

AGREEMENT/CONTRACT

THIS AGREEMENT, made this _____ day of _____, 20____, by and between CITY OF CROSSVILLE, herein called "Owner", acting herein through its designated representative, and

ETC Construction LLC

STRIKE OUT (a corporation) (a partnership) (LLC)
INAPPLICABLE (an individual doing business as _____)
TERMS
of CROSSVILLE, County of CUMBERLAND, and State of TENNESSEE,
hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows: **Construction Services – Catoosa Office & Maintenance Building** hereinafter called "the project", being the **Lump Sum Base Bid plus Additive Alternative 1 and 2**

for the sum of One Million and One Hundred and Twenty-Eight Thousand and Two Hundred and One Dollars and Zero Cents

Dollars (**\$ 1,128,201.00**) and all extra work in connection therewith, under the terms as stated in the RFP; and at their own property cost and expense to 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 bid, which include all maps, plats, blue prints, and other drawings and printed or written explanatory matter thereof, the bid therefore as prepared by City of Crossville – Engineering & Planning Department, all of which are made a part hereof and collectively evidence and constitute the contract.

The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within 300 consecutive calendar days thereafter after the delivery of the Pre-engineered Metal Building. Proposer must agree also to pay as liquidated damages, the sum of \$1,000.00 for each consecutive calendar days thereafter as hereinafter provided in the RFP.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the bid.

See attachments that are a part of this agreement.

- ETC Construction LLC Bid Package
- Import Instructions to Contractors
- Minimum Standards for Office and Maintenance Building
- Contractor Requirements
- Concept Plans
- Addendum 1
- Addendum 2

IN WITNESS WHEREOF, the parties to these presents have executed this contract in four (4) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

ATTEST:

CITY OF CROSSVILLE
(Owner)

(City Clerk)

By: _____

(Title)

(Contractor)

(Witness/Secretary)

By: _____

(Title)

(Address and Zip Code)

NOTE: If Contractor is a corporation, Secretary should attest.

Project Information: City Clerk/RFP

**Project Title: RFP-Construction Services-Catoosa
Office & Maintenance Building**

Institution: City of Crossville

City/County: Crossville, Cumberland Co., Tennessee



Bidder Identification:

Bidder: ETC Construction, LLC

Address: 6153 Plateau Rd., Crossville, TN. 38571

Tennessee Contractor License Information:

License Number: 78172

License Classification: BC/CMC

License Expiration Date: 08/31/26

Dollar Limit: Unlimited

CITY OF CROSSVILLE

REQUEST FOR PROPOSALS

IMPORTANT: Read Instructions Carefully

RETURN PROPOSAL TO:

City Clerk, Baylee Rhea
City of Crossville
392 North Main Street
Crossville, TN 38555

Date Issued: September 19, 2025

Proposal to be Opened: **October 21, 2025 @ 2:00 pm CDT**

Prices to be F.O.B. – City of Crossville, Catoosa Utility District
5252 Plateau Road
Crossville, TN 38571

NOTICE TO CONTRACTOR

Please enter the LUM SUM BASE PRICE for your proposal listed herein specified for the design and construction of a new Office and Maintenance Building for Catoosa Utility District. Be sure the specifications and/or minimum requirements are followed. Any deviation from the specifications and/or minimum requirements shall be noted in an attach letter containing a description of the deviation with any additional comments, and it will be considered as part of your proposal. Provide a list of allowances if used other than the ones specified in the minimum requirements.

We reserve the right to accept or reject any or all proposals.

For further information, contact Don Cole at 931-456-2014, email: don.cole@crossvilletn.gov.

Contractor's Name: ETC Construction LLC
Contractor's Address: 6153 Plateau Rd.
Crossville, TN. 38571
(931) 265-4920

Lump Sum Base Bid including allowances in minimum requirements:

One Million and Eighty-Seven Thousand

Dollars Zero **Cents**

(\$ 1,087,000.00 **)**

Additive Alternative 1

Delete Sectional Type Overhead Doors (2- 14' x 16' OH Door and 1 – 10' x 12' OH Door) change to Roll Type Overhead Doors

Additional amount for Alternative 1

Eight Thousand and Two Hundred and Fifty-Four Dollars Zero Cents

(\$ 8,254.00)

Lump Sum Base Bid plus Additive Alternative 1:

One Million and Ninety-Five Thousand and

Two Hundred and Fifty-Four Dollars Zero Cents

(\$ 1,095,254.00)

Additive Alternative 2

Add a Natural Gas Standby Generator System for the building including generator, automatic transfer switch, switchgear, surge protector, concrete pad, etc. for a fully operational standby generator system

Additional amount for Alternative 2

Thirty-Two Thousand and Nine Hundred and Forty-Seven Dollars Zero Cents

(\$ 32,947.00)

Lump Sum Base Bid plus Additive Alternative 1 and 2:

One Million and One Hundred and Twenty-Eight Thousand and

Two Hundred and One Dollars Zero Cents

(\$ 1,128,201.00)

(Amounts are to be shown in both words and figures. In case of discrepancy, the amount in words will govern.)

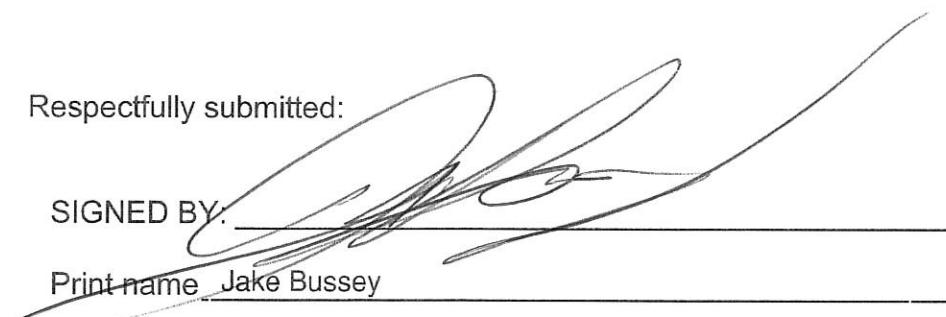
Proposer must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within 300 consecutive calendar days thereafter after the delivery of the Pre-engineered Metal Building. Proposer must agree also to pay as liquidated damages, the sum of \$1,000.00 for each consecutive calendar days

The above lump sum price shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Proposer understands that the Owner reserves the right to reject any or all proposals and to waive any informalities in the Request for Proposals.

The proposer agrees that this proposal shall be good and may not be withdrawn for a period of 60 days after the scheduled closing time for receiving proposals.

Respectfully submitted:

SIGNED BY: 

Print name: Jake Bussey

FIRM: ETC Construction LLC

ADDRESS: 6153 Plateau Rd.

City Crossville State TN Zip 38571

Date: 10/21/25 Telephone: (931) 265-4920

Please attach your Proposal to this form include the information required for evaluation of your proposal and any other information that the proposer deems relative to this project.

PUBLIC NOTICE

TITLE VI OF THE 1964 CIVIL RIGHTS ACT

“No person in the United States shall, on the ground of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.”

The City of Crossville provides benefits and services such as police protection, fire protection, water service, sewer service, sanitation service, infrastructure needs, and other related municipal services. The City also provides funds to certain non-profit organizations.

Anyone who believes that an agency or local government receiving the federal funding mentioned above has discriminated against someone on the basis of race, color or national origin has a right to file a complaint within 180 days of the alleged discrimination.

Leah Crockett, Human Resources Administrator
Title VI Coordinator

Please sign and return to the City of Crossville verifying that your company is in compliance with the above Title VI, 1964 Civil Rights Act.

~~Authorized Signature~~

ETC Construction, LLC

Company

Jake Bussey

Print Name

Please return to: City of Crossville
392 N. Main St.
Crossville, TN 38555

IRAN DIVESTMENT ACT

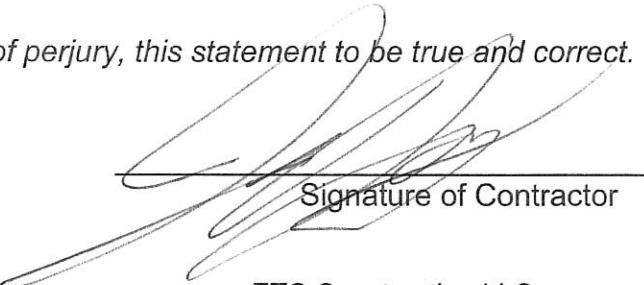
In compliance with the Iran Divestment Act (State of Tennessee 2016, Public Chapter No. 817), which became effective on July 1, 2016, certification is required of all contractors on contracts over \$1,000.

By submission of this proposal, each contractor and each person signing on behalf of any contractor certifies, and in the case of a joint proposal each party hereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each contractor is not on the list created pursuant to T.C.A. § 12-12-106.

I affirm, under the penalties of perjury, this statement to be true and correct.

10/21/25

Date



Signature of Contractor

ETC Construction LLC

Company

A proposal shall not be considered for award nor shall any award be made where the foregoing certification has not been complied with; provided, however, that if in any case the contractor cannot make the foregoing certification, the contractor shall so state and shall furnish with the proposal a signed statement which sets forth in detail the reasons therefor. The City of Crossville may award a proposal to a contractor who cannot make the certification, on a case-by-case basis, if:

- (1) The investment activities in Iran were made before July 1, 2016, the investment activities in Iran have not been expanded or renewed on or after July 1, 2016, and the person has adopted, publicized, and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
- (2) The City of Crossville makes a determination that the goods or services are necessary for the City of Crossville to perform its functions and that, absent such an exemption, the political subdivision will be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF Tennessee
COUNTY OF Cumberland

The undersigned, principal officer of ETC Construction LLC, an employer of five (5) or more employees contracting with City of Crossville government to provide construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of ETC Construction LLC (hereinafter referred to as the "Company"), and is duly authorized to execute this Affidavit on behalf of the Company.
2. The Company submits this Affidavit pursuant to T.C.A. § 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9, of the Tennessee Code Annotated.
3. The Company is in compliance with T.C.A. § 50-9-113.

Further affiant saith not.

Principal Officer

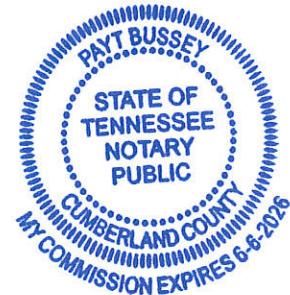
STATE OF Tennessee COUNTY OF Cumberland

Before me personally appeared Jake Bussey, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and seal at office this 17 day of October, 2025.

Patt Bussey
Notary Public

My commission expires: 06-06-2026



STATEMENT OF COMPLIANCE CERTIFICATE ILLEGAL IMMIGRANTS

EACH CONTRACTOR SHALL FILL IN AND SIGN THE FOLLOWING

This is to certify that ETC Construction LLC
have fully complied with all the requirements of Chapter No. 878 (House Bill No. 111
and Senate Bill No. 411) which serves to amend Tennessee Code Annotated Title 12,
Chapter 4, Part I, attached herein for reference.

- All Contractors for construction services on this project shall be required to submit an affidavit (by executing this compliance document) as part of their proposal, that attests that such Contractor shall comply with requirements of Chapter no. 878.

Signed:

State of Tennessee)
County of Cumberland) ss

Personally, appeared before me, Jake Bussey the undersigned Notary

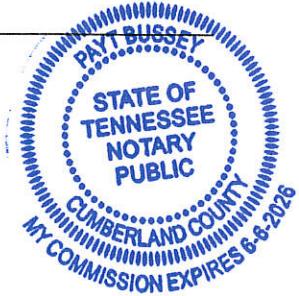
Public, Payt Bussey, the within named bargainer, with whom I am personally acquainted, and known to me to be the President / Owner / Partner (as applicable) of the ETC Construction, LLC, Corporation, Partnership, Sole Proprietorship (as applicable) and acknowledged to me that he executed the foregoing document for the purposes recited therein.

Witness my hand, at office, this 17 day of October, 2025.

P. Bryant Notary Public

My commission expires

06-06-2025 2026



ATTACHMENT 1

ACKNOWLEDGMENT OF ADDENDUMS

TO BE INCLUDED IN RFP Submittal

**New Office and Maintenance Building
Catoosa Utility District
5252 Plateau Road**

Proposer acknowledges receipt of the following addendums:

Addendum 1 dated 10/02/2025

Addendum 2 dated 10/17/2025

Respectfully submitted:

SIGNED BY:

Print name: Jake Bussey

FIRM: ETC Construction LLC

ADDRESS: 6153 Plateau Rd.

City Crossville State TN Zip 38571

Date: 10/17/2025 Telephone: (931) 265-4920

Attach this attachment to your RFP submittal.

**PREPARED BY****Greg Atkins**

East Tennessee Contractors (ETC)

(931) 265-4920

greg@etccerectors.com

6153 Plateau Rd, Crossville, TN 38571, USA

PREPARED FOR**Don Cole**

City of Crossville

(931) 456-2014

don.cole@crossvilletn.gov

5252 Plateau Rd. Crossville, TN. 38571

COMMERCIAL PROPOSAL DETAILS**5252 Plateau Rd. Crossville, TN. 38571****Scope of Work**

Construction Services for the design and construction of a new office and maintenance building for Catoosa Utility District.

*Supply & Erect 85x90 PEMB Package w/30x90 Office area

*Architectural & Engineering Services

*Concrete Pad

*Mechanical/HVAC

*Electrical

*Plumbing

*Office Build Out

Notes

1) ETC Construction LLC specializes in structural steel erection, general contracting, and commercial/industrial construction across Tennessee. ETC self performs PEMB erection, concrete, mechanical, HVAC, plumbing, and structural steel manufacturing & erect.

2) ETC Construction LLC maintains a proven record of delivering high-quality, on-time, and cost-effective projects throughout Tennessee.

Our track record includes:

Zero lost-time safety incidents in the last 3 years.

Consistent completion within budget and schedule targets.

Excellent client relationships and repeat business from local industries and municipalities.

Recognized for quality workmanship, proactive communication, and strong cost control.

Our firm's performance reflects a commitment to professionalism, teamwork, and customer satisfaction across every phase of construction.

Example: Super Show Fireworks - ETC came in after the project had begun implementation to take over for another contractor. ETC was able to meet tight deadlines and allow the customer to open in time for July 4th. Total scope of work was complete in 60 days.

3) ETC Construction LLC understands the practical challenges common to public and industrial projects, including:

Working around existing facilities and utilities.

Maintaining schedules through adverse weather conditions.

Complying with TDOT, TDEC, and local building codes.

Managing subcontractor coordination and material logistics.

4) As a Crossville-based contractor, ETC Construction LLC is deeply familiar with local site conditions, inspection procedures, and regional construction practices.

Our relationships with local suppliers, testing labs, and utility departments allow for efficient coordination and faster mobilization.

We have extensive experience with Cumberland County and City of Crossville project standards, inspection schedules, and permitting workflows.

ETC has built appx. ,000,000 sq. ft. of construction in Crossville/Cumberland County.

ETC built TSM (20,000 sq. ft.) PEMB which is on Plateau Rd.

ETC's main office is on Plateau Rd. appx. 1/2 mile from project site.

ETC built East Fork Water Utility District. Located in Monterey, TN. This project consisted of a 5,000 sq. ft. new facility for the East Fork Water Dept. This facility came with a fully equipped office space and warehouse. It had extensive dirt work, stem walls, and pre-engineered metal building. Worked with 3rd party inspections, board meetings, and weekly project update meetings.

CONTRACTOR'S EXPERIENCE

Previous Experience.

List similar projects completed in the past ten years, a minimum of three projects, with the following information.

Project Name: East Tennessee Dodge of Crossville

Location: 2774 N. Main St., Crossville, TN. 38555

Owner's Name: Jon Buckner

Address: 2774 N. Main St.
Crossville, TN. 38555

Telephone: (931) 200-9299

Email: jon.buckner@etndodge.com

Contract Date: 02/28/2025

Type of Work: Remodel & Construction

Status: Completed

Cost of Work: \$300,000.00

Additional Comments if needed: This was a remodel after a serious fire destroyed most of the showroom.

Make additional copies of this sheet as needed for additional projects.

CONTRACTOR'S EXPERIENCE

Previous Experience.

List similar projects completed in the past ten years, a minimum of three projects, with the following information.

Project Name: Baron USA

Location: 110 W. Turkey Creek Rd. Cookeville, TN. 38506

Owner's Name: Steve Glass

Address: 110 W. Turkey Creek Rd.

Cookeville, TN. 38506

Telephone: (931) 260-4711

Email: steve@baronusa.com

Contract Date: May 12, 2025

Type of Work: PEMB Erect & Concrete

Status: Complete

Cost of Work: \$205,000.00

Additional Comments if needed: Since completion, we have contracted more work for Baron USA.

Make additional copies of this sheet as needed for additional projects.

CONTRACTOR'S EXPERIENCE

Previous Experience.

List similar projects completed in the past ten years, a minimum of three projects, with the following information.

Project Name: WinSupply of Cookeville

Location: 480 E. Veterans Dr. Cookeville, TN. 38501

Owner's Name: Joel Deason

Address: 480 E. Veterans Dr.
Cookeville, TN. 38501

Telephone: (931) 526-1320

Email: jdeason@dndenter.com

Contract Date: 03/13/2024

Type of Work: PEMB Design, Supply, & Erect

Status: Complete

Cost of Work: \$990,000.00

Additional Comments if needed: This was a design build.

Make additional copies of this sheet as needed for additional projects.

IMPORTANT INSTRUCTIONS TO CONTRACTORS

1. Each proposal should be in a **SEPARATE ENVELOPE** and have typed/noted on the envelope the **CITY CLERK/RFP, “RFP – Construction Services – Catoosa office & Maintenance Building”, OPENING DATE, AND TIME. No electronic submissions.**
2. All proposers must be licensed General Contractors as required by the Contractor's Licensing Act of 1994 of the General Assembly of the State of Tennessee, and qualified for the type of construction being proposal upon. Each proposer shall write on the outside of the envelope containing its Request for Proposal: 1) its Contractor's license number; 2) that part of the classification applying to the proposal. If this is not done, the proposal will not be opened.
3. Specifications and/or Minimum Requirements used in this proposal are intended to be open and non-restrictive. Reference to brand names, catalogs, etc., is to establish minimum standards of quality and does not preclude BUYER'S consideration of proposals on comparable quality.
4. All bidders to register with City of Crossville – Engineering & Planning Department at 392 N. Main St., Crossville, Tn 38555 to ensure all proposers receive any and all information concerning the RFP. Please contact City of Crossville, Engineering Department, via email (don.cole@crossvilletn.gov) to register for this project and to receive a .pdf copy of the RFP. Emails must include the company name, address, contact person, and contact phone number. There is no charge for the .pdf, but bidders are responsible for printing/copying of project documents. All Bidders to register with City of Crossville – Engineering & Planning Department by **October 15, 2025**.
5. Every request for such interpretation should be in writing addressed to

City of Crossville – Engineering & Planning Department at 392 N. Main St., Crossville, Tn 38555 or email: don.cole@crossvilletn.gov

and to be given consideration must be received at least six days prior to the date fixed for the opening of bids being **October 15, 2025**. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the RFP which, if issued, will be mailed by certified mail with return receipt requested or emailed to all prospective bidders (at the respective addresses furnished for such purposes), not later than two working days prior to the date fixed for the opening of bids being **Friday, October 17, 2025**. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the RFP.

6. Unless otherwise indicated, proposals should be submitted indicating a lump sum price for all products and services include in your proposal.
7. The City of Crossville, Engineering Department, will review the proposals and make a recommendation to the City Council for approval based upon the evaluation criteria.

8. The Contractor must provide Certificates of Insurance for Liability and Workers Compensation if awarded the proposal.
9. The Contractor must provide a performance and payment bond for the entirety of the project if awarded the proposal.
10. The Contractor to attend Construction Progress Meetings during the project. The Contractor and the City may agree upon a meeting time and schedule. Meetings may be monthly or as needed during the project.
11. Each proposal must be accompanied by Certification of Contractor Regarding Iran Divestment Act, Certification of Contractor Regarding Equal Employment Opportunity (Title VI of the Civil Rights act), Drug-Free Workplace Affidavit, and Statement of Compliance Certificate - Illegal Immigrants. All the Certifications must be fully completed and executed with the Request for Proposals. See attached forms.

Conceptual Timeline

Award Proposal – November 11, 2025 by City

Notice of Award – November 12, 2025 by City

Notice to Proceed – TBD – After the approval of the Pre-engineered Metal Building Shop Drawings)

Final Completion Date – TBD (300 days after the delivery of Pre-engineered Metal Building)

Minimum Standards for Office and Maintenance Building

Office Area – 30 feet by 90 feet with a minimum 10-foot exterior wall height for an 8-foot finished ceiling height in Office Area

- Office (2)
- Lobby
- ADA Uni Sex Bathroom (3)
- Uni Sex Bathroom with shower
- Meeting Room
- Break Room
- Storage Areas (3)
- Locker Room
- Mechanical Room
- Janitorial

Maintenance/Shop Area - 55 feet by 90 feet Maintenance/Shop Area

Open Shed Area

30 feet by 90 feet covered area and open on back side with concrete slab floor.

See attached Concept Plan for proposed building layout, building elevations, and Proposed Site Plan for location.

General Building Requirements:

Construction to meet or exceed building code requirements for Cumberland County, Tennessee. <https://cumberlandcountyn.gov/directory/codes/>

Pre-engineered Metal Building Construction for all exterior walls. Primary-Frame Type: Rigid Clear Span: Solid-member, structural-framing system. No interior columns in the Maintenance/Shop Area. Secondary-Frame Type: Manufacturer's standard purlins and joists and flush-framed girts. Shop drawings to be approved by the city.

Minimum wall sheeting to be 26 gauge, and a minimum roof sheeting to be 24 gauge with a 30-year warranty.

Colors for the metal siding, roof, and trim to be determined.

Standing seam roof.

Roof areas to have a minimum 3:12 pitch.

The proposed building including the insulation, windows, doors, etc. to meet or exceed the International Energy Conservation Code (IECC), 2018 Edition (see exceptions adopted by Cumberland County - <https://cumberlandcountyn.gov/directory/codes/>)

No insulation to be placed above and on the ceiling tiles.

Concrete floor thickness 6 inches with 6x6 Mesh w2.9xw2.9 reinforcing and 10 mil polyethylene vapor barrier.

Four 36-inch walk through doors in Maintenance/Shop area with minimum 5 foot by 5 foot concrete pad.

Two Overhead Doors on each side wall leaving Maintenance/Shop area, 14' wide x 16' height – Sectional Type Doors in Base Bid - Additive Alternative 1 – Roll-Up Doors

One Overhead Door on back wall leaving Maintenance/Shop Building, 10' wide x 12' height – Sectional Type Doors in Base Bid - Additive Alternative 1 – Roll-Up Doors

Remote Control for Overhead Doors

A minimum two-foot concrete strip around the perimeter of the building where needed (not needed where apron and sidewalk are adjacent to the building)

All gutter downspouts shall drain into 6" PVC downspout leaders extended 5' feet out from building, floor drain pipe to extend 5' out from building. City to continuing running the drains out from the building.

All interior doors to be 36 inches wide, with lever door hardware, and door stops.

All trenches for pipes and conduits across the parking area to be backfilled with gravel.

All material excavated for foundations and trenched to remain on site and to be stockpiled on the back side of the project site.

Contractor responsible for minor grading on the building site for concrete flat work.

Contractor responsible for pipe bollards as shown on the concept plans. (Min. 4" steel pipe filled with concrete, 42" high, embedded 18" into 18" diameter concrete base, 60" length of pipe, painted yellow)

The building design and construction shall be in strict accordance with the latest applicable codes and standards.

City to review and approve all drawings and shop drawings, and review product information on equipment and accessories and approve.

TEMPORARY FACILITIES

The Contractor shall provide a temporary field office, sanitation facilities and equipment required during the duration of the project. The Contractor shall provide a dumpster as required for the project. The Contractor shall provide and be responsible for temporary electrical, gas and water services while the work is in progress.

PERMITS / TAP FEES

The Contractor is responsible for the building permit and the building permit fee in this proposal.

