LEXINGTON

REQUEST FOR PROPOSALS

FOR:

New Fire Training Academy Facility

RFP #26-2026

Department of General Services

Capital Project Management

Department of Public Safety

Division of Fire & Emergency Services

May 2026

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1.0- INTRODUCTION

The Lexington-Fayette Urban County Government (LFUCG) is seeking proposals from Architectural/ Engineering Consultants who are expertly qualified in the performance of professional design services relating to new public safety building construction.

The purpose of these services is for a New Fire Training Academy Facility to replace the current facility located at 1375 Old Frankfort Pike, Lexington, KY 40504. The proposed site and surrounding acreage are owned by LFUCG. The new facility is anticipated to be a two-story building with approximately 48,000-50,000SF. The site will need to accommodate the required immediate parking, along with safe and efficient access to internal roadways, parking lots and Old Frankfort Pike.

The address for the **New Fire Training Academy Facility is**:
1375 Old Frankfort Pike, Lexington, KY 40504

The Project shall consist of Two Stages:

- Stage 1: Design Stage
- Stage 2: Construction Administration Stage
  Note: Cost estimates provided by the Consultant during Stage 1 will be used to secure funding for Stage 2. Consultant Services Agreement may be amended for Bidding Phase & Construction Administration Phase at the time of construction funding.

1.1 - PROJECT NARRATIVE

For over 150 years, Lexington Fire Department has served the community, currently across 24 stations, by providing progressive, all-hazard services. The Fire Department responds to over 70,000 local emergencies annually. The Fire Department consists of 635 sworn personnel and 34 non-sworn personnel. All firefighters are IFSAC I/II, EMT-B, and HazMat Ops certified. Additionally, they provide full-time fire prevention, education, and investigation programs, as well as structural and ARFF firefighting, advanced life support EMS, hazardous materials, and technical rescue services.

The Lexington Fire Department typically runs 635 sworn members through the Fire Training Academy facility annually and often many of them multiple times a year. The Department typically has two recruiting classes annually, which consist of approximately 25 to 45 recruits per class. They also have a Paramedic class annually consisting of approximately 36 students. Company Officer Academy class is held annually, consisting of approximately 15 company officers. There are also numerous public outreach events that are hosted and requested of this facility throughout the year.

In 2024, LFUCG commissioned a Feasibility Study of the entire Fire Training Academy campus and a facility assessment of the existing one-story facility. The existing 16,400sf Fire Training Academy was constructed in 1969 and has undergone multiple renovations. After full review of the facility assessment, it was determined that a new replacement facility should be constructed to meet the needs of the Department.

This new approximately 48,000 – 50,000sf Fire Training Academy will be a state-of-the-art public safety facility designed to support comprehensive firefighter and EMS training, operational readiness, and community engagement on a 15-acre campus. Purpose-built to meet the evolving demands of modern emergency response, the facility will integrate administrative, instructional, and hands-on training environments within a resilient and highly functional design. The new facility will stand as a premier regional training destination - strengthening preparedness, advancing firefighter excellence, and reinforcing LFUCG's commitment to public safety.

A separate Fire Training Academy - Phase 1 Site Development Project has already been funded and is currently underway with an awarded construction contract to ATS Construction. The scope includes full development of the approximately 8-acres of site on the campus surrounding the Fire Training Academy, providing new supporting parking lots, roadways, utilities, driving training pad, utilitarian building and vehicular/pedestrian bridge to the rear parcel. The construction is scheduled to be completed by the summer of 2027. All documents associated with the design and construction of this project will be provided to the awarded design consultant for integration of this New Fire Training Academy facility.

Numerous strategies were employed to determine the recommended space for a New Fire Training Academy facility housing all the functions including, but not limited to, apparatus and equipment bays, classrooms, training labs, storage areas, locker rooms, bunk rooms, offices, cafeteria, kitchen, fitness, rehabilitation areas, bay support spaces, lobby, building support spaces and public support areas. Design Standards, Best Practices and Guidelines were utilized to evaluate the required spaces needed and provided by the Lexington Fire Department stakeholders and LFUCG Capital Project Management to officially function and operate in a new facility.

Design of flexible spaces should be included so the stakeholders can adjust the programming over time. Acoustic recommendations shall also be made to isolate noise produced by simultaneous programming. All furnishings shall be flexible and designed to accommodate universal populations. All interior finish materials should be long lasting, durable, safe and aesthetically pleasing. Budget conscious, standard finish materials are preferred. The design of furniture, fixtures, and equipment (FF&E) specifications will be included as work of the Design Consultant and included in the design documents but may be bid as separate contracts from construction and utilize price contracts. Specified interior and exterior signage should be consistent with LFUCG's Branding and Signage standards and guidelines, which will be provided to the awarded design consultant. A bronze building plaque shall be provided in the lobby to meet LFUCG Building Plaque standards. Exterior signage should be easily visible, illuminated (where applicable) and vandal resistant. Building and site directional signage is included in this scope of services of the Design Consultant and clear wayfinding should be provided.

The proposed site is within the boundaries of the LFUCG-owned property and is adequate in meeting the project scope and requirements. See (Attachment "D") for aerial views highlighting the proposed site. Because of the adjacent Old Frankfort Pike, Town Branch Trail and Town Branch Creek, the layout of the facility to be thoughtfully considered to maximize circulation, access and daylighting. Although a two-story structure is preferred, the Consultant shall conduct a thorough investigation regarding the site-specific structure that best meets the Owner's needs. A property survey and geotechnical reports will be provided to the awarded design consultant. The Consultant shall be responsible for reviewing the site and project criteria and gathering any additional necessary information to make recommendations to the Owner regarding building placement and site design.

It is anticipated that the New Fire Training Academy facility will encompass roughly 48,000 – 50,000sf. The building exterior and parking lot should be well lit to provide for safe use of the facility. Exterior building and site components should be resistant to vandalism and energy efficient. Site improvements shall be designed using Universal Design principles as required to accommodate all new design elements. The site design should also include evaluation and design of necessary modifications to site utilities including site lighting, new dumpster pad with enclosure, ADA compliant parking and paths as required, a connection to the future Town Branch Trail and intersections on Old Frankfort Pike.

Audio visual systems, IT components, security camera system, access control system, and an intrusion detection system will be included as work of the Design Consultant and included in the design documents but may be bid as separate contracts from construction. LFUCG has proprietary systems and price contracts

that will be integrated into the design, along with LFUCG standards for IT, building materials, etc. that will be shared with the awarded design consultant. A building backup generator is to be provided for the new facility. The design and specification of the generator is included as work of the Design Consultant in coordination with LFUCG. All lighting shall be LED with lighting controls and easily replaceable fixtures. The design consultant shall engage a commercial kitchen consultant for the design, layout and selection of appliances for the commercial kitchen.

The New Fire Training Academy design should support LFUCG's policy on energy efficiency by seeking ways to minimize utility consumption, lower operating costs and demonstrate environmental stewardship. The HVAC for the building should be designed to exceed energy performance guidelines without compromising the comfort of building occupants. HVAC systems and components shall utilize BACnet protocol for integration with Owner's existing front-end server. Dedicated outdoor air system(s) for ventilation shall be provided, and mechanical systems should be engineered for long term operating efficiency, energy costs, and maintenance costs. The Consultant shall make recommendations and provide cost analysis for infection risk management strategies in the HVAC design, which may include additional specifications for air exchange, filtration, and/or disinfection. An overall mechanical systems evaluation must be made available to the Owner before a final decision on the mechanical system is made. The Design Consultant shall ensure the mechanical systems can be serviced and maintained by locally available tradespeople. The system must be accessible for maintenance and repair. If the mechanical system is at ground level, adequate security must be provided.

As work of Phase 1, the Consultant shall specify to what degree, if any, that system commissioning will be required/recommended for the project, and the Design Consultant shall advise Owner on procurement options. During Phase 2, the Consultant shall document the commissioning scope of work and basis of design of applicable systems and assist the Owner with incorporating the requirements into an RFP for independent commissioning of the building.

The New Fire Training Academy design should incorporate a photovoltaic system. Consultant shall explore, make design recommendations, and provide a cost analysis for proposed systems (e.g. roof-mount, ground-mount, parking lot canopy, etc.). At a minimum the design shall include orientation and layout for a solar panel system; reserved areas for modules and inverters; reserved capacity for interconnection in electrical panel; and, if applicable, method of attaching to the roof and calculation of structural load capacity available for the solar system.

The parking lot will be designed to minimize foot traffic that crosses drive aisles and will offer the minimum required standard and ADA-compliant spaces. Barrier free accessible parking is preferred. Site layout and landscaping will be designed in coordination with campus amenities and landscaping, meeting all LFUCG Ordinances. The design process will be collaborative for the entire project, with input from the LFD stakeholders and Capital Project Management.

This Request for Proposal includes all phases of design and outlines each phase with minimum requirements and recommendations within two project stages; however, only funding for Stage 1 (Design) has been funded. Detailed third-party cost estimates will be required at four project milestones throughout the design process: Schematic Design, 95%; Design Development, 95%; Construction Documents, 50%; Construction Documents, 95%. The Owner also reserves the right to contract with and consult any other third-party cost estimators or general contractors for cost estimating and evaluating building systems, structural components, materials, labor considerations, etc.

The Consultant's cost estimating will be used by the Owner to budget for construction. In the event that construction is funded, the Consultant's contract will be amended to include Stage 2 (Construction Administration) based on fees designated on the Form of Proposal provided in response to this RFP. Stage

1: Design Stage, includes a schematic design phase, design development phase, construction document phase, and a bidding phase. Stage 2: Construction Administration Phase includes construction administration, and a required eleventh month walkthrough to review items that may fall under the one-year workmanship warranty provided by the contractor. The Design Consultant will present design and cost estimate information to LFUCG Administration/Council as required. Refer to Section 1.3a - STAGE 1: Design Stage below for a complete list of project deliverables.
Design recommendations shall include, at a minimum, comparisons of probable costs, product lifecycles, maintenance requirements, and site considerations. Bid Alternates will likely be included in the final design documents to meet Owner's budget limitations. This project will follow a Design-Bid-Build delivery method in which Bid Documents should be ready to advertise in the winter of 2027. Refer to the Project Schedule (Attachment C).

This project will also qualify to be submitted to the LFUCG Division of Planning for a PFR (Public Facility Review) as a formality for all new LFUCG capital construction. This is typically submitted at the end of Design Development or early in the Construction Document Phase. The project information is submitted, including drawings and narrative statements to outline how the project aligns with Lexington's Comprehensive Plan. The LFUCG Planning staff will create a report that summarizes the request and presents the information to the Planning Commission at their regularly scheduled meetings. A representative from the design consultant should plan to be present to answer any additional questions.

The design consultant is responsible for final submission of the contract documents to Lexington Building Inspection and any other applicable LFUCG Divisions or AHJ (Authorities Having Jurisdiction) for building code and ordinance review to obtain building permits. This also includes the CAP Application and Fee to the LFUCG Division of Water Quality, E911 Addressing and LFUCG Division of Engineering and Water Quality for Land Disturbance Permits and NOI from the KY DOW.

STORM SHELTER:
A storm shelter will be required by the building code for all public safety facilities. The shelter is required to meet the ICC 500 requirements. This area is Zone 4, which must be able to withstand wind speeds of 250 miles per hour. The storm shelter is required to protect the first responders for 2 hours so they can respond to the public need following the event. The storm shelter should be an existing program space that is used for another function so that the shelter does not sit empty and dark. The shelter must have access to restrooms, water, venting, and lighting. With no intended basement for this new proposed two-story facility, the storm shelter design should be strategically integrated into the new construction.

FEDERAL GRANT SUBMISSION:
This project has been submitted to the federal Community Project Funding (CPF) for FY27 Appropriations through U.S. Representative, Andy Barr (KY-06). The submission to the Appropriations Committee was sent on 3/9/26 via the Community Development Fund – Economic Development Initiative (EDI), Department of Housing & Urban Development (HUD).
Should this project qualify for this federal grant and LFUCG accepts as a recipient, the final construction documents shall abide by all requirements associated with the funding. This can include Build America, Buy America (BABA) enactment and/or any other compliance rules. The design consultant shall work directly with LFUCG to incorporate these requirements and ensure compliance throughout the entire project.

TOWN BRANCH TRAIL & SUPPORTING DOCUMENTS:
LFUCG will provide supporting documents to the awarded design consultant that pertains to this property and project, including:

- LFUCG Town Branch Trail Extension Construction Documents via LFUCG Division of Engineering
- GIS Flood Plain Mapping & Town Branch Trail Floodway Study
- LFUCG GIS Utility and Fiber Mapping
- CAD and PDF Site Survey via Endris Engineering

- Geotechnical Reports performed by Thoroughbred Firm
- 2025 LFUCG LFD Fire Training Academy - Phase 1 Site Development Project construction docs via GRW
- 2024 LFUCG LFD Fire Training Academy Campus - Feasibility Study via Brandstetter Carroll Inc

1.2 - PROGRAM & TECHNICAL REQUIREMENTS

The New Fire Training Academy is anticipated to be approximately 48,000 – 50,000GSF on approximately 15 acres of the existing Fire Training Academy Campus located at 1375 Old Frankfort Pike. The scope for this project area is the footprint of the existing building and the approximately 100' perimeter around it. This is due to the rest of the major site development occurring currently under a separate contract to provide the support for parking and training pad areas for this one-for-one New Fire Training Academy facility replacement.

The building shall be sited in accordance with all codes, zoning, and applicable regulations. The building should be oriented to address Old Frankfort Pike and the extended LFUCG Town Branch Trail running parallel between Old Frankfort Pike and the internal property drives. Site entrances/exits shall account for pedestrian right-of-way, large apparatus access, turning radius, proper sightlines, and appropriate alignment and distances from adjoining properties and roadways.

Building configuration, material assemblies, lighting, and building technology shall provide a reasonable level of safety and security per the building typology. Consultants shall collaborate with the LFUCG Lexington Fire Department and LFUCG Capital Project Management for safety and security strategies to be implemented within the design. At a minimum, the design shall include interior door locks and considerations to support Active Shooter protection and a system to lock down the building if there is an outside threat. The orientation of the parking lot and drive need to be designed to allow EMS/Fire/Police to render aid while maintaining traffic flow in the parking lot. Additional interior and exterior design considerations shall implement universal design with ADA compliance, life safety, egress paths, exit signage, exit lighting, etc. shall be evaluated for compliance with the latest.

Consultants shall collaborate with the various LFUCG Departments and end users, including Capital Project Management, Lexington Fire Department, LFUCG IT, Computer Services, Energy Initiatives, EQPW, E911, and Traffic Engineering to ensure all required scope elements are met. Programming and design considerations include:

"DIRTY" AREAS: (15,000SF)

Vehicle Apparatus Bays – 8,000SF

- Vehicle Bays: Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props – 1,600SF each | Quantity = 4 = 6,400SF
- POV Bays: Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props – 1,600SF each | Quantity = 1 = 1,600SF

Bay Support Areas - 2,700SF

- Gear Room: 100 Gear Lockers / Exhaust / Fans / Floor Drawings – 600SF
- Tool Room: Workbench / Floor Drains – 200SF
- Decon/Laundry: Shower / Sink / Floor Drains/ Emergency Eye Wash/Shower – 200SF
- Gear Wash: 2 Gear Washers / 2 Linear Drying Racks / Regular Washer & Dryer – 200SF
- Storage Rooms: Fire and EMS Storage / Access Control – 600SF (300SF/each – Quantity = 2)
- SCBA: Workbench / Bottle Storage / SCBA Machine / 24-Hour Access / Access Control – 180SF
- SCBA Maintenance: Workbench / 100 Bottle Storage / SCBA Machine – 250SF

- Technical Rescue Training: Combined in Bay Spaces / Landing Area – 100SF
- Auditorium Storage: Tables and Chairs / Portable Stage Storage – 200SF
- General Storage Room: Shelving – 200SF
- Dirty Restroom: Sink / Water Closet / Hose Bib / Near Decon – 70SF

Bay Support Areas – 4,200SF

- Large Classrooms: A/V / Monitors / Markerboards / Air Walls for Division / 60 seats – 1,800SF
- Classroom Storage Room: Shelving / Tables & Chairs / Props – 400SF (200SF/each – Quantity = 2)
- Medium Classroom: A/V / Monitors / Markerboards / Air Walls for Division / 45 seats / Shared with Fire & EMS – 2,000SF

"CLEAN" AREAS: (26,175SF)

Entry – 1,470SF

- Vestibule: ADA Accessible – 70SF
- Lobby: ADA Accessible / Displays / Historic Artifacts – 800SF
- Public Restrooms: Water Closets / Sinks / Fountains / ADA Accessible – 600SF (300/each – Quantity

Fire Training Areas – 400SF

- Classroom Storage Room: Shelving / Tables & Chairs / Props – 400SF (200SF/each – Quantity = 2)

EMS Training Rooms – 5,665SF

- Breakout Rooms: A/V / Monitors / Markerboards - 1,440SF (360SF/each – Quantity = 4)
- Large Classroom: A/V / Monitors / Markerboards / Air Walls for Division / 60 Seats – 2,700SF
- Classroom Storage Room: Shelving / Tables & Chairs / Props – 300SF (10SF/each – Quantity = 3)
- Simulation Lab: Multi-Purpose / Access Controlled – 625SF
- Climate Controlled Storage / Access Controlled – 300SF
- Cold Storage Area: Access Controlled – 300SF

Administration Areas – 3,760SF

- Executive Officer: Desk / File Cabinet / Bookcase / Monitor – 200SF
- Training Officer Office: Desk / File Cabinet / Bookcase / Monitor – 120SF
- Admin. Specialist: Desk / File Cabinet / Bookcase / Monitor – 120SF
- Large Conference: Table & Chairs / Monitor / Markerboard / 20 People – 600SF
- Work/Copy/Mail Room: Mailboxes / Copier / Work Counter / Cabinets – 90SF
- Training Instructor Office: 12 Workstations 8'x6' / Monitors / Bookcase – 720SF (60SF/each)
- A/V Office: Desk / File Cabinet / Bookcase / Monitor – 120SF
- Video Production / Multimedia: Soundproof / Quiet Area / A/V Equipment / Graphic Preparation Area / Laptop Cart Storage – 250SF
- Records Storage: Lockable / Fireproof / Access Control – 200SF
- Recruiting Offices: Desk / File Cabinet / Bookcase / Monitor – 240SF (120SF/each – Quantity = 2)
- Background Investigators: 3 Workstations 8'x6' / Monitor / Bookcase – 180SF (60/SF each)
- Admin. Specialist: Desk / File Cabinet / Bookcase / Monitor – 120SF
- Recruiting & Hiring Entry: Seating / Monitor – 70SF
- EMS Instructor Office: Desk / File Cabinet / Bookcase / Monitor – 480SF (120SF/each - Quantity = 4)
- Wellness Coordinator: Desk / File Cabinet / Bookcase / Monitor / Near Fitness / Future Growth for Workstations for Future Staff – 250SF

Staff Support Areas – 12,970SF

- Locker Room: 120 half-size 2'x2' Metal Lockers / Benches – 400SF
- Locker Room: 15 full-size 2'x2' Metal Lockers / Benches – 400SF
- Gender Neutral Restroom: with Showers – 1,710SF (90SF/each – Quantity = 19)

- Laundry: Laundry Equipment w/Hookups / Venting / Shelving / Near Staff Locker Room – 80SF
- Custodial Closet: Mop Sink / Shelving – 40SF
- Linen Closet: Shelving – 40SF (20SF/each – Quantity = 2)
- Fitness: Exercise & Training Equipment / 24-Hour Access / Near Locker Rooms and Showers / Fans / Monitors – 4,500SF
- Kitchen: Commercial Kitchen & Appliances / Pantry / Near Cafeteria – 600SF
- Food Storage: Dry / Freezer / Coolers – 200SF
- Cafeteria: Seating for 60 people / Microwaves / 2 Refrigerators – 2,300SF
- Bunk Rooms: 12 Bunks / Nightstands / Monitors / Fans – 600SF (50SF/each – Quantity = 12)
- Quarter Master Room: Shelving / Racks / Electronic Tracking / Access Controlled / 24-Hour Access / Exterior Access Point – 600SF
- Rehabilitation Area: Near Fitness Room / Limited Access / Monitors – 1,500SF

Physical Plant – 1,910SF

- Mechanical: Floor Drain / HVAC Equipment – 800SF
- Electrical: MDP / Switchgear / Panels / Fire Alarm / Floor Drain – 500SF
- Water: Oil Water Separator / Water & Fire Entry Risers / Water Heaters – 150SF
- MDF/Server Room: Separate HVAC / Facility Wi-Fi Spots / IP Phone System / Fiber Entry / Grounding / Servers / Floor Drain / Comm Equipment / Cable Tray – 300SF
- Antennae Room: Floor Drain / Antennae Equipment & Entry / Grounding / Station Alerting – 80SF
- I.T./IDF: Comm Equipment / Cable Tray / Fiber – 80SF

15,000SF	Sub-Total of “Dirty Areas”
26,175SF	Sub-Total of “Clean Areas”
41,175SF	Total Net Building SF
8,235SF	Circulation, Walls and Corridors Grossing Factor of 20%
49,410SF	**Total Gross Square Footage**

Exterior Design Considerations

- No Curb separating front drive from walk
- Entrance canopy completely attached to building to prevent leaks
- Mechanical courtyard / Generator / Enclosed with perimeter wall system to hide aesthetically
- Low maintenance landscape
- Landscape should not obscure sight lines to building or create “hiding spaces”
    - Consider exterior camera placement so that landscape does not obscure view
- Receiving area / Loading
- Staff and required ADA-Compliant parking spaces and adjacent to entrance
    - Wheel stops at all parking spots that have signs
    - Maximize close proximity parking
- Shaded exterior space for patio at rear of building
    - With benches and seating (exterior furnishings should be low maintenance)
    - Use Parks standards and price contract for exterior furnishings.
    - Secured area with fencing system and yard drains
    - Near cafeteria / connection to natural gas for grill / Electrical
- Vandal resistant finishes
- Outdoor storage space or rooms with direct exterior access / access controlled

Additional Notes:

- All furniture and casework to be coordinated with Owner to ensure proper power, data, and blocking locations. Power & data shall be located to allow for flexible use and arrangements.