OFFICE AREA FINISHES

- 5/8-inch drywall
- Rubber base - 4 inch
- Acoustical Tile Ceiling – 2' x 2' grid
 - Fine Fissured White Mineral Fiber Drop Ceiling
 - Tegular edge detail
 - White Grid
- 8 ft Ceiling Height
- Flooring – Commercial Grade Vinyl Plank flooring – Glue Down
 - Minimum 20 mil wearing surface
 - Minimum 15 year commercial limited warranty
 - **Allowance for Commercial Grade Vinyl Plank (Vinyl Plank Material Only) - \$4.00/sq ft**
- Painted walls, doors & trim
- RFP Panels on walls in bathroom and wet areas
- HVAC for office area
- Sound attenuation batts (Insulation) – Interior Walls
- Exterior Store Front Door with closure – Full pane- 36" wide door – mirror tinted
- Interior doors
 - Office doors to be keyed
 - Lever Door Hardware
 - Door Stops
- Exterior Fixed Windows – mirror tinted
 - 5' x 5' (4)
 - 4' x 5' (1)
- Uni Sex Bathroom
 - Vanity
 - ADA Toilet
 - Paper Towel Dispenser
 - Soap Dispenser
 - Double Roll Toilet Paper Holder
 - Mirror with stainless steel frame
 - Exhaust Fan
- UBI Sex ADA Bathroom with grab bars
 - ADA Wall mounted Sink
 - ADA Toilet
 - Paper Towel Dispenser
 - Soap Dispenser
 - Double Roll Toilet Paper Holder
 - Grab Bars
 - Mirror with stainless steel frame
 - Exhaust Fan
- Interior doors that open to the Maintenance/Shop Area to have weatherstripping and a threshold – 2 hour fire rated doors

- Meeting Room
 - Floor Receptacles under Conference Table
 - Recessed Floor Ethernet Box – 4 ports under Conference Table
- Janitorial Closet
 - Mop Sink
 - Back Flow Preventor

MAITENANCE AREA FINISHES

- Maintenance Area to be ventilated with a combination of wall mounted exhaust fans and motorized intake louvers. Ventilation System to provide a minimum of six air changes per hour in the summer.
- Two 8 ft Powerfoil industrial comfort fan by Big Ass Fans.
 - 200-277 V
 - 1 HP
 - Extension to meet minimum clearance requirements
 - Standard Color
 - Standard Controller with BAFCOn upgrade
- Two Natural Gas fired unit heaters located on opposite corners sized to heat the Maintenance area
- Interior Wall adjacent to Office Area – 2 Hour fire wall (2 layers of 5/8" Type X Drywall)
- Interior Walls adjacent to Covered Shed Area and exterior walls – Metal Panels that are a minimum of 8 foot tall around the exterior side and back walls and butted into columns
- Floor – Sealed Concrete
- Floor trench drains as shown on concept drawings - Drain pipe to be stubbed out 5' beyond the building
- Uni Sex Bathroom (to be climate controlled)
 - Vanity
 - ADA Toilet
 - Paper Towel Dispenser
 - Soap Dispenser
 - Double Roll Toilet Paper Holder
 - Mirror with stainless steel frame
 - Commercial Vinyl Plank (same as Office Area)
 - Exhaust fan

ELECTRICAL

- Electrical design and installation shall be in strict accordance with the latest applicable codes and standards
- Underground service from pole to the building
- One dedicated conduit for fiber internet into the building from power pole – 1" Conduit
- One spare Communications Conduit – 1" Conduit
- Three Phase Electrical Service to the building
- Sixteen (16) High Bay dimmable LED fixtures for the Maintenance Area
- Four (4) High Bay dimmable LED fixtures for the Maintenance Area
- 2x4 lay in LED troffers in Office area for an acoustical tile ceiling
- Eighteen (18) exterior wall mounted LED lights with photocells along the front and side walls. 70W - See Concept drawings
- Eight (8) Spotlights on back columns on photocell– see Concept Drawings
- Exit lighting and Emergency lighting
- Switches and receptacles in the Office Area as per code. Locations to be coordinated with owner.
- Quad receptacles in Maintenance/Shop Area to be located at or near each column
- Quad receptacles in Covered Shed Area to be located at or near each column along Maintenance/Shop Area wall
- 208/240V receptacles (2) for an air compressor and/or welder
- Stub out conduits for future parking lot lights at both front corners – 5' out
- Stub out conduit for future electric gate on south side of building – 5' out
- Drops for the SCADA system
- Drops for Ethernet
- Floor Receptacles (2) for Main Office desks
- Floor Receptacle for Meeting Room
- Recessed Floor Ethernet Boxes – 4 ports (2) for Main Office desks
- Recessed Floor Ethernet Box – 4 ports for Meeting Room
- Conduits and boxes for Security Cameras
- Drops for Security Key Pads at Front and Side doors
- Network cabling and low voltage wiring for security and SCADA by others
- Contractor responsible for all the conduits and boxes for the network and low voltage wiring
- See SECURITY/ACCESS CONTROLS: DATA/ETHERNET requirements below
- Additive Alternative 2 – Natural Gas Standby Generator with all accessories including automatic transfer switch, switchgear, surge protector, concrete pad, etc.

PLUMBING

- ADA Elongated Toilet
- ADA accessible Bathroom wall mounted Sink
- Vanity

- Mop Sink
- Water /ice connection for refrigerator
- Kitchen Sink for Break Room
- Freezeless/Frostproof wall hydrants (2) on outside side walls - Water Spigots
- Hot Water Heater – Tankless – Natural Gas
- 48" x 36" Shower Enclosure - Acrylic
- 1" Water Service from meter to the building -Tie into Proposed water meter - Northeast corner of project side next to road.
- Appliances to be provided by the city
- Stub sewer out 5' feet on north side – City to install Septic Tank, Pump, and field lines
- Water connection and drain for Ice Machine

CONCRETE FLAT WORK

- Concrete slab for building and covered shed area
- HVAC concrete pads (2) - (Approx. 6' x 8' ea.)
- 2-foot Concrete strip around the perimeter of building where needed (not needed where apron and sidewalk are adjacent to the building)
- Concrete pads at exterior doors where needed (Approx. 5' x 5')
- Concrete pads at Overhead doors (Approx. 10' x 16')
- Concrete sidewalks along front of building
- Concrete - 4 inches thickness with 6x6 Mesh w2.9xw2.9 reinforcing and 10 mil polyethylene vapor barrier.

SECURITY / ACCESS CONTROLS: DATA/ETHERNET

- Contractor to coordinate with city's security system, and IT/Data contractors for security systems and cameras.
- Contractor to provide drops, conduit and box, in walls and floor for ethernet. See Concept drawings for locations in Office Area.
- Contractor to provide drops, conduit and box, in walls for SCADA system. See Concept drawings for locations in Office Area.
- Contractor to run conduits and install boxes for security cameras, on outside walls, open shed area, and Maintenance/Shop area as shown on Concept Drawings.
- Contractor to install 3 Quad receptacles in the Storage, IT/ Data & SCADA Room as shown on Concept Drawings.
- Contractor to stub out conduit for SCADA system for antenna
- Contractor to run conduit from Data Room to Pole for fiber internet (1" conduit).
- Contractor to run spare conduit for communications from Data Room to Pole (1" conduit).

- Network cabling and low voltage wiring for security and SCADA by others
- Contractor responsible for all the conduits and boxes for the network and low voltage wiring

MILLWORK

- **\$15,000.00 allowance** for installation of Millwork in the Break Room/Kitchen Area including trim, Cabinets, Countertops and Cabinet Hardware.

CONTIGENCY

- **\$25,000.00 allowance** for construction contingencies

All allowances show in the minimum requirements to be included in the lump sum base bid. A final change order will be utilized to reconcile any differences between the allowances and the final costs.

ASSESIBILITY

Maneuvering clearances for doors to meet ADA requirements: These spaces are needed for individuals using mobility aids to approach, open, and pass through doorways. They are typically required on both sides of doors, except for those used only in one direction. The size and configuration of these clearances vary based on the approach direction and if the door has a closer or latch.

Door hardware: Hardware must be usable with one hand without needing tight grasping, pinching, or wrist twisting. Acceptable types include lever-operated and push-type. Round doorknobs are not compliant. Hardware must be between 34 inches and 48 inches above the floor.

Thresholds: New construction thresholds can be a maximum of 1/2 inch high. If over 1/4 inch high, the edge must be beveled with a slope no steeper than 1:2.

Emergency exiting alarm and signage: All emergency exiting alarm and signage to comply with federal, state and county codes for accessibility.

Emergency warning systems shall comply with ADA requirements for the hearing impaired. Visual warning strobe lights to be designed to have a frequency of not more than 60 flashes per minute.

General contractor shall allow for applied finish dimensions in addition to standard construction tolerances in achieving all accessibility clearances per ADA guidelines.

General Contractor to meet or exceed the standards in the 2010 ADA Standards for Accessible Design.

WARRANTIES AND RECORDS

The general contractor shall guarantee the work for one (1) year after substantial completion of the work.

The general contractor shall perform a one (1) year warranty walk-through/inspection with the owner's representative upon request.

The contractor shall leave a copy of redlined as-built drawings for the owner/owner's representative noting all revisions of work upon completion of construction.

Upon completion of the work and before final payment is made, the contractor shall secure and deliver to the owner all guarantees and/or warranties on all equipment supplied and/or installed by the contractor and his/her sub-contractors, and all operations/maintenance materials.

GENERAL CODES/ STANDARDS

Give all notices and comply with all national, state and local laws, ordinances, codes, rules and regulations bearing on the conduct of the work.

If the contractor knowingly performs any work which is contrary to such laws, ordinances, codes, rules and regulations, he/she shall promptly make changes as required to comply therewith and bear all costs arising therefrom.

The contractor shall file, obtain and pay fees for building department and all other agency approvals and permits, controlled inspections and final write-offs for project completion.

In case of conflicts in the requirements of authorities having jurisdiction, the most restrictive requirements shall govern.

Loads and code restrictions for all design considerations shall conform to local, state and all governing codes.

The contractor shall arrange for all inspections necessary to obtain certificate of occupancy.

The contractor shall be responsible for adequately bracing and protecting work during construction against damage, breakage, collapse, distortion, and/or misalignment in accordance with applicable codes, standards and generally accepted best practice.

The contractor shall provide back flow devices as required by local, state and federal codes.

CONTRACTOR STANDARD OF CARE

Contractors are to exercise proper precautions to verify all existing conditions and layout of work.

Contractors are responsible for any error resulting from failure to exercise such precautions. any such error will not be considered as a basis for a change order or extra compensation.

General contractor is responsible for layout of all work and is responsible for all lines and measurements (within reasonable tolerances) of the building, utilities and other work executed under this contract.)

All contractors shall verify dimensions as related to their scope of work prior to commencing construction or ordering materials, equipment, etc.

QUALITY OF WORK

General contractor to ensure that construction and finishes are clean, true and free of irregularities. Do not proceed with work until unsatisfactory conditions have been corrected. Should a contractor work in sequence after another contractor (for example, a drywall crew begins work after a framing crew)- commencement of work shall

indicate the later contractor's acceptance of predecessor's work as satisfactory.

Paint and other finishes are to be applied to create a solid, acceptable finish. all finishes shall adhere to a consistent professional quality.

GENERAL NOTES

The general contractor is responsible for coordination, providing and maintaining site sanitary facilities, temporary utilities, construction debris collection and removal of dumpsters, as coordinated with the owner.

The general contractor and subcontractors are responsible for providing all labor, tools, equipment, including power lulls/lifts, scaffolding, materials, etc. necessary to unload and install their related scope of work items.

Certificates of insurance for each subtrade and vendor, etc. shall be kept on file by general contractor and presented to owner.

All federal, OSHO, state and local safety standards are to be maintained by the general contractor and all subcontractors and sub-subcontractors until final completion and certificate of occupancy issued by County.

CONTRACTOR REQUIREMENTS

The Contractor shall provide all architectural and engineering services required to obtain a building permit and to clearly indicate the scope of work to the Owner. The Contractor understands that all Civil Site Design will be completed by the City of Crossville. City to review all plans and shop drawings.

Qualifications: The Contractor shall have experience in the design and construction of similar facilities, and shall meet the following as a minimum:

- A) Business license for the City of Crossville and/or Cumberland County.
- B) Contractor to utilize an architectural design service with at least (1) TN licensed professional(s).
- C) A General Contractor in the State of TN.
- D) Ability to provide a performance and payment bond for entirety of the project if awarded the project.

The Contractor shall carry all necessary workman's compensation, builder's risk, and following liability insurance with the below minimum limits:

General liability:	\$ 2,000,000
Automobile Liability:	\$ 1,000,000
Excess Liability:	\$ 2,000,000
Worker's Compensation:	\$ 1,000,000

The Contractor shall provide an onsite Field Manager, Project Manager, and office support as required to manage the project.

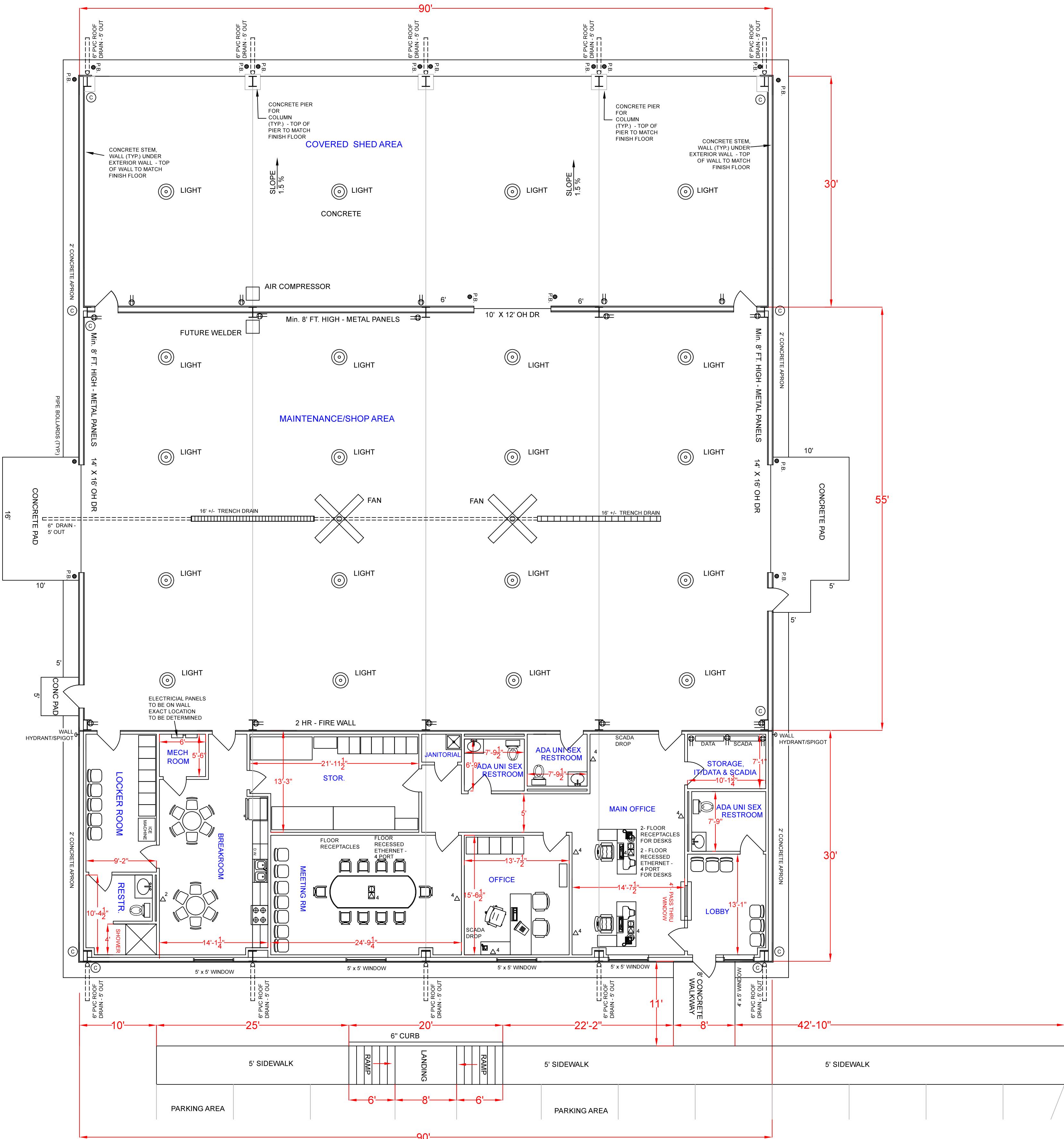
The Contractor shall prepare and update a monthly construction schedule.

The Contractor shall provide daily cleanup as needed throughout the duration of the project and final cleanup.

The Contractor shall coordinate all project meetings, processing of subcontractor's submittals, contract close-out and facility startup.

The Contractor to provide a project schedule if awarded the RFP.

Completion date no more than 300 days after the delivery of the metal building

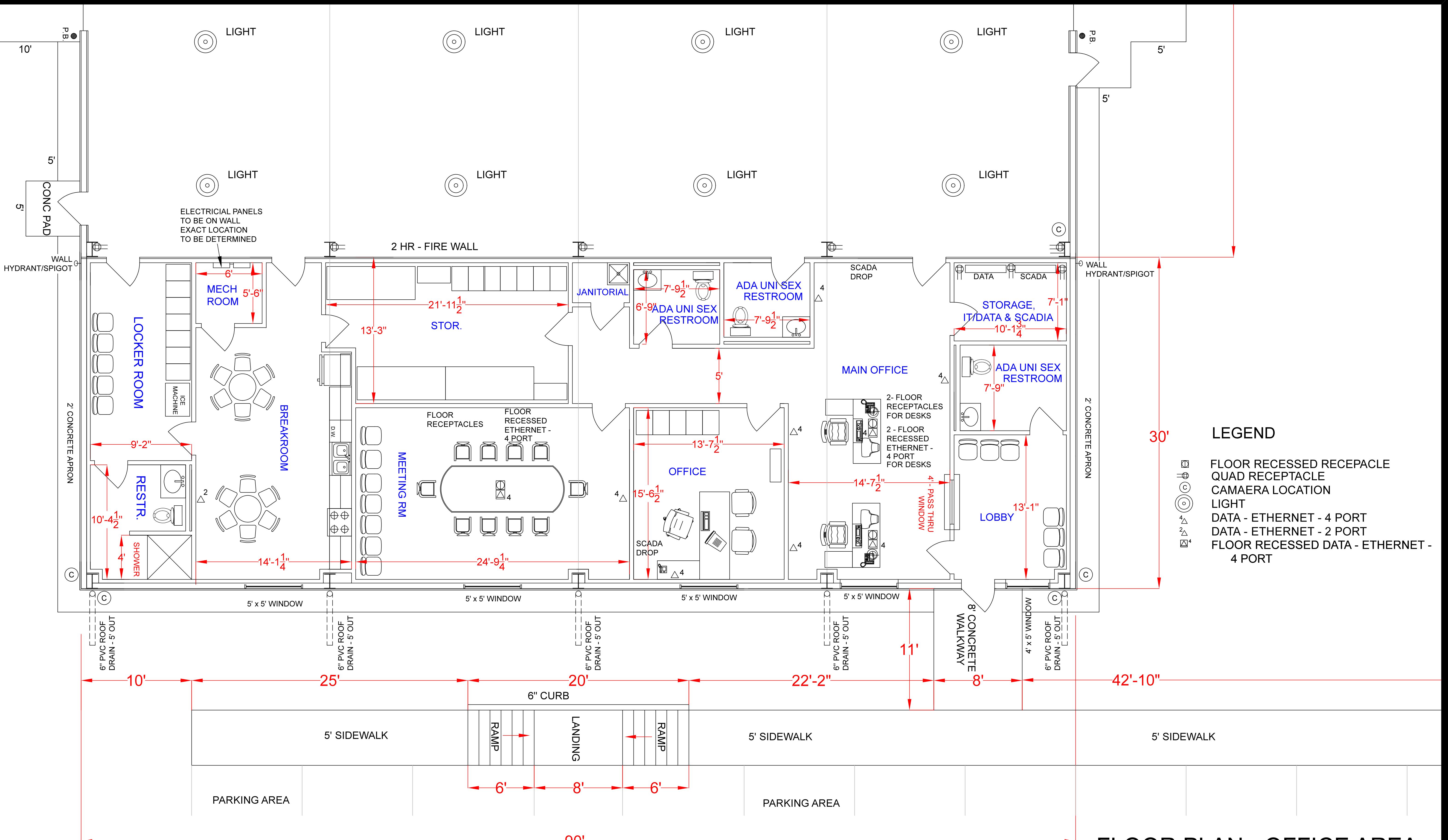


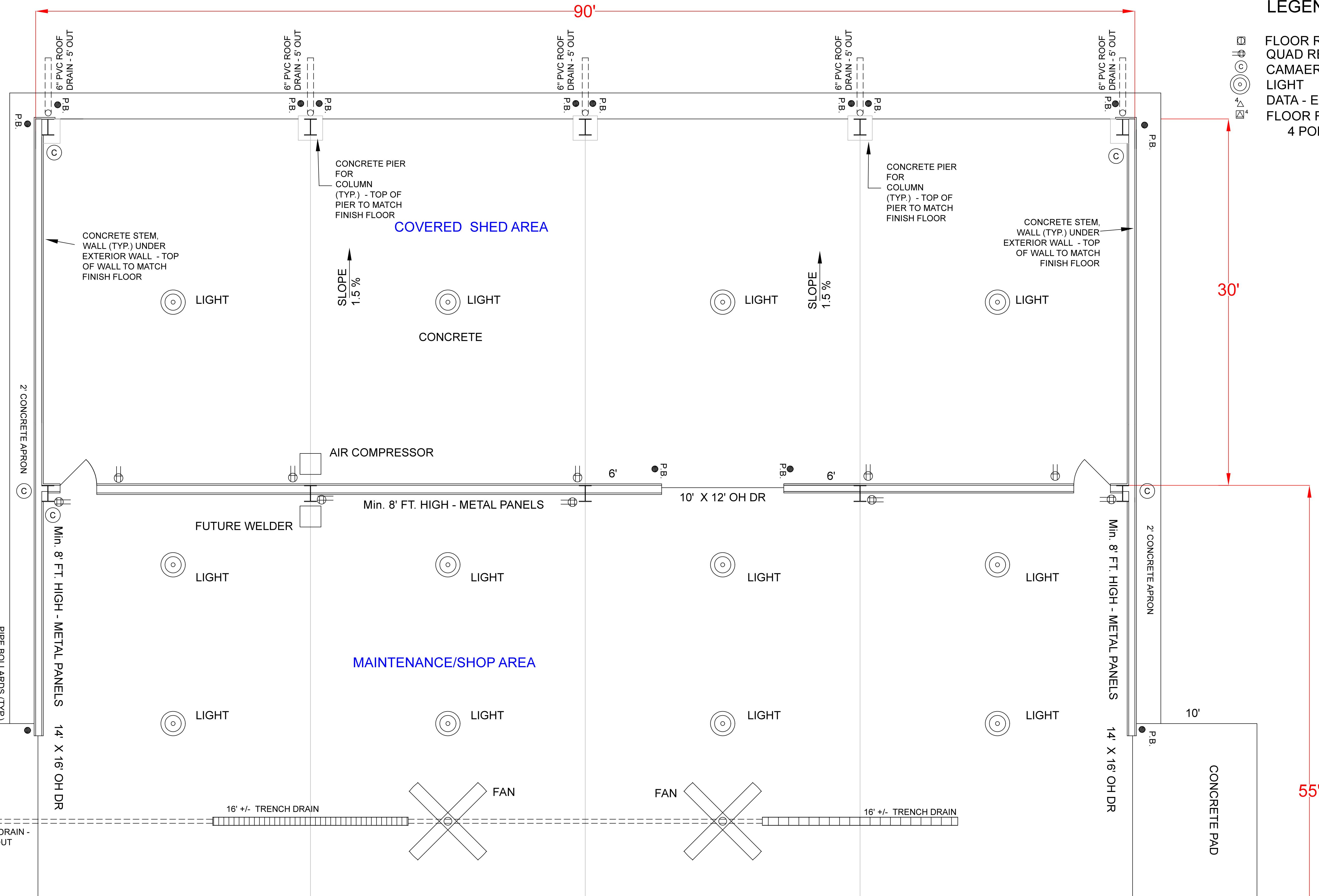
LEGEND

FLOOR RECESSED RECEPACLE
 QUAD RECEPTACLE
 CAMERA LOCATION
 LIGHT
 DATA - ETHERNET - 4 PORT
 DATA - ETHERNET - 2 PORT
 FLOOR RECESSED DATA - ETHERNET - 4 PORT

OVERALL FLOOR PLAN CONCEPT DRAWING

NOT FOR CONSTRUCTION
SCALE: 1/8" = 1'-0"



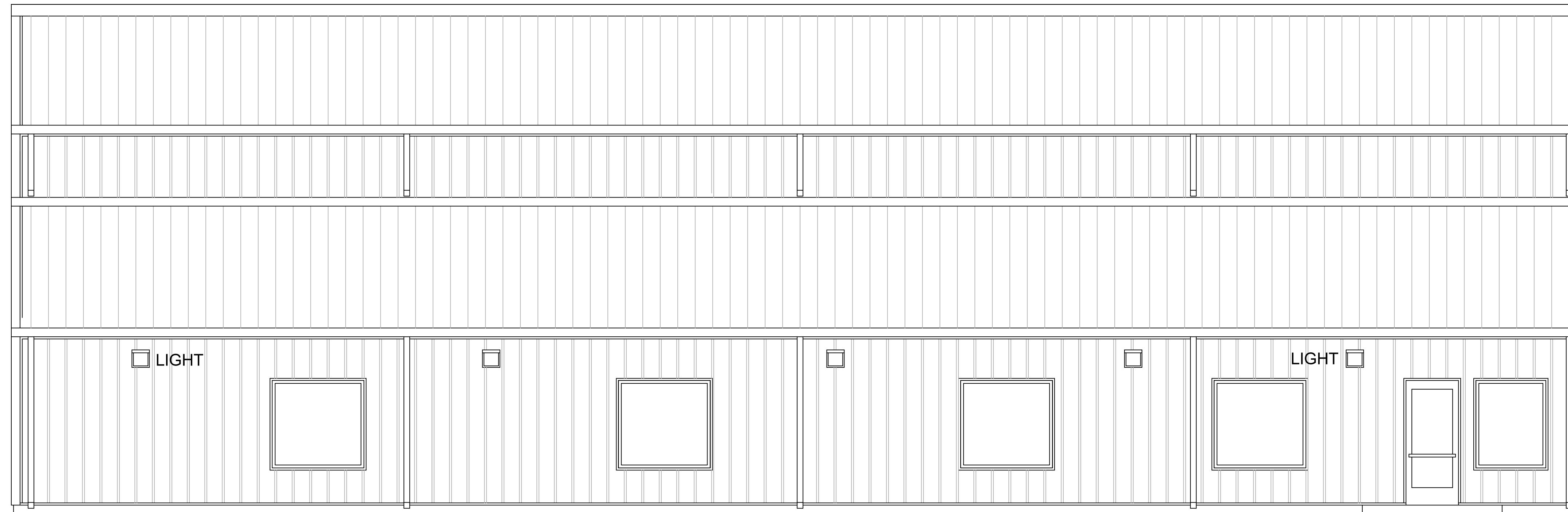


FLOOR PLAN - COVERED AREA

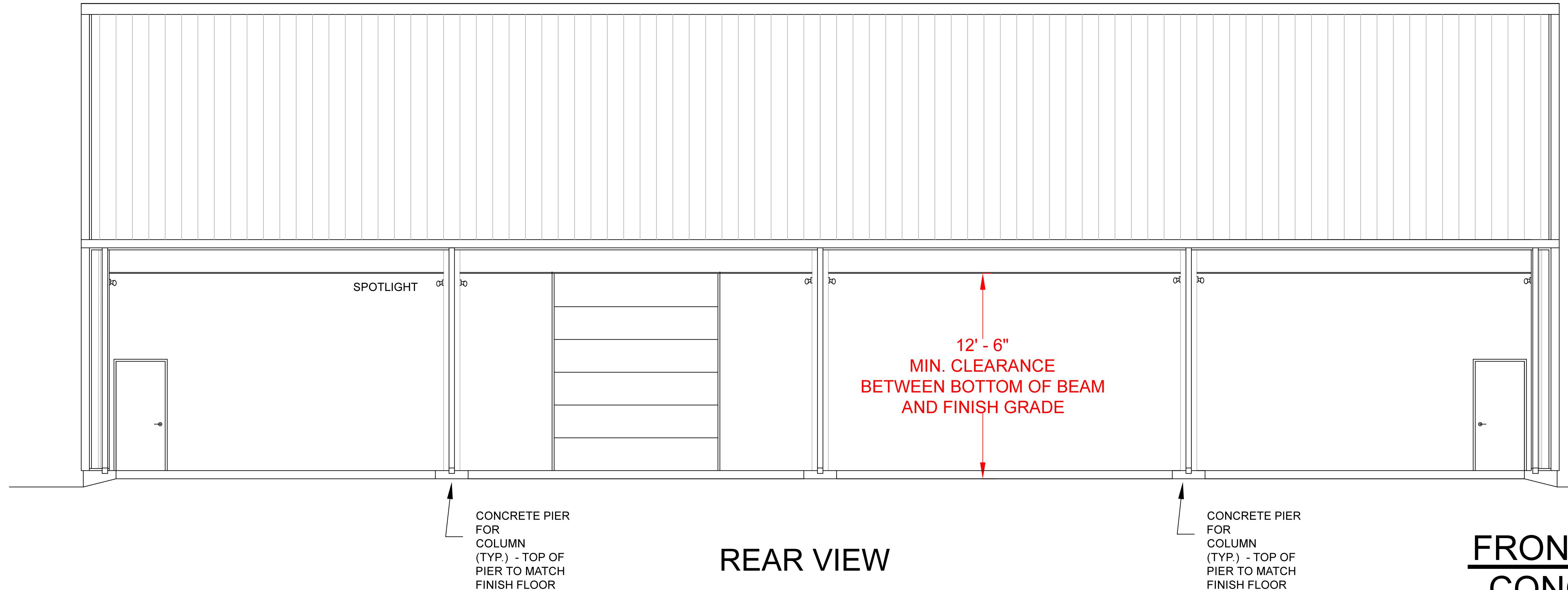
CONCEPT DRAWING

**NOT FOR CONSTRUCTION
SCALE: 1/4" = 1'-0"**

SHEET 3 OF 5



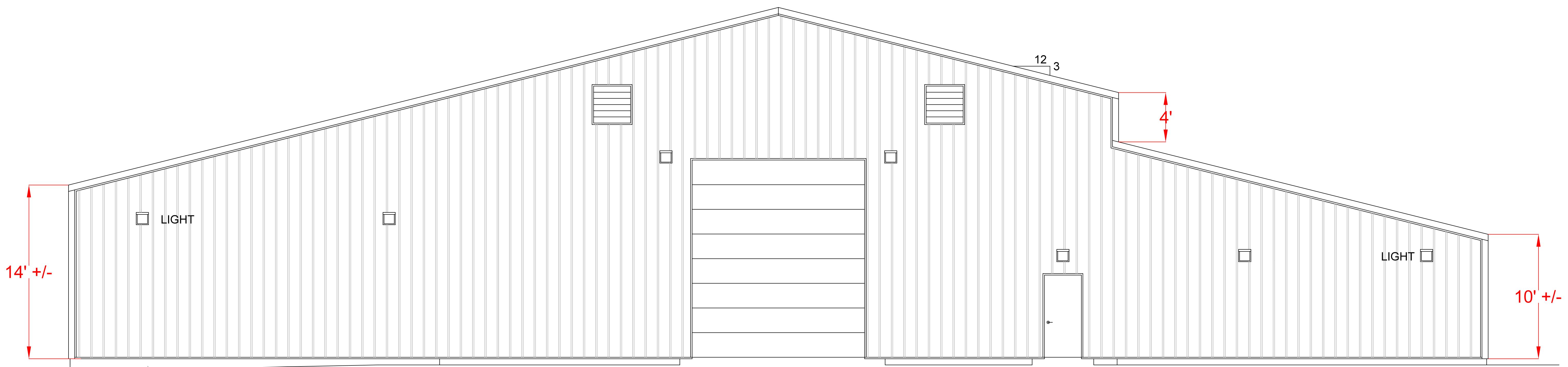
FRONT VIEW



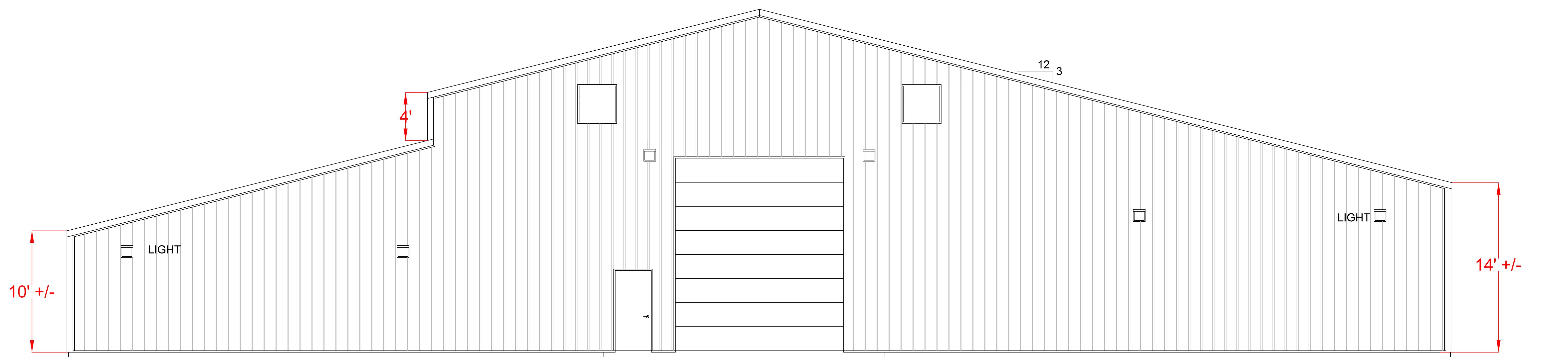
REAR VIEW

FRONT & REAR VIEWS
CONCEPT DRAWING

NOT FOR CONSTRUCTION
SCALE: 1/4" = 1'-0"



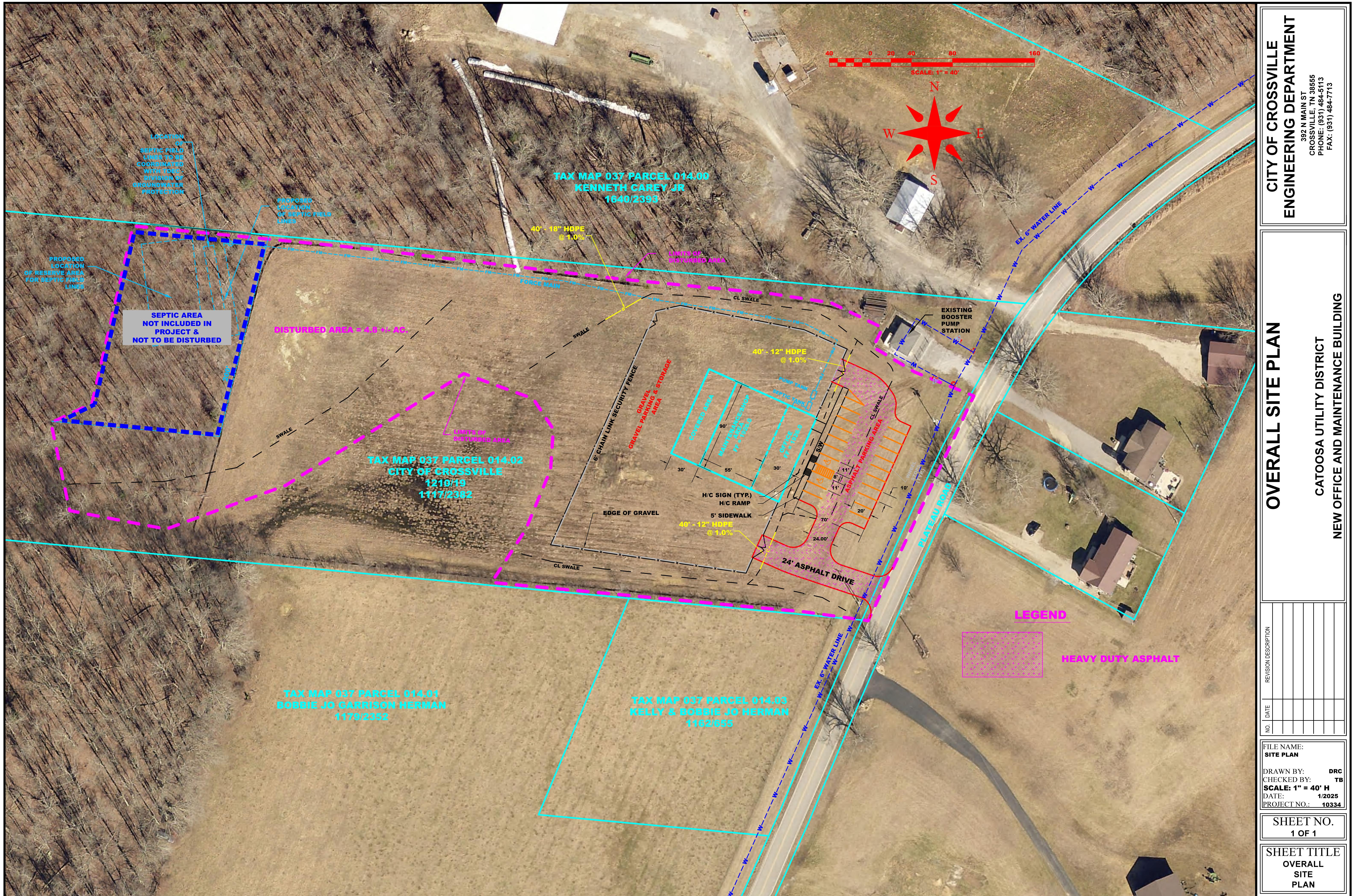
LEFT SIDE VIEW



RIGHT SIDE VIEW

SIDE VIEWS
CONCEPT DRAWING

NOT FOR CONSTRUCTION
SCALE: 1/4" = 1'-0"



ADDENDUM NO. 1
REQUEST FOR PROPOSALS
FOR
CONSTRUCTION SERVICES
New Office and Maintenance Building
Catoosa Utility District
5252 Plateau Road

From: City of Crossville – Engineering Department

Date: 10/02/2025

Project No. 10334

Re: Addendum No. 1

The City of Crossville is requesting proposals for Construction Services for the design and construction of a new Office and Maintenance Building for Catoosa Utility District to be located at 5252 Plateau Road in Cumberland County. Proposals will be received by the City of Crossville at 392 North Main St., Crossville, Tn 38555 at the office of City Clerk until 2:00 o'clock P.M., C.D.T., October 21, 2025. All proposals should be properly marked **CITY CLERK/RFP** and "**RFP – Construction Services – Catoosa Office & Maintenance Building**" on the outside of a sealed envelope. No electronic submissions accepted.

The Addendum consists of three typed sheets.

INFORMATION FOR PROPOSERS

Electrical

Contractor to provide a 20 amp - 120 Volt circuit for the pump in the pump tank for the septic. Pump tank to be located north of the office area.

Electrical Equipment that can utilize 208 or 240 Volts.

Questions and Clarifications

The RFP says bids are due on 10/21 at 2 PM but on another sheet it says 10/17. Just confirming it is 10/21?

Proposals will be received by the City of Crossville at 392 North Main St., Crossville, Tn 38555 at the office of City Clerk until 2:00 o'clock P.M., C.D.T., **October 21, 2025**. All proposals should be properly marked **CITY CLERK/RFP**

and “RFP – Construction Services – Catoosa Office & Maintenance Building” on the outside of a sealed envelope. No electronic submissions accepted.

I didn't see any sitework shown on the RFP. Should we assume pad ready and running utilities 5' out?

Yes. No site work included in the RFP. The site is a pad ready site with a layer of gravel on the parking areas and building pad. Some minor grading may be required around the building during construction.

Are the overhead doors and alt. roll up doors insulated? If so, do you have any specs?

Overhead Doors and alt. roll up doors to be insulated and motorized – R9 minimum

What is the power coming into the building? Voltage, Phase, High Leg or not?

208/120V – 3 Phase – 4 Wire – Pad mounted transformer – Pad mounted transformer location to be determined

Will the generator power the whole building or just the pump?

The standby generator will power the whole building. The existing pump station has its' own generator.

Can the office area be conventional framed?

The office area can be conventionally framed construction (stick framed) if more cost effective

Wood or Steel studs?

Either as long as the construction meets Cumberland County Codes requirements.

Do they have a specific service size they want to the building. Are they wanting to cover just the equipment mentioned or should it be larger for other equipment or future additions?

Service size to cover the equipment mentioned in the RFP and this addendum, and the equipment shown on the concept plans.

What kind of HVAC system? (split system, package system, mini splits, etc.)?

Split System with natural gas heat furnace.

Will city be providing furniture, desks, etc.?

Yes. City will provide furniture, desks, lockers, etc.

Are there any trench drain specs?

Zurn Z882 with Ductile Iron Slotted Grate – Class E or equal

What kind of millwork materials (specs)?

Cabinets – Ready to assemble Plywood cabinets – Shaker style or equal
Counters – kitchen & pass thru – Formica

\$15,000.00 allowance for installation of Millwork in the Break Room/Kitchen Area including trim, Cabinets, Countertops and Cabinet Hardware as per RFP.

Just to confirm, Cumberland County calls for R-19 + R-11ci in the roof and R13+13ci in the walls?

The proposed building including the insulation, windows, doors, etc. to meet or exceed the International Energy Conservation Code (IECC), 2018 Edition (see exceptions adopted by Cumberland County –
<https://cumberlandcountyn.gov/directory/codes/>)

2018 IECC – Metal Building

Roof – R19 + R11 liner system
Wall – R13 + R13 continuous

2018 IECC – Stud framed wall

Roof – R38
Wall – R13 +R3.8 continuous or R20

ADDENDUM NO. 2
REQUEST FOR PROPOSALS
FOR
CONSTRUCTION SERVICES
New Office and Maintenance Building
Catoosa Utility District
5252 Plateau Road

From: City of Crossville – Engineering Department

Date: 10/17/2025

Project No. 10334

Re: Addendum No. 2 - Final

The City of Crossville is requesting proposals for Construction Services for the design and construction of a new Office and Maintenance Building for Catoosa Utility District to be located at 5252 Plateau Road in Cumberland County. Proposals will be received by the City of Crossville at 392 North Main St., Crossville, Tn 38555 at the office of City Clerk until 2:00 o'clock P.M., C.D.T., October 21, 2025. All proposals should be properly marked **CITY CLERK/RFP** and **"RFP – Construction Services – Catoosa Office & Maintenance Building"** on the outside of a sealed envelope. No electronic submissions accepted.

The Addendum consists of four typed sheets and four attachments.

Attachment 1 – Acknowledgement of Addendums to be included in RFP
submittal

Attachment 2 – Concrete Pad Detail for Ground Mounted Transformer -
VEC

Attachment 3 – Geotech Report

Attachment 4 – Civil Site Drawings

INFORMATION FOR PROPOSERS

Code Clarification

Since the Maintenance /Shop area is going to be classified as S-1, a 3-hour fire barrier will be required between the Office Area and the Maintenance/Shop Area instead of a 2-hour fire wall. Doors between the two area to be fire rated for 3-hours. Project is a design build. Examples of 3-hours fire barrier walls, 3 layers of Sheetrock on both

sides of a steel studded wall with fiberglass insulation, 8-inch masonry grouted solid wall, 12 inch ungrouted masonry wall.

Sidewalk/Curb detail

See Sidewalk/Concrete Curb detail on sheet 9 of the Civil Site Drawings.

Sidewalk ADA Ramp

See ADA ramp detail on sheet 9 of the Civil Site Drawings.

Questions

The 3-hour fire barrier required between the office and shop area will not be required to be a freestanding (structurally independent) wall, correct?

Correct

Will this 3-hour barrier be permitted to stop at the underside of metal deck / metal building roof, or will it be required to extend through / above the roof?

Stop at the underside of the metal deck/metal building roof

Do you plan on sprinkling?

No, our plan is not to sprinkle the building.

The concrete scope indicates a 2' concrete strip around the building (where needed), except at the front sidewalk area. On the civil grading plans, the rear will be 1' lower than the covered building area; and 6" lower at a midpoint. What should we include here site wise to allow easy access to rear and back half sides of covered area and can you clarify the extent of the 2' concrete surround of the building?

The overall floor plan shows the location of the 2-foot concrete strip. The grade of the 2-foot concrete strip to follow the finish grade adjacent to the building.

The concrete under the cover shed area to slope from building wall out at

-1.5% to the gravel parking area. 6" slab under the covered shed area including the 2-foot strip at this location.

Currently, the building pad has a layer of gravel that is level including the cover shed area.

The concept drawings show a concrete stem wall along the sides of the covered area and concrete piers at the column locations.

City will adjust the grades next to the building with gravel as needed when the building is complete.

Who is responsible for any fees with VEC, Volunteer Electric Cooperative?

City is responsible for any fees associated with VEC for the ground mounted transformer and transformer pad. Contractor is responsible for conduits from power pole to transformer pad, and transformer pad to building. Contractor responsible for concrete pad for ground mounted transformer. See Attachment 2.

Is the gravel, fence, and asphalt part of this project?

No, the city will be responsible for these items.

Is there a Geotech report on the site

Yes, before the site work was done, and a Geotech Representative was onsite to observe the fill placement and proof roll. The Geotech Report is attached in this Addendum. See Attachment 3.

Does the Millwork allowance cover the materials too?

Yes.

Are the Civil Plans complete and can we get a copy?

Yes. The Civil site Plans are attached in this addendum. The site has been filled, and a layer of gravel has been placed on the building pad and parking areas. See Attachment 4.

How set on the floor plan is the County or can this be revised after award?

Floor Plan can be slightly adjusted after award. The plans in the RFP are concept drawing and can be adjusted to provide a more cost-effective solution.

Under General Building requirements, we see a 6" slab is required. Under "Concrete flat work", it calls for a 4" slab. Can you clarify please?

6" thickness is for building slab and drive aprons at overhead doors and under the covered open area including the 2-foot strip at the cover open area.

4" thickness for other flat work - sidewalks, 2' concrete strip along building, HVAC pads, door aprons, etc.

Where will the SCADA antenna be mounted?

It will be on a tower that will be installed by the city on the North side of the building outside the Storage IT/Data & SCADA room. Contractor to provide 1 1/2" conduit thru the building (5' outside the building). City will be responsible for SCADA wiring.

Is a bid bond required?

No, but if awarded the contractor to provide performance and payment bond for the contract amount.

3rd party testing.: do we include costs for testing, or are we only responsible to coordinate inspections with designated test agent?

City will be responsible for the cost of 3rd party testing. The contractor to coordinate with designated testing agent.

ATTACHMENT 1

ACKNOWLEDGMENT OF ADDENDUMS

TO BE INCLUDED IN RFP Submittal

**New Office and Maintenance Building
Catoosa Utility District
5252 Plateau Road**

Proposer acknowledges receipt of the following addendums:

Addendum 1 dated 10/02/2025

Addendum 2 dated 10/17/2025

Respectfully submitted:

SIGNED BY: _____

Print name _____

FIRM: _____

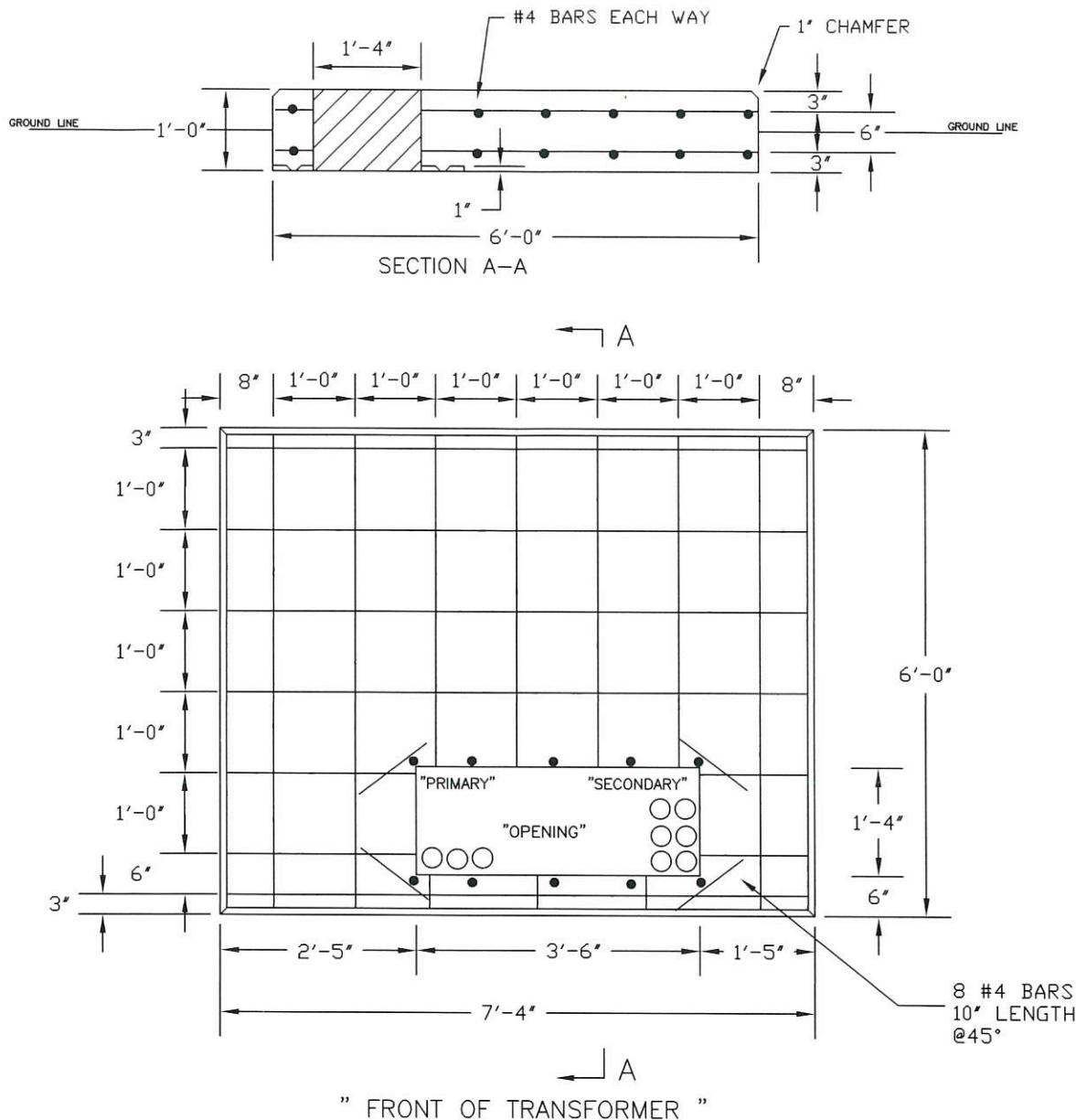
ADDRESS: _____

City _____ State _____ Zip _____

Date: _____ Telephone: _____

Attach this attachment to your RFP submittal.