- Consultants shall coordinate with Owner for LFUCG standards. Owner will provide the design consultant with all available LFUCG standards as necessary.
- Consultant shall explore opportunities of operable partitions between large spaces to allow for greater capacity and flexible program use.
- Consultant shall coordinate all colors and finishes with the Owner graphics. Sample boards for interior and exterior finishes shall be submitted and reviewed with the Owner for approval.
- All exterior & interior finish materials should be long-lasting, durable, and easily maintained.
- Building exterior and parking area shall be well lit to provide for safe use of the facility. Exterior lights should be resistant to vandalism and be energy efficient.
- Consultant should consider permeable surfaces and landscaping options when evaluating storm water management.

The Consultant shall provide continual coordination with the owner and provide recommendations based on cost, quality, schedule, maintenance, life cycle, constructability, and applicability to the specific project. A preliminary program of spaces has been outlined above, but the Consultant shall be responsible for updating and finalize the Program of Spaces as necessary with Owner approval. The Consultant shall prepare alternates at the Owner's request, or as recommended by the Consultant and approved by Owner.

1.3 - SCOPE OF BASIC SERVICES

General Requirements:

a. **Council & Planning Commission Presentations -** The Consultant must be available for Council Work Sessions and/or Council/Planning Commission Meetings to make presentations, answer design questions, and provide change order information as necessary.
b. **Design Schedule** - See Project Schedule (Attachment C). The Consultant shall review the design schedule and submit a strategy of reaching milestone dates. Any proposed deviations to the attached schedule should be identified in the proposal.
c. **Deliverables -** All design submittals shall consist of (2) hard copies and (1) digital PDF copy at 98% submissions, and (3) hard copies and (1) digital PDF at the Final Submission of each Phase. Typical drawing sheet size to be 24"x 36" unless approved otherwise. Specifications, reports, and other supplemental documents shall be on 8-1/2" x 11" sheets unless approved otherwise. Supplemental drawings, revisions, and clarifications may be on 8-1/2" x 11" sheets, or 11" x 17" sheets. All other sheet sizes are to be approved by LFUCG Project Manager. LFUCG Project Manager may request half-size sets of drawings as a portion of the required amount of hard copy sets per each submission.
d. **Owner Review Meetings/Presentation -** The Consultant shall be responsible for attending review meetings/presentations at the end of each design phase, and as otherwise noted in the RFP. Refer to design schedule (Attachment 'C').
e. **Value Engineering -** shall be performed at the end of each design phase as necessary to meet the project budget.
f. **Authorization to Proceed –** Where multiple phases of work are outlined, the Consultant shall not proceed with the next stage or phase of work until cost and timeline estimates are aligned with the Owner's budget and schedule. Authorization to commence with the next phase of work will be issued in writing from the Owner (LFUCG) after approval of previous design documents. Any work performed by the Consultant without this written authorization will be at the Consultant's risk and will be a voluntary contribution to the project.

1.3a - STAGE 1: Design Stage

The design stage of the project shall include all phases of design as outlined below. The Consultant shall collect all necessary information, provide updates to the LFUCG Project Manager, acquire continual input from the Owner, evaluate and implement Owner's comments, advocate for the Owner, maintain documentation of the design process, and provide all deliverables as outlined by the RFP per the design schedule. Minimum requirements for each design phase are listed below. However, it is the Consultant's responsibility to communicate the design intent and full scope of work. Content established in the minimum requirements may be shown or indicated where the content is best communicated. The Consultant shall be responsible for determining additional content as necessary to complete the full design intent based on the Owner's Project Requirements. The scope of this project will include full professional services for new construction and site development. The Consultant shall seek continual input from the Owner throughout each phase of the project.

Phase 1: Schematic Design - Schematic Design Documents shall consist of drawings and other documents necessary to convey the overall intent. Preliminary selections of major building systems and construction materials shall be noted on the drawings or described in writing in a schematic design narrative. Proposed building systems shall be evaluated on probable costs, product lifecycle, and maintenance requirements. Continual input from the Owner shall be actively sought throughout the schematic design process. At the completion of the Schematic Design Phase the general design intent of the project shall be expressed and evident. See below for minimum Schematic Design Submission Requirements:

- ☐ **Program of Spaces/ Defined Scope of Work**
  Written assurance from the design professional that the building square footage, and/or defined scope of work depicted on the drawings is consistent with that shown in the program of spaces, and/or proposed scope of work. If there is a discrepancy between these documents, an explanation of the discrepancy shall be provided.

- ☐ **Preliminary Estimate of Probable Construction Cost.**
  The Probable Construction Cost shall be itemized with unit costs. If the Consultants Preliminary Estimate of Probable Construction Cost is over an Owner provided construction budget, the Consultant must include value engineering options, and written recommendations of how to reduce the cost to meet the provided budget.

- ☐ **Schematic Design Narrative & Documentation**
  Written documentation and justification of proposed major building systems. Identify each major building system (HVAC systems, building envelope, electrical, plumbing, etc.). Provide probable costs, product lifecycle, and maintenance requirements of each system. Provide a written recommendation for the systems to be used. Specify to what degree, if any, that system commissioning will be required/recommended for the project and advise Owner on procurement options.

- ☐ **Schematic Design Drawings** (include at a minimum):
  - Cover Sheet: Project name, project address, date of submission, drawing index with sheet names and numbers listing all drawings included within the submission, list of abbreviations and project specific notes, vicinity map of general project location with north arrow, breakdown of building square footage by floor with total, use & occupancy classification, construction classification, phase of submission, and owner name & contact information.
  - Site Plan: Incorporate Boundary and Topographic Survey Data, Preliminary Grading Plan, and Utility Plan showing anticipated proposed tie-in locations where applicable.

- Floor Plans: Room descriptions and square footages of each space, plumbing fixtures, all major MEP components applicable to the scope of work at the schematic level, line diagrams as necessary, and overall dimensions.
- Elevations: Exterior elevation drawings sufficient to describe the general layout and character of proposed new construction and/or major renovation. All major construction materials and/or components shall be identified in drawings. All major building elevations shall be required for new building construction.

Schematic Design Deliverables:
(2) Full hardcopy sets, and (1) digital set of submission items are due at the 98% submission as indicated on the design schedule (Attachment C) unless approved otherwise. Consultants are required to present the submission in person at an Owner's review meeting and keep a record of the meeting minutes along with all Owner comments and action items. The Consultant shall distribute the meeting minutes within (3) business days of the Owner review meeting. LFUCG Project Manager will review the submission, and will send in writing, additional review items and comments within (5) business days. The Consultant shall incorporate all applicable review comments and submit three full hard copy sets and one digital set of all submission items for the final schematic design submission.

The Consultant shall not proceed with the next phase of work until cost and timeline estimates are aligned with the Owner's budget and timeline and approved by the Owner. Authorization to commence with the next phase of work will be made in writing from the Owner. Any work performed by the Consultant without this written authorization will be at the Consultant's risk.

Phase 2: Design Development

The Design Development Documents shall illustrate and describe the development of the approved Schematic Design Documents. Design Development Documents shall consist of documents including plans, sections, elevations, and typical construction details that effectively communicate the overall scope of work, layout, dimensions, quantities, and specific building systems. The Design Development Documents shall include outline specifications that identify major materials and systems and establish in general their quality levels. All major building systems shall be expressed in a clear graphical and/or written manner. The design approach and aesthetic of the building envelope improvements shall be fully communicated within the Design Development Submission. Continual input from the Owner shall be actively sought throughout the Design Development process. At the completion of the Design Development Phase the design intent of the project shall be fully expressed and evident. See below for minimum Design Development Submission Requirements:

☐ **Program of Spaces/ Defined Scope of Work**
Written assurance from the design professional that the building square footage, and/or defined scope of work depicted on the drawings is consistent with that shown in the program of spaces, and/or proposed scope of work. If there is a discrepancy between these documents, an explanation of the discrepancy shall be provided.

☐ **Independent Third-Party Estimate of Probable Construction Cost at 95%**
The consultant shall engage with a third-party estimator for a full Itemized Construction Cost Estimate including unit costs and quantities per division of work. If the Construction Cost Estimate is over the Owner provided construction budget/ approved construction cost from a previous phase, the consultant shall work with the third-party estimator to include value engineering options to meet the Owner's Budget. The consultant shall provide a written evaluation of value engineering options with a recommendation on how to reduce the cost to meet the provided budget.

☐ **Outline Specification**

Outline specifications to include all major building, and/or project components & systems per division of work specific to the project. Identifies the major materials & systems and establishes in general their quality levels. Basis of design for major materials, components, and systems to be identified, and coordinated with the Owner. Include Cover Sheet, and full table of contents.

☐ **Commissioning Plan**

The Commissioning requirements shall include basis of design of applicable systems for Owner to incorporate into RFP for independent commissioning of project.

☐ **Design Development Drawings** (include at a minimum):

- Site Plans: Key plan, property lines, building footprint, parking & paving, exterior steps & ramps, sidewalks, fencing. Identify locations of materials (asphalt, concrete, pavers, lawn, etc.), storm water management, spot grades at all entrances & new building corners, grades (at drives, sidewalks, parking), location of all necessary utilities (power, water, sewer, communication, etc.), and datum points for locating/ placing new construction.
- Structural Plans: Key plan, layout of floor & roof framing plans showing major structural components including sizes/ weights, descriptions of floor deck & concrete systems, locations of retaining walls or non-standard foundations and/or framing systems, bearing height of structural elements, finish floor elevations, proposed bottom of footing elevations, location dimensions for all major structural elements/ dimensional tie-ins to architectural plans, narrative describing structural systems for all footings, foundations, floors, roof, and/or modifications.
- Architectural Plans: Key plan, Show all major plan elements where applicable (columns, exterior walls, interior partitions, doors/ door swing, windows, stairs, handrail/ guard rails, elevators, interior frames & openings, casework/ built in items, equipment, etc.), room names and numbers, door numbers, Overall building dimensions, column line dimensions tied to exterior wall dimensions, wall thicknesses, stair & ramp dimensions, continuous string of dimensions (minimum of one longitudinally & one laterally) through the building or space that equals the overall dimensions, ceilings (show grid with lighting & HVAC, ceiling heights, changes in ceiling elevations, note materials, show all ceiling mounted items), callouts for building elevations & sections, door & window tags, roofing elements (locate: roof drains, gutters, downspouts, overflows, taper insulation, roof slops, major flashing, roof curbs, parapets, ridge lines, valleys, roof ladders, hatches, etc.), preliminary finish schedule (floors, walls, and ceilings).
- Elevations: Exterior elevations of all new construction from an orthogonal view (include bump-out returns, elevations above the roof line, dormer faces/sides, etc.), show locations of major equipment, finish grade, windows & doors, finish floor heights, bearing heights, top of wall heights, roof pitch, note all materials & show material extent. Show interior elevations of complex areas requiring multiple material transitions, space requirements for built-ins, and/or equipment. Dash & label all required clearances.
- Building Sections: Show all major building elements that come in contact with the section plane (roofs, exterior walls, foundations, floors, beams, joist, windows, doors, openings, ceilings, soffits, insulation, finish grade, etc.), roof slope, wall section call outs. Provide minimum of two major building sections (one longitudinally & one laterally).
- Plumbing: Key plan with legend, preliminary plumbing fixture schedule & equipment schedules for all plumbing equipment (provide makes & model, if available), locate all plumbing fixtures & equipment, locate main water line and include sizing, locate main sewer/ vent lines and include sizing, locate roof drain lines and include sizing. Identify where water, sewer and storm enter/ exit the site/ facility.

- Mechanical: Key plan with legend, preliminary equipment schedules with sizes and quantities from basis of design (provide make & model, if known), locate all major HVAC equipment. Provide at a minimum, single line diagram of ducts and pipes sufficient to show zone locations including preliminary sizing for all ductwork mains and piping system main lines on plan view. Locate roof top equipment, fans, HVAC, etc. Ensure all roof top equipment locations allow for proper clearances in relation to parapet walls, exhaust vents, intake louvers, etc. Confirm proper existing and/or new structure with equipment weight & vibrations. Coordinate & allow for proper equipment curbs, roof repairs, and proper flashing. Coordinate locations of all ground equipment, clearances, concrete pads, in-take locations, screen walls / enclosures, etc.
- Electrical: Key plan with legend, power plan with legend showing locations of main and distribution panel boards/ outlets along with service entrance and transformer locations, and emergency power systems (generators/ misc. systems). Lighting plan with legend showing the location of lighting, fixture type, controls, dimming systems, exit lighting, and emergency egress lighting. Preliminary fixture schedule showing all fixture types with basis design identified. (make & model, if known). Communications plan with legend showing location of fire alarm pull stations (if applicable), data outlets, phone outlets, etc. Site utility service connections & details, technology documents showing cable tray, outlet locations, main technology closets and outlet details.
- Energy: Report to include energy modeling and life cycle cost analysis as basis for mechanical system selection.

☐ **3D Images/ Samples:**

Provide color 3D images of all 4 major elevations to show the proposed new building envelope. 3D Images may be sketched by hand, exported images from sketch-up, rendered images from Revit, or other preferred programs. The intent of the 3D images is to provide an aesthetic understanding of the proposed building envelope. Material types, configurations, and overall aesthetic shall be clear and evident. Consultants shall submit sample boards of all major exterior materials (brick, metal panels, stone/ casts tone, fascia material, window finishes, glass samples, etc.)

Design Development Deliverables:

(2) Full hardcopy sets, and (1) digital set of submission items are due at the 98% submission as indicated on the design schedule (Attachment C) unless approved otherwise. Consultants are required to present the submission in person at an Owner's review meeting and keep a record of the meeting minutes along with all Owner comments and action items. Only one material sample board is required at 98% submission unless updates are necessary. If updates are necessary, an updated material sample board may be resubmitted at final completion of the phase. The consultant shall distribute the meeting minutes within (3) business days of the Owner review meeting. LFUCG Project Manager will review the submission, and will send in writing, additional review items and comments within (5) business days. The consultant shall incorporate all applicable review comments and submit three full hard copy sets and one digital set of all submission items for the final design development submission.

The Consultant shall not proceed with the next phase of work until cost and timeline estimates are aligned with the Owner's budget and timeline and approved by the Owner. Authorization to commence with the next phase of work will be made in writing from the Owner. Any work performed by the Consultant without this written authorization will be at the Consultant's risk.

Phase 3: Construction Documents

The Construction Documents shall illustrate and describe the further development of the approved Design Development Documents. Construction Documents shall consist of documents including fully noted drawings and specifications that effectively communicate the entire design intent and full scope of work including all approved alternates. Drawings and specifications shall be coordinated by the design consultant for quality and completeness. Continual input from the Owner shall be actively sought throughout the Construction Document process. The consultant shall coordinate with LFUCG Project Manager and LFUCG Division of Central Purchasing. LFUCG Front End Documents, Parts I through VIII will be completed by Central Purchasing with assistance from the design consultant and inserted into the Project Manual. Parts I through VIII include: I- Advertisement for Bids, II- Information for Bidders, III- Form of Proposal, IV- General Conditions, V- Special Conditions, VI- Contract Agreement, VII- Performance and Payment Bonds, VIII- Addenda. Consultants shall review Parts I – VII, assist with project specific information, and complete the rest of the Project Manual including cover sheet, indexes, technical specifications, etc. The completed construction documents shall convey the entire scope of work in a level of detail for quality construction of the full project scope that meets all applicable codes, regulations, and requirements. See below for minimum Construction Documents Submission Requirements:

☐ **Program of Spaces/ Defined Scope of Work**
Written assurance from the design professional that the building square footage, and/or defined scope of work depicted on the drawings is consistent with that shown in the program of spaces, and/or proposed scope of work. If there is a discrepancy between these documents, an explanation of the discrepancy shall be provided.

☐ **Independent Third-Party Estimate of Probable Construction Cost at 50% & 95%**
The consultant shall engage with a third-party estimator for a full Itemized Construction Cost Estimate including unit costs and quantities per division of work. If the Construction Cost Estimate is over the Owner provided construction budget/ approved construction cost from a previous phase, the consultant shall work with the third-party estimator to include value engineering options to meet the Owner's Budget. The consultant shall provide a written evaluation of value engineering options with a recommendation on how to reduce the cost to meet the provided budget.