ATTACHMENT 2



NOTES:

1. CONCRETE 4000 PSI @ 28 DAYS
2. STACK PRIMARY CONDUITS LEFT FRONT OUTSIDE CORNER INWARD
3. STACK SECONDARY CONDUITS RIGHT FRONT OUTSIDE CORNER INWARD

FILE: G:\Standards\SPECIFICATIONS\Concrete pad details\3ph_Pad_45_300kva.pdf		REVISION LOG	
VEC VOLUNTEER ENERGY COOPERATIVE www.vec.org	CONCRETE PAD DETAIL 3Ø TRANSFORMER 45 - 300 KVA	BY: ME	DATE: 04/30/09
		BY: CKD	DATE: 04/14/11

208 /240

ATTACHMENT 3

ENGINEERING & TESTING SOLUTIONS LLC

Report of Subsurface Exploration

Catoosa Utility District – Maintenance & Office Building Crossville, Tennessee

Geotechnical & Construction Materials Testing Consultants

ENGINEERING & TESTING SOLUTIONS, LLC

February 13, 2025

City of Crossville
Attn: Mr. Don Cole
392 North Main Street
Crossville, TN 38555

Subject: Report of Subsurface Exploration
Catoosa Utility District – Maintenance & Office Building
Crossville, Tennessee
ETS Project Number 25-05

Dear Mr. Cole:

We are pleased to transmit our Report of Subsurface Exploration for the proposed new building in Crossville, Tennessee. Our services were performed in general accordance with the terms and conditions in our Proposal 24-149 dated December 6, 2024.

This report reviews the information provided to us, discusses the site and subsurface conditions, and presents our conclusions and recommendations. The Appendices contain a Boring Location Plan, Boring Logs, and Laboratory Test Results.

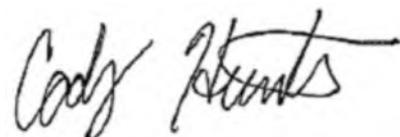
We appreciate the opportunity to perform these services and look forward to assisting you during the construction of this project. We are available to discuss any questions concerning this report. Please contact us if we may be of further service.

Sincerely,

ENGINEERING & TESTING SOLUTIONS, LLC



Chad B. Smock, P.E.
Principal
csmock@ets-tn.com



Cody Hunter
Project Manager
chunter@ets-tn.com

CBS/CH

cc (elec copy) Mr. Tim Begley – City of Crossville

REPORT OF SUBSURFACE EXPLORATION

**Catoosa Utility District – Maintenance & Office Building
Crossville, TN**

Prepared for:
City of Crossville

February 13, 2025

ETS Project 25-05

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APPENDIX:

- A. BORING LOCATION PLAN
- B. FIELD EXPLORATORY PROCEDURES, KEY SHEET & BORING LOGS
- C. LABORATORY TEST PROCEDURES AND TEST RESULTS

1.0 INTRODUCTION

The purpose of this subsurface exploration was to determine general subsurface conditions as they are related to engineering properties and obtain data to evaluate the site for shallow foundations and an appropriate soil bearing pressure. This report presents our findings of subsurface conditions and our recommendations regarding foundation design and site preparation.

An assessment of site environmental conditions was beyond the scope of our requested services.



View of existing site conditions

2.0 PROJECT DESCRIPTION

The proposed project is located on Plateau Road in Crossville, Tennessee. A recent Google Earth image of the property and proposed build site is shown below. The site has an existing building located along Plateau Road and the area to be developed is currently grass covered. Several loads of soil material have been stockpiled within the area to be developed. The immediate area to be developed appears to be undeveloped and has existing elevations ranging from about 1932 ft to 1918 ft. Elevations were obtained from the overall grading plan on sheet No. 2 of 8 dated June 2024 provided by the City of Crossville Engineering Department.



Project information has been provided by you in the form of electronic correspondences and an overall grading plan provided by the City of Crossville Engineering Department. The plan shows the proposed building and parking lot footprints relative to existing site conditions. The building will have rough dimensions of about 114 feet by 90 feet. The maintenance garage area will have 16 ft to 20 ft side walls. It is our understanding the new building will be a pre-engineered metal building (PEMB) with associated paved areas. The proposed Finish Floor Elevation (FFE) is 1927.00. Based on the grading plan provided, the building will require up to 5 feet of fill to achieve planned subgrade elevations.

We have not been provided structural information but, based on our experience with similar structures we anticipate wall loads will be less than 2 kip per linear foot and column loads will be less than 50 kips. We anticipate a combination of conventional load bearing strip footings with some isolated column footings will be used for the foundation of the structure.

3.0 GEOLOGICAL CONDITIONS

The project site lies in the Geology of the Cumberland Plateau Area Quadrangle. Review of the Geologic Map of the Cumberland Plateau Area quadrangle and Geology of the area, Tennessee map indicates this site is geologically mapped to be underlain by the Crooked Fork Group. The Crooked Fork Group generally consists of sandstone, shale, and occasional coal seams.

4.0 SUBSURFACE CONDITIONS

Seven soil test borings were performed for the proposed development. Six borings were performed within the proposed building area and one boring was performed within the proposed parking area. The boring locations shown on the attached Boring Location Plan should be considered approximate.

Subsurface conditions encountered at the boring locations are shown on the Soil Test Boring Records in Appendix B. The Soil Test Boring Records represent our interpretation of the subsurface conditions based on the field logs and visual examination of the field samples by our engineer. The lines designating the interfaces between various strata on the Soil Test Boring Records represent the approximate interface locations. The elevations shown on our boring logs were obtained by superimposing our boring locations on the grading plan (sheet 2 of 8) provided by the City of Crossville Engineering Department. As such, the elevations should be considered approximate.

Auger refusal was encountered in borings B-3 and B-4 prior to achieving the respective predetermined termination depths. Auger refusal was about 11.0 feet in both borings. Please refer to section 9.0 Difficult Excavation for more details regarding auger refusal depths and elevations.

Our soil test borings encountered residual soils beneath a topsoil/rootzone veneer. Boring B-7 encountered up to 2 feet of excess topsoil. Residual soils are soils that have developed from the in-place weathering of the parent bedrock.

The residual materials generally consisted of an orange and gray silty sandy clay with weathered sandstone. The Standard Penetration Resistance (SPT) N values for the residual soils ranged from 11 to 50+ blows per foot (bpf) indicating stiff to very hard consistencies. Moisture content for residual soils varied from about 11.2 percent to about 26.7 percent. Plasticity Index (PI) tests were performed on two residual samples indicating PI's of 20 and 34. Two undisturbed samples of residual soil was obtained during the drilling activities for subsequent unconfined compressive strength testing. The tests indicated an ultimate unconfined strength of 6.76 kips per square foot (ksf) in boring B-1 and 11.07 ksf in boring B-6.

Groundwater was not observed at the time of our drilling. We note, the borings were backfilled upon completion of drilling activities and therefore, long-term readings were not obtained. Based on the project information provided and conditions encountered at the time

of our exploration, we do not anticipate groundwater control measures will be required. It is not uncommon to encounter “perched” water tables in this site geology. Typically, the groundwater can be temporarily controlled with sump pits to facilitate construction or french drains for long term dewatering.

5.0 SITE PREPARATION RECOMMENDATIONS

All topsoil, vegetation, and surface soil containing organic material should be stripped from the construction area and either wasted from the site or, if suitable, used as topsoil or fill in areas to be landscaped.

We have not been provided with any documentation regarding previous development on the subject property. However, there is still the risk of encountering abandoned utilities and other subsurface obstructions such as pits, septic tanks, and drain fields within the construction areas. If encountered, these items should be removed or remediated (other treatment) so as to not impact the new construction.

In general, the proposed site is blanketed with stiff residual soils, which appear suitable for the proposed construction. Topsoil was encountered at greater than typical depths along the proposed parking in boring B-7. As such, additional excavation and replacement should be expected for this area.

Once stripping is complete in areas requiring fill and once sub-grade elevations are achieved in areas of cuts, we recommend the exposed subgrade be observed by the geotechnical engineer and proofrolled. Proofrolling should be done after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade. Proofrolling should be performed with a heavily loaded dump truck or with similar approved construction equipment. We recommend the exposed subgrade and proofrolling operation be observed and documented by our personnel. If unsuitable conditions are encountered at the subgrade level, our geotechnical engineer can provide recommendations to the owner's representative for dealing with the conditions. Soft, organic, highly plastic, wet soils, or soils that pump, rut, or wave, during site grading or proofrolling operations should be excavated and replaced with compacted fill or evaluated for stabilization alternatives. We recommend subgrade stabilization requirements be determined by the geotechnical engineer at the time of site preparation based on the stability of the subgrades as determined by proofrolling.

During rough grading, positive surface drainage should be maintained to prevent the accumulation of water. If the exposed subgrade becomes excessively wet or frozen, or if conditions different from those described previously in this report are encountered, our geotechnical engineer should be contacted.

The on-site fine-grained soils are judged to be very moisture-sensitive regarding their performance for subgrade support. As such, it would be advantageous to perform the mass site grading during the dry summer and early fall months.

In general, excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926).

6.0 COMPACTED FILL RECOMMENDATIONS

Areas requiring fill should be constructed by spreading acceptable soil in loose layers not more than 8 to 10 inches thick and compacting with appropriate equipment. The soils used within the proposed building and paved areas should be compacted in lifts to 98 percent of the standard Proctor maximum dry density (ASTM D 698). The upper 24 inches of fill beneath pavements should be compacted to at least 100 percent of standard Proctor maximum dry density.

Qualified testing personnel approved by the geotechnical engineer should observe the filling operation. Field density tests, moisture content tests, and proctor verification tests should be performed during placement to determine the compaction achieved. As a general rule, the moisture content of the compacted fill soils should be maintained within -3 to +3 percentage points of the optimum moisture content as determined from the standard Proctor compaction test. This provision may require the contractor to dry soils during periods of wet weather or to wet soils during the hot summer months.

Soil fill material should have a standard Proctor maximum dry density of 85pcf or greater, with a liquid limit of less than 50 and a plasticity index (PI) of 35 or less. Before grading activities begin, bulk samples of the proposed fill soils should be collected to determine natural moisture content, maximum dry density, optimum moisture content, and PI.

Several of the local borrow pits and on-site materials consist of weathered sandstone, it is imperative these materials be reduced to a soil/gravel gradation during compaction. If the material size is not adequately reduced, it may degrade when exposed to water causing losses in soil volume and strength that could adversely affect the proposed structure/pavement sections. Maximum particle size, arriving at the fill area, should be 10 inches.

The fill surface must be adequately maintained during construction in order to achieve an acceptable compacted fill. We recommend the fill surface be sloped to achieve sufficient drainage and to prevent ponding of water on the fill. If precipitation is expected while fill construction is temporarily halted, the surface should be rolled with rubber-tired or steel-drummed equipment to improve surface run-off. If the surface soils become excessively wet or frozen, fill operations should be halted, and we should be consulted for guidance.

7.0 CUT AND FILL SLOPE RECOMMENDATIONS

It appears significant excavations “cuts” and mass site fills will be required for the proposed development. Based on the subsurface information obtained, we recommend all permanent cut slopes be configured at 2 Horizontal:1 Vertical (2H:1V) or flatter. We recommend that permanent fill slopes be constructed no steeper than 2.5H:1V or flatter. Before sloping, the edge of compacted fills should extend a minimum of 10 feet horizontally beyond the outside edges of the building foundations and proposed curb lines.

We recommend the following measures be taken to reduce the potential for slope problems:

- Good site drainage must be incorporated into the project to prevent surface water from infiltrating into the ground behind/above slopes, thus saturating the slopes and resulting in a reduction in soil shear strength and reduced slope stability.
- Slope design should include ditches at toes of the slopes to collect and remove surface water.
- Site and building (i.e. downspouts) drainage should not permanently discharge onto or at the top of slopes. Stormwater should be permanently routed away from slopes or to the bottom of the slope with appropriate scour protection such as rip rap.
- Utility construction benches should be restored to their original configuration to minimize progressive sloughing of material along the bench.
- Cut and fill slopes should be grassed as soon as practical after grading to reduce erosion.

We recommend that the stability of cut slopes be assessed during construction by the geotechnical engineer. The geotechnical engineer will check if unfavorable geologic conditions, such as slickensided zones, are present along the cut slope face. If such conditions exist, the slope must be flattened or other corrective measures taken. Ground water emerging from the slope may also necessitate remedial action, such as drainage structures and/or slope flattening.

8.0 FOUNDATION AND SLAB-ON-GRADE DESIGN RECOMMENDATIONS

We recommend that a shallow foundation system consisting of continuous wall footings and isolated spread footings be utilized for design of the building. Once the site has been prepared in accordance with the recommendations of this report, the building area should be suitable for a shallow foundation system. Foundations for the proposed building should bear in stiff to harder residual soils or competent compacted soil fill. Foundations bearing in these materials should be designed for a maximum allowable soil bearing pressure of 2500 pounds per square foot (psf).

Continuous wall footings should be a minimum of 24 inches wide and isolated spread footings should be a minimum of 36 inches in dimension. All exterior foundations should be designed to bear at least 18 inches below finished exterior grade to protect against frost heave. We recommend that walls be provided with construction joints at locations of change in support from residuum soil to compacted soil fill in order to accommodate differential settlements at such locations. Individual column footings should be entirely supported by either residuum soil or by compacted fill.

Foundation concrete should be placed as soon as possible to limit exposure of bearing soils. If footing excavations will remain open for an extended period of time and rainfall is possible, we recommend a "mud mat" of flowable fill or lean concrete be placed on the bearing soils for protection. The footings should be over excavated to compensate for the "mud mat". Remedial measures will most likely be required if bearing soils are exposed to weather or rainfall and the bearing soils become softened. If the bearing soils become softened due to exposure, our representative should observe conditions and provide appropriate recommendations.

Construction of the structure's foundation should be observed and documented by our geotechnical engineer or their approved representative. We recommend the footing excavations be observed by our geotechnical engineer to verify the exposed soils are consistent with our recommendations based on conditions encountered during our exploration. If unsuitable conditions are encountered, our geotechnical engineer can provide appropriate recommendations for dealing with the conditions.

The use of a slab-on-grade will be acceptable provided the building areas are prepared in accordance with the recommendations of this report. We recommend the slab-on-grade bear on a minimum 4-inch layer of crushed stone (#57 or #67). The subgrade should be compacted and approved prior to the placement of the crushed stone. Joints should be

constructed in the slab around columns and walls to reduce damage due to differential settlement of the slab and foundation walls and columns.

We have been requested to provide the seismic site classification for the proposed project in accordance with the 2018 International Building Code (IBC). Per the 2018 IBC, peak ground acceleration shall be determined based on Chapter 21 of ASCE 7 or in accordance with Section 11.8.3 of ASCE 7. The table below provides site specific spectral response accelerations for both short and 1-second periods, taken from the on-line version of the ASCE 7 Hazards Report.

Project	S_s	S_1	S_{DS}	S_{D1}
Catoosa Utility District – Maintenance & Office Building	0.274	0.106	0.237	0.106

Latitude 36.063251 Longitude -85.131693

Based on the preceding data, subsurface information obtained, and our previous experience in this geologic setting, the site is categorized as Seismic Site Class C under the IBC. In some, but not all cases, shear wave velocity measurements, which are more accurate than SPT tests, can be used to possibly re-classify a site.

The 2018 IBC (1803.5.12) requires an assessment of potential consequences of liquefaction and soil strength loss. Based on the subsurface conditions encountered and our experience in this geologic setting, a liquefaction hazard does not exist for the proposed development. In addition, the following potential consequences are of no seismic hazard for the site: flotation of buried structures, soil lateral pressures on retaining walls, reduction of soil bearing capacity and lateral resistance, lateral soil movement. We also do not expect significant additional total and differential settlement to be a seismic hazard. As such, no mitigation measures should be expected for the proposed project as they relate to seismic hazards.

9.0 DIFFICULT EXCAVATION DISCUSSION

Soil test borings B-3 and B-4 encountered refusal prior to reaching the predetermined termination depth. A summary table of our refusal depth and approximate elevation is listed below:

Boring Designation	Refusal Depth (ft.)	Approx. Refusal Elevation
B-3	11.0	1913.0
B-4	11.0	1914.0

* Depths & elevations should be considered approximate

The refusal materials generally consisted of weathered sandstone bedrock. The depth to refusal materials will vary depending on the type of equipment utilized by the contractor. You should anticipate that the use of rock removal equipment will be required to achieve grades lower than the refusal depths encountered by the borings. Additionally, rock removal will most likely be required in utility trenches and excavations at depths near the boring refusal depths.

The rock excavation process is dependent on the skill of the operator, size of equipment, and structure of the rock. The end use of the material should be taken into account when considering ripping vs. blasting. There are a few size limitations when excavated rock is simply wasted. Even though the material can be ripped, this may generate rock boulders that are too large to utilize in the fill and size reduction with hydraulic hammers will be required.

Ultimately, unless the project is bid unclassified, we recommend the project specifications provide detailed language regarding the effort required to quantify both mass and trench rock. An appropriate allowance for each of the above items is also recommended.

10.0 SOIL PLASTICITY CONSIDERATIONS

The plasticity index (PI) of a soil is an indication of the volume change potential of the soil. Highly plastic soils have a greater potential to shrink or swell as the moisture content changes. Ideally, soils within the building and paved areas should have a PI of less than 30. According to published data for a climate similar to that of East Tennessee, soils with PI's lower than 30 are slightly susceptible to volume changes, and soils with PI's higher than 50 are generally highly susceptible to volume changes. Soils with PI's between these values have moderate volume change potential.

Atterberg limits tests were performed on a total of two samples from the site. Our tests indicated PI's of 20 and 34 for on-site soils. As such, the samples indicate low to moderate volume change potential.

Moisture content changes within the soil are necessary to cause shrinking or swelling. Since extended periods of excessively wet or excessively dry weather do not normally occur in East Tennessee, changes in the moisture content of foundation soils are usually minimal. Therefore, shrinking and swelling problems are typically not as severe in the East Tennessee area as in other areas. However, it is not uncommon for significant drying of soils to occur if grading is performed during dry weather. If these soils re-saturate after completion of foundation construction, there is the potential for significant structural distress. Therefore, the volume change potential of the soils at this site should be considered, and the following construction precautions are recommended:

Foundation construction should be completed as rapidly as possible to prevent damage of foundation soils by exposure to the elements. It is most desirable to complete concreting of individual foundation excavations the same day they are made.

- Subgrades of floor slabs should be protected from excessive drying or wetting by covering the subgrade prior to floor slab construction. Leaving the floor subgrade several inches high and then making the final excavation to subgrade shortly before floor construction can do this.
- Low plasticity clay should be used for backfill underneath floor slabs and other structural elements whenever possible.
- The site should be graded to promote rapid drainage of surface water during construction.
- The use of high plasticity clay as compacted fill should be minimized. During site preparation, the mixing of the high plasticity clay fill with low plasticity materials and/or placement in the lower elevations of the fill and subsequently capped with low plasticity materials should be performed.

In addition to these construction precautions, we recommend that the following considerations be incorporated into construction:

- Floor slabs should be liberally jointed to control cracking in the event volume changes occur. We recommend that building walls be provided with suitable movement joints, appropriately disguised (if desired) by a flexible covering or internal finish, to accommodate the effects of volume change without unsightly cracking. Such movement joints are particularly appropriate at the junction of walls, where walls cross from compacted fill to undisturbed soils at the foundation bearing level, and along long walls to absorb differential movement. The wall footings can be continuously reinforced, including appropriate top reinforcing, to provide rigidity and thus reduce the potential for differential deflection.
- Roof drains should discharge well away from the building area to prevent ponding of water near foundations.
- Heat sources should be isolated from foundation soils to minimize drying and the resultant shrinkage of foundation soils.

11.0 PAVEMENT RECOMMENDATIONS

Our recommendations are based on the assumptions that the subgrade within the areas to be paved will be prepared in accordance with the site preparation and compacted fill recommendations contained in this report. Based on our experience with similar projects, we have estimated EAL's for light duty pavement areas of 50,000.

No subgrade strength tests have been performed at this site. Provided the site is prepared in accordance with the recommendations provided in our report, a design CBR (California bearing ratio) of 4 for flexible pavements should be available for subgrade support.

The thickness analyses for flexible pavements were performed in general accordance with American Association of State Highway and Transportation Officials (AASHTO) procedures. Based on EAL's of 50,000 and 150,000 and a CBR of 4, and a 20-year service life, we recommend the following pavement sections:

Pavement Layer	Light Duty	Heavy Duty
Asphalt Surface	1.5 in.	1.5 in.
Asphalt Binder	2.0 in.	3.0 in.
Crushed Stone or Approved Recycled Concrete	6.0 in.	8.0 in.

The mineral aggregate base stone should be Type A, Class A and Grading D in accordance with Subsection 903.05 of the Tennessee Department of Transportation (TDOT) Standard Specification for Road and Bridge Construction, dated January 1, 2021. The asphalt base course should be bituminous plant mix base Grading B per section 307 and the asphalt surface course should be Grading E per section 411. The pavement sections should be constructed and compacted in general accordance with TDOT specifications. The pavement design should include proper surface drainage as well as soil subgrade drainage.

The above pavement thickness sections are not suitable for heavy construction equipment loads. The overall life of the pavement system will be shortened or significant pavement distress may occur if the mineral aggregate base or asphalt base course are left in place for an extended period of time during construction, exposed to rainfall and/or subjected to heavy construction equipment loads. We recommend concrete pavement sections be constructed in the vicinity of trash dumpsters, loading docks, and narrow bus lanes.

11.0 LIMITATIONS AND BASIS OF RECOMMENDATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. Our findings and recommendations are based upon standards of our practice in this area at the time this report is prepared.

The recommendations provided herein are based on the subsurface conditions and on project information provided to us; they apply only to the specific project and site discussed in this report. In the event that any changes in the nature, design or location of buildings and roadways, the findings and recommendations contained in this report may become invalid. If the project information section in this report contains incorrect information or if additional information becomes available, you should convey the corrected or additional information to us and retain us to review our recommendations. We will then modify them if the new information has rendered them inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between test borings will differ from those at specific test boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inappropriate procedures will be reported to the design team, along with timely recommendations to solve the problems created. We recommend the owner retain ETS to provide this service, based upon our familiarity with the subsurface conditions, the project design, and the intent of the recommendations.

APPENDIX A

BORING LOCATION PLAN

APPENDIX B

**FIELD EXPLORATORY PROCEDURES
BORING KEY SHEET
BORING LOGS**

FIELD EXPLORATORY PROCEDURES

Soil Test Boring (Hollow Stem)

All boring and sampling operations were conducted in general accordance with ASTM D 1586. The borings were advanced by mechanically twisting continuous steel hollow-stem auger flights into the ground. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2-inch O.D., split-tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot of penetration was recorded and is designated the "standard penetration resistance (SPT)." Proper evaluation of the penetration resistance provides an index to the soil's strength, density, and ability to support foundations.

Representative portions of the soil samples obtained from the split-tube sampler were sealed in bags and transported to our laboratory, where they were examined by our engineer to verify the driller's field classifications. Test Boring Records are attached, graphically showing the soil descriptions and penetration resistances.