☐ **Project Manual**
Specifications shall include all major building, site, and project components/ systems per division of work specific to the project. Consultant shall provide all necessary Divisions (Divisions 01 through 33). Division 01 – General Requirements shall be coordinated with LFUCG General Conditions, and with the LFUCG Project Manager. Consultants shall coordinate basis of design, equal manufacturers, warranties, and applicable sample/ mock-up submittal requirements with LFUCG Project Manager for all major building systems. Consultants shall be responsible for the complete Project Manual and shall include a full table of contents. LFUCG's Central Purchasing will provide LFUCG Front End Documents to be inserted into the Project Manual before advertising for bids. The Consultant shall coordinate and assist as necessary with Central Purchasing on all LFUCG Front End Documents pertaining to project specific information. Project Manual Cover Sheet shall include at a minimum: LFUCG Logo, Phase, Owner (LFUCG) Information, Project Name, Project Address, Date, and Bid Number.

☐ **Construction Document Drawings** (include at a minimum):

- Cover Sheet: Project name, project address, date of submission, drawing index with sheet names and numbers listing all drawings included within the submission, list of abbreviations and project specific notes, vicinity map of general project location with north

arrow, breakdown of building square footage by floor with total, use & occupancy classification, construction classification, phase of submission, owner name & contact information, and Bid Number as issued by LFUCG.

- Civil: Site layout plans and details including property lines, buildings/ structures, curb cuts, parking & paving, exterior steps & ramps, sidewalks, fencing, curbs, locations of materials (asphalt, concrete, pavers, lawn, etc.), dumpster location & pad/enclosure details, site signage, miscellaneous details (light bases, bollards, curbs, etc.), and all other site improvements. Landscaping plans and details as required by code, ordnances, and/or other required regulations. Site grading plans and details with spot grades at all entrances & new building corners. Include datum points for locating/ placing new construction (coordinate with architectural). Storm water management, sediment and erosion control plan & details. Site profiles and sections. Utility plans, details, and profiles indicating locations of all utilities, tie-ins, etc. (power, water, sewer, communication, etc.). Include all details, legends, and schedules as necessary to convey full scope of work. Include key plan, tags, call outs, etc.
- Structural: Structural comments sheet with all code and design basis noting all design parameters, abbreviations, legends, etc. Dimensioned foundation plans with slab notes and details. Dimensioned layout of floor & roof framing plans showing structural components including sizes/weights. Note all openings, jointing, and edge conditions. Include bearing height of structural elements, finish floor elevations, footing elevations, and location dimensions for all major structural elements/ dimensional tie-ins to architectural plans. Provide sections and details to show all typical and unique foundation and framing conditions. Complete all foundation, column, beam, and lintel schedules and details to convey full scope of work. Include key plan, tags, call outs, etc.
- Architectural Plans: Show all major plan elements (columns, exterior walls, interior partitions, doors/ door swing, windows, stairs, handrail/ guard rails, elevators, interior frames & openings, casework/ built in items, equipment, etc.), room names and numbers, door and window tags/numbers, partition tags, legends, overall building dimensions, column line dimensions tied to exterior wall dimensions, wall thicknesses, stair & ramp dimensions, dimension all interior partitions and openings, provide continuous string of dimensions, and key notes to covey full scope of work. Life safety plan to show all exists with actual load and capacity (verify that minimum egress requirements are met), show egress paths per code lengths, verify stair/ ramp/ railing requirements per code, verify wall ratings per code, review plan for handicapped access. Reflected Ceilings to be coordinate with MEP and structural. Show grid with lighting, HVAC, ceiling heights, changes in ceiling elevations, note materials, access panels, and all other ceiling mounted items). Roof Plans and details shall be coordinate with MEP and structural. Locate roof drains, gutters, downspouts, overflows, taper insulation, roof slops, major flashing, roof curbs, parapets, ridge lines, valleys, roof ladders, hatches, etc. Indicate R-value and identify minimum roof insulation at low points. Finish plans to indicate locations and extents of finish materials, material transitions and locations, room names/ numbers, and casework locations. Provide furniture layout to be coordinated with MEP (electrical and data locations to be allow for flexibility in furniture arrangement. Enlarged plans to include kitchen, restrooms, stairs, display areas, etc. Architectural Plans to Include all details, legends, and schedules as necessary to convey full scope of work. Include key plan, tags, call outs, etc. Coordinate with Civil, Structural, and MEP.
- Building Elevations: Exterior elevations of all new construction from an orthogonal view (include bump-out returns, elevations above the roof line, dormer faces/sides, etc.), show locations of major equipment, finish grade, windows & doors, finish floor heights, bearing heights, top of wall heights, flashing, gutters, downspouts, trims, and roof pitch. Note all materials & show material extents and transitions. Show interior elevations of complex

areas requiring multiple material transitions, space requirements for built-ins, and/or equipment, display areas, and restroom plumbing walls (where heights, arrangements, and finishes need clarification). Dash & label all required clearances. Provide complete notation, call outs, and coordination.

- Sections: Building Sections to show all major building elements that come in contact with the section plane (roofs, exterior walls, foundations, floors, beams, joist, windows, doors, openings, canopies, ceilings, soffits, insulation, finish grade, etc.). Indicate roof slope and show wall section call outs. Provide minimum of two complete major building sections (one longitudinally & one laterally). Show additional sections as required to convey full scope of work. Show call outs for wall sections were applicable. Provide wall sections for typical conditions, and at all unique conditions (material and construction type transitions, canopy locations, major entrances, etc.). Note all materials and construction, and provide call outs for larger details. Provide larger details for all areas not conveyed at smaller scales. Show material transitions, and terminations. Show flashing, sealant, and other water proofing details. Provide complete notation, call outs, and coordination.
- Doors & Windows: Dimension all doors, door frames, and windows, show elevations and jamb/sill heights, schedule and/ or note all materials/ material types, show swing directions, and coordinate hardware. Show head, jamb, and sill details for all openings. Coordinate with structural, interior finishes, and window treatments (blinds, shades, tints, etc.). Schedule all doors and windows. Door schedule to include: Door number, door size, door material, glass type, door elevation reference, frame material, frame type reference, fire rating, head reference, jamb reference, sill reference, hardware set number (coordinate with specification – hardware specification to include ANSI hardware function.)
- Plumbing: Completed plumbing systems foundation drain lines, storm, and sanitary sewer and vent lines, complete water supply system and location of all plumbing fixtures, including hose cabinets and sewage disposal system. Size all piping including valves, on plan view. Include riser diagrams and details for all systems. Completed fixture and equipment schedules including makes and models for all systems to adequately show the basis of design. For areas of concentrated equipment, provide enlarged plans for both plan and section views. Indicate the design intent for fire protection system desired, and special equipment (i.e., fire pumps, holding tanks) as necessary and where applicable for the project. Include key plan, legends, tags, call outs, etc.
- Mechanical: HVAC plans showing completed systems with size and type of heating and cooling units. Show all connections, pumps, supply and return lines with sizes, valves and slopes, motors, air-handling equipment, and fans. Including types, locations, sizes and capacity of all ducts, grilles and ventilator. Provide plans showing ductwork, piping, and mechanical devices with sizes. Note sound/vibration attenuation measures. Show locations of fire dampers, balance dampers, access panels, and housekeeping pads sized and located on plans. Show completed equipment schedules including makes, models, fan RPM speed, etc., for all systems. For areas of concentrated equipment, provide enlarged plans and section views. Show all piping sized including valves on plan view. Include riser diagrams and details for all systems. Complete control schematic diagram with terminations which correlate with the sequence of operation in the specification. Consultant to advise Owner of equipment and components that affect the building's aesthetic, and/or is in direct view from an exterior pedestrian perspective. Include key plan, legends, tags, call outs, etc.
- Electrical: Use standard symbols to show all connections; inside and outside, wall, floor, and ceiling. Show locations and size of all conduits, capacity of outlets, network drops, location and details of switch panels, circuit breakers and fusing, location and connections for all bells, alarms, special outlets, etc. Electrical light fixture schedule with makes and models to adequately show the basis of design. Lighting control details and risers. One-line

diagrams showing all panel sizes, conduit requirements and wire sizes. Panel schedules for all new, renovated and existing panels. Plans showing locations of all panels, outlets, light fixtures, receptacles, switches, fire alarm devices (if applicable) and equipment, emergency power systems, etc. Show mechanical equipment connection schedule. For areas of concentrated equipment, provide enlarged plans and section views. Coordinate technology with LFUCG. Show detailed rack systems for T/D, video/TV, sound, security, intercom, cctv and wireless outlet systems. Provide completed equipment schedules including makes and models for all systems. Provide riser diagrams for all systems. Show incoming service connection details, completed site utility service connections and detail, power plan with legend showing locations of main and distribution panel boards and outlets. Provide lighting plan with legend showing location of lighting, controls, exit lighting, and emergency egress lighting. Provide communications plan, hardwired computer outlets, phone outlets, CCTV locations, TV Monitors, etc. Provide completed power, lighting and communication equipment schedules. Include key plan, legends, tags, call outs, etc.

- Energy: Include a final energy model with anticipated utility operating costs (for budgetary purposes).

☐ **3D Images/ Samples:**

Provide color 3D images of all 4 major elevations to show the proposed new building envelope. 3D Images may be sketched by hand, exported images from sketch-up, rendered images from Revit, or other preferred program. The intent of the 3D images is to provide an aesthetic understanding of the final building envelope. Material types, configurations, and overall aesthetic shall be clear and evident. Consultants shall resubmit an updated sample board of all major exterior materials (brick, metal panels, stone/ casts tone, fascia material, window finishes, glass samples, etc.) Consultants shall also submit a board of interiors finishes (flooring, paint, tile, laminates, wood, etc.) that shall be coordinated with submitted finished plans.

Construction Document Deliverables:

(2) Full hardcopy sets, and (1) digital set of submission items are due at the 98% submission as indicated on the design schedule (Attachment 'C') unless approved otherwise. Consultants are required to present the submission in person at an Owner's review meeting and keep a record of the meeting minutes along with all Owner comments and action items. The consultant shall distribute the meeting minutes within (3) business days of the Owner review meeting. LFUCG Project Manager will review the submission, and will send in writing, additional review items and comments within (5) business days.

The Consultant shall not proceed with the next phase of work until cost and timeline estimates are aligned with the Owner's budget and timeline and approved by the Owner. Authorization to commence with the next phase of work will be made in writing from the Owner. Any work performed by the Consultant without this written authorization will be at the Consultant's risk.

The consultant shall incorporate all applicable review comments, and coordinate with the LFUCG Project Manager & LFUCG Division of Central Purchasing for submission of Ready to Advertise (RTA) Construction Documents. Consultants shall submit three full hard copy sets and one digital set of all submission items for the Final Construction Document Submission.

Final RTA (Ready To Advertise) Construction Documents: deliver (2) full-size hardcopy sets of the drawings and specifications, along with a digital PDF copy. Also provide (1) half-size drawing set.

Phase 4: Bid Phase

The Division of Central Purchasing will be responsible for advertising the bid documents. All questions, requests, and correspondence shall be directed to LFUCG Division of Central Purchasing during the Bid Phase. The consultant shall assist Purchasing with clarifications, questions form bidders, and addenda. The Consultant shall be responsible for attending the Pre-Bid Conference and providing a verbal summary of the scope of work. The Pre-Bid Conference will be conducted by the Division of Central Purchasing. The Bid Opening will also be conducted through the Division of Central Purchasing. After the Bid Opening, the Consultant shall be responsible for reviewing all Bids and providing a written recommendation to the LFUCG Project Manager.

Bid Phase Deliverables:

(1) Hardcopy and one digital written recommendation on company letterhead.

1.3b - STAGE 2: Construction Administration Stage

The Construction Administration Phase of the project shall start after the Bid Phase once the Owner has released the written Notice to Proceed (NTP) to the contractor. Duration of construction administration services will be based on both construction contract time, completion of the original project scope, and Owner's approval of all deliverables. The Consultant shall forward all review items to the LFUCG Project Manager and provide continuous updates and coordination. The Consultant shall inform and coordinate all site visits and construction administration related meetings with the LFUCG Project Manager. The LFUCG Project Manager will be the primary contact for the Owner. All written recommendations and reports throughout the construction phase shall appear on the Consultant's company letterhead. All Owner approvals shall be made in writing.

Phase 1: Construction Administration Phase

Construction Administration shall be provided throughout the Construction Stage in which the Consultant shall advocate for the Owner (LFUCG), administer the construction contract, maintain consistent and precise documentation, facilitate the project close out, and provide frequent updates to the LFUCG Project Manager. LFUCG Project Manager shall be included in all correspondence, meeting invites, and shall be informed of all milestones, issues, delays, or contract deviations. Minimum Construction Administration services shall include the following:

- ☐ **Meetings (Pre-Construction & Progress Meetings):**
  Prepare agendas, lead meetings, and distribute meeting minutes. Progress meeting shall be scheduled bi-weekly (every two weeks).

- ☐ **Reviews:**
  Consultant shall review Construction Schedules, Schedule of Values (SOV), Submittals, Samples, Mock-ups, Contractor's Daily Logs, Payment Applications, Proposals, Change Order Documentation, RFIs, O&M Manuals, Closeout Documents, and all other correspondence. All Owner approvals shall be made in writing.

- ☐ **Logs:**
  Maintain Submittal Logs, RFI Log, ASI, Log, Proposal Log, Change Order Log, etc. At a minimum, all logs shall contain numbered items, item names, relevant dates, item summary, item action, and current status.

- ☐ **Correspondence/ Reports:**
  Consultants shall document and keep a record of all project correspondence.

Clarifications to the construction documents initiated by the Contractor shall be though a Request for Information (RFI). Clarifications initiated by the Consultant shall be through Architectural Supplemental Instructions (ASI). Clarifications made by RFI or ASI shall not change the contract time, or the contract amount. Field Observations shall be made at each Progress Meeting, and Field Observation Reports shall be provided with Progress Meeting Minutes. Work Changes Proposal Request (WCPR) will be used for proposal request with Owner Approval. Written Recommendations from the Consultant shall be required for all proposed Change Orders. The Consultant shall consistently update the Owner and inform the Owner of any deviations from the construction documents, potential time delays, or construction issues.

☐ **Inspections:**

Consultant shall inspect the full scope of work to determine Substantial Completion. The Consultant shall conduct a second inspection of the full scope of work to determine Final Completion after all Punch List items have been corrected. Consultants shall provide both a Punch List and a Back-Punch List containing completion dates for each punch-item. A Certificate of Substantial Completion shall be issued to both the Owner and Contractor.

☐ **Supplemental Drawings:**

Supplemental drawings shall be required to clearly communicate the full scope of work, when necessary, when not already shown in the construction documents, or when additional clarification is needed. Supplemental Drawings may be required for clarifications, RFI, ASI, WCPR, Change Orders, etc.

☐ **Record Drawings:**

Consultant shall collect the Contractor's marked-up drawings (As-Built Drawings), and digitally update the construction documents for Record Documents to be submitted to the Owner in both hardcopy and digital format.

☐ **Close Out:**

Consultant shall generate a Project Closeout Checklist containing all close out items as listed in the Contract Documents. This Checklist shall include dates for the following items: Issue of Certificate of Substantial Completion, List of Completed Inspections, Completion of Punch List Items, Final Release of Liens, Consent of Surety, Completed O&M Manuals, Completed Record Drawings, Completion of Back-Punch List, Review of Final Payment Application, Verification of Stock Items Transferred to Owner, and Confirmation of all Deliverables competed and submitted to the Owner.

Construction Administration Deliverables:

I. Consultant shall provide Progress Meeting Agenda, Submittal Log, RFI Log, ASI Log, Log of Proposals, and Change Order Log in digital format sent (1) day prior to each progress meeting and shall provide hardcopy prints at each progress meeting for attendees at the meeting.
II. Consultant shall submit (1) digital copy of Progress Meeting Minutes, and Field Observation Report within (5) business days after each Progress Meeting.
III. Consultant shall submit (1) digital copy of Change Order Recommendation within (5) business days after receiving contractor's proposal and back-up documentation.
IV. Consultant shall submit (3) hard copies, and (1) digital copy of the Certificate of Substantial Completion.
V. Consultant shall submit (1) digital copy of the Punch List within (5) business days after the walk-through to determine Substantial Completion.
VI. Consultant shall submit (1) digital copy of the Back-Punch List within (5) business days after the walk-through to determine Final Completion.

VII. Consultant shall submit the Contractor's Original "As Build" Drawings to the Owner, and the following digital copies of the Record Documents: PDF file of all Drawings, PDF File of the Project Manual, CAD files of all drawings, DOCX files of the Project Manual.

VIII. Consultant shall submit (1) digital copy of the completed Project Closeout List within (5) days after Final Completion.

Phase 2: One Year Workmanship Warranty Period - Coordination Assistance

☐ **Warranty Coordination**
Owner assistance, and coordination with the Contractor for correction of warranty items throughout the Contractor's One Year Workmanship Warranty Period.

☐ **11- Month Walk-Through**
Consultant shall coordinate an 11-Month Walk-Through onsite with the Consultant, Owner, and Contractor. A list of warranty items to be corrected shall be submitted to all parties. The Consultant shall follow up with the completion of identified warranty items and resubmit the list of warranty items to the Owner with completion dates.

One Year Workmanship Warranty Period Deliverables:

I. Consultant shall submit (1) digital copy of the 11 Month Walk-Through List of Warranty Items within (5) business days of the 11 Month Walk Through.

II. Consultant shall submit (1) digital copy of the 11 Month Walk-Through List of Warranty Items with dates of correction for each item.

1.4 - SELECTION PROCESS

All responses to this RFP/Q meeting the submittal requirements will be evaluated by a review committee. Written proposals will be reviewed and ranked by the review committee and ranked in accordance with the rating criteria reflected in this RFP/Q.

All costs associated with the preparation and responses, including presentation materials for interviews and site visits, if conducted, related to this RFP/Q, shall be borne solely by the Consultant and at no cost to LFUCG Owner.

SCORING CRITERIA

	Total Points
Professional qualifications and experience of the team with architectural and engineering services throughout the design and construction phases.	20
Demonstrated understanding of the project requirements. Provide past experience with similar projects and building systems, including modeled performance versus actual performance energy data.	25
Capacity of the team to perform the work within the time limitations. Illustrated by the current volume of work in progress.	15
Past record and performance on contracts with the LFUCG, other governmental agencies, and private industry with respect to such factors as cost control, quality of work, and ability to meet schedule requirements.	5
Degree of local employment to be provided by the person or firm in the performance of the contract by the person or firm.	5
Fees	30
Final Technical Score	**100**

COMPENSATION

Refer to the Sample Contract (**Attachment B)** for complete compensation description.

ATTACHMENT A

FORM OF PROPOSAL

Design Services for the New Fire Training Academy Facility
Request for Proposal #26-2026
Form of Proposal

Consultant: _____

Address: _____

_____

1. General:

a. The undersigned Consultant, having read and examined the specifications and associated documents for the above designated work, affirms agreement to complete all work in accordance with the contract documents.

b. The selected Successful Consultant (SC) shall verify all mentioned requirements in these contract documents. The SC shall confirm in writing any discrepancies found within one week of being informed of successful proposal.

c. The undersigned agrees that this proposal constitutes a firm offer to LFUCG which cannot be withdrawn for one hundred twenty (120) calendar days from and after the stated closing time, or until a contract is fully executed by LFUCG and a third party, whichever occurs earlier.

d. The Consultant shall include Technical Information as required herein.

2. Submittal Requirements: Interested firms are encouraged to submit their qualifications, which will include the information below. Failure to comply with this requirement may lead in disqualification of the Consultant's proposal:

a. Signed cover letter stating interest in the project. The cover letter should indicate the proposer's willingness to enter into an agreement with LFUCG (see Sample Contract **Attachment B**). An officer of the company who has authority to commit their firm to the proposed project must sign the letter.

b. Additional company information to be provided shall include company history, key management members, major accomplishments, inter-company or third party alliances or partnerships, and any major pending litigation and facts of the case(s).

c. Narrative on how customer satisfaction is tracked.

d. Copies of written continuing education/professional training program and quality control/quality assurance program.

e. Provide the current number of employees and employee types.

f. Statement of general firm qualifications and capacity that should include firm location, where the work will be performed, and the firm's background and demonstrated ability to perform the required services for this project.

g. Project Team list including sub consultants indicating key professionals that will be specifically assigned to work on each discipline and phase of the project. Identify project manager. Detailed resumes for the key professionals and project manager should be included with the proposal. Describe team members' educational background, related experience, experience in providing like services to governmental entities, and individual references within such entities. Describe how the team has worked together on similar projects in the past.

h. Summary of firm's recent (5 year) experience in similar/representative projects including

i. Physical project size
ii. Estimated and Actual Cost of the resulting construction and/or renovation work
iii. Identification of any involved sub-consultants and/or joint-venture partners

i. Conflict of Interest Statement clearly stating the proposer has no conflicts of interest in providing professional services on the project.

j. A narrative of design approach, preliminary design concepts, approach to project inclusive of proposed work scope, and related considerations.

k. Ability to meet required deadlines (See Project Schedule **Attachment C**). Demonstrate integration of this project into the firm's present workload through current and projected staff workload data.

l. References: names and contact information of previous clients on similar projects within the past five (5) years with a description of the type of project completed on schedule and on budget. A minimum of three references is required.

3. **Proposal Format**: Proposals are limited to 24 single-sided pages not including the required LFUCG documents as outlined in the RFP. Proposals in excess of these requirements may not be considered. The twenty (24) page limitation includes any written, photographic or graphic material contained in the body of the statement and any appendices. The limitation does not include:
   i. The cover (although narrative on the reverse side of the front cover or front of the back cover will be counted)
   ii. A title page
   iii. A table of contents and/or index; or blank tab pages

4. Respondents are responsible for all costs associated with the preparation of materials in response to this RFP. LFUCG assumes no responsibility for such costs. LFUCG reserves the right to waive any formality in the submitted statements of qualifications, to reject any and all statements of qualifications or to re-advertise for additional statements of qualifications.

5. **Work Plan:** Consultant shall provide a plan to complete the work described herein in submitted proposal within the submittal limit. Included in work plan shall be:

   a. A checklist of what specific deliverables will be provided at each design phase and/or milestone and the team member that will provide the deliverable.

   b. A specific budget and schedule **(**See Project Schedule **Attachment C)** to complete services described herein.

   c. An explanation of the communication/documentation and collaboration plan.

   d. An explanation of the approach that will be used to assure quality and well-coordinated documents between all disciplines through the design process.

   e. An explanation of the team Quality Control Program throughout all phases of design, and through construction administration.

6. **Lump Sum Pricing:**

   a. All Lump Sum Pricing shall include all direct labor and supervision necessary to complete the item in a manner that meets or exceeds the customer's satisfaction. It shall also include the labor payroll costs, overhead (such as unemployment taxes, general liability insurance, rent, utilities, phones, supplies, administrative salaries, F.I.C.A. sick and vacations, etc. disposal fees tool allowance, equipment, materials, profit and all other costs used on the job.)

   b. Provide Firm Lump Sum Cost for providing LFUCG with services as noted in these specifications.

Design Stage (Total Services Below) **$_____**

Schematic Design Phase: $_____
(percentage of total services) _____%

Design Development Phase: $_____
(percentage of total services) _____%

Construction Documents Phase: $_____
(percentage of total services) _____%

Bid Phase: $_____
(percentage of total services) _____%

Construction Administration Stage – $_____

(percentage of total services) _____%

Total Architectural/ Engineering Services **$_____**

Note: Construction is currently unfunded. The Consultant Services Agreement will be amended at the time of construction funding to include Bidding Phase & Construction Administration.

7. **Payment for Additional Services:** Additional Services, as permitted under Section 2 of the Contract, shall be compensated at the unit rates listed below. LFUCG reserves the right to increase or decrease frequencies of unit cost. If Additional Services are requested, the base contract may be increased or decreased on the basis of the unit rates. No price adjustments will be made unless mutually agreed to in advance through the Change Order process to the contract. All Unit Pricing Hourly Rates shall include all direct labor, any supervision required, labor payroll costs, overhead (such as unemployment taxes, general liability insurance, rent, utilities, phones, supplies, administrative salaries, F.I.C.A., sick and vacations, etc.) disposal fees, tool allowance, equipment, materials, profit, and all other costs used on the job.

Title/Skill Level	Hourly Rate
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR
_____	_____$/HR

a. Additional Services may require procurement beyond the base contract. Procurement shall comply with the specifications set forth herein. The Consultant markup over the invoiced price shall be zero percent (0%).

b. Approved reimbursable expenses will be based on actual costs and shall be mutually agreed to in advance through the Change Order process to the contract.

Signature	**Name**
Title	**Date**

ATTACHMENT B

CONSULTANT SERVICES AGREEMENT

THIS IS AN AGREEMENT made as of _____, 2026, between the LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT (**OWNER**) and _____ (**CONSULTANT**). **OWNER** intends to proceed with architectural/engineering design services as described in the attached Request for Proposal document. The services are to include the preparation of Schematic Design Documents through Construction Documents of the **New Fire Training Academy** as contemplated in the **OWNER**'s Request for Proposal No. 26-2026. The services are hereinafter referred to as the Project.

OWNER and **CONSULTANT** in consideration of their mutual covenants herein agree in respect of the performance of professional architectural/engineering services by **CONSULTANT** and the payment for those services by **OWNER** as set forth below.

CONSULTANT was selected by **OWNER** based upon its response to the Request for Proposal No. #26-2026.

CONSULTANT shall provide professional consulting services for **OWNER** in all phases of the Project described herein, serve as **OWNER'S** professional architectural and engineering representative for the Project as set forth below and shall give professional consultation and advice to **OWNER** during the performance of services hereunder.

SECTION 1 - BASIC SERVICES OF CONSULTANT

CONSULTANT shall perform professional services as hereinafter stated, which include customary architectural and engineering incidental thereto.

The following documents are incorporated by reference herein as if fully stated and are attached hereto as exhibits: RFP No. 26-2026. (**Exhibit "A"**), and Consultant's Response dated _____ (**Exhibit "B"**).To the extent there is conflict among their provisions, the provisions of this Agreement shall take precedence, followed by the provisions of Request for Proposal No. 26-2026. (**Exhibit "A"**).

After written authorization to proceed with the Evaluation and Recommendation Phase, **CONSULTANT** shall:

1. Notify the **OWNER** in writing of its authorized representative who shall act as Project Manager and liaison representative between the **CONSULTANT** and the **OWNER**.

2. On the basis of the "Selection Criteria" in the "Request for Proposal", attached in **Exhibit "A"**, conduct field surveys and gather other necessary data or information, prepare an evaluation and recommendation document consisting of design options and cost estimates as well as all required deliverables listed in the Request for Proposal. See **Exhibit "A"** for complete listing of all deliverables.

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This Agreement (consisting of pages 1 to __ inclusive), together with the Exhibits and schedules identified above, constitutes the entire Agreement between **OWNER** and **CONSULTANT** and supersedes all prior written or oral understandings. This Agreement and said Exhibits and schedules may only be amended, supplemented, modified, or canceled by a duly executed written instrument.

The General Condition provisions of RFP No. 26-2026 are incorporated herein by reference as if fully stated.

SECTION 2 - ADDITIONAL SERVICES BY CONSULTANT

2.1. The **OWNER** may desire to have the **CONSULTANT** perform work or render services in connection with this Project other than as provided by **Exhibit "A"** of this Agreement. Such work shall be considered as "Additional Services", subject to a change order, supplemental to this Agreement, setting forth the character and scope thereof and the compensation therefore. Work under such change order shall not proceed until the **OWNER** gives written authorization. Should the **OWNER** find it desirable to have previously satisfactorily completed and accepted plans or parts thereof revised, the **CONSULTANT** shall make such revisions as directed, in writing, by the **OWNER**. This work shall be considered as "Additional Services" and shall be paid as such.

2.2. All "Additional Services" are subject to prior written authorization of **OWNER** and necessary appropriations made by the Urban County Council.

SECTION 3 - OWNER'S RESPONSIBILITIES

OWNER shall:

3.1. Provide criteria and information as to **OWNER'S** requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary limitations.

3.2. Assist **CONSULTANT** by placing at its disposal available information pertinent to the Project.

3.3. Examine all studies, reports, sketches, drawings, specifications, proposals and other documents presented by **CONSULTANT**, and render in writing decisions pertaining thereto within a reasonable time so as not to delay the services of **CONSULTANT**.

3.4. Designate in writing a person to act as **OWNER'S** representative with respect to the services to be rendered under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define **OWNER'S** policies and decisions with respect to materials, equipment, elements and systems pertinent to **CONSULTANT'S** services.

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3.5. Give written notice to **CONSULTANT** whenever **OWNER** observes or otherwise becomes aware of any development that affects the scope or timing of **CONSULTANT'S** services, or any defect in the work of Contractor(s).

3.6. Furnish or direct **CONSULTANT** to provide necessary Additional Services as stipulated in Section Two (2) of this Agreement or other services as required.

SECTION 4 - PERIOD OF SERVICES

4.1. See **Exhibit "A"** for the project timeline/schedule.

4.2. The provisions of this Section Four (4) and the various rates of compensation for **CONSULTANT'S** services provided for elsewhere in this Agreement have been agreed to in anticipation of the orderly and continuous progress of the Project through completion.

If delays result by reason of acts of the **OWNER** or approving agencies or other causes, which are beyond the control of the **CONSULTANT**, an extension of time for such delay will be considered. If delays occur, the **CONSULTANT** shall within 14 days from the date of the delay apply in writing to the **OWNER** for an extension of time for such reasonable period as may be mutually agreed upon between the parties, and if approved, the Project schedule shall be revised to reflect the extension. Such extension of time to the completion date shall in no way be construed to operate as a waiver on the part of the **OWNER** of any of its rights in the Agreement. Section 6.5, under DISPUTES, of this Agreement, shall apply in the event the parties cannot mutually agree upon an extension of time.

In the event that the overall delay resulting from the above described causes is sufficient to prevent complete performance of the Agreement within two (2) months of the time specified therein, the Agreement fee or fees shall be subject to reconsideration and adjustment. Section 6.5 of this Agreement shall apply in the event the parties cannot mutually agree upon an adjustment of fee.

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SECTION 5 - PAYMENTS TO CONSULTANT

5.1 Methods of Payment for Services of CONSULTANT

5.1.1 For Basic Services.

Lump Sum Pricing

In consideration of the architectural and engineering services described in this Loan Agreement and its exhibits, **OWNER** shall pay **CONSULTANT** the sum below stated, which sum shall include without limitation all direct labor and supervision necessary to complete the item in a manner that meets or exceeds the customer's satisfaction, labor payroll costs, overhead (such as unemployment taxes, general liability insurance, rent, utilities, phones, supplies, administrative salaries, F.I.C.A., sick and vacation leave, etc.), disposal fees, tool allowances, equipment fees, materials, profits, and all other costs used on, for, or in association with the job. The negotiated cost of services is represented in the Form of Proposal, and is summarized as follows:

Design Stage (Total Services Below)	**$**_____
Schematic Design Phase: (percentage of total services)	$_____ _____%
Design Development Phase: (percentage of total services)	$_____ _____%
Construction Documents Phase: (percentage of total services)	$_____ _____%
Bid Phase: (percentage of total services)	$_____ _____%
Construction Administration Stage	**$**_____
(percentage of total services)	_____%
Total Architectural/ Engineering Services	**$**_____

5.1.2. For Additional Services

"Additional Services" shall be paid for by the **OWNER** on the basis of the unit pricing below. In the event the **OWNER** and the **CONSULTANT** are unable to agree upon payment for "Additional Services", the amount of such payment shall be determined as set forth in Section 6.5, "DISPUTES" of this Agreement.

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Unit Pricing

If Additional Services are requested, the base contract may be increased and/or decreased on the basis of these proposed unit rates. No price adjustments will be made, unless mutually agreed to in advance through the Change Order process to the contract, or as a result of temporary conditions (defined as 30 days or less from the date of the last invoice).

All Unit Pricing Hourly Rates shall include without limitation all direct labor and supervision necessary to complete the item in a manner that meets or exceeds the customer's satisfaction, labor payroll costs, overhead (such as unemployment taxes, general liability insurance, rent, utilities, phones, supplies, administrative salaries, F.I.C.A., sick and vacation leave, etc.), disposal fees, tool allowances, equipment fees, materials, profits, and all other costs used on, for, or in association with the job.

Title/Skill Level	Hourly Rate
Principal Architect	_____$/HR
Project Architect_	_____$/HR
Project Manager__	_____$/HR
Project Associate_	_____$/HR
_____	_____$/HR
_____	_____$/HR

Additional Services may require procurement beyond the base contract. Procurement shall comply with the specifications set forth herein. The **CONSULTANT** markup over the invoiced price shall be __0_____%

5.2. Times of Payment.

5.2.1. For any month in which the **CONSULTANT** provides services in connection with this Agreement, the **CONSULTANT** shall submit to the **OWNER** a written statement reasonably identifying the percentage of each task, listed in Section 5.1.1., above, as may be amended by the parties from time to time, that has been completed to date, the total amount to be billed for each task, the amount previously billed for each task, and the total amount due and owing for each task at the time the statement is issued. Within thirty (30) days of the **OWNER's** receipt of such statement, the **OWNER** shall pay to the **CONSULTANT** all amounts due and owing as indicated thereon, unless the **OWNER** has in good faith contested the same.

5.3. Other Provisions Concerning Payments.

5.3.1. In the event the Agreement is terminated by the **OWNER** without fault on the part of the **CONSULTANT**, the **CONSULTANT** shall be paid for the work performed or services rendered an amount bearing the same ratio to the total Agreement fee as the amount of work completed or partially completed and delivered to the **OWNER** is to the total amount of work

provided for herein, as determined by mutual agreement between the **OWNER** and the **CONSULTANT**.

5.3.2. In the event the services of the **CONSULTANT** are terminated by the **OWNER** for fault on the part of the **CONSULTANT**, the **CONSULTANT** shall be paid reasonable value of the work performed or services rendered and delivered, and the amount to be paid shall be determined by the **OWNER**.

5.3.3. In the event the **CONSULTANT** shall terminate the Agreement because of gross delays caused by the **OWNER**, the **CONSULTANT** shall be paid as set forth in Section 5.3.1. above.

SECTION 6 – ADDITIONAL GENERAL CONSIDERATIONS

6.1. Termination

6.1.1. The obligation to provide further services under this Agreement may be terminated by either party upon ten (10) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party, provided the non-terminating party fails to cure such default within ten (10) days of receiving notice of such default.

6.1.2. The **OWNER** reserves the right to terminate the Agreement for any reason at any time upon seven (7) days written notice to the **CONSULTANT**.

6.2. Ownership and Reuse of Documents.

All documents, including hardcopies and original digital format, including but not limited to Drawings and Specifications, prepared by the **CONSULTANT** pursuant to this Agreement shall be delivered to and become the property of the **OWNER**. The **OWNER** shall have the right to reuse same without restriction or limitation, but without liability or legal exposure to **CONSULTANT**.

6.3. Legal Responsibilities and Legal Relations.

6.3.1. The **CONSULTANT** shall familiarize himself with and shall at all times comply with all federal, state and local laws, ordinances, and regulations which in any manner affect the services of this Agreement.

6.3.2. In performing the services hereunder, the **CONSULTANT** and its **CONSULTANTS**, employees, agents and representatives shall not be deemed or construed to be employees of **OWNER** in any manner whatsoever. Except as otherwise provided in this Agreement, the **CONSULTANT** shall be acting as an independent contractor. The **CONSULTANT** shall not hold itself out as, nor claim to be, an officer or employee of **OWNER** by reason hereof and shall not make any claim, demand or application to or for any right or privilege applicable to an officer or employee of **OWNER**. The **CONSULTANT**

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shall be solely responsible for any claims for wages or compensation by **CONSULTANT'S** employees, agents and representatives, including **CONSULTANTS**, and shall save, defend, and hold **OWNER** harmless therefrom.

6.3.3. The parties hereto agree that causes of actions between the parties shall be governed by applicable provisions of the Kentucky Revised Statues. Any action arising from or in relation to this Agreement shall be brought in Fayette County, Kentucky.

6.4. Successors and Assigns.

6.4.1. CONSULTANT binds itself and its partners, successors, executors, administrators, assigns and legal representatives to this Agreement in respect to all covenants, agreements and obligations of this Agreement. **CONSULTANT** shall not assign any interest, obligation or benefit in this Agreement. **CONSULTANT** shall not assign any interest, obligation or benefit in this Agreement nor transfer any interest in the same, whether by assignment or novation, without prior written consent of **OWNER**.

6.4.2. The **CONSULTANT** shall not subcontract more than fifty percent (50%) of the work, based upon dollar value, to be provided under this Agreement. The **CONSULTANT** shall obtain written approval prior to subletting or assigning any services contained in this Agreement, and consent to sublet or assign any part of this Agreement shall not be construed to relieve the **CONSULTANT** of any responsibility for compliance with the provisions of this Agreement.

6.4.3. Nothing herein shall be construed to give any rights or benefits hereunder to anyone other than **OWNER** and **CONSULTANT**.

6.5. Disputes.

Except as otherwise provided in this Agreement, any dispute concerning the amount of payment due the **CONSULTANT** or any dispute concerning any question of fact of any act to be performed under this Agreement, which is not disposed of by agreement between the Urban County Division of Central Purchasing and the **CONSULTANT**, shall be submitted to the Commissioner of the Department of General Services, Lexington-Fayette Urban County Government, for review. The decision of the Commissioner as to the determination of such dispute shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith. Pending a final decision of a dispute hereunder, the **CONSULTANT** shall proceed diligently with the performance of the Agreement in accordance with the directions of the **OWNER**.

6.6. Accuracy of CONSULTANT'S Work.

The **CONSULTANT** shall be required to perform this Agreement in accordance with the degree of ordinary and reasonable skill and care usually exercised by professional architects

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and engineers prevailing at the time, place and under similar conditions as the services hereunder are rendered.

The **CONSULTANT** shall be responsible for the accuracy of all work, even though Drawings and Specifications have been accepted by the **OWNER**, and shall make any necessary revisions or corrections resulting from errors and/or omissions on the part of the **CONSULTANT**, without additional compensation. By submission of reports, soils and subsurface information, quantities estimates, calculations and Drawings and Specifications to the **OWNER**, the **CONSULTANT** has made a statement that, to the best of its belief and knowledge, the information is accurate. Failure on the part of **CONSULTANT** to provide the expected level of accuracy may be grounds for the **OWNER** to disqualify **CONSULTANT** from consideration for future **CONSULTANT** service agreements.

6.7. Security Clause.

The **CONSULTANT** certifies that it shall not at any time release or divulge any information concerning the services covered by this Agreement to any person or any public or private organization except the **OWNER** without prior approval of the **OWNER**.