BORING LOG KEY SHEET

LEGEND TO SOIL AND ROCK SYMBOLS

	TOPSOIL		ASPHALT / GRAVEL
	SILTSTONE		ALLUVIAL
	BEDROCK		RESIDUAL
	DOLOMITE		COLLUVIAL
	LIMESTONE		FILL

DRILLING SYMBOLS

	water table @ time of drilling		spt	split spoon sample
	water table, 24 hours		ud	undisturbed sample

Correlation of Penetration Resistance to Consistency and Relative density			
Silts & Clays		Sands & Gravels	
N Value	consistency	N Value	relative density
0-2	very soft	0-4	very loose
3-4	soft	5-10	loose
5-8	firm	11-30	firm
9-15	stiff	31-50	dense
16-30	very stiff	50+	very dense
31-50	hard		
50+	very hard		

Particle Size Identification	
Silts & Clays	Less than 0.075 mm
Fine Sand	0.075 mm to 0.425 mm
Medium Sand	0.425 mm to 2.00 mm
Coarse Sand	2.00 mm to 4.75 mm
Fine Gravel	4.75 mm to 19.0 mm
Coarse Gravel	19.0 mm to 75 mm
Cobbles	75 mm to 300 mm
Boulders	Greater than 300 mm

ENGINEERING AND TESTING SOLUTIONS

D E P T H	SOIL DESCRIPTION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS	L E G E N D	E L E V	SAMPLES	SPT (bpf)						Lab Results				
					T	1st 6"	2nd 6"	3rd 6"	N VALUE	5	10	15	20	25	30
0	Topsoil / Rootzone		1922	spt	5	9	12	21							
5	Very Stiff to Hard Light Gray and Orange Silty Sandy Clay - Residual		1917	spt	8	16	15	31							20.4
10	Stiff Light Gray Silty Sandy Clay - Residual		1912	spt	6	6	9	15							19.0
10	Very Stiff Orange Silty Clay - Residual		1912	spt	10	10	8	18							22.8
15	Very Hard Gray Completely Weathered Sandstone - Residual		1907	spt	10	25.01	50+								26.7
15	Boring Terminated at 15.5 ft.		1902												13.5
20			1897												
25	Note: An undisturbed sample was obtained between 2 feet and 4 feet at depth in an offset boring.		1892												
30															
Remarks:				SOIL TEST BORING RECORD											
Groundwater was not encountered at the time of drilling. Borings were backfilled after drilling. Therefore, long term groundwater depth was not measured.				PROJECT: Catoosa Utility District - Maintenance & Office Bldg											
This is an interpretation of subsurface conditions at the boring location. Subsurface conditions may differ at other times and other locations. The interfaces shown between strata are approximate. Transitions between strata may be gradual.				DRILLED: 1/30/2025				BORING: B-1				Crossville, TN			
				ETS PROJECT NO.				25-05							

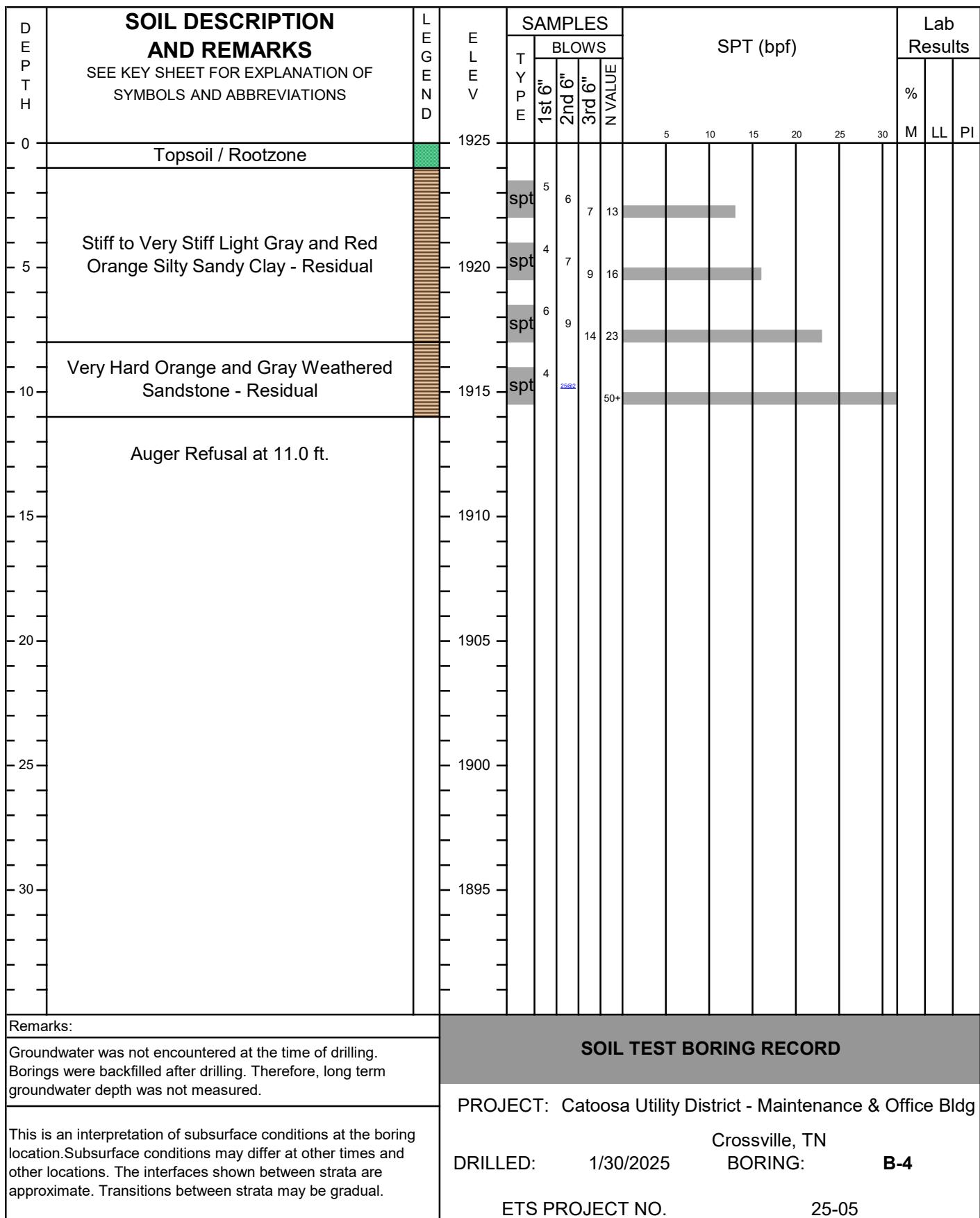
ENGINEERING AND TESTING SOLUTIONS

D E P T H	SOIL DESCRIPTION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS	L E G E N D	E L E N D	SAMPLES					SPT (bpf)					Lab Results		
				T Y P E	1st 6"	2nd 6"	3rd 6"	N V A L U E	5	10	15	20	25	M	LL	PI
0	Topsoil / Rootzone	1923														
	Stiff Light Gray and Orange Silty Sandy Clay - Residual			spt	4	4	7	11								22.9
5	Very Hard Light Gray and Orange Weathered Sandstone - Residual	1918		spt	12	25 ⁶⁵	50+									11.6
	Stiff to Very Stiff Light Gray Silty Sandy Clay - Residual			spt	5	7	9	16								19.8
10	Very Hard Gray Completely Weathered Sandstone - Residual	1913		spt	5	7	7	14								17.9
		1908		spt	7	8	13	21								17.1
15	Boring Terminated at 15.5 ft.															
20		1903														
25		1898														
30		1893														
Remarks:				SOIL TEST BORING RECORD												
Groundwater was not encountered at the time of drilling. Borings were backfilled after drilling. Therefore, long term groundwater depth was not measured.				PROJECT: Catoosa Utility District - Maintenance & Office Bldg												
This is an interpretation of subsurface conditions at the boring location. Subsurface conditions may differ at other times and other locations. The interfaces shown between strata are approximate. Transitions between strata may be gradual.				DRILLED: 1/30/2025					Crossville, TN					BORING: B-2		
				ETS PROJECT NO.					25-05							

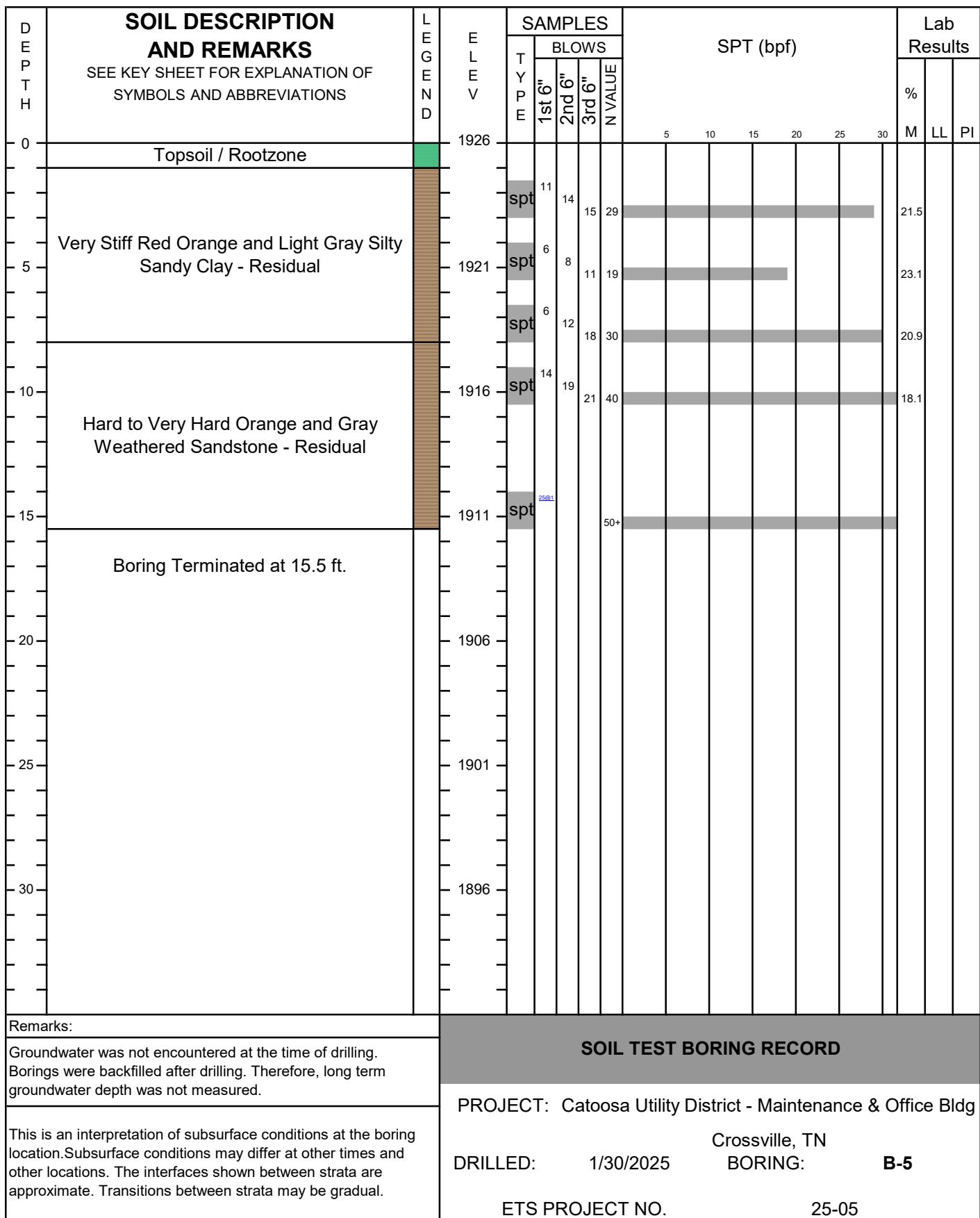
ENGINEERING AND TESTING SOLUTIONS

D E P T H	SOIL DESCRIPTION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS	L E G E N D	E L E V	SAMPLES					SPT (bpf)					Lab Results				
				T Y P E	BLOWS			N VALUE										
0	Topsoil / Rootzone		1924		1st 6"	2nd 6"	3rd 6"	N VALUE	5	10	15	20	25	30	%	M	LL	PI
5	Very Stiff to Stiff Light Gray and Orange Silty Sandy Clay - Residual		1919	spt	4	7	11	18										
10	Very Hard Orange and Gray Weathered Sandstone - Residual		1914	spt	5	9	11	20										
15	Auger Refusal at 11.0 ft.		1909															
20			1904															
25			1899															
30			1894															
Remarks:				SOIL TEST BORING RECORD														
Groundwater was not encountered at the time of drilling. Borings were backfilled after drilling. Therefore, long term groundwater depth was not measured.																		
This is an interpretation of subsurface conditions at the boring location. Subsurface conditions may differ at other times and other locations. The interfaces shown between strata are approximate. Transitions between strata may be gradual.				PROJECT: Catoosa Utility District - Maintenance & Office Bldg					Crossville, TN					BORING: B-3				
				DRILLED:	1/30/2025				ETS PROJECT NO.					25-05				

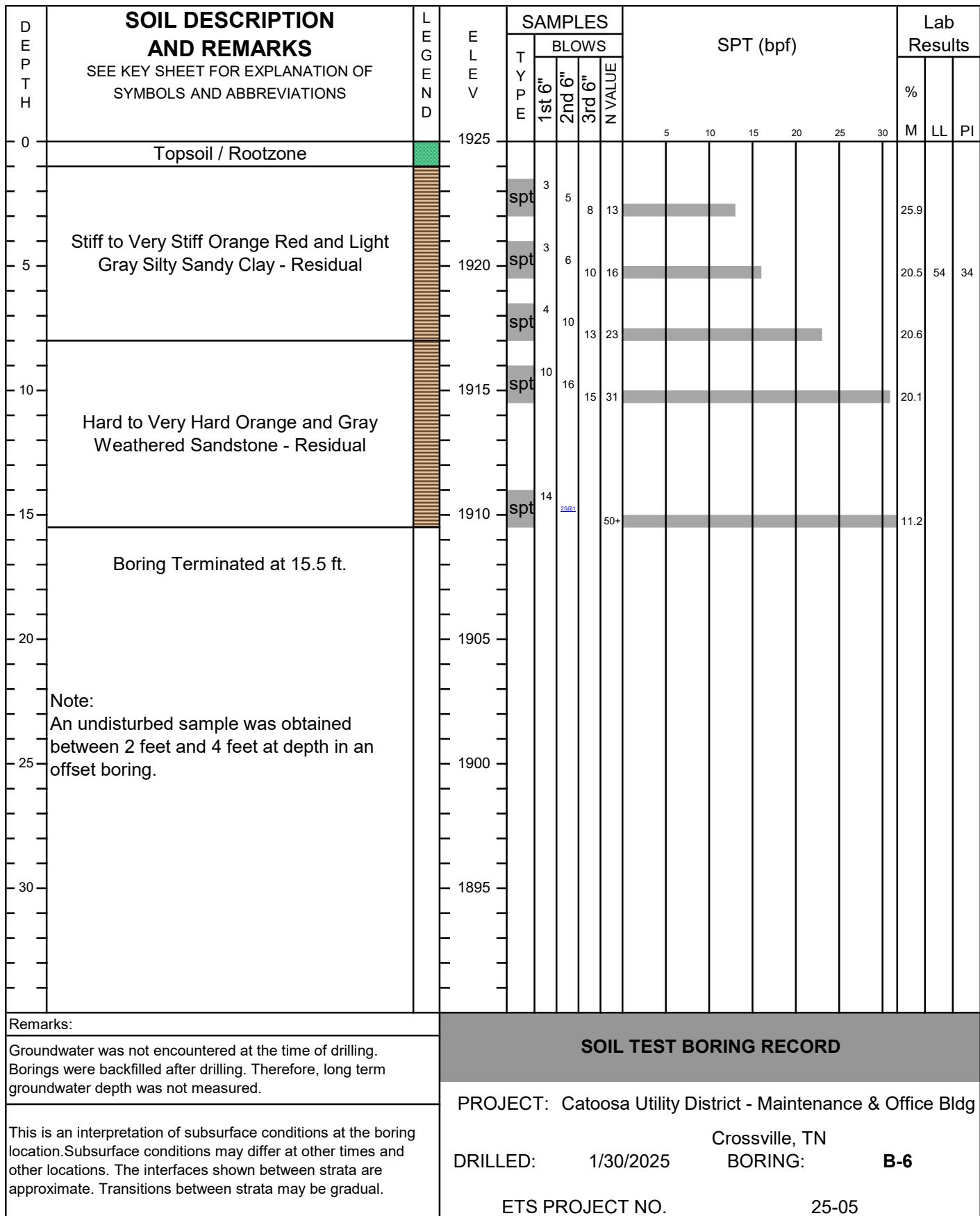
ENGINEERING AND TESTING SOLUTIONS



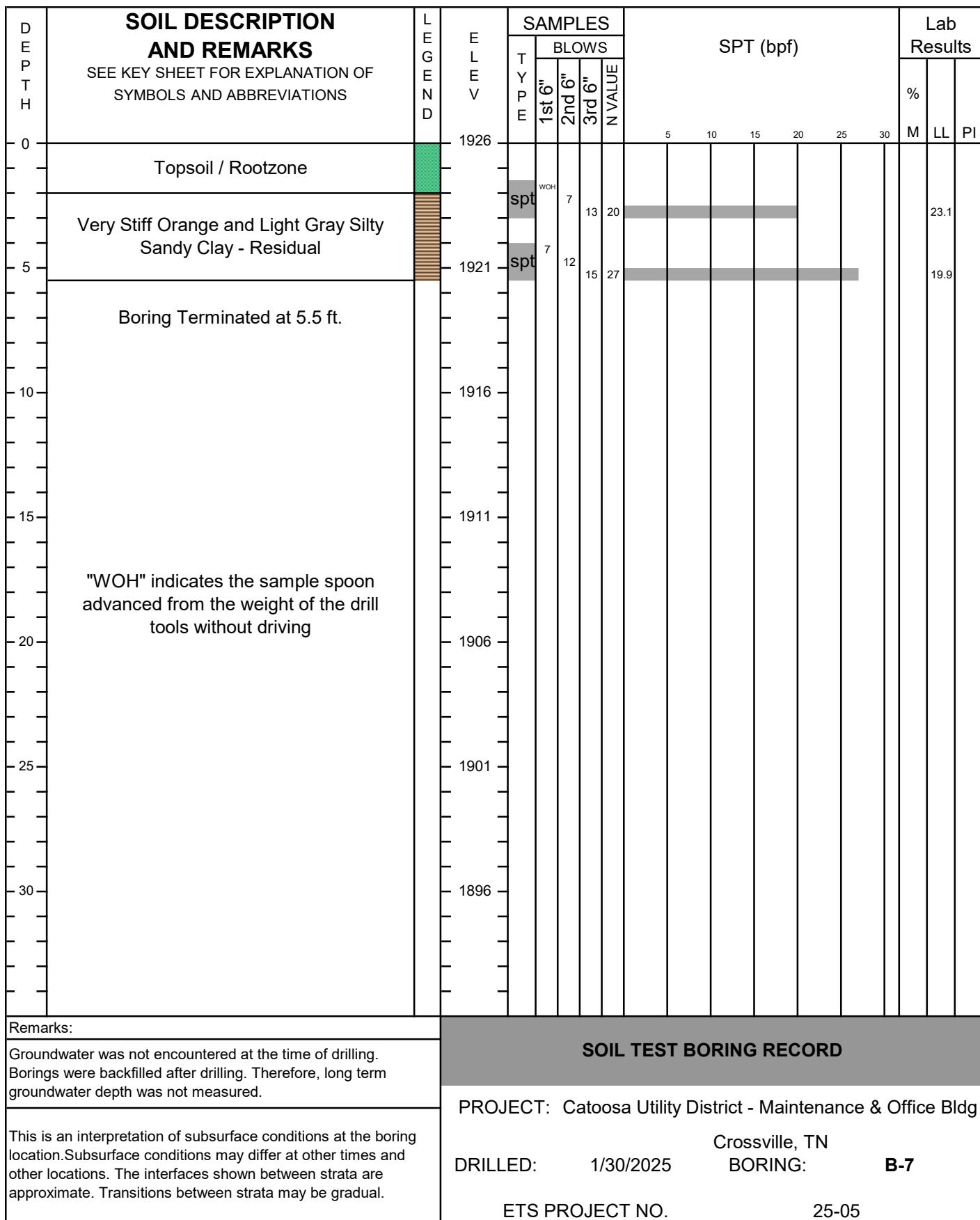
ENGINEERING AND TESTING SOLUTIONS



ENGINEERING AND TESTING SOLUTIONS



ENGINEERING AND TESTING SOLUTIONS



APPENDIX C

LABORATORY TEST PROCEDURES AND LABORATORY TEST RESULTS

LABORATORY TEST PROCEDURES

Atterberg Limits (PI)

Originally, the Atterberg Limits consisted of seven "limits of consistency" of fine-grained soils. In current engineering usage, the term usually refers only to the liquid limit (LL) and plastic limit (PL). The LL (between the liquid and plastic states) is the water content at which a trapezoidal groove of specified shape, cut in moist soil held in a special cup, is closed after 25 taps on a hard rubber plate. The PL (between plastic and semi-solid states) is the water content at which the soil crumbles when rolled into threads of 1/8-inch in diameter.

The LL has been found to be proportional to the compressibility of the normally consolidated soil. The PI is the calculated difference in water contents between the LL and the PL. Together the LL and PI are used to classify silts and clays according to the Unified Soil Classification System (ASTM D 2487). The PI is used to predict the potential for volume changes in confined soils beneath foundations or grade slabs. The LL, PL, and PI are determined in accordance with ASTM D 4318.

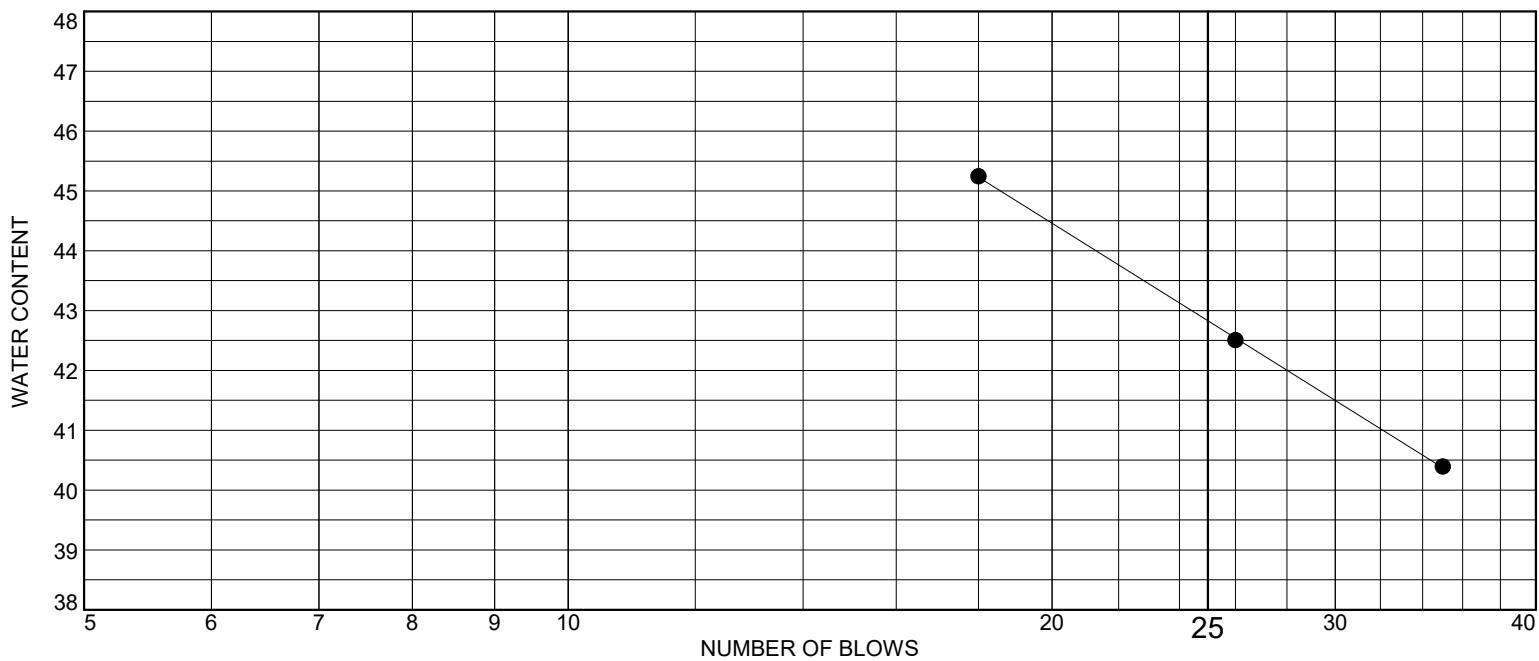
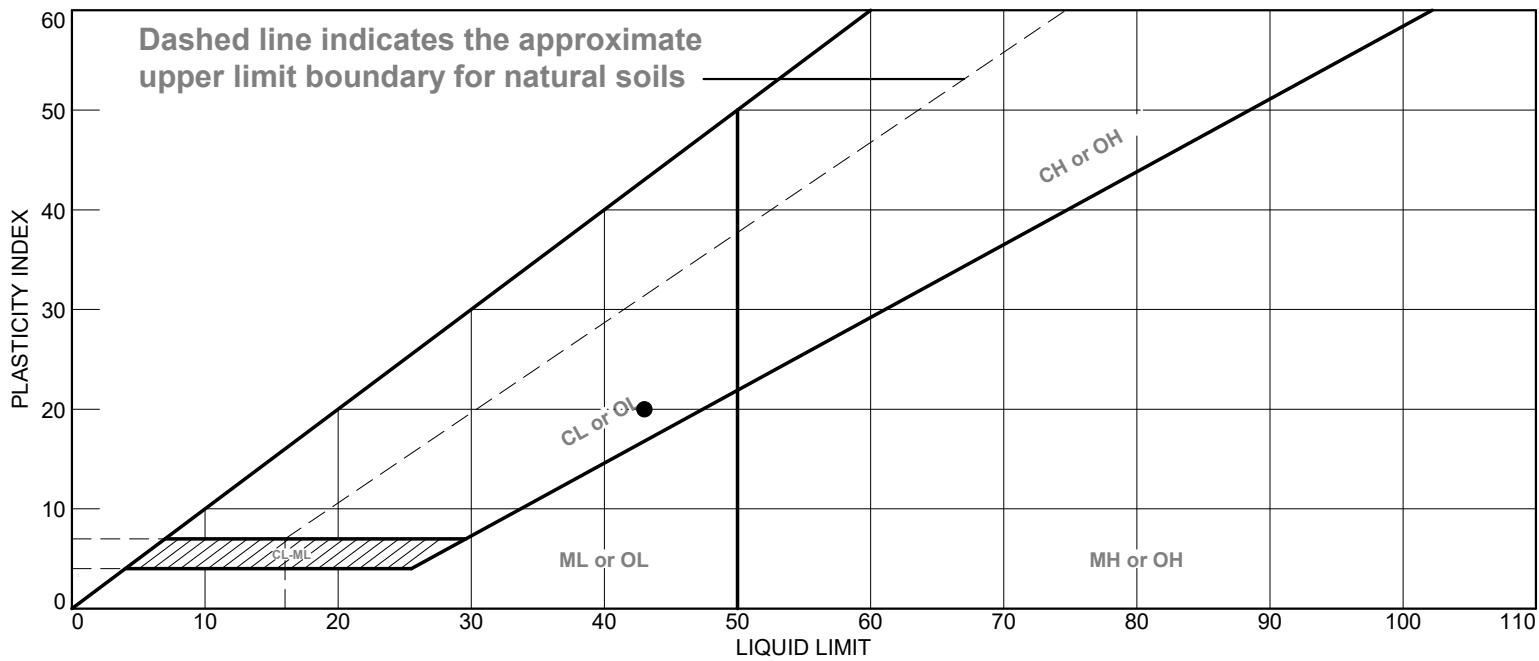
Moisture Content

The moisture content in a given mass of soil is the ratio, expressed as a percentage, of the weight of the water to the weight of the solid particles. This test was conducted in accordance with ASTM D 2216.