6.8. Access to Records.

The **CONSULTANT** and its sub-**CONSULTANTS** shall maintain all books, documents, papers, and accounting records, and make such materials available at their respective offices at all reasonable times during the contract period and for three (3) years from the date of final payment under the contract for inspection by the **OWNER**, and copies thereof shall be furnished if requested. Failure to maintain such records for three (3) years after the date of final payment may be grounds for the **OWNER** to disqualify the **CONSULTANT** from consideration for future **CONSULTANT** service agreements.

6.9. Required Risk Management Provisions.

The Risk Management Provisions of RFP No. 26-2026 are incorporated herein by reference as if fully stated. Copies of the required Certificates of Insurance shall be provided to **OWNER** as required therein.

SECTION 7 - EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this service agreement, the **CONSULTANT** agrees as follows:

7.1. The **CONSULTANT** will not discriminate against any employee or application for employment because of race, color, religion, national origin, sex, age or handicap. The **CONSULTANT** will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, national origin, sex, age or handicap. Such action shall include, but not be limited to the following: employment upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training,

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including apprenticeships. The **CONSULTANT** agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

7.2 The **CONSULTANT** will, in all solicitations or advertisements for employees placed by or on behalf of the **CONSULTANT**, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, age (between forty and seventy), or handicap.

SECTION 8 - SPECIAL PROVISIONS

8.1. This Agreement is subject to the following provisions.

8.1.2. Pursuant to subparagraph 3.4 of this Agreement, **OWNER** has assigned the appropriate Lexington-Fayette Urban County Government employee (the "**OWNER'S** Agent"), as the authorized agent of **OWNER**, to monitor, direct and review the performance of work of the **CONSULTANT**. Documents, data, reports and all matters associated with carrying out this Agreement shall be addressed to the **OWNER'S** Agent or their designee. Questions by the **CONSULTANT** regarding interpretations of the terms, provisions and requirements under this Agreement shall be addressed to the **OWNER'S** Agent or their designee. The **CONSULTANT** shall look only to the **OWNER'S** Agent or their designee for direction in its performance under this Agreement; no other direction shall be binding upon **OWNER**. **OWNER** shall respond to written requests by **CONSULTANT** within thirty (30) days.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year first above written.

OWNER: **CONSULTANT:**

_____ _____

_____ _____

_____ _____

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ATTACHMENT 'C'

NEW FIRE TRAINING ACADEMY (RFP #26-2026)

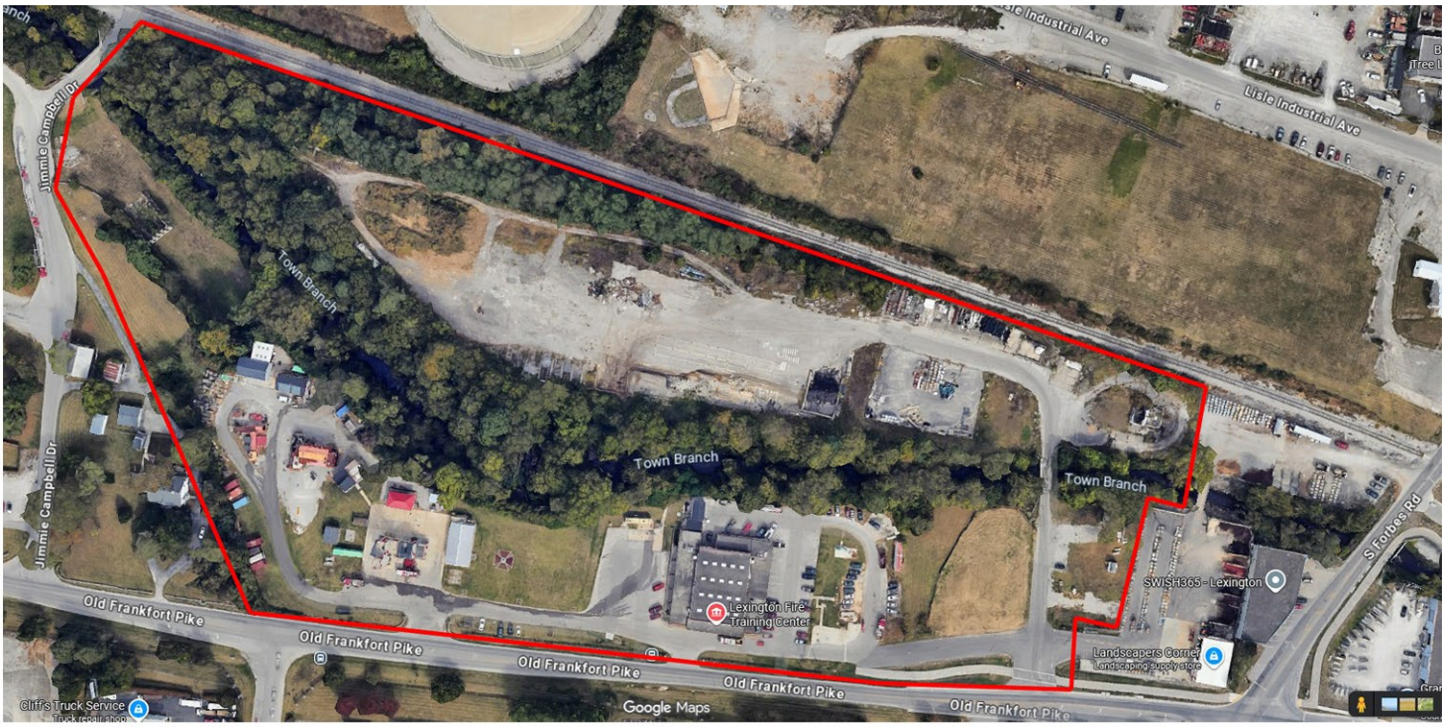
Task	Duration		Start	Finish
RFP	**30**	**Days**	**4/1/2026**	**5/1/2026**
Stakeholder Review	**7**	**Days**	**5/1/2026**	**5/8/2026**
Advertisement - Design RFP	**30**	**Days**	**5/11/2026**	**6/10/2026**
Pre-RFP Meeting	**1**	**Days**	**5/20/2026**	**5/20/2026**
RFP Opening	**1**	**Day**	**6/10/2026**	**6/10/2026**
LFUCG Selection Committee Review	**6**	**Days**	6/11/2026	6/17/2026
LFUCG Selection Committee Meeting	**1**	**Days**	6/17/2026	6/17/2026
Shortlist Interviews (if needed)	**1**	**Days**	6/19/2026	6/19/2026
LFUCG RFP Evaluation /Law & Purchasing Review/Contract	**0**	**Days**	6/19/2026	6/19/2026
Approved in Legistar Date	**1**	**Day**	6/22/2026	6/22/2026
Council WS	**1**	**Day**	7/1/2026	7/1/2026
Council 1st & 2nd Reading DOUBLE READING	**1**	**Day**	7/2/2026	7/2/2026
P.O. & NTP	**0**	**Days**	7/10/2026	7/10/2026
Design Phase	**198**	**Days**	**7/20/2026**	**2/3/2027**
Schematic Design	**44**	**Days**	7/20/2026	9/2/2026
SD 95% Document + Cost Estimate Review	**1**	**Day**	9/2/2026	9/2/2026
Owner Review & Comments	**7**	**Days**	9/2/2026	9/9/2026
Schematic Design Final Deliverables Due	**6**	**Days**	9/9/2026	9/15/2026
Design Development	**49**	**Days**	9/16/2026	11/4/2026
DD 95% Document + Cost Estimate Review	**1**	**Day**	11/4/2026	11/4/2026
Owner Review & Comments/Consultant	**7**	**Days**	11/4/2026	11/11/2026
Design Development Final Deliverables Due	**7**	**Days**	11/11/2026	11/18/2026
Construction Documents	**56**	**Days**	11/18/2026	1/13/2027
50% CD Cost Estimate Review	**1**	**Days**	12/16/2026	12/16/2026
CD 95% Document + Cost Estimate Review	**1**	**Day**	1/13/2027	1/13/2027
Owner Review & Comments	**7**	**Days**	1/13/2027	1/20/2027
100% Construction Documents	**9**	**Days**	1/20/2027	1/29/2027
Ready to Advertise Final Deliverables	**1**	**Day**	**2/3/2027**	**2/3/2027**
Advertisement - Construction **PENDING FUNDING**	**28**	**Days**	**2/10/2027**	**3/10/2027**
PreBid Meeting (TBD)	**1**	**Days**	**2/17/2027**	**2/17/2027**
Bid Opening (TBD)	**1**	**Day**	**3/10/2027**	**3/10/2027**
LFUCG Bid Evaluation /Law & Purchasing Review/Contract	**14**	**Days**	3/10/2027	3/24/2027
Approved in Legistar Date (TBD)	**1**	**Day**	3/29/2027	3/29/2027
Council WS (TBD)	**1**	**Day**	4/6/2027	4/6/2027
Council 1st & 2nd Reading DOUBLE READING (TBD)	**1**	**Day**	4/8/2027	4/8/2027
P.O. & NTP (TBD)	**8**	**Days**	4/8/2027	4/16/2027
Construction Phase (TBD Pending Funding)	**540**	**Days**	**4/26/2027**	**10/17/2028**
Substantial Completion/Punch Inspection (TBD)	**1**	**Day**	10/17/2028	10/17/2028
Final Completion (TBD)	**30**	**Days**	10/17/2028	11/16/2028

ATTACHMENT ‘D’



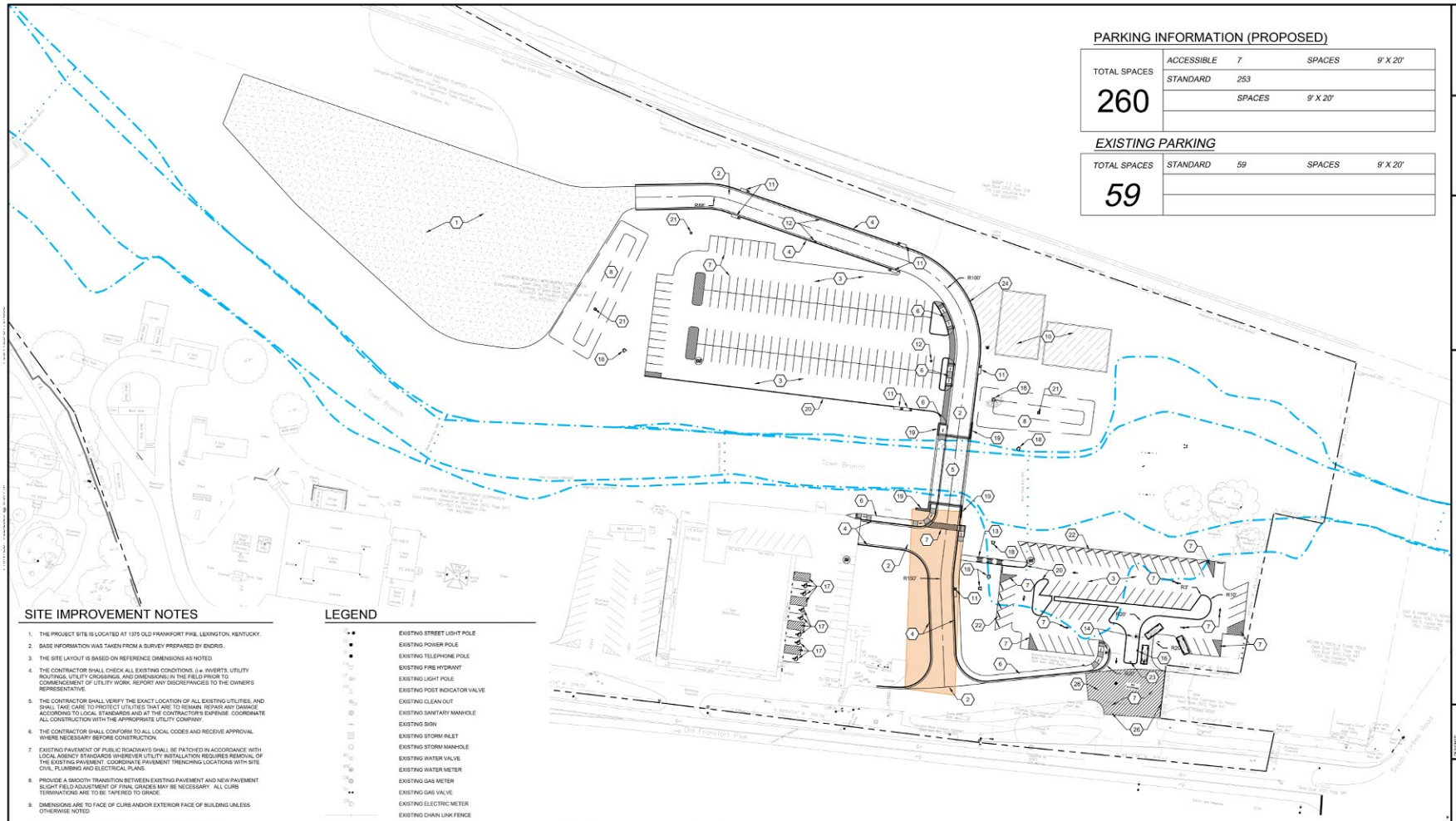
Project Site for New Fire Training Academy Facilty

[redacted]



Entire Existing Fire Training Academy Campus (For Reference Only)

ATTACHMENT 'E'



PARKING INFORMATION (PROPOSED)

TOTAL SPACES				
260	ACCESSIBLE	7	SPACES	9' X 20'
	STANDARD	253		
		SPACES	9' X 20'	

EXISTING PARKING

TOTAL SPACES				
59	STANDARD	59	SPACES	9' X 20'

SITE IMPROVEMENT NOTES

1. THE PROJECT SITE IS LOCATED AT 1375 OLD FRANKFORT PIKE, LEXINGTON, KENTUCKY.
2. BASE INFORMATION WAS TAKEN FROM A SURVEY PREPARED BY ENDRIS.
3. THE SITE LAYOUT IS BASED ON REFERENCE DIMENSIONS AS NOTED.
4. THE CONTRACTOR SHALL CHECK ALL EXISTING CONDITIONS, (i.e. INVERTS, UTILITY ROUTINGS, UTILITY CROSSINGS, AND DIMENSIONS) IN THE FIELD PRIOR TO COMMENCEMENT OF UTILITY WORK. REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
5. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, AND SHALL TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR ANY DAMAGE ACCORDING TO LOCAL STANDARDS AND AT THE CONTRACTOR'S EXPENSE. COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANY.
6. THE CONTRACTOR SHALL CONFORM TO ALL LOCAL CODES AND RECEIVE APPROVAL WHERE NECESSARY BEFORE CONSTRUCTION.
7. EXISTING PAVEMENT OF PUBLIC ROADWAYS SHALL BE PATCHED IN ACCORDANCE WITH LOCAL AGENCY STANDARDS WHEREVER UTILITY INSTALLATION REQUIRES REMOVAL OF THE EXISTING PAVEMENT. COORDINATE PAVEMENT TRENCHING LOCATIONS WITH SITE CIVIL, PLUMBING AND ELECTRICAL PLANS.
8. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. SLIGHT FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. ALL CURB TERMINATIONS ARE TO BE TAPERED TO GRADE.
9. DIMENSIONS ARE TO FACE OF CURB AND/OR EXTERIOR FACE OF BUILDING UNLESS OTHERWISE NOTED.
10. CONCRETE FOR CURBS AND SIDEWALKS SHALL BE 4000 PSI CONCRETE.
11. ANY WORK UNACCEPTABLE TO THE OWNER'S REPRESENTATIVE OR TO THE LOCAL GOVERNING AUTHORITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
12. ALL SIDEWALKS & HANDICAP RAMPS SHALL BE BUILT TO ADA STANDARDS.
13. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
14. THE CONTRACTOR SHALL PAVE IN THE DIRECTION OF TRAFFIC.
15. THE CONTRACTOR WILL BE REQUIRED TO ADJUST GRADES OF INTERSECTING STREETS, ALLEYS, PUBLIC ENTRANCES AND PRIVATE DRIVES AS DIRECTED BY THE ENGINEER.
16. ALL ROADWAY AND SIDEWALK CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF LOCAL AND/OR STATE GOVERNING AGENCY.
17. ALL CONSTRUCTION MATERIALS AND INSTALLATION SHALL CONFORM TO LOCAL AND/OR GOVERNING AGENCY REGULATIONS AND SPECIFICATIONS.
18. ALL PAVEMENT MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE LOCAL GOVERNING AGENCY AND KYTC STANDARDS AND SPECIFICATIONS.
19. ALL PAINTED TEXT SHALL BE PER CURRENT MUTCD REQUIREMENTS.
20. THE CONTRACTOR SHALL INSTALL NECESSARY TRAFFIC CONTROL SAFETY BARRICADES, LIGHTING, AND OTHER REQUIRED CONTROL MEASURES TO SECURE THE WORK AREA FROM EXISTING TRAFFIC AND TO ASSURE PUBLIC SAFETY.
22. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING THE SITE UNTIL THE WORK IS ACCEPTED IN TOTAL BY THE OWNER.
23. ANY DEFICIENCIES WITHIN THE SITE PRIOR TO TOTAL ACCEPTANCE BY THE OWNER MUST BE REPLACED IN KIND PER STANDARD DRAWINGS AND SPECIFICATIONS.

LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING ELECTRIC METER
- EXISTING CHAIN LINK FENCE
- EXISTING BOARD FENCE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- EXISTING FLOODPLAIN LIMITS
- (X) NEW PARKING COUNT

SHEET KEYNOTES:

1. PROPOSED CONCRETE PAVEMENT DRIVING PAD, SEE 3/CS-501 FOR DETAIL. ALTERNATE TO BE HEAVY DUTY ASPHALT, SEE 2/CS-501 FOR DETAIL.
2. PROPOSED HEAVY DUTY PAVEMENT, SEE 2/CS-501 FOR DETAIL
3. PROPOSED LIGHT DUTY PAVEMENT, SEE 1/CS-501 FOR DETAIL
4. PROPOSED LFUCG STANDARD CURB AND GUTTER, SEE 4/CS-501 FOR DETAIL
5. PROPOSED PREFABRICATED VEHICULAR BRIDGE WITH PEDESTRIAN SIDEWALK, SEE SEPARATE BRIDGE DRAWINGS USED AS BASIS OF DESIGN.
6. PROPOSED CONCRETE SIDEWALK, SEE 5/CS-501 FOR DETAIL
7. PROPOSED PAVEMENT STRIPING, SEE 6/CS-503 FOR DETAIL
8. PROPOSED STORMWATER BIORETENTION AREA, SEE 1/CS-502 FOR DETAIL
9. NOT USED
10. FUTURE POLE BARN PAD
11. PROPOSED LFUCG CURB BOX INLET, SEE 2/CS-502 FOR DETAIL
12. PROPOSED STORM SEWER MANHOLE, SEE 8/CS-501 FOR DETAIL
13. PROPOSED CONCRETE STAIRCASE WITH HANDRAIL, SEE 1-2/CS-504 FOR DETAILS
14. PROPOSED TRAFFIC ARM WITH A NEW 3/4HP, 208V/1-PHASE HYSECURITY "STRONGARM 140" OPERATOR. PROVIDE COMPELTE WITH UL 254 SAFETY DEVICES – GATE EDGE SENSORS, PHOTO EYES (TRANSMITTER/RECEIVER), INSIDE/OUTSIDE OBSTRUCTION LOOPS AND RESET LOOPS. TRAFFIC ARM CONTROLLER TO RECEIVE TM-619 PROGRAMMABLE TIMER OR EQUAL. SEE ELECTRICAL DRAWINGS AND SEE DETAIL 3/CS-502 FOR ADDITIONAL INFORMATION.
15. NOT USED
16. PROPOSED INTERCOM PEDESTAL WITH CONCRETE BOLLARDS
17. PROPOSED ADA STRIPING AND SIGNAGE, SEE 2-3/CS-503 FOR DETAIL
18. PROPOSED LFUCG STORM HEADWALL, SEE 4/CS-502 FOR DETAIL
19. PROPOSED CONCRETE WINGWALLS, SEE STRUCTURAL PLANS FOR DETAILS
20. PROPOSED KYTC STANDARD HEADER CURB, SEE 15/CS-501 FOR DETAIL
21. PROPOSED LFUCG STANDARD AREA INLET, SEE 7/CS-501
22. PROPOSED RUBBER WHEEL STOP, SEE 6/CS-503 FOR DETAIL
23. PROPOSED DIRECTIONAL SIGNAGE, "KEEP RIGHT"
24. PROPOSED LFUCG STANDARD TYPE 4 ROLL CONCRETE CURB, SEE 3/CS-504 FOR DETAIL
25. PROPOSED KYTC CLASS II CHANNEL LINING, SEE 4/CS-504 FOR DETAIL
26. DEEDED ACCESS TO LANDSCAPER'S CORNER TO REMAIN CLEAR DURING CONSTRUCTION
27. PROPOSED PARKING LOT SIGNAGE, "LEXINGTON FIRE DEPARTMENT ONLY" (18"X24" OR 24"X30")
28. PROPOSED WAYFINDING SIGNAGE, "LEXINGTON FIRE DEPARTMENT - TRAINING ACADEMY" WITH WEST FACING ARROW TOWARDS EXISTING ACADEMY (24"X30")
29. PROPOSED SIGNAGE, "NO PUBLIC ACCESS - LEXINGTON FIRE DEPARTMENT PRIVATE PROPERTY"
30. PROPOSED SIDEWALK HANDRAIL WITH BRONZED ANODIZED FINISH, SEE 2/CS-504 FOR DETAIL
31. PROPOSED DETECTABLE WARNING, SEE 5/CS-504 FOR DETAIL

N

SCALE: 1"= 50'

50' 25' 0 50' 100'

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

STATE OF KENTUCKY
RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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OVERALL SITE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

NO.	REVISIONS DESCRIPTION	DATE	BY
1	THIS WORK SHALL BE PRODUCED IN ACCORDANCE WITH KYTC STANDARDS		

DESIGNED JCR
DRAWN JCR
REVIEWED RSS
APPROVED RSS

DATE: JANUARY 23, 2026
SCALE: 1"=50'
SHEET NO.: CS-100



LEXINGTON

LFUCG

FIRE TRAINING STUDY



BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS



ACKNOWLEDGMENTS

Lexington Fire Training Center Feasibility Report
Lexington, Kentucky

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EXECUTIVE SUMMARY

How to Use this Report

The intent of the study is to evaluate existing fire facilities against industry standards (such as NFPA 1710 and 1500) and provide recommendations on infrastructure/development that will address the changing training needs of the Lexington Fire Department (Fire Department) as it continues to grow.

This study is used to share this information and build consensus on the direction for Lexington (City) to pursue in fulfilling the needs of the City and Fire Department. The study included four primary objectives or tasks: Evaluation of Current Conditions, Facility Space Needs, Conceptual Design Scenarios, and the potential cost for each of the conceptual scenarios. Each of these objectives provides key information to be considered for planning for the City.

Introduction

The Lexington Fayette Urban County Government Council and Lexington Fire Department contracted with Brandstetter Carroll, Inc. (BCI) in June 2024 to complete a comprehensive facility feasibility report for the Lexington Fire Training Center. The City's Team, consisting of Josh Ives, AIA, Jason Wells, Fire Chief, Gary Harris, Assistant Chief, Jeremy Poynter, Battalion Chief, and others coordinated the efforts of the Consultant Team with the resources of the City. The City Team assisted in the collection of data and provided support, including escorting the Consultant Team on tours of the facilities and setting up meetings with major stakeholders.

This Executive Summary is formatted around significant information discussed throughout the report. During the Summer and Fall of 2024, BCI visited the existing Training Center building to perform and conduct a building analysis noting in particular: code compliance, accessibility, and damage or maintenance problems. The Consultant Team then developed recommendations for the facilities. After these tasks were completed, the final recommendations were then identified and completed. What follows is a brief synopsis of the analysis and recommendations addressing the deficiencies and pertinent recommendations for the Lexington Fire Department Training Center.

Background

For over 150 years, Lexington Fire Department has served the community from 24 stations providing progressive, all-hazard services to meet the needs of the community. The Fire Department responds to over 60,000 local emergencies annually. The Fire Department consists of 607 sworn personnel and 34 non-sworn personnel. The organizational chart is in the Appendices for reference and hierarchy. All firefighters are IFSAC I/II, EMT-B, and HazMat Ops certified. Additionally, they provide full-time fire prevention, education, and investigation programs, as well as structural and ARFF firefighting, advanced life support EMS, hazardous materials, and technical rescue services.

The Lexington Fire Department typically runs 607 sworn members through the Training Center annually and often many of them multiple times a year. The department typically has two recruiting classes annually which consist of approximately 25 to 45 recruits per class. They also have a paramedic class annually consisting of approximately 36 students. They also have a company officer academy class annually consisting of approximately 15 company officers.

The Lexington Fire Department uses the Training Center for other events besides just department training. They also have many other public outreach events they host or would like to host and have many outside agencies that request to use the facility. The Fire Department hosts a Citizen Fire Academy semi-annually with class sizes of about 30 students. They have the graduation event for these at the Training Center which ranges from 75 to 85 people. The department also has LFUCG Council Field Day consisting of 30 people, an American Red Cross event consisting of 75 to 100 people, Metro Employees Credit Union Event consisting of 75 people, and Leadership Lexington visit consisting of approximately 30 people. The department currently hosts Kentucky State Fire School in June, Army National Guard training exercises two to three times a year. They host CSEPP Training Exercises, Lexington Police Training, Columbia Gas employee training, and car seat installation classes.

Facility Assessment

The Facility Assessment for the existing facilities considered both the physical facility as well as the operational aspects of the facility. The existing facility, while in most cases is structurally sound, the facilities are inefficient and, in many cases, not conducive to the use of the building for modern operations. The current building does not meet the current requirements of modern building codes or best practices as they relate to public safety training facilities. The existing building includes 16,400 square feet of space.

Facility Space Needs

The Facility Space Needs Assessment consisted of discussions with the Lexington Fire Department and Lexington Staff, and observation of current operations. This information, along with the information received from the Study Committee and Consultant tours of the facility and the Consultant's knowledge of design guidelines, best practices, and regulations, contributed to the development of the Facility Space Needs Program. These program documents identify an approximate total of 49,000 square feet of space for the Training Center.

Conceptual Plan

The Facility Space Needs Program was used to create conceptual plan options as follows:

1. Renovation and Expansion of Existing Building
2. New Training Center Building

These are merely conceptual plans for study purposes and should not be considered finalized floor plans at this stage. These include the necessary spaces for the Fire Department and training operations and represent appropriate space relationships. The site was then diagrammed with the proposed building footprints, parking needs, and vehicular circulation to evaluate the feasibility of using the existing property.

Recommendations

The recommendations of the Consultant Team listed in this report include the following:

1. Recommendation 1: Construct a new Fire Training Center for an approximate cost of $49.4 million dollars.

Financing

Most public safety projects for municipalities are funded through a combination of available cash on hand, General Obligation Bonds, plus some level Federal or State funding. There may be an opportunity for an external source. It is very unlikely that State and Federal resources will be available for the entirety of the project, so the City must be prepared to provide matching funds. The most likely source would be General Obligation bonds. The City of Lexington should be in a good position to leverage its bond rating and capacity to fund this project even if it is done over multiple phases.

Next Steps

There are a series of steps to move forward from this study towards the development of improved operations and facilities for the most efficient training space and service delivery. These recommendations, if implemented, will enhance the Lexington Fire Department training operations and facilities with improved operational improvements due to more space and more space efficiencies.

Conclusion

In conclusion, the City of Lexington and Lexington Fire Department are in the early stages of planning for the next steps for the Fire Training Center and site improvements. The information in this report is offered to help in making those difficult decisions and determinations.

The recommendations in this study also give greater flexibility to the Fire Department so that implementation can take place as quickly as possible or as funds become available. The project can be broken into multiple phases and funded over multiple years, if necessary, or it can be done as one project with localized phasing to maintain operations.

The Consultant Team is pleased to have been asked to perform this report and to work with the Fire Department to improve their operations and training center to continue to deliver a high level of training services to the Fire Department personnel, agencies, and citizens of the City and surrounding areas.



1

INTRODUCTION

1.1 History

Lexington is in Fayette County, Kentucky. Lexington is in the Bluegrass Region and is known as the "Horse Capital of the World" due to the large number of horse farms. The City was originally named in 1775 before Kentucky became a state. Then Lexington was established in 1780 as a town in the County of Kentucky. The land area is 285.5 square miles of which 284.5 square miles is land and 1.0 square miles is water. The City has grown rapidly causing the City to adopt or develop the first urban growth boundary. Lexington is near major interstate corridors that access 14 major United States cities in 11 states.

For over 150 years, Lexington Fire Department has served the community from 24 stations providing progressive, all-hazard services to meet the needs of the community. The Fire Department responds to over 60,000 local emergencies annually. The Fire Department consists of 607 sworn personnel and 34 non-sworn personnel. The organizational chart is in Appendix F for reference and hierarchy. All firefighters are IFSAC I/II, EMT-B, and HazMat Ops certified. Additionally, they provide full-time fire prevention, education, and investigation programs, as well as structural and ARFF firefighting, advanced life support EMS, hazardous materials, and technical rescue services.

The Fire Department has multiple divisions which make up the department which are Administration/Finance, Logistics, Operations, Planning, and Office of the Chief. The Training Center houses 16 people that consist of the Training Team under the Planning Division. The 16 personnel consist of 12 Training personnel, 2 EMS Educators, 2 Recruiting and Hiring personnel. Due to the growth of the City and Fire Department, the Training Center needs many enhancements and improvements to meet current and future building codes and to provide adequate space for their daily training operations and department needs both now and in the future.

The Lexington Fire Department has the Training Center and Training Grounds located at 1375 Old Frankfort Pike. It currently houses Engine 37, Engine 38, Engine 39, Ladder 18, Ford F550 Work Truck, (2) UTV's, and a Training Van. Other vehicles stored on site consist of (2) Passenger Vans, (7) Small Fleet Vehicles, (1) Utility Trailer. Due to the need to store the quantity of vehicles and equipment at the Training Center, improvements and enhancements are necessary to properly house and maintain these assets.

The Lexington Fire Department typically runs 607 sworn members through the Training Center annually and often many of them multiple times a year. The department typically has two recruiting classes annually which consist of approximately 25 to 45 recruits per class. They also have a paramedic class annually consisting of approximately 36 students. They also have a company officer academy class annually consisting of approximately 15 company officers. Due to the quantity of personnel that must be trained on the department and the fact that it is mandatory, the existing Training Center, does not have the parking or space to provide for the needs of the Department. Due to existing conditions and constraints, the class size is restricted to a maximum of 50 students or personnel per class. The recruiting class graduation is held at another venue due to the number of people that attend which the current facility cannot accommodate. The typical graduation consists of approximately 300 people. There are other events for the department such as Command Staff Meetings, hiring and promotional events, Paramedic Class Graduation which range from 30 to 100 people. The Training Center needs improvements and enhancements to allow for larger class sizes which allow for more personnel and students to process through the training requirements and allows for opportunity to open the facility for outside agencies and other public outreach events to utilize the facility and would allow for additional training for their own personnel and even opportunity to bring in new training options because of the improved and larger facility.

The Lexington Fire Department uses the Training Center for other events besides just department training. They also have many other public outreach events they host or would like to host and have many outside agencies that request to use the facility. The Fire Department hosts a Citizen Fire Academy semi-annually with class sizes of about 30 students. They have the graduation event for these at the Training Center which ranges from 75 to 85 people. The department also has LFUCG Council Field Day consisting of 30 people, an American Red Cross event consisting of 75 to 100 people, Metro Employees Credit Union Event consisting of 75 people, and Leadership Lexington visit consisting of approximately 30 people. The department currently hosts Kentucky State Fire School in June, Army National Guard training exercises two to three times a year. They host CSEPP Training Exercises, Lexington Police Training, Columbia Gas employee training, and car seat installation classes. Due to the existing conditions, class sizes are limited or in the case of Kentucky State Fire School they must use offsite classrooms and training areas due to limited space and availability at the facility. The Fire Department would also like to accommodate other requests that they receive but due to limited space and parking, these requests are not able to be fulfilled or accommodated because of the existing facility deficiencies. It is important that the Training Center be enhanced and improved to provide more opportunities to the community but also other agencies.

1.2 Demographic Analysis

Lexington has a population of 324,981 (2024) people, with daytime population increasing to 357,197. The median age of the City is 35 years of age. The recent trends in population change show growth in the past, with slight growth in 2029. Most of the population is between the ages of 25 and 64.

There are 15,708 businesses (2024) in Lexington with a total employment population of 267,929 (2024). Most of the businesses in the city, approximately 69%, are white collar jobs. The unemployment rate is at 4.7% for the city, which is slightly higher than the national average of 4.1% (Sept. 2024).

The median home value in Lexington is $318,531 (2024) which is 20.6% higher than the Kentucky median home value of $264,100 (2024). The typical household size is 2.29 people (2024).

There are 136,900 households in Lexington, with an anticipated slight increase in 2029 to 139,115. Median household income is currently $67,248. The recent trends in median household income show growth to $80,360 in 2029. This represents income growth of nearly 3.63%. By contrast, nationally, the median household income is $79,068 (2024) and will increase to $91,442 in 2029. Recent changes in income and growth have been affected by COVID 19, but the trends show that both population and income in Lexington will continue to grow.

More detailed information regarding Lexington demographics is provided in the Appendices.

1.3 Methodology

The Lexington Fayette Urban County Government Council and Lexington Fire Department contracted with Brandstetter Carroll, Inc. (BCI) in June 2024 to complete a comprehensive facility feasibility report for the Lexington Fire Training Center. The City's Team, consisting of Josh Ives, AIA, Jason Wells, Fire Chief, Gary Harris, Assistant Chief, Jeremy Poynter, Battalion Chief, and others coordinated the efforts of the Consultant Team with the resources of the City. The City Team assisted in the collection of data and provided support, including escorting the Consultant Team on tours of the facilities and setting up meetings with major stakeholders.

The existing Training Center facility consisting of 16,400 square feet was analyzed in detail from both an architectural and operational perspective. The City requested that the Consultant Team review the existing facilities and identify any recommendations and potential costs for renovation, expansion, or new buildings. This would allow the City and Fire Department to develop a comprehensive understanding of the needs and identify and strategically plan for future improvements for the Training Center and Fire Department with respect to the services and functions offered by the Department at this facility. In 2024, BCI reviewed and analyzed the Training Center operations, resources, facilities and completed this comprehensive report. This report is the culmination of that analysis and feedback.

1.4 Objectives

This report had four major objectives. First, it was to analyze the existing facilities and identify key issues of concern, including maintenance deficiencies, code deficiencies, material degradation, structural concerns, HVAC and electrical systems' useful life, departmental capacity and needs, operational requirements, and future needs.

The second objective was to conduct a Facility Space Needs Study. This Needs Study will utilize Best Practices and Industry Standards, as well as the current and future needs required by the Fire Department for their daily training operations.

The third objective was to review a variety of scenarios or options to provide direction on enhancing the services for the

Training Center and Fire Department that would produce an economic solution with the greatest positive impact on the site and for the operations of the Fire Department.

The fourth objective was to conduct a third-party Opinion of Probable Cost for each of the scenarios. These cost opinions would help officials to understand the overall economic and investment needed to renovate and/or expand the existing facilities or to build a new facility on the existing site.

Based on this information, recommendations could be made on how best to provide proper facilities and ultimately better training.



2

FACILITY ASSESSMENT

2.1 STANDARDS

The assessment of the existing Lexington Fire Department Training Center included both the physical building and systems, as well as the operational efficiency. The assessment was based on Best Practice Industry Standards from many codes and standard which a few of the major ones are listed below:

1. International Association of Fire Chiefs (IAFC)
2. International Association of Fire Fighters (IAFF)
3. National Fire Chiefs Council (NFCC)
4. International Association of Police Chiefs (IACP)
5. Commission on Accreditation for Law Enforcement Agencies (CALEA)
6. National Institute for Occupational Safety and Health (NIOSH)
7. National Fire Protection Agency (NFPA)
   - NFPA 1 – Uniform Fire Code
   - NFPA 1221 – Standard for the Installation, Maintenance, and Use of Emergency Service Communication Systems
   - NFPA 1500 – Standard on Fire Department Occupational Safety and Health Program
   - NFPA 1581 – Standard on Fire Department Infection Control Program
   - NFPA 1710 – Standard for the Organization and Deployment of Fire Suppression Operations Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments
8. Safety and Health Considerations for the Design of Fire and Emergency Medical Services Stations
9. Whole Building Design Guide (WBDG) National Institute of Building Sciences
10. Kentucky Building and Plumbing Code
11. International Mechanical Code
12. National Electrical Code
13. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
14. ADA Standards for Accessible Design
15. Federal Emergency Management Agency (FEMA)
16. Department of Justice (DOJ)
17. Occupational Safety and Health Administration (OSHA)

2.2 Key Exterior Issues Identified

2.2.1 Site

1. There are no identifiable handicap parking spots in the parking lot for staff or the public.
2. The public has access to the entire site via the roadways through the site. This is not ideal because it leaves the Fire Department's vehicles susceptible to vandalism and damage. There is a main front entry to the building. However, there are multiple doors that could be mistaken as entry locations and are not well marked.
3. The existing asphalt is in need of repair in many areas of the site drives and parking lots.
4. The existing bridge is not available for vehicular traffic due to structural concerns and narrowness.
5. Utilities on the site are available but many are not sized adequately or haphazardly installed due to the need for maintenance or other projects in the area.
6. Storm water control is minimal and needs to be addressed in any new work conducted.
7. There is evidence of the site being a filled site with trash and other rubble and materials buried below ground. These may be an issue for any future construction.
8. There are many foundations, bins, gravel, soils, mulch, brick, and other items on the northern side of Town Branch Creek which will need to be removed.
9. There is an old concrete structure and water tank that may need to be removed.
10. There is an area at the southern side of Town Branch Creek which has an EPA Covenant due to soil contamination that is still under monitoring. This should be remediated or avoided in the event of future work.
11. There is not a designated grilling area. There is a designated outdoor seating area that is on the opposite side of the building from the current grilling area. Outdoor activities must take place in the way of the sidewalk and parking spots.
12. There are no drains at the aprons and the aprons drain to the streets on both sides.
13. There are potentially hazardous materials and fire equipment that are scattered around the site unprotected and potentially hindering site movement. There is an air unit behind the Apparatus Bays on a concrete pad next to the pull through bays.
14. The location of the vehicle drives cause potentially serious conflict between pedestrians, parked cars, and emergency vehicles.