Undisturbed Sampling

The relatively undisturbed samples were obtained by pushing a section of 2-inch O.D., thin wall steel tubing (Shelby tube) into the soil at the desired sampling level. The sampling procedure is described by ASTM D 1587. The shelby tube was then retrieved from the boring, capped at both ends with plastic covers and tape and transported to the laboratory.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Orange Tan Silty Sandy Clay	43	23	20			

Project No. 25-05

Client: City of Crossville

Remarks:

Project: Catoosa Utility District - Maintenance & Office Building

Location: Boring 1

Sample Number: 2

Depth: 4.0-5.5

Engineering & Testing Solutions LLC

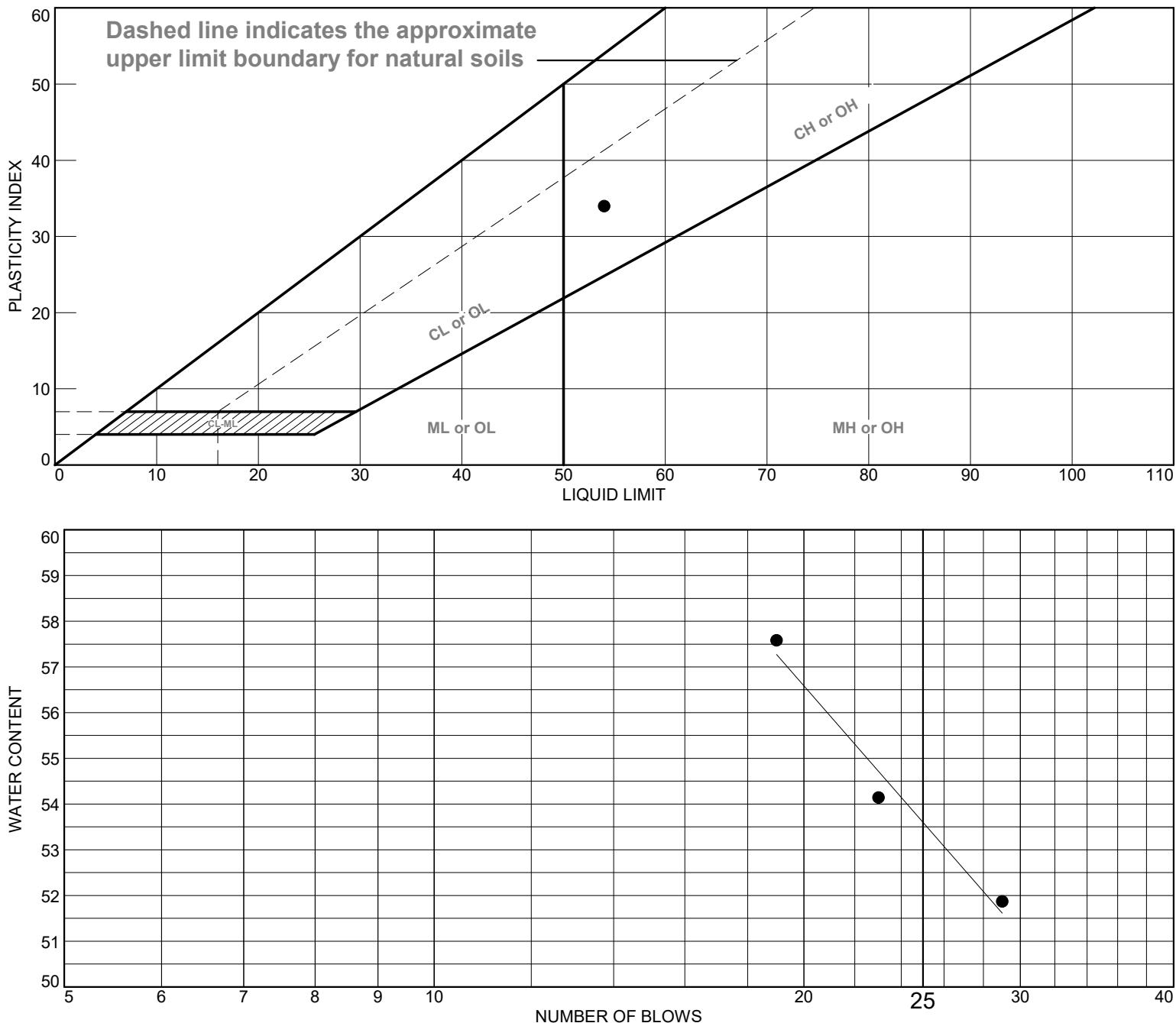
www.ets-tn.com

Figure

Tested By: JW

Checked By: CH

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	% ≤ 40	% ≤ 200	USCS
Orange Tan Silty Sandy Clay	54	20	34			

Project No. 25-05 Client: City of Crossville
 Project: Catoosa Utility District - Maintenance & Office Building

Remarks:

Location: Boring 6
 Sample Number: 2 Depth: 4.0 - 5.5

Engineering & Testing Solutions LLC

www.ets-tn.com

Figure

Tested By: JW

Checked By: CH

Soil Data Summary

Catoosa Utility District - Maintenance & Office Bldg Crossville, Tennessee

Boring No.	Depth (feet)	Moisture Content	Atterberg Limits			Unconfined Compressive Strength (ksf)
			LL	PL	PI	
B-1	1.5-3.0	20.4				
B-1	2.0-4.0	16.8				6.76
B-1	4.0-5.5	19.0	43	23	20	
B-1	6.5-8.0	22.3				
B-1	9.0-10.5	26.7				
B-1	14.0-15.5	13.5				
B-2	1.5-3.0	22.9				
B-2	4.0-5.5	11.6				
B-2	6.5-8.0	19.8				
B-2	9.0-10.5	17.9				
B-2	14.0-15.5	17.1				
B-5	1.5-3.0	21.5				
B-5	4.0-5.5	23.1				
B-5	6.5-8.0	20.9				
B-5	9.0-10.5	18.1				
B-6	1.5-3.0	25.9				
B-6	2.0-4.0	23.3				11.07
B-6	4.0-5.5	20.5	54	20	34	
B-6	6.5-8.0	20.6				
B-6	9.0-10.5	20.1				
B-6	14.0-15.5	11.2				
B-7	1.5-3.0	23.1				
B-7	4.0-5.5	19.9				

ENGINEERING TESTING SOLUTIONS, LLC

geotechnical and construction materials consultants

UNCONFINED COMPRESSION TEST

Project Name:	Catoosa Utility District	Date Sampled:	1/30/25
Project Location:	Crossville, TN	Date Tested:	2/11/25
ETS Project #:	25-05	Boring #:	B-1
Performed by:	AW	Sample Description:	Light gray and orange silty sandy clay

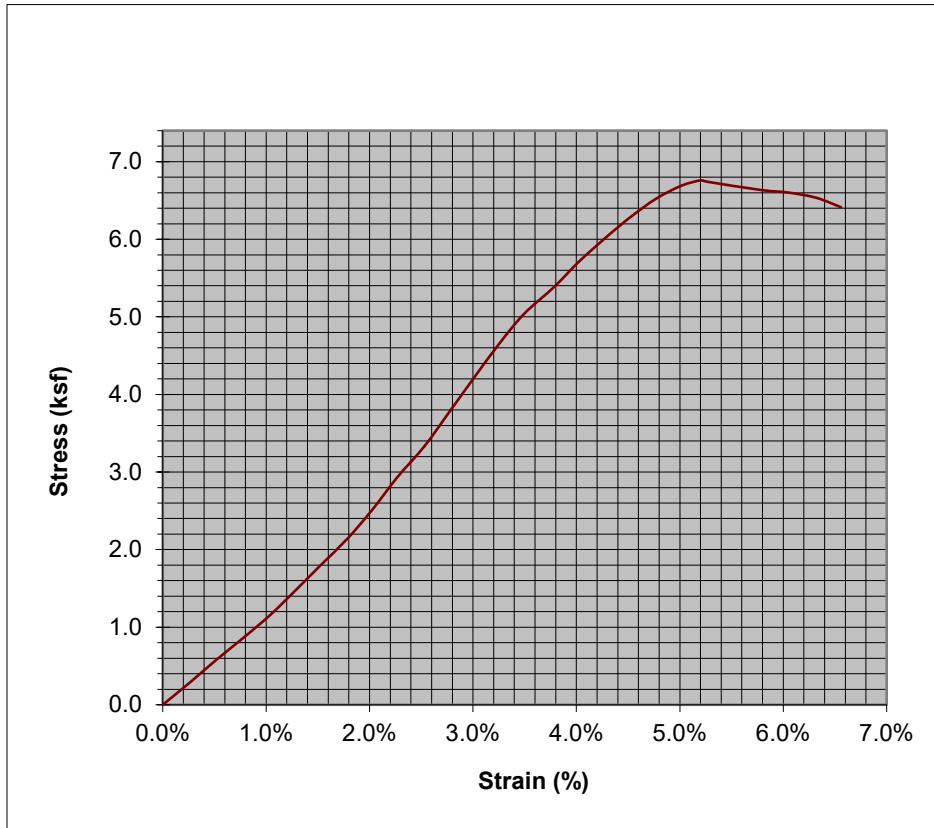
TEST DATA

Initial dia. (in)	1.89	L/D	1.984127
Initial area (in ²)	2.81	% Mois.	16.8%
Initial ht. (in)	3.75	Wet Den. (pcf)	128.0
Initial vol. (in ³)	10.5207	Dry Den. (pcf)	109.6

Unit Strain = $\Delta L \div L_0$ *Corr. Area= $A_0 \div (1 - \text{Unit Strain})$* *Stress= Load \div \text{Corr. Area}*

Peak Load (pds.)	138.9	Unconfined Strength (ksf)	6.76
Displacement (in.)	0.195	Failure Strain (%)	5.20%
Strain Rate(in./min.)	0.0500	Shear strength (ksf)	3.38

Remarks:



ENGINEERING TESTING SOLUTIONS, LLC

geotechnical and construction materials consultants

UNCONFINED COMPRESSION TEST

Project Name:	Catoosa Utility District	Date Sampled:	1/30/25
Project Location:	Crossville, TN	Date Tested:	2/10/25
ETS Project #:	25-05	Boring #:	B-6
Performed by:	AW	Sample Description:	Orange red and light gray silty sandy clay

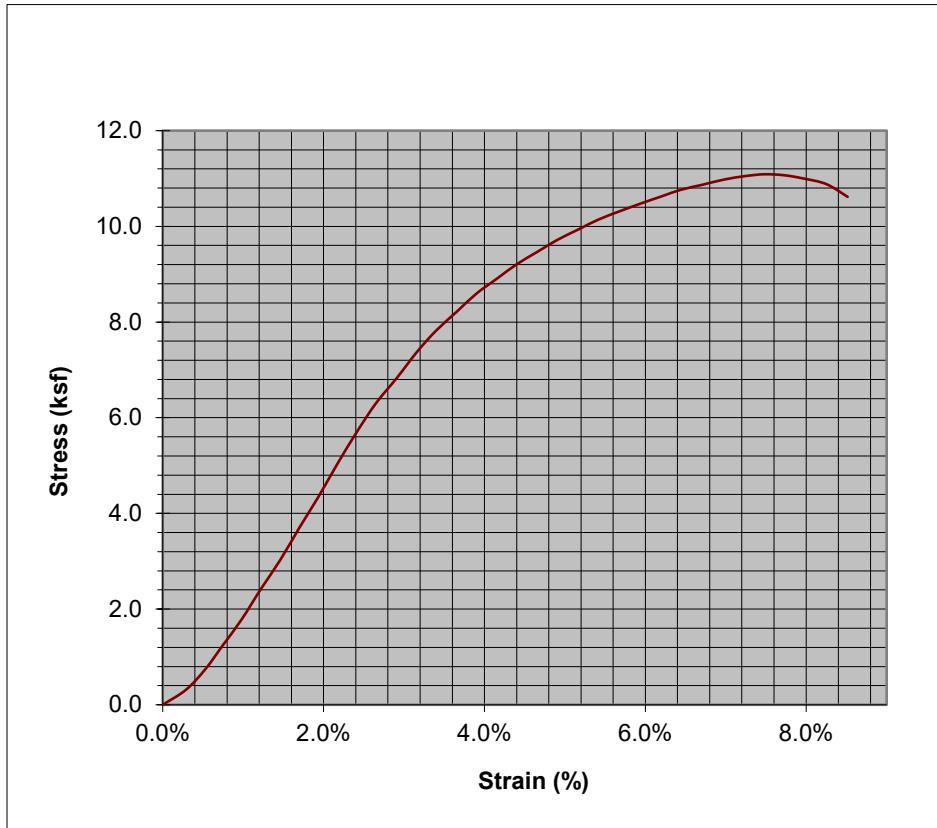
TEST DATA

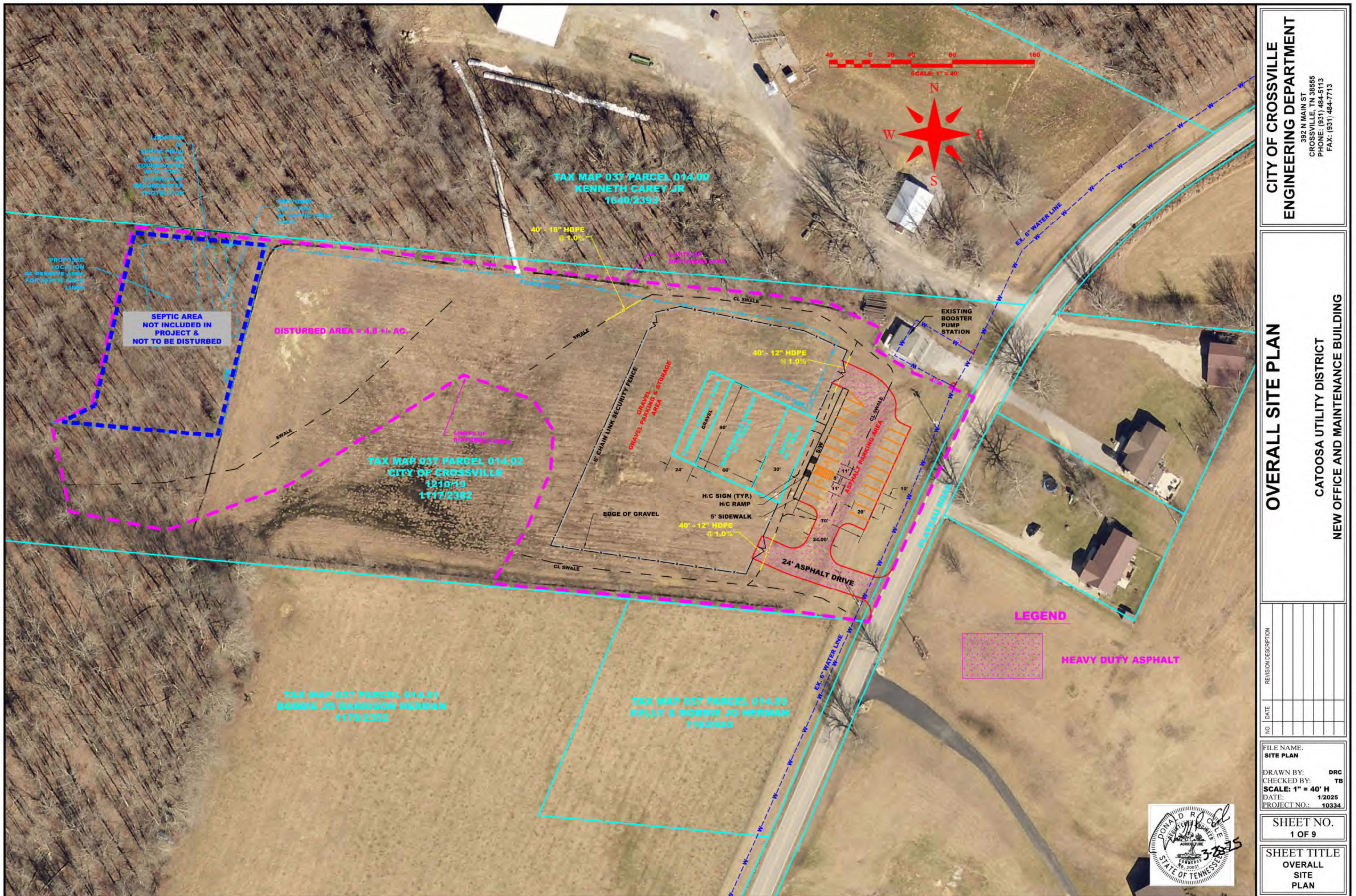
Initial dia. (in)	1.89	L/D	1.994709
Initial area (in ²)	2.81	% Mois.	23.3%
Initial ht. (in)	3.77	Wet Den. (pcf)	125.4
Initial vol. (in ³)	10.57681	Dry Den. (pcf)	101.7

Unit Strain = $\Delta L \div L_0$ *Corr. Area= $A_0 \div (1 - \text{Unit Strain})$* *Stress= Load \div \text{Corr. Area}*

Peak Load (pds.)	233.7	Unconfined Strength (ksf)	11.07
Displacement (in.)	0.291	Failure Strain (%)	7.72%
Strain Rate(in./min.)	0.0500	Shear strength (ksf)	5.53

Remarks:





GENERAL CONSTRUCTION NOTES:

- ALL DESIGN, CONSTRUCTION AND MATERIAL SHALL BE IN COMPLIANCE WITH THE CITY OF CROSSVILLE STANDARD CONSTRUCTION SPECIFICATIONS AND STANDARDS.
- ALL MATERIAL, WORKMANSHIP AND CONSTRUCTION TO MEET OR EXCEED THE TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT), JANUARY 1, 2021 STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION (LATEST VERSION), AND THE TDOT STANDARD DRAWINGS WHEN REFERENCED IN THE PLANS AND SPECIFICATIONS.
- SEVENTY TWO (72) HOURS BEFORE STARTING CONSTRUCTION. THE CONTRACTOR SHALL CALL 1-800-331-1111 OR 811 FOR LOCATION OF UNDERGROUND UTILITIES.
- LOCATION AND/OR DEPTH OF EXISTING UTILITIES SHOWN ON PLANS ARE APPROXIMATE. ALL UTILITIES MAY NOT APPEAR ON PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES FOR UNDERGROUND LOCATION OF FACILITIES AT LEAST 72 HOURS PRIOR TO EXCAVATING.
- ALL TRAFFIC CONTROL AND TEMPORARY SIGNAGE MUST BE CONFORMANCE WITH THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES." (MUTCD)
- THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES NECESSARY TO PROTECT AND SAFEGUARD THE PUBLIC AND WORKERS AGAINST INJURY AND PROTECT THE WORK FROM DAMAGE.
- ALL TEMPORARY TRAFFIC CONTROL SIGNING AND DEVICES SHALL BE IN PLACE PRIOR TO BEGINNING WORK.
- PROPERTY LINES SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. GRADING, CLEARING AND THE ERECTION OR REMOVAL OF FENCES ALONG PROPERTY LINES SHALL BE FULLY COORDINATED WITH ADJACENT PROPERTY OWNERS.
- NEWLY CUT OR FILLED EMBANKMENTS SHALL BE SEEDED AND MULCHED TO ADEQUATELY PREVENT SOIL EROSION.
- ALL GRADING WORK SHALL BE PERFORMED IN SUCH A MANNER THAT ADJACENT PROPERTIES ARE NOT DAMAGED OR ADVERSELY AFFECTED.
- ALL GRADING WORK AND PLACEMENT OF FILL MATERIAL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SOILS REPORT.
- ALL FILL SHALL BE COMPAKTED TO 98% STANDARD PROCTOR DENSITY IN 8" LIFTS WITHIN THE BUILDING PADS AND PARKING AREAS. THE UPPER 24 INCHES OF FILL BEHNEATH PAVEMENTS SHOULD BE COMPAKTED TO AT LEAST 100% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. SEE PROJECT SOILS REPORT FOR FILL RECOMMENDATIONS.
- ALL AREAS TO BE FILLED SHALL BE PROPERLY CLEARED AND STRIPPED PRIOR TO BEGINNING THE FILLING OPERATION.
- SITE GRADING SHALL BE PERFORMED IN A MANNER TO ASSURE STORM WATER RUNOFF IS NOT BLOCKED OR DIVERTED.
- VERIFY EXISTING CATCH BASIN LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
- AFTER STRIPPING THE PROJECT SITE, THE EXPOSED SUBGRADE IN FILL AREAS TO BE PROOF ROLLED PRIOR TO FILLING. CUT AREAS IN THE BUILDING AND PARKING AREAS TO BE PROOF ROLLED ONCE THE SUBGRADE ELEVATIONS ARE ACHIEVED. SEE SOILS REPORT FOR SITE PREPARATION RECOMMENDATIONS.
- RIPRAP CHECK DAMS AND OTHER EROSION CONTROL METHODS TO BE MAINTAINED BY CONTRACTOR OR DEVELOPER. THE CITY OF CROSSVILLE IS NOT RESPONSIBLE FOR ANY MAINTENANCE OF THESE STRUCTURES DURING CONSTRUCTION AND PRIOR TO ACCEPTANCE.
- NO SITE WORK SHALL BE PERFORMED UNTIL THE CONTRACTOR SIGNS THE SWPPP AND THE NOI CERTIFICATIONS.

EROSION PREVENTION AND SEDIMENT CONTROLS (EPSC) NOTES:

- ALL CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND/OR GOOD ENGINEERING PRACTICES. IF PERIODIC INSPECTIONS OR OTHER INFORMATION INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE CONTRACTOR MUST REPLACE OR MODIFY THE CONTROL.
- IF SEDIMENT ESCAPES THE PERMITTED AREA, OFF-SITE ACCUMULATIONS THAT HAVE NOT REACHED A STREAM MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., SEDIMENT THAT HAS ESCAPED A CONSTRUCTION SITE AND COLLECTED IN A STREET MUST BE REMOVED SO THAT IT DOES NOT SUBSEQUENTLY WASH INTO STORM SEWERS AND STREAMS DURING THE NEXT RAIN OR SO THAT IT DOES NOT POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS).
- ARRANGEMENTS CONCERNING THE REMOVAL OF SEDIMENT ON ADJOINING PROPERTY MUST BE SETTLED BY THE CONTRACTOR AND THE ADJOINING LANDOWNER.
- SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS, SILT FENCES, SEDIMENT BASINS AND OTHER SEDIMENT CONTROLS WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
- ERODIBLE MATERIAL STORAGE AREAS (E.G., OVERTBURDEN AND STOCKPILES OF SOIL) AND BORROW PITS THAT ARE USED PRIMARILY FOR THE PERMITTED PROJECT ARE CONSIDERED A PART OF THE SITE.
- PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING OR EARTH MOVING ACTIVITIES UNLESS THE AREA IS SUBSEQUENTLY TEMPORARILY OR PERMANENTLY STABILIZED.
- CLEARING AND GRUBBING MUST BE HELD TO THE MINIMUM NECESSARY FOR GRADING AND EQUIPMENT OPERATION. EXISTING VEGETATION AT THE SITE SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE. THE LIMITS OF SOIL DISTURBANCE SHALL BE CLEARLY OUTLINED IN THE SWPPP AND THE AREAS TO REMAIN UNDISTURBED CLEARLY INDICATED ON THE SITE, WITH THE METHODS TO BE USED TO MARK THESE AREAS DESCRIBED IN THE SWPPP.
- CONSTRUCTION MUST BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF GRADED OR DENUDED AREAS.
- EPSC MEASURES MUST BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN AND MUST BE CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD STAGES AS APPROPRIATE. TEMPORARY MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY BUT MUST BE REPLACED AT THE END OF THE WORKDAY.
- OFF-SITE VEHICLE TRACKING OF SEDIMENT AND THE GENERATION OF DUST SHALL BE MINIMIZED. A STABILIZED CONSTRUCTION ACCESS SHALL BE IMPLEMENTED TO REDUCE THE TRACKING OF MUD AND DIRT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES.
- CONSTRUCTION PHASING IS RECOMMENDED ON ALL PROJECTS REGARDLESS OF SIZE AS AN EFFECTIVE PRACTICE FOR MINIMIZING EROSION AND LIMITING SEDIMENTATION.
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT SOIL STABILIZATION AT THE CONSTRUCTION SITE MUST BE COMPLETED WITHIN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- OPERATORS SHALL ENSURE PROPER INSTALLATION, MAINTENANCE, AND OVERALL EFFECTIVENESS OF EROSION PREVENTION AND SEDIMENT CONTROLS (EPSCS) BY PERFORMING TWICE WEEKLY SITE INSPECTIONS.
- A COPY OF THE EXISTING VERSION OF THE SWPPP AND INSPECTION REPORTS SHALL BE RETAINED ON-SITE. IF THE SITE IS INACTIVE OR DOES NOT HAVE AN ON-SITE LOCATION ADEQUATE TO STORE THE SWPPP, THE LOCATION OF THE SWPPP, ALONG WITH A CONTACT PHONE NUMBER, SHALL BE POSTED ON-SITE. IF THE SWPPP IS LOCATED OFF-SITE, REASONABLE LOCAL ACCESS TO THE PLAN DURING NORMAL WORKING HOURS MUST BE PROVIDED.
- THE CONTRACTOR SHALL MAKE THE EXISTING SWPPP AND INSPECTION REPORTS AVAILABLE UPON REQUEST TO TDEC AND/OR THE CITY OF CROSSVILLE STORMWATER DEPARTMENT.