2.2.2 Façade

1. Exterior doors are metal frames with single pane glazing providing minimal insulating value.
2. Joints and sealants need repair.
3. The windows are single pane glazing providing minimal insulation value. The sealants are deteriorated in places. These should be replaced in their entirety.
4. The existing roof utilizes primarily gutters and downspouts. The downspouts are in good condition.
5. The concrete façade has cracks in it from building settlement which has led to unwanted openings in the walls and needs repairs.
6. The mortar joints of the CMU walls are primarily in good condition but have some areas in need of maintenance and repair.
7. No exterior wall insulation was found. Insulation will be required to meet current energy codes

2.2.3 Roof

1. The roof is in bad condition. If this building is renovated or expanded, the roof should be replaced in its entirety. There are some visible signs of leaks in the building due to staining of ceilings.
2. The emergency generator for the facility is located on the roof. This makes it difficult to access for maintenance.
3. The air units are located on the roof and have faded materials and warps from the weather.
4. The skylights on the upper roof are sun faded with popped sealants.
5. Fall protection will need to be provided at all roof top equipment within ten feet of roof edges.
6. The existing roof structure consists of cantilevered double tee concrete beams that extend beyond the exterior walls. No thermal breaks were found at the intersection of exterior wall to beams, this can lead to condensation and mold concerns.

2.3 Key Interior Issues Identified

2.3.1 Structure

1. The facility, if expanded and renovated, would need to meet the requirements of the building code to withstand a weather event. The structure itself does not comply with those requirements and would need to be remediated to meet those requirements.
2. The existing facility constructed in 1969 consists of one-story load bearing concrete block for all exterior and bearing walls with the exception of the front wall which is pre-cast concrete tees. The roof over the high bay (vehicle bay) consists of steel bar joists 36" deep @ 5' 0.c. clear spanning the bay and bearing on 12" concrete block walls. The roof decking over the high bay area is steel roof decking.
3. The lower roof areas (classrooms, offices and lobby area) consist of exterior 8" load bearing concrete block, and the roof structure is pre-cast concrete double tees (approximately 18" deep with ribs at 2' on center. These concrete double tees cantilever past the exterior block wall creating an overhang.
4. There are two additions to the low roof areas along the west end. The oldest addition consists of concrete block walls and wood roof framing. This addition has a foundation and to have been constructed to commercial standards from a structural standpoint. The more recent addition does not have a foundation and appears to be a slab poured on asphalt. This newer addition does not appear to have been constructed in accordance with the Kentucky Building Code and should be considered a temporary structure for storage only.
5. The existing precast concrete bridge over the town branch creek to the rear of the property is in poor structural condition and needs to be replaced. The abutments could potentially be re-used if the same size and location works for a potential replacement precast concrete bridge.
6. There is some minor cracking of the concrete block, especially over and around openings. It is likely none of the concrete blocks are grouted or reinforced. This was acceptable and met the structural loading requirements of the Kentucky Building Code in 1969. The cracking areas of the concrete block should be tuck-pointed and partially grouted.
7. The added space inside the high-bay area was constructed with wood and does not appear to be in compliance with the Kentucky Building Code. This area would need to be replaced and reconstructed with non-combustible materials if any renovations occur.

2.3.2 Fire Training Center

General

There is typically a maximum of seventy-seven (77) people at the Training Center each day. The personnel currently consist of (16) Full-Time Employees. There are typically recruit classes at the Training Center.

Lobby / Vestibule

- There is no vestibule.
- The lobby is open to the public with no reception area and is not secure to keep the public out of the rest of the training center.
- The lobby is in good condition and is used for displaying miscellaneous Lexington Fire Department memorabilia. More space is needed to display all the Fire Department's items.
- The exterior wall of the lobby is a precast concrete wall system, no insulation was noted.

Public Restrooms

- Restrooms are limited in the building. The restrooms are small and do not meet current building and plumbing codes for size and quantity needed to comply with the codes.
- There is limited ADA required clearances and turning radiuses. These do not meet current ADA accessibility codes.
- The restrooms and showers have general cosmetic needs like new fixtures, tile, etc.

EMS Office and Storage

- The EMS Office is crowded with little area for desk space.
- The room is used mainly for storage, which severely limits the operational use of the office.
- The EMS storage room is small and does not accommodate the needs of the department.

- A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The walls are not sound rated.

Training Officer Office

- The area is a shared common area with several desks that are overcrowded and require more space for filing and gear.
- A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The office walls are not sound rated.

Conference Rooms

- There is limited conference room space in the building. The room has miscellaneous storage in it and is small for a conference room.
- The technology in the room is outdated.
- There are general cosmetic needs in the room such as flooring, wall base, ceiling systems, painting, etc.
- A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The walls are not sound rated.

Administrative Offices

- The offices are limited in size for typical administration office use but do accommodate a desk and chair and some other amenities. The lack of storage has caused many of the offices to be used for storage and office space.
- There are cosmetic needs such as ceiling systems, flooring, paint, and wall base, etc.
- Storage and filing for these offices are severely limited and additional space is needed for the department.
- There is not a dedicated room for an administrative conference room. The common space between the administration offices is used as a small conference room.
- The administrative suite is located directly off the apparatus bay. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The administrative suite currently does not have direct viewing of the entry doors or lobby area.
- The administrative suite walls are not sound rated.

Vehicle Bays

- Storage for miscellaneous equipment is along the exterior walls of the bay. There is also a small stage in the bay used for presentations.
- There are gear lockers in the bay because there is not enough space in the gear room.
- The bay is not large enough for the size of the apparatus. With the additional amount of equipment stored in the bays this limits the maneuverability of staff and ability to open and close vehicles.
- The bay utilizes one (1) overhead sectional door while storing up to four (4) vehicles at a time. This makes vehicle maneuverability severally limited and greatly increases the likelihood of an accident damaging the trucks.
- The bay does not have any floor drains. There is limited ability to keep the bay floor dry during rain or snow events since the drainage is minimal. This is dangerous for the crew and inefficient for them to have to manually evacuate water and debris from the bay floor.
- The pendant lights are old but seem to be in good condition. The lights are not the correct fixtures for this environment.
- The floor slab has several cracks in it due to the weight of the vehicles. The joint at the lobby flooring is deteriorated.
- The vehicle bays are separated from the living and office areas by a CMU wall with no vestibules. It is not evident if the 2-hour separation is achieved due to current conditions. It is assumed that this is not achieved per today's building code. This is not the best practice for apparatus bays.
- The vehicle bay area currently has no vehicle exhaust extraction system. This should be added to protect the occupants within the building and to meet current codes.

Bay Storage

- The Storage Room is small and additional storage capacity is needed for the bays.
- There are a few storage shelves around the bay. These are not sizable for any significant storage, so the bays are being used for storage of a variety of equipment, supplies, furniture, vehicles, and other miscellaneous items.
- Some gear lockers are in bay which is not preferred due to the UV degradation and exposure to contaminates and vehicle exhaust.
- The Gear Room has general cosmetic needs such as ceiling systems, flooring, paint, and wall base, etc.

Washroom / Electrical

- The gear wash area is located away from the Apparatus Bay through the kitchen. This is not best practice because it requires contaminated gear to be brought through an eating area to be cleaned.
- The washer and dryer are in the electrical room and are inadequate in number for the size and number of staff at the Training Center. Per Best Practices it is advised to add a decontamination room, and laundry room dedicated to the Apparatus Bay for staff convenience and to keep contaminated areas separated.

Cascade and Tool Rooms

- The Cascade Room is small and needs more space to adequately accommodate the needs of the department.
- The Tool Room is small and has limited space to perform maintenance duties.
- The rooms are used for additional building and janitorial storage.
- Access to these rooms requires personnel to exit the main building. The adjacencies of these rooms are not ideal and should be better located.

Kitchen and Dining

- The kitchen area is small and cramped. There is limited dining space.
- The kitchen is a residential grade with solid surface counters and wood cabinets.
- Lighting in this area is old fluorescent lights.
- The overall quantity of storage space and appliances for staff and trainees is not adequate for current needs.
- A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.

Restrooms and Locker Rooms

- Restrooms are limited in the station. The restrooms and showers are undersized and do not meet the current building and plumbing codes for size and quantity needed to comply with the codes.
- There is limited ADA required clearances and turning radiuses. These do not meet current ADA accessibility codes.
- The restrooms and showers have general cosmetic needs like new fixtures, tile, etc.

Bedrooms/Bunk Room

- The bunk room is located upstairs. The stairs are not compliant with the codes for treads and railing requirements.
- The room is too small for the standard needs of the staff. The rooms have limited storage.
- The rooms are adjacent to the Apparatus Bay with no vestibule. This can cause exhaust to enter the living areas which is against NFPA standards. The walls are not soundproof, which causes issues for staff sleeping. This is a community sleeping room which has its own problems with the snoring and use of C-Pap machines. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The lighting in this room is not efficient and is not tied to the station alerting for adjustable light levels for those coming out of sleep when a call comes. This is per industry Best Practices for health and safety of the firefighters.
- There are general cosmetic needs in the room such as flooring, wall base, ceiling systems, painting, etc.
- This area is currently not accessible and would require an elevator to meet current code requirements.
- The walls are not sound rated.
- No elevator currently installed, would require adding an elevator to meet current code requirements

Classrooms

- Classrooms are located off the bay with access also from the exterior. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
- The classrooms are small for the number of trainees and other staff that use the classrooms daily.
- There is not proper storage accommodation for the classrooms and training props and other equipment must stay out in the bays.
- The technology in the rooms is outdated.
- The classroom walls are not sound rated.

2.4 Operational Assessment

2.4.1 General Analysis

The existing Training Center does not provide an ideal or functional layout for a modern Fire Training Center with modern staffing requirements, vehicles, equipment, and apparatus that is utilized in the 21st century. The configuration of the spaces affects the operational efficiency and resulting response times. The facility does not have adequate separation of public and staff spaces.

2.4.2 Exhaust and Carcinogen Systems

Protection of First Responders from exhaust carcinogens and contaminates is a critical concern in today's work environment. The various standards address these concerns and provide requirements for proper safety and precautions that should be adhered to for the safety of First Responders. Exposure to these elements is a significant contributing factor for the high rate of cancer in Fire Fighters.

2.4.3 Threat Mitigation Deficiencies

The following items affect the way the building inhabitants are secure within the complex perimeter and how they interface with the public. The three threat scenarios that need to be mitigated are Technological, Man made, and Natural.

1. **Technological Threats:** Threats resulting from the man made environment but are unintentional or accidental in initiation. These include hazardous materials releases, utility failure, transportation incidents, and other events that originate due to human intervention.
2. **Man made Threats:** Threats based upon the intentional actions of individuals to cause harm to others and/or the destruction of property. This category includes criminal acts of violence, terrorism, and civil unrest.
3. **Natural Threats:** Natural phenomena that place individuals and the built environment at risk. These include both geophysical (e.g., severe weather, earthquake, flooding) and biological, such as naturally occurring diseases (e.g., pandemic influenza, Ebola).
    - Natural hazards represent the primary threats to public safety facilities. Weather-related events such as severe storms, lightning, tornadoes, and flooding have the highest potential of occurrence and impact on the delivery of public safety services.

Deficiencies of the Existing Facility

- Technological Threats
    - Structure Fire - Moderate Probability with Major Impact
    - Hazardous Materials Release (Fixed Site) - Low Probability with Limited Impact
    - Hazardous Materials Release (In-Transit) - Moderate Probability with Major Impact
    - Interruption of Primary Electric Delivery - Moderate Probability with Major Impact
    - Interruption of Secondary Electrical Systems - Low Probability with Moderate Impact
    - Interruption of Telephone Service - Low Probability with Moderate Impact
    - Train Derailment - Low Probability with Major Impact
    - Aircraft Crash - Low Probability with Major Impact
- Man made Threats
    - Active Assailant (Firearm) – Low Probability with Major Impact

  - Explosives
  - Package Device - Low Probability with Major Impact
  - Person Borne Device (Suicide Bomber) - Low Probability with Major Impact
  - Vehicle Borne Device - Low Probability with Major Impact
  - Chemical Agents - Low Probability with Major Impact
  - Biological Agents - Low Probability with Major Impact
  - Criminal Mischief / Vandalism - Moderate Probability with Moderate Impact
  - Vehicle Ramming - Low Probability with Moderate/Major Impact
  - Personal and Property Protection - Moderate Probability with Major Impact
- Natural Threats
  - Severe Thunderstorms (high winds and hail) - High Probability with Major Impact
  - Lightning - High Probability with Major Impact
  - Tornado - High Probability with Major Impact
  - Flooding - High Probability with Major Impact
  - Ice Storm, Snow, and Extreme Cold - Moderate Probability with Moderate/Major Impact
  - Subsidence - Low Probability with Moderate Impact
  - Disease (pandemic) - Moderate Probability with Major Impact
  - Drought - Moderate Probability with Limited Impact
  - Wildland Fire - Low Probability with Limited Impact

2.4.4 Exterior

1. The roof has minimal insulation thickness. The current energy code requires a minimum rating of R25 to R30 for roof insulation value. The efficiency of the mechanical systems and the energy efficiency of the building is greatly compromised.
2. The exterior windows of the facility are single glass pane windows. These windows do not meet the current Building and Energy Codes. They are very inefficient and cause a tremendous amount of heat loss and heat load for the building. This also puts undue stress on the HVAC system creating energy inefficiencies.
3. The exterior walls appear to have no thermal insulation, selective demolition would be needed to confirm.

2.4.5 General Interior

Lobby / Main Entry

- The main entry is good size but does not have a vestibule or access to a receptionist. A window should be in the vestibule to allow for direct communication between the Fire Department Administration and the Public.
- The main lobby allows for access to the entire building. Access points should be installed to restrict public access to the rest of the building. The current situation makes access to the building inadequate for public use, but access to employee areas unrestricted and unsafe.
- There should be adequate restrooms off the Lobby that are ADA compliant and meet all the requirements of the current building code.
- There should be general signage for public use.

Vehicle Bays

- The Vehicle Bays are not only used for vehicle storage, but they are also utilized for storage of gear and other equipment. Due to the limited storage and support areas of the Bay, the Bay itself is unable to provide adequate maneuverability for equipment and Staff. This causes an undue burden on daily operations and can result in higher response times and potential injury to staff.
- The Bays do not have proper NFPA clearances for equipment. The bay widths are not adequate per current standards. The width does not allow for maintenance of the apparatus from the sides or access to equipment in the vehicles.

- There are no drains in the Bay. This makes it difficult for vehicles to be cleaned and maintained during inclement weather.
- There is one apparatus bay that is not a drive-thru bay. This allows for the potential for accidents from backing into the bays causing significant damage and cost to equipment and the building. The bay can accommodate multiple vehicles if parked properly. Bays should be drive-through, if at all possible, per NFPA Standards and Best Practices. This may not be possible in the current building but should be explored.
- Gear is housed in the Bays. Gear should be housed in a separate Storage Area to protect from carcinogen contamination through off-gassing.
- Lockers should be sized at a minimum of 24" x 24" x 72".
- The Apparatus Bay utilizes a sectional door. These doors create maintenance and safety issues for the Department. The use of newer technology such as bi-fold or four-fold doors would be beneficial, not only from a maintenance and operation perspective, but also from a response time perspective. If these are not economical, the sectional doors should be modified to heavy-duty commercial sectional doors with higher use cycles and safety features.
- There is no Decontamination Room in the facility. A Decontamination Room should be provided that allows for decontamination of gear and staff. This should also allow for quick access to a shower. Per NFPA Standards and Best Practices, this will minimize the tracking of contaminations into the living areas.
- There is not a restroom in the Bay area. There should be a restroom facility provided in the Bay adjacent to the Decon Room. Per best practices, this is highly recommended to minimize tracking of contaminates into the living areas.
- A two-hour fire-rated separation should be added at all walls and openings shared with the apparatus bay.

Bedrooms / Bunk Room

- The dorm room is a community area with beds and personal storage units for the firefighters. This arrangement is acceptable but in industry best practices and modern trends, these are going to individual bunk rooms due to C-Pap and snoring issues and privacy. It also does not allow for gender separation.
- If individual bunk rooms were pursued these should have adequate space to accommodate a small desk, bed, nightstand, and a set lockers or closet.
- The dorm rooms do not have windows to the exterior. As a means of health, safety, and welfare of the staff, there should be means of natural light and the use of black out shades can help darken the room.

Offices

- The office arrangement at the station is not desirable as the offices are shared spaces.
- NFPA Standards and Best Practices for Fire Station design locate all offices in a general Administration Area. This would minimize duplication of spaces and services such as the need for copy machines, filing cabinets, etc. This will also prevent the public from entering the workspace of the staff.
- Office(s) should have visibility to exit and entry aprons, which currently is not possible.
- Office(s) should have full walls for privacy and less distractions while working.
- There should be separate rooms with adequate space for a reports room, a fire prevention office, and a code review area which is not available now.

Storage

- The storage capacity of this building is woefully short of the needs of the station. As aforementioned, the Bays are being utilized for storage as are other Staff spaces.
- The bay storage is also inadequate for the storage of supplies.

Kitchen and Dining Room

- There is no true dining room, but an eating area is located in the kitchen.
- The Kitchen is too small for the use of the facility. The kitchen should be larger to accommodate the proper clearances around the equipment, appliances, and cook top.

Locker Rooms and Restrooms

- NFPA Standards require that Locker Rooms be accommodated in a facility and be provided for both sexes. These can be provided as gender specific which includes the restroom and shower facilities in individual rooms and the lockers are in a gender neutral room. The current facilities are not adequate for the size of this department or per the Plumbing Code. These facilities should be enlarged and provide ADA accessible fixtures.

- Lockers should be sized at a minimum of 24" x 24" x 72".
- The lockers should accommodate current ADA accessibility codes and provide adequate facilities for the number of first responders and staff who use the facility.

Classrooms

- Classrooms should be large enough and flexible to accommodate the many recruit classes that use the Training Center daily.
- Classrooms should have adequate storage for the tables and chairs used by the classes.

Miscellaneous Support

- There should be two laundry areas. A Laundry Area in the Living Area separate from a laundry area in the bays to minimize contamination in the Living Areas.
- There is not a true fitness area in the facility which does not meet NFPA Standards or best practices. The fitness area should be near the living areas away from the bays and dirty areas of the facility.
- The fitness room is a vital part of the firefighter conditioning and overall health. Due to the duties of their positions, they need to be in top physical shape and a fitness room would allow them to use it while on duty and not have to go to another location. This encourages fitness and is beneficial to both the Fire Department and the firefighters.
- A Rehabilitation Room is not available in the current facility. This area allows those in the department to recover from injury or other ailments to be able to work on their rehabilitation process both on and off duty. It also allows them to have monitoring by the wellness coordinator. This area should be near the fitness area to allow for use of equipment and a graduated process.
- The Tool Room should have adequate storage and a work bench to accommodate all department maintenance needs.
- The Cascade Room should have adequate space for all the SCBA equipment and for future storage needs.