CITY OF CROSSVILLE
ENGINEERING DEPARTMENT

392 N MAIN ST
CROSSVILLE, TN 38565
PHONE: (931) 484-5113
FAX: (931) 484-7713

GENERAL NOTES

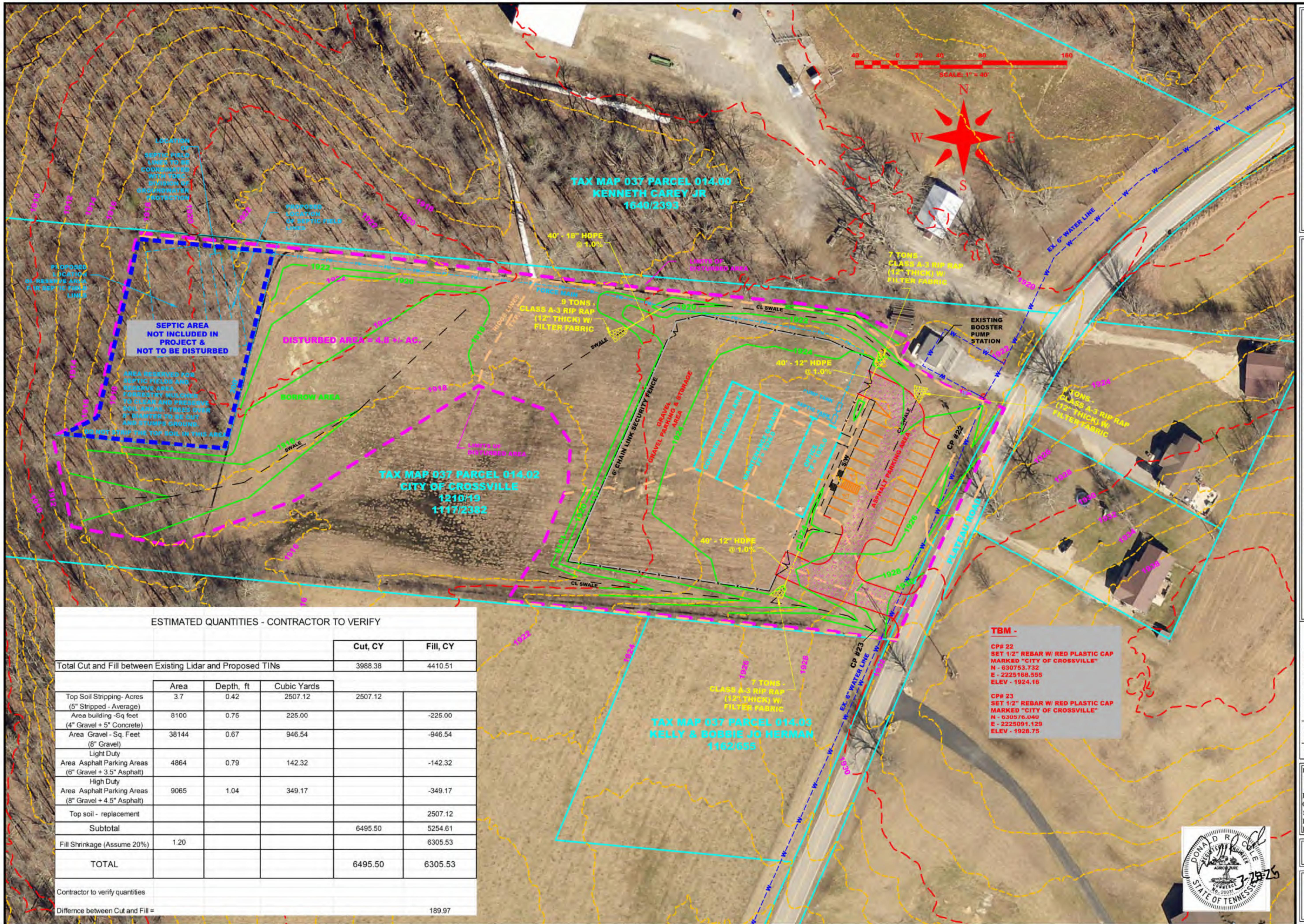
CATOOSA UTILITY DISTRICT
NEW OFFICE AND MAINTENANCE BUILDING

NO.	DATE	REVISION DESCRIPTION

FILE NAME:
SITE PLAN
DRAWN BY: DRC
CHECKED BY: TB
SCALE:
DATE: 1/2025
PROJECT NO.: 10334

SHEET NO.
2 OF 9
SHEET TITLE
DETAIL SHEET





**CITY OF CROSSVILLE
ENGINEERING DEPARTMENT**

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CATOOSA UTILITY DISTRICT NEW OFFICE AND MAINTENANCE BUILDING

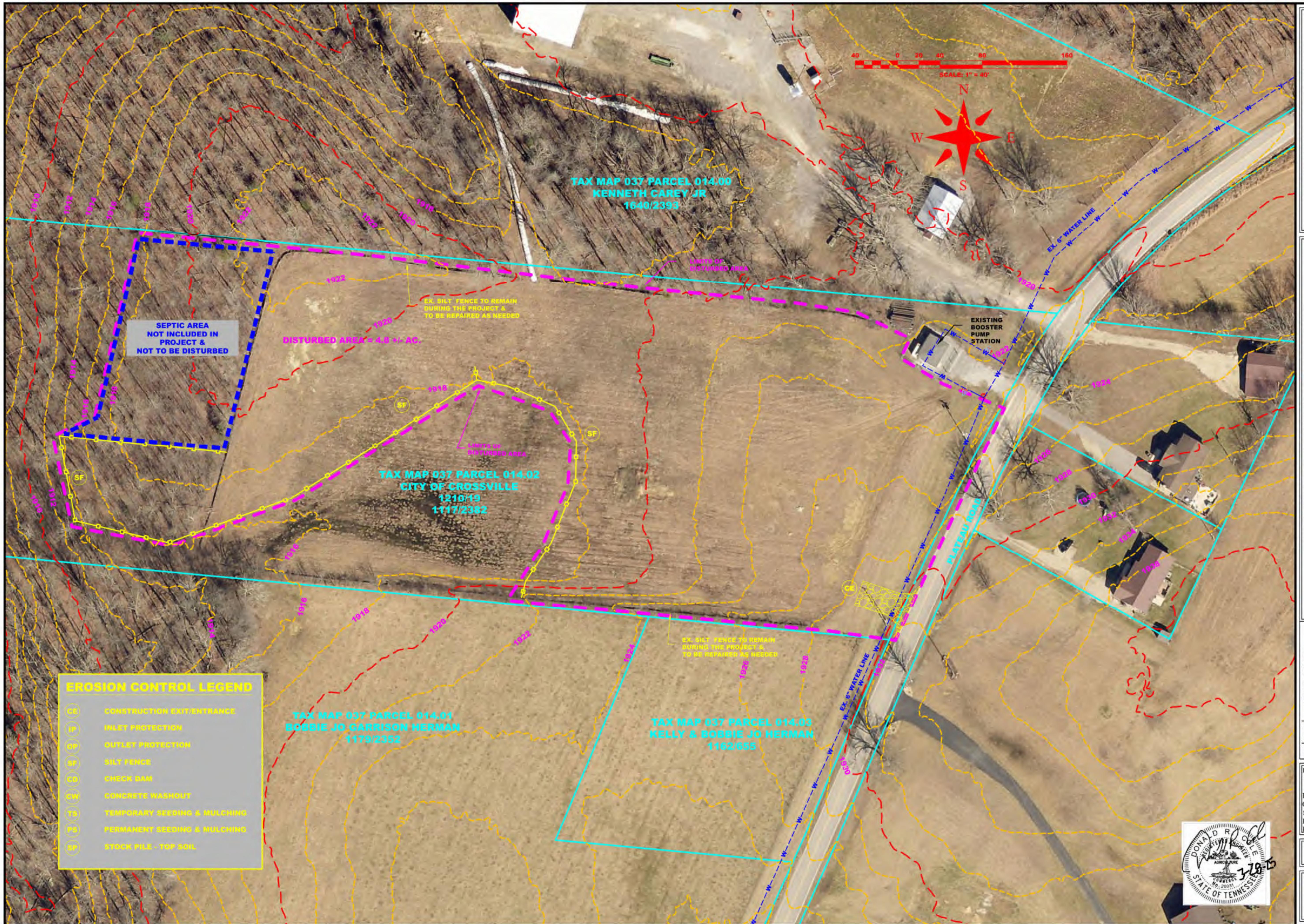
OVERALL GRADING PLAN

FILE NAME: SITE PLAN
DRAWN BY: DRC
CHECKED BY: T
SCALE: 1" = 40' H
DATE: 1/2025
PROJECT NO.: 10334

SHEET NO.
3 OF 9

SHEET TITLE
**OVERALL
GRADING
PLAN**





**CITY OF CROSSVILLE
ENGINEERING DEPARTMENT**

CROSSVILLE, TN 38555
PHONE: (931) 484-5113
FAX: (931) 484-7713

EROSION CONTROL PLAN INITIAL PLAN

CATOOSA UTILITY DISTRICT NEW OFFICE AND MAINTENANCE BUILDING

NO.	DATE	REVISION DESCRIPTION

FILE NAME:
SITE PLAN

DRAWN BY: **DRC**
CHECKED BY: **TB**
SCALE: 1" = 40' H
DATE: **01/2025**

SHEET NO.
5 OF 9

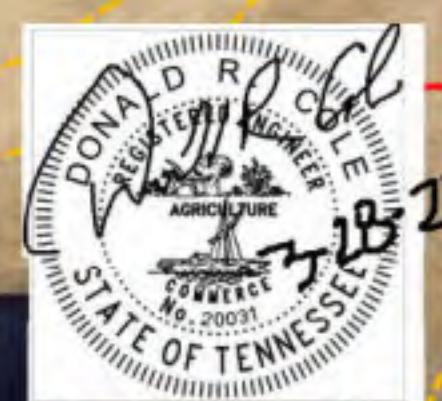
SHEET TITLE
EROSION
CONTROL PLAN
INITIAL

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ENGINEERING DEPARTMENT**

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CROSSVILLE, TN 38555
PHONE: (931) 484-5113
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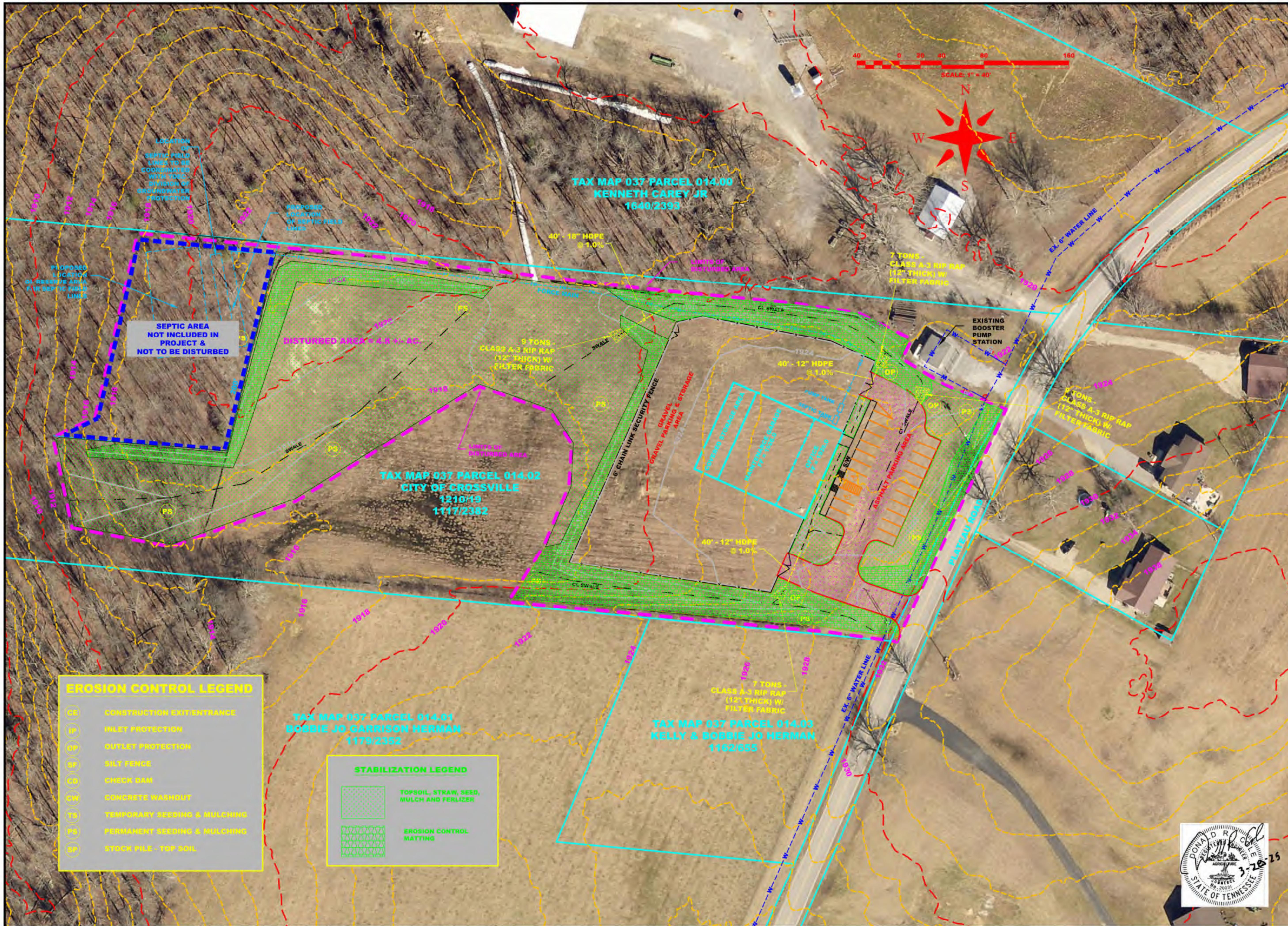
**EROSION CONTROL PLAN
INTERIM PLAN**

CATOOSA UTILITY DISTRICT
NEW OFFICE AND MAINTENANCE BUILDING



FILE NAME:
SITE PLAN
DRAWN BY:
DRC
CHECKED BY:
TB
SCALE: 1" = 40' H
DATE: 01/2025
PROJECT NO.: 10334

SHEET NO.
6 OF 9
SHEET TITLE
EROSION
CONTROL PLAN
INTERIM



**CITY OF CROSSVILLE
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FAX: (931) 484-7713

EROSION CONTROL PLAN PERMANENT PLAN

**CATOOSA UTILITY DISTRICT
NEW OFFICE AND MAINTENANCE BUILDING**

NO.	DATE	REVISION DESCRIPTION

FILE NAME: **SITE PLAN**
DRAWN BY: **DRC**
CHECKED BY: **TB**
SCALE: 1" = 40' H
DATE: **1/2025**
PROJECT NO.: **10334**

SHEET NO.
7 OF 9

SHEET TITLE
EROSION
CONTROL PLAN
PERMANENT

**CITY OF CROSSVILLE
ENGINEERING DEPARTMENT**

CROSSVILLE, TN 38555
PHONE: (931) 484-5113
FAX: (931) 484-7713

EROSION CONTROL PLAN DETAIL SHEET

CATOOSA UTILITY DISTRICT NEW OFFICE AND MAINTENANCE B

**SHEET T
8 OF**

**SHEET T
EROSION
CONTROL
DETAIL**



END SECTION (TYP)

MIN. APRON WIDTH = 3 Wc

Wc

Wc + Ls

Wc + Wc + Ls

LA

DA = 1.5 x 1.5 x D50

HEAVY GEOTEXTILE FABRIC, ANCHORED

SEPARATOR

TAILWATER < 0.5 Hc AND ASSUMING FULL CULVERT FLOW (LOW TAILWATER CONDITIONS)

END SECTION, CONCRETE FLOOR OR RIPRAP (TYP)

MIN. APRON WIDTH = 3 Wc

Wc

Wc + 0.4

LA

DA = 1.5 x 1.5 x D50

HEAVY GEOTEXTILE FABRIC, ANCHORED

SEPARATOR

TAILWATER > 0.5 Hc AND ASSUMING FULL CULVERT FLOW (HIGH TAILWATER CONDITIONS)

Riprap Aprons for LOW Tailwater (downstream flow depth < 0.5 x pipe diameter)

Culvert Diameter	Lowest value			Intermediate values to interpolate from									Highest value					
	Q Cfs			LA Ft			D50 In			Q Cfs			LA Ft			D50 In		
	4	7	2.5	6	10	3.5	9	131	6	12	16	7	14	17	8.5			
12"	4	7	2.5	6	10	3.5	9	131	6	12	16	7	14	17	8.5			
15"	6.5	8	3	10	12	5	15	16	7	20	18	10	25	20	12			
18"	10	9	3.5	15	14	5.5	20	17	7	30	22	11	40	25	14			
21"	15	11	4	25	18	7	35	22	10	45	26	13	60	29	18			
24"	21	13	5	35	20	8.5	50	26	12	65	30	16	80	33	19			
27"	27	14	5.5	50	24	9.5	70	29	14	90	34	18	110	37	22			
30"	36	16	6	60	25	9.5	90	33	15.5	120	38	20	140	41	24			
36"	56	20	7	100	32	13	140	40	18	180	45	23	220	50	28			
42"	82	22	8.5	120	32	12	160	39	17	200	45	20	260	52	26			
48"	120	26	10	170	37	14	220	46	19	270	54	23	320	64	37			

Riprap Aprons for HIGH Tailwater (downstream flow depth < 0.5 x pipe diameter)

Culvert Diameter	Lowest value			Intermediate values to interpolate from									Highest value					
	Q Cfs			LA Ft			D50 In			Q Cfs			LA Ft			D50 In		
	4	8	2	6	18	2.5	9	28	4.5	12	36	7	14	40	8			
12"	4	8	2	6	18	2.5	9	28	4.5	12	36	7	14	40	8			
15"	7	8	2	10	20	2.5	15	34	5	20	42	7.5	25	50	10			
18"	10	8	2	15	22	3	20	34	5	30	50	9	40	60	11			
21"	15	8	2	25	32	4.5	35	48	7	45	58	11	60	72	14			
24"	20	8	2	35	36	5	50	55	8.5	65	68	12	80	80	15			
27"	27	10	2	50	41	6	70	58	10	90	70	14	110	82	17			
30"	36	11	2	60	42	6	90	64	11	120	80	15	140	90	18			
36"	56	13	2.2	100	60	7	140	85	13	180	104	18	220	120	23			
42"	82	15	2.5	120	58	7	160	85	12	200	96	14	260	120	19			
48"	120	20	2.5	170	58	7	220	85	12	270	105	16	320	120	20			

EDGE OF PUBLIC ROAD

70' R. (MIN.)

50' MIN.
<2% SLOPE

20' MIN.

CLEAN WASHED STONE SIZES FROM 2" TO 4" 8" DEPTH WITH GEOTEXTILE FABRIC

TEMPORARY DRAINAGE PIPE WHERE NEEDED

PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD

50' MIN.

EXISTING NATU GROUND

PUBLIC ROAD

3" UNDERCUT PRIOR TO PLACEMENT OF MACHINED RIPRAP

TEMPORARY DRAINAGE PIPE WHERE NEEDED

CLEAN WASHED STONE SIZES FROM 2" TO 4" 0" DEPTH

GEOTEXTILE FABRIC SHALL BE PLACED UNDER ENTIRE WIDTH OF RIPRAP

SECTION A-A

CONSTRUCTION EXIT

DETAIL FOR V-DITCH

BASE OF V-DITCH → A

GEOTEXTILE FABRIC TO EXTEND 3' BEYOND LIMITS OF RIPRAP

MACHINED RIPRAP (CLASS A-1)

B

TOP OF DITCH → A

FLOW

PLAN VIEW

SECTION B - B

NATURAL GROUND

② 9° MIN.

1.0' MIN. TO 3.0' MAX.

FLOW LINE OF DITCH

GEOTEXTILE FABRIC SHALL BE PLACED UNDER ENTIRE WIDTH OF RIPRAP.

DETAIL FOR TRAPEZOIDAL DITCH

TOP OF DITCH → A

FLOW

BASE OF TRAPEZOIDAL DITCH

PLAN VIEW

SECTION C - C

TOP OF CHECK DAM AT EDGE OF DITCH → A

2:1 OR FLATTER

FLOW LINE OF WEIR

1.5° MIN.

3' MAX.

2:1 OR FLATTER

MACHINED RIPRAP (CLASS A-1)

SECTION A - A

FLOW LINE OF PROPOSED DITCH

S = DITCH SLOPE

TOP OF CHECK DAM AT EDGE OF DITCH

2:1 OR FLATTER

1.5° MIN.

3' MAX.

MACHINED RIPRAP (CLASS A-1)

GEOTEXTILE FABRIC SHALL EXTEND BEYOND TOE OF MACHINED RIPRAP SLOPE 3'.

DETAIL FOR SPACING BETWEEN CHECK DAMS

TOP OF DITCH (NATURAL GROUND)

L = THE DISTANCE SUCH THAT POINTS (X) AND (Y) ARE OF EQUAL ELEVATION

PT. (X)

PT. (Y)

BASE OF DITCH

S = DITCH SLOPE

NOTES:

① FILL LOW AREAS ALONG TOP OF BANK TO PREVENT BACKWATER FROM EXITING DITCH.

② WEIR FLOW DEPTH BASED UPON 2yr/24hr STORM EVENT OR 5yr/24hr STORM EVENT.

CHECK DAMS

HARDWARE CLOTH AND GRAVEL INLET PROTECTION (FLOW FROM ONE SIDE)

SECTION A-A **CONSTRUCTION EXIT** CE

ELEVATION VIEW

MAX. 6' POST SPACING
USE MIN. OF 18 POSTS PER 100 FT. OF LENGTH
2" MIN.
6"
BOTTOM OF TRENCH
WOOD POST (TYP.)
SILT FENCE FABRIC TOTAL WIDTH 36"
26"
30" min.
58" MINIMUM POST
EXISTING GROUND

SECTIONAL VIEW

MIN. 2.25" (NOMINAL) X 2.25" (NOMINAL)
- (1.75" ACTUAL X 1.75" ACTUAL) (3.06 SQ. IN.) HARDWOOD POST (OAK OR HICKORY) OR
MIN. 1.25 LB./FT. STEEL POST (STD. "T" OR
"U" SECTION) - LENGTH 58"
2" MIN.
POSITION POST/FABRIC ASSEMBLY AT VERTICAL TO A MAX. 5° FROM THE VERTICAL (ANGLED TOWARD FLOW)
SILT FENCE FABRIC
DACKFILL WITH COMPACTED SOIL
EXISTING GROUND
OR SILT FENCE C 6" DEEP WITH IN-OUT LENGTH
4"
30" min.
26"
TIEBACK BETWEEN FENCE POST AND ANCHOR STAKE TO BE
NO. 8 (0.25") HOLLOW BRAIDED POLYPROPYLENE ROPE WITH
MINIMUM TENSILE STRENGTH OF 1,200 POUNDS
ANCHOR STAKE MIN. 18" LONG TO BE PLACED 12" INTO GROUND
SECURE TO POST BY WRAPPING
SILT FENCE
FLOW
EXISTING GROUND
SILT FENCE TIEBACK FOR STEEL POSTS OR WOOD POSTS
(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS. COST TO BE INCLUDED IN THE ITEMS FOR SILT FENCE)
SILT FENCE SF

HARDWARE CLOTH AND GRAVEL INLET PROTECTION

SECTION A-A

HARDWARE CLOTH AND GRAVEL INLET PROTECTION (FLOW FROM ONE SIDE)

The diagram illustrates a cross-section of an inlet protection system. At the top, a vertical wall is shown with a 1/4" wire mesh covering its top portion. A horizontal line labeled "FLOW" indicates water entering from the left. Below this, a thick, textured layer of "MINERAL AGGREGATE (SIZE 57)" is shown. A "STEEL POST (1.25 LBS/FOOT) (TYP)" is embedded in the aggregate. A "CATCH BASIN" is depicted as a rectangular area below the steel post. The bottom section shows a horizontal wall with a "MIN. 2' WIRE MESH" covering its top. A "FLOW" line indicates water exiting to the right. Below the mesh, a "2' MIN." layer of "MINERAL AGGREGATE (SIZE 57)" is shown. A vertical dimension line indicates a height of "2'". A horizontal dimension line indicates a width of "16\". A "VAR." dimension line indicates a variable distance between vertical supports. Arrows at the bottom point downwards, labeled "SECTION B-B" and "FILTERED WATER".

INLET PROTECTION

NOTE: SEE SHEET 8 FOR CONCRETE WASHOUT DETAIL

NOTE: FOR A COMPLETE DESCRIPTION OF THE EROSION CONTROL MEASURES, REFER TO THE "TENNESSEE HANDBOOK ON EROSION AND SEDIMENTATION CONTROL".

SOURCE FOR DETAILS: "TENNESSEE HANDBOOK ON EROSION AND SEDIMENTATION CONTROL"

See www.tnpsc.org for a copy of manual and details

FILE NAME:
SITE PLAN

DRAWN BY: **DRC**
CHECKED BY: **TB**
SCALE: NTS
DATE: **1/2025**
PROJECT NO.: **10334**

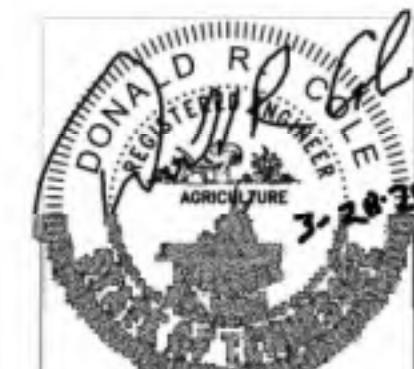
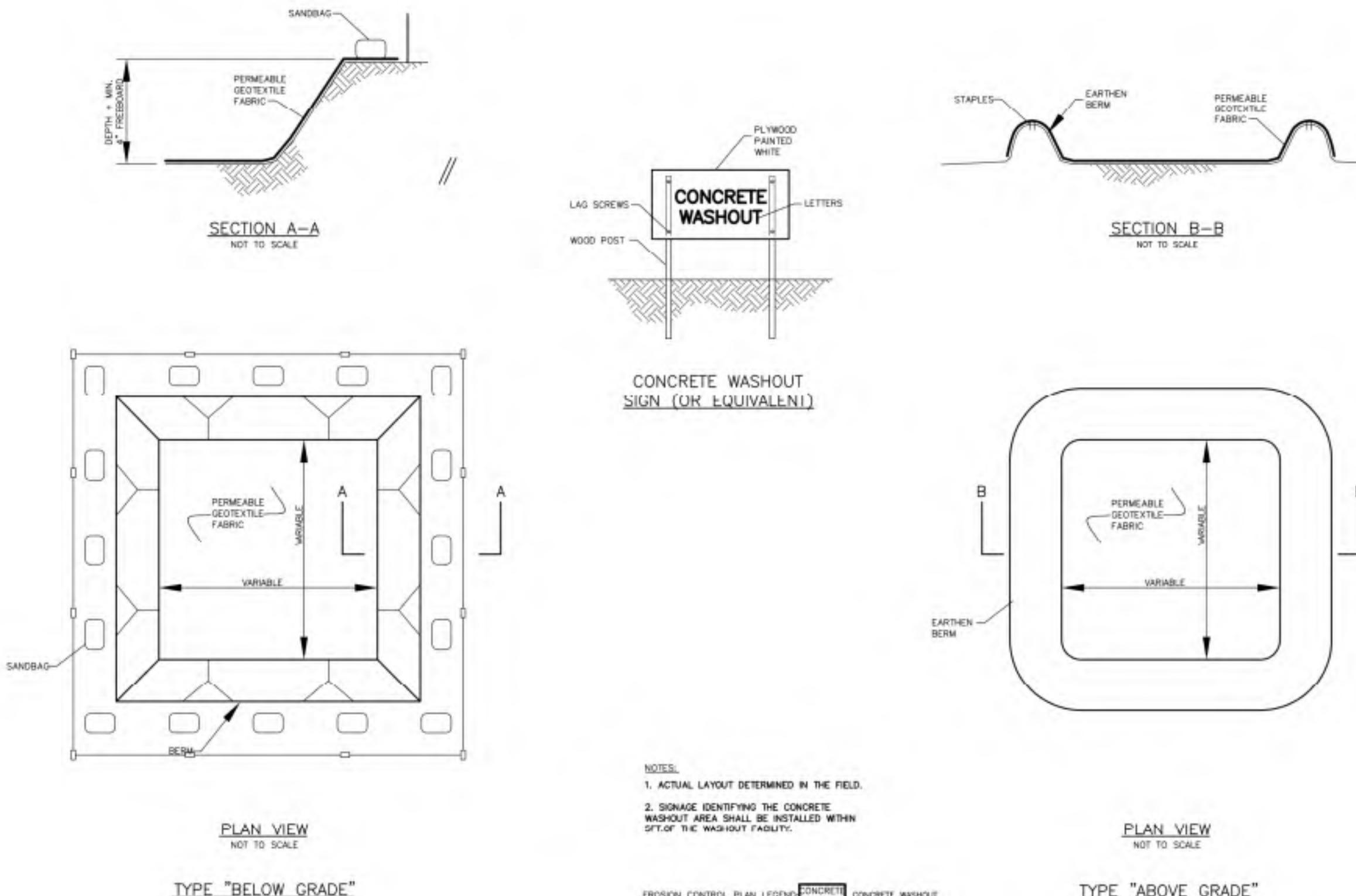
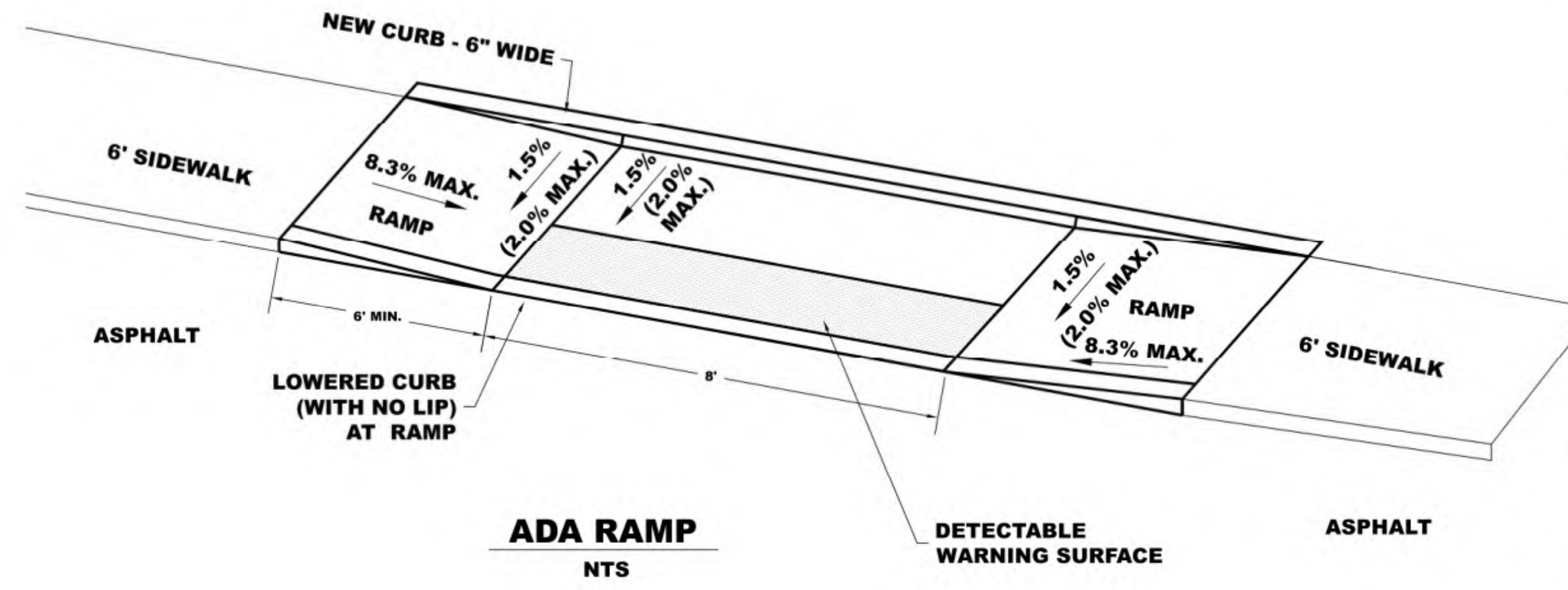
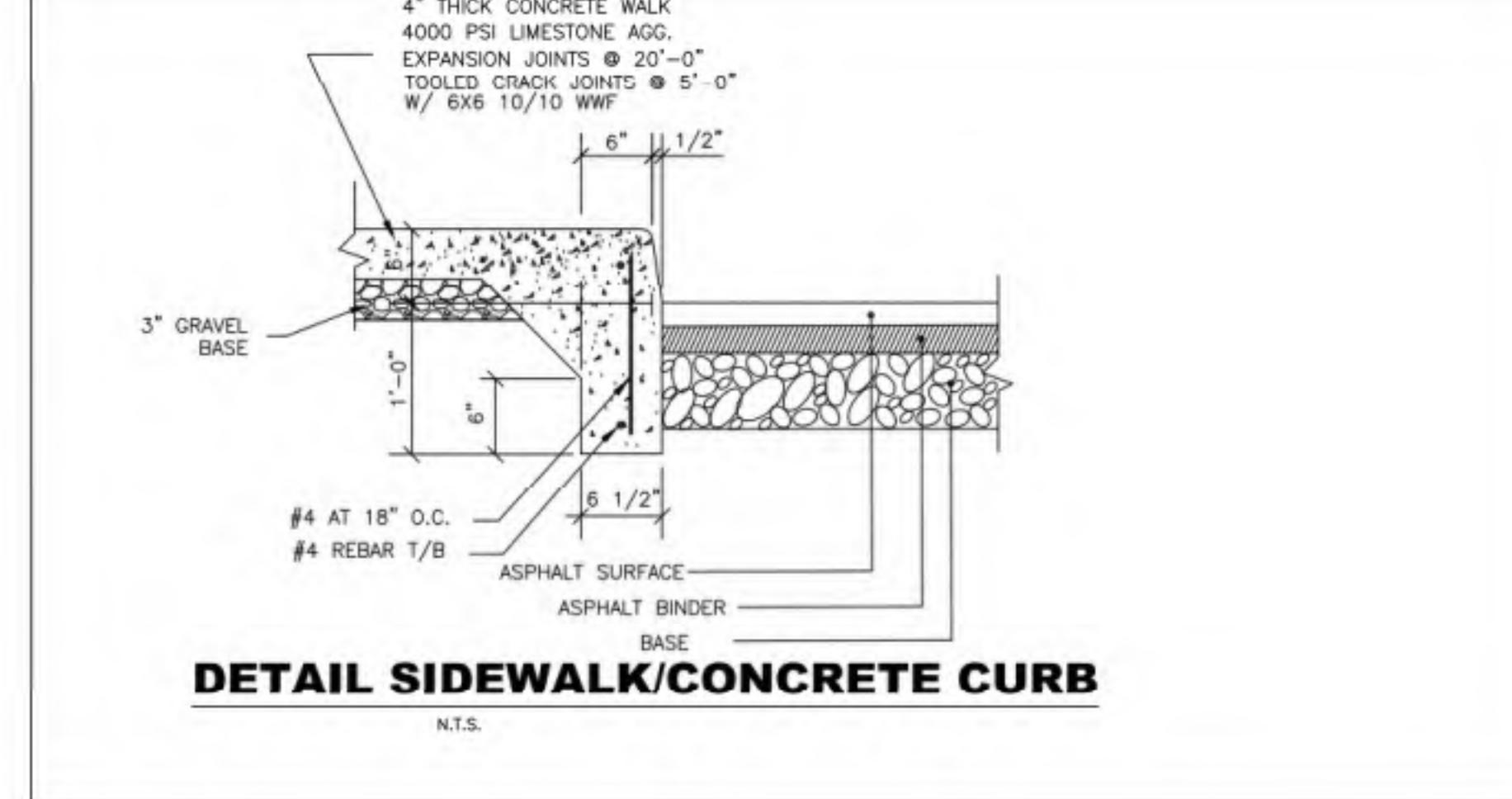
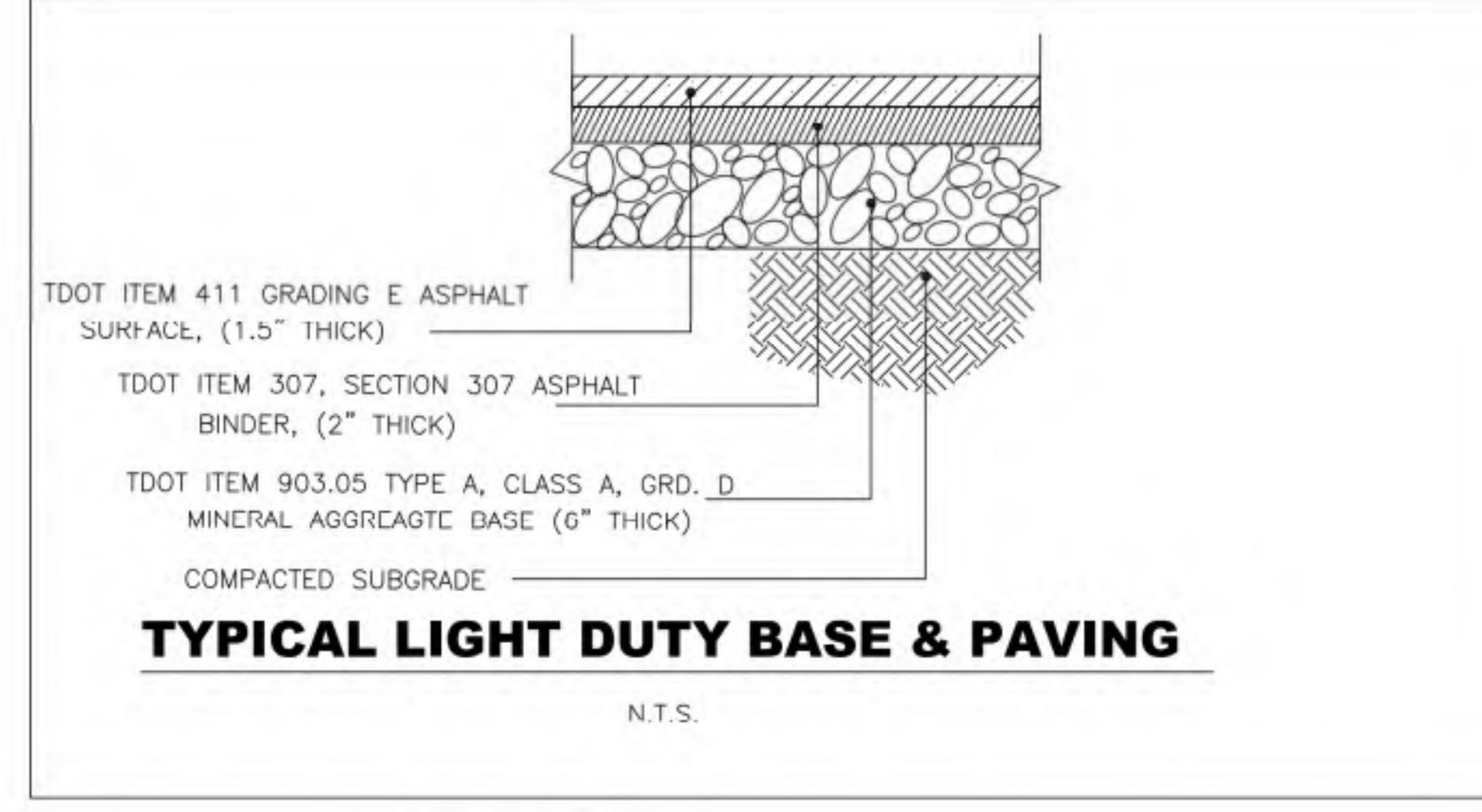
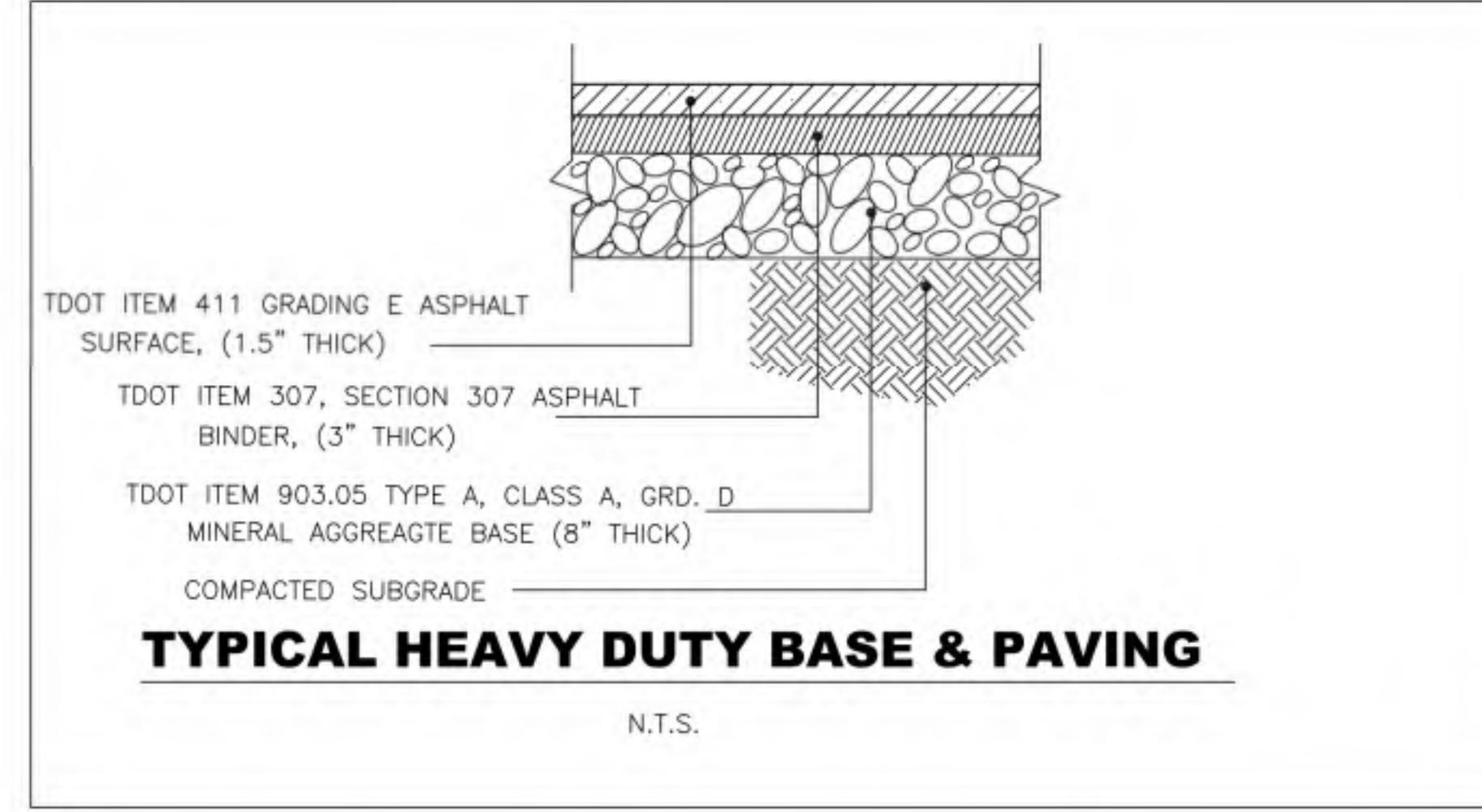
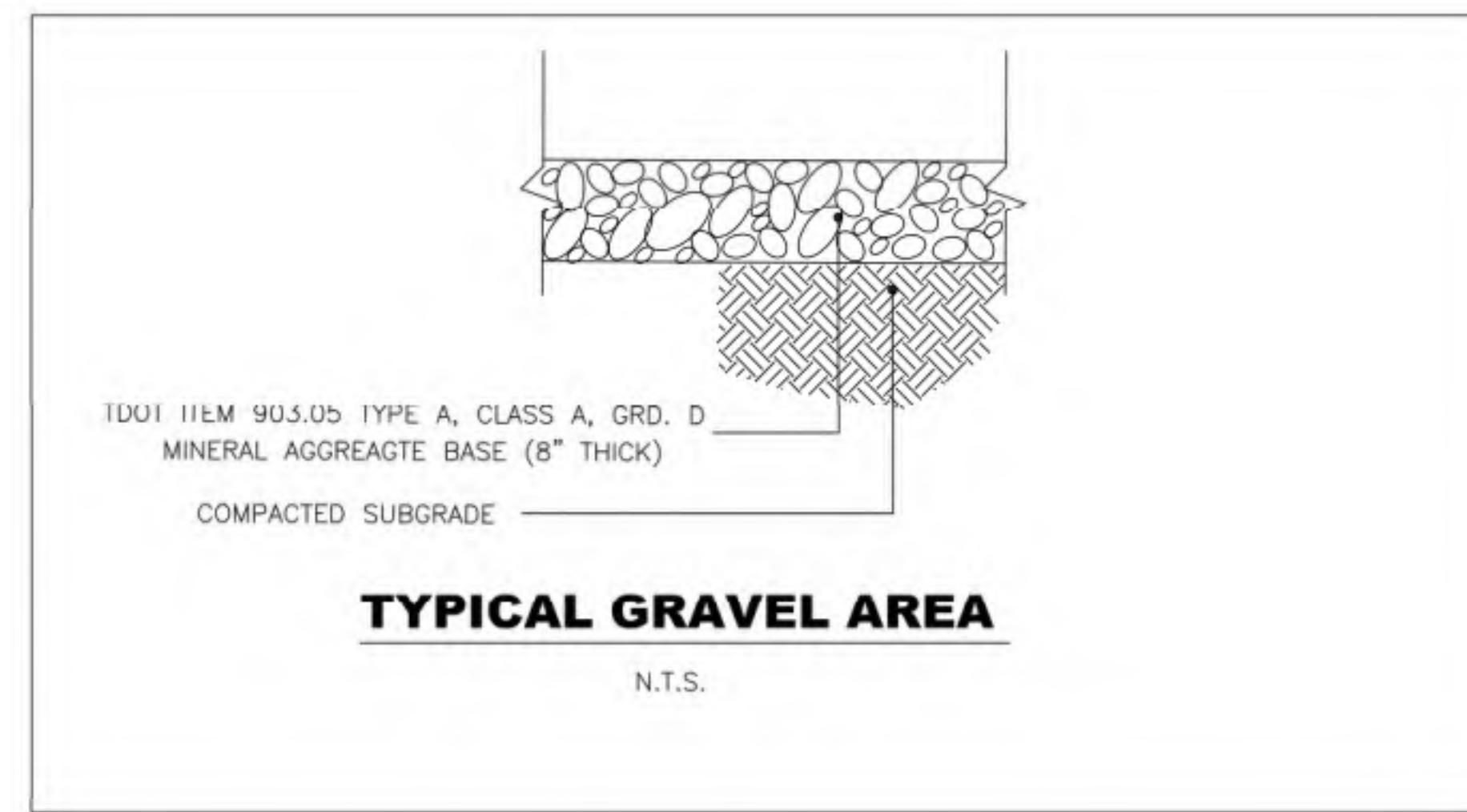
SHEET
8 OF

**SHEET T
EROSION
CONTROL
DETAIL**

**CITY OF CROSSVILLE
ENGINEERING DEPARTMENT**

392 N MAIN ST
CROSSVILLE, TN 38565
PHONE: (931) 484-5113
FAX: (931) 484-7713

DETAIL SHEET
CATOOSA UTILITY DISTRICT
NEW OFFICE AND MAINTENANCE BUILDING



SHEET NO.
9 OF 9
SHEET TITLE
DETAIL SHEET

FILE NAME:
SITE PLAN
DRAWN BY:
CHECKED BY:
SCALE: NTS
DATE: 1/2025
PROJECT NO.: 10334