2.4.6 Building Systems

HVAC

- The air handling equipment consists of seven packaged rooftop units (RTUs). Four of these rooftop units serve the large bay area while two serve the east wing and one serves the west wing. The west wing RTU is the most recently replaced unit, which occurred in 2016. The RTUs serving the east wing were replaced in 2008. The four RTUs serving the Bay were replaced in 2001.
- It was found that the majority of spaces were outside of the desired space temperature. The facility operator has installed multiple temporary air conditioning units in an attempt to bring the space temperature down to a more accommodating level.
- Many pieces of equipment and systems were found to be operating beyond the typical service life. The type of equipment and systems that were originally selected are no longer performing at their peak efficiencies and show signs of wear.
- According to ASHRAE's life expectancy for the RTUs, all the RTUs except the west wing unit are beyond their typical life expectancy. Although the RTU serving the west wing has approximately five years of operational life remaining, replacement of this unit to a higher tonnage would help serve the spaces. The west wing typically is further off zone setpoint than the other areas in the facility. This is further exemplified by the multiple temporary air conditioning units installed in the west wing.
- The ductwork for the rooftop units appears to be original. Above ceiling, it appears that the supply ductwork is externally insulated while the return ductwork is internally lined. Due to the age of the ductwork and internal conditions
- The new addition of the office spaces and bunks is served by a mini-split system heat pump. This features one outdoor unit mounted on the roof and four indoor units serving each of the four newly added spaces. This system and addition were installed in 2023, so the mechanical equipment has effectively its whole operating life remaining.
- Classroom 2 and the adjacent EMS Room are each served by a packaged terminal air conditioner (PTAC) unit. The PTAC units are estimated to have been installed in 2001. According to ASHRAE's life expectancy for the PTAC units, both are almost a decade past their life expectancy.
- The Bay is currently served by three high volume low speed (HVLS) fans. The estimated installation date for the HVLS fans was 2016. The ASHRAE life expectancy for these fans indicates that they have twelve years of operating life remaining. With over half of their lifetime remaining, it is Paladin's recommendation that these fans continue

operating unchanged. Even if the air distribution is altered for the Bay, these fans will continue to combat thermal stratification that can more easily affect an area like the Bay with high ceilings.

- The Bay is also served by a singular wall mounted exhaust fan. It is estimated that this exhaust fan's installation date was 2001. The ASHRAE life expectancy for this fan indicates that it is three years past its operational life expectancy. Furthermore, it is reported that diesel fumes accumulate when the fire engines are in the Bay. The purpose of this fan was to assist with engine exhaust, and it is no longer able to fulfill its purpose effectively.
- The men's and women's restrooms each have a ceiling mounted electric unit heater. It is estimated that these were installed when the restrooms were renovated in 2009. The ASHRAE life expectancy for these heaters indicates that they are past their operational life expectancy by two years.
- The three restroom areas: men's, women's, and Chief's, all include ceiling mounted exhaust fans. It is estimated that these fans were installed when the restrooms were renovated in 2009. The ASHRAE life expectancy for these fans indicates that they have approximately five years of remaining operational life.
- The fans are nearing the end of their 20-year life expectancy and replacing them during the upcoming project is safer than allowing them to exceed their life expectancy and replace them as they fail.
- The Kitchen includes a kitchen hood exhaust fan. This exhaust fan has been estimated to have been installed in 2019. The ASHRAE life expectancy for a fan of this type is 20 years. The hood and fan seem to be in acceptable condition for continued operation.
- An exhaust system should be installed. There are multiple types of systems, and two forms of exhaust are preferred. The options are building exhaust which exhausts air out of the bays due to sensors or switch. The direct-connect has a hose that connects directly to the apparatus exhaust system. The other system is an air purifier also known as scrubber. They take the air into them and clean it and then redistribute it to the bays.
- Since these systems are older and the quality of air required per the Building Code and per NFPA Standards has increased, they should be replaced in their entirety.

Plumbing and Fire Sprinkler

- Plumbing fixtures were replaced in approximately 2009. Two domestic water heaters serve the building: one tankless and the other traditional tank style. The domestic water heaters were replaced in 2015 and 2023, respectively.
- The building's domestic hot water is generated by two sources: an electric tank-style water heater and an instantaneous gas water heater. Each of these water heaters serves a different side of the building. The electric water heater serves the west side of the building. This includes the men's restroom and the chiefs' office restroom.
- The gas water heater serves the east side of the building. This includes the women's restroom, the laundry room, and the kitchen. The electric water heater was replaced in 2023. The gas water heater was installed in 2015. Both pieces of equipment are in good condition, and both also have over ten years of operable life remaining.
- The building underwent a restroom renovation in 2009. During this renovation, the plumbing fixtures were updated into more efficient fixtures as well as becoming more uniform fixtures. There are three restrooms in the facility: a men's restroom, a women's restroom, and an individual restroom serving the chiefs' offices. In the men's restroom, there are three urinals, a water closet, and two lavatories. In the women's restroom, there are two water closets and two lavatories. In the individual chief restroom, there is one water closet, one lavatory, and one shower.
- The building is equipped with two water fountains in the Lobby. In the east side of the Lobby, an Elkay water fountain with bottle filler has been installed. This installation occurred in 2019. The Elkay water fountain is in good condition, and it has approximately ten years of expected operational life remaining. The west side of the Lobby is served by an Oasis water fountain. This water fountain is estimated to have been installed in 2001. With this being the case, the water fountain is well beyond its expected operational life.
- The current facility does not have a fire sprinkler system, which is required for an essential facility. NFPA recommends a sprinkler system as there are approximately 100 to 150 fires in EMS and Fire Stations annually.
- The use of automatic control fixtures in the Restrooms would help conserve water. It is good practice for a public entity to conserve water.
- The building has limited cleanouts and access panels. This is not in violation of the building code but for maintenance purposes, additional cleanouts and access panels are recommended.
- Isolation water valves should be provided for maintenance purposes. Shutting water off is difficult without affecting the entire building.
- Vehicle bays have limited drainage. It is recommended that a trench drain be placed in each bay length wise to allow better drainage when vehicles come in with rain or snow.

Electrical

- The lighting in the facility has been replaced at various points in the past. The latest partial replacement occurred in 2017. Prior to the 2017 lighting replacement, an upgrade to LED fixtures occurred in approximately 2010. The electrical distribution system has been upgraded as necessary at varying intervals. The main switchboard is original to the building, while the majority of the electrical distribution panels are estimated to have been replaced in 2008. A backup generator serves the west side of the building and was installed in 2015.
- The electrical distribution system consists of one main 600 Amp switchboard, ten electrical distribution panels, and two large disconnect switches. The main switchboard is original to the building. The ten electrical distribution panels all vary in age. However, most are from approximately 2001-2008. The two large isconnect switches each serve a distribution panel on the roof for the east and west wings respectively. These disconnect switches appear to be from 2008.
- The main switchboard serves the entire building. The typical operational lifespan of a main switchboard is expected to be thirty years. Since this switchboard is original to the building, that puts the current life of this equipment at almost twice what it was expected to achieve. Furthermore, the main switchboard is a Federal Pacific model which is outdated. These are often recommended for replacement regardless of their age.
- The electrical distribution panels can be separated into two categories based upon manufacturer: Square D panels and non-Square D panels. There are two non-Square D panels. There is an ITE panel that serves the men's restroom and a Cutler-Hammer panel that serves the computer room. The ITE panel appears to be from 1977 and was not replaced with the restroom renovation project. The ITE panel is almost two decades past its expected operational life. The Cutler-Hammer panel has approximately 5 years of expected operational life remaining. Replacing both panels with updated Square D panels would allow for increased versatility in the spaces, increased capacity, and a safer environment.
- The eight Square D panels are generally in a similar good condition with approximately half of their thirty-year operational life expectancy remaining. The exceptions to this are the newly added panel to serve the 2023 office addition and the panels that are located on the roof to serve the RTUs. The new panel has its entire operational life remaining. The roof panels appear to be in acceptable condition; however, it cannot be determined when these panels were installed. The earliest estimate for the roof panels is 2001, while they could have been upgraded with the remaining panels in approximately 2008. The roof panels' enclosures have shown signs of aging but the equipment itself appears to be in acceptable condition.
- The two large disconnect switches each serve a roof distribution panel. These disconnect switches were both made by Square D and approximately installed in 2008. There appears to be no significant signs of distress or failures.
- The backup generator serving the building was installed in 2015. It has been reported that it serves only the west half of the building. The expected life span of the generator is thirty years. Reports show that the generator is up to date on regularly scheduled maintenance.
- The lighting in the building has been replaced at various points, causing lighting color and fixtures to be non-uniform throughout the facility. The majority of the lighting fixtures were reported to be replaced with LED fixtures in approximately 2010. A separate replacement project was implemented for the lighting fixtures in approximately 2017 for a small number of fixtures in the office spaces. The 2017 replacement project featured another upgrade of lighting fixtures to LED fixtures. Finally, the 2023 addition included its own new LED fixtures as well. The exception to this would be if uniform lighting fixtures were desired. This conformity would require a replacement of lighting fixtures.
- The lighting fixtures for the facility are not all LED fixtures. There are metal halide lights in the Bay, incandescent can lights in the Lobby, Computer Room, and Chief's Restroom, and incandescent exterior light fixtures. To increase energy efficiency, Paladin recommends replacing all lighting fixtures that are not LED to be updated to LED fixtures.
- The Kentucky Building Code for "essential facilities" requires that the building be able to withstand an event and be able to fully function during a weather or catastrophic event if power has been lost. Typical time requirements for fully operational essential facilities during a power failure should be a minimum of 72 hours.
- Surface mounted conduit and outlets are noticeable throughout the facility. The facility has limited technological, communication and electrical capabilities to meet the technological needs for a modern facility. It is extremely difficult to add future technology and communication systems to the building, resulting in inefficient operations.
- The building is not equipped with a whole building fire alarm and has minimal smoke detectors.
- Smoke detectors are provided in the facility. These should be upgraded and tied to a fire alarm system. There is no evidence the consultants could find to show if the HVAC system has duct detectors. The HVAC system should have duct detectors provided to verify smoke transfer in and through the HVAC system ductwork to avoid unsafe conditions or disasters.

- It is recommended that ceiling fans be utilized throughout the facility in major spaces.
- The generator is minimal and does not meet the requirements of a facility of this size. The power needs to be updated to allow for more circuits and for adequate power for modern appliances and equipment.

Technology

- The detailed investigation of communications and technology was beyond the scope of this assessment.
- At the time in which this building was built, technology was not as great a concern for computer and phone access, however, over time, technology demands have required installation of phone and data jacks throughout the building. These have been done during the life of the facility and they have been surface-mounted where needed for use.
- There are multiple locations that were viewed during the review where technological equipment has been installed in spaces which are not dedicated to technological equipment. Many of these areas do not have the proper HVAC components to maintain humidity and temperature control. The equipment is also unsecure and the opportunity for vandalism or damage exists.
- There is a limited access control and surveillance system provided for the building. Security is limited.
- In many instances, proper labeling is not provided on wiring, jacks, or boards.
- There should be dedicated rooms with adequate space for the Department's technology storage needs.

2.5 Energy Efficiency

1. As noted throughout the Operational Assessment, there are various items that have energy implications, such as the roof, HVAC, lighting, and plumbing fixtures. These items can be addressed to increase the energy efficiency of the facility. These decisions are beneficial and will also increase the quality of life of the facility.
2. Other items for consideration are as follow:
   - Install a building automation system with night setbacks. This will help reduce energy consumption. Understanding that this building is primarily a 24/7 facility, the energy reduction is minimal in comparison to typical public facilities, however, it would still provide operational cost savings over the life of the building.
   - Install a lighting control system. Lighting will be turned off by occupation or motion sensors if rooms are not being utilized.
   - Automatic flush valves and faucets will reduce water usage.
   - New energy efficient windows and daylight harvesting controls in the facility will reduce energy consumption. This will also benefit the HVAC system, reducing the load on the system, and therefore decreasing energy use and operation costs.
   - The use of ceiling fans throughout the facility will minimize the energy consumption of the HVAC system.
   - Utilization of proper exhaust methods and the creation of positive and negative pressure areas in the facility will deter a "sick building syndrome". This will also benefit the health and welfare of the staff.
   - Increasing insulation on the roof will mitigate heat loss in the building. This will reduce the load on the HVAC system, making it more efficient and reducing operational costs.
   - The use of an energy recovery unit would be a benefit to the facility. This would allow for energy generated by the HVAC and exhaust systems to be recaptured and converted to heat or a tempered distribution.



3

FACILITY SPACE NEEDS

A few strategies were employed to determine the recommended space/size for a new Fire Training Center building housing all the functions including, but not limited to apparatus and equipment bays, classrooms, storage areas, locker rooms, bunk rooms, offices, cafeteria, kitchen, fitness, rehabilitation areas, bay support spaces, and building support space. A new building along with a renovation and expansion were explored as separate options. Multiple meetings were held with Fire Department personnel. The Consultant also toured the existing facility to analyze the existing conditions and to understand the good, bad, and ugly with the existing facility and to understand operations and efficiencies. Finally, the Consultant utilized the analysis and data gathered and applied their knowledge of Design Standards, Best Practices and Safety Recommendations and Guidelines to generate the programmatic needs of the Fire Department.

Design Standards, Best Practices and Guidelines are utilized to evaluate the required spaces needed to officially function and operate in a new facility. Some of these standards, best practices, and guidelines are noted throughout other sections of this report.

3.1 Design

The design of a facility must account for these functions and guidelines to achieve the most efficient operation and delivery of service possible. All decisions in arrangement, size, and location of these spaces can affect efficiency in operations.

3.2 Public Spaces

The Fire Department Training Center like many other public facilities, provide a public service, and therefore, become a public building. The Fire Department offers many classes and public outreach events at this facility that make it incumbent on the public entity developing the facility to include public spaces. This is usually accomplished in the design of a public entry with access to a restroom(s), a community or large meeting room, or at a minimum lobby seating where a person can be seated as they wait for their meeting or class to start. The public spaces must be accessible and accommodating for people of all ages and abilities.

However, with today's growing security concerns, it is critical to consider maintaining safety for the staff. Therefore, the Lobby is the only area the public has access to directly, and all other circulation is controlled via access control or other secure means to maintain the security of the facility. The public areas are used for public interaction such as meetings, community training, fire prevention demonstrations, car seat installation, and many other uses.

There are also areas provided in the public parking lot that are well lit and have camera coverage that can be used for various uses and especially parking and training.

3.3 Administration

Administrative functions such as offices, files, storage, and other similar spaces are a necessary requirement for all departments. These functions should be maintained around the other functions of the building. They can, however, be more remote from the major support spaces. It should be noted that Administrative Spaces, are known as "clean areas", and should be kept separate from the Fire Apparatus Bays and Bay Support Spaces, known as "dirty areas", both mechanically and physically, to limit and prevent contamination of the harmful carcinogens and other hazardous materials encountered

in the daily functions of a First Responder. The office spaces for employees are similar across the department but there are some intricacies for each department that are unique to them that must be accommodated in the design. This facility specifically needs areas for training instructors and recruiting and retention staff. These areas need to be located adjacent to the training classrooms and the lobby respectively.

3.4 Rehabilitation, Fitness, and Staff Support

The Training Center and Fire Department need to a Rehabilitation room which must be a flexible multi-purpose space so that various rehabilitation activities can be performed whether stretching, use of machines, and other treatment and therapy. This room must be large enough to accommodate the various uses and be flexible enough for the variety of uses with adequate storage and the necessary amenities. The room should be located near the Wellness Coordinator and Fitness room so that monitoring can be done. As the person makes progress in their rehabilitation, access to the Fitness Room is valuable to be able to start increasing their activity and exercise needs.

Staff Support spaces are vitally important to the success and vitality of the department. Accommodation for Fire Department needs such as Bunk/Sleeping Rooms, Locker Rooms, Kitchen, Breakrooms, Cafeteria, and Fitness rooms provide for the daily needs, but also the ability to get away from the stress of their job duties and assist in recruiting and retention for the department along with enhancements in the training experience. Some of these areas are important but in the fire department specifically they must be located near the Bays for response and operational efficiency but separated for the safety of the personnel. It should be noted that Living, training, and fitness spaces, known as "clean areas", should be kept separate from the fire Bays and Bay Support Spaces, known as "dirty areas", both mechanically and physically, to limit and prevent contamination of the harmful carcinogens and other hazardous materials encountered in the daily functions of a First Responder. NFPA 1583, Standard on Health-Related Fitness Programs for Fire Department Members - requires fitness rooms for fire stations.

Cardiovascular health and Strength Training Areas should be open and inviting with emergency/safety measures in the room. With the physically demanding nature of fire service activities, it is essential to incorporate these spaces into heavily used areas so the departments can maintain health and fitness standards and requirements. Many times, these rooms are available for the entire department and are in a location that allows users to access it without having to go into the main areas.

The locker rooms, restrooms, and showers for the staff is important and with the increase in female officers and fire fighters, the need for larger female and male areas is important and must be considered in the design. There are many facilities going to a gender neutral concept for the locker rooms with individual banks of lockable restrooms and showers to limit space since these spaces are quite large and are significant costs to construct.

As a means of staff support, a secure parking area should be provided separate from the public parking areas. This allows staff to be in a secure area when coming in or leaving the building. This area is typically fenced and gated. The area is well lit and has camera coverage. The lot is usually accessed via access control/keypad by staff to open the gates upon arrival.

All areas for staff must be accessible and accommodating for people of all ages and abilities.

3.5 Classrooms and Training Support Spaces

Training opportunities such as classrooms, large meeting rooms, breakout rooms, or other similar accommodation allow the department to meet their required training requirements, but also allow the training to be conducted on site and become a part of their daily operations. This also allows the department to bring the public in for training courses on various topics, citizen fire academy, and other type events. It also allows for other public services such as CPR classes.

Furthermore, these rooms can be a potential revenue generation by allowing other municipalities to attend training classes or allow the public to rent the space. The training areas must also be flexible as the nature of the training fire departments do, which is quite different. Fire training also requires spaces to throw ladders, stair training with hoses, climbing through doors and windows, close quarter training, and rappelling training is all necessary for their jobs. These spaces need to be accommodated in unique ways to minimize the cost of having all these facilities separate from the other program elements.

Classrooms need to be flexible to allow for varied training scenarios such as a classroom, presentation, hands-on activities, demonstration areas, etc. These rooms also need to be technologically advanced to allow for webinars, video conferencing, presentations, videos, audio and visual aids, etc. There is also a need to do EMS and Fire type training. These rooms are necessary and are very particular in how they are constructed and where they are in the building. These rooms are required to be soundproof and be constructed of durable materials due to the nature of the use.

Breakout rooms are for the ability for an instructor to break out teams to do specific training activities or hands-on training

with smaller groups. It also allows for the ability to have smaller and more frequent training and does not require a larger room. These are situated in and around the main classrooms for convenience and to avoid taking people to the other areas of the building and disturbing other work occurring elsewhere. The report rooms are set up like small classrooms and usually have similar technology setups.

Typically, the classrooms have storage closets adjacent or attached to the room for chair and table storage, audio/visual, technology equipment, and training props. These may be one large room or multiple smaller rooms for the ability to segregate the various storage needs of the room.

3.6 Apparatus/Vehicle Bays

Vehicle Bays are vitally important to the operation of a Fire Station and Training Facility. The Bays house emergency apparatus and vehicles and other equipment. The design of the space is key in facilitating daily functions and proper response time in a station setup. Industry Standards for the Bays are to have adequate maneuverability around and between all vehicles. It is typical to have 5'-0" between the rear and front of vehicles and the doors, 7'-0" between vehicles (side by side), 6'-0" between vehicles and the Station's structure, and 8'-0" between vehicles (rear to rear).

Bay ceilings should provide adequate clearance between the top of the largest vehicle and the Station's structure. The ability to stand on top of a vehicle and not be impeded by the structure of the facility should be considered.

Bay doors should be a minimum of 13'-0" wide with a height able to accommodate the largest vehicle size. Typical practice is 14'-0" to 16'-0" high. These doors can be sectional or hi-speed overhead type. Bi-fold doors should be seriously considered over the other doors. Bi-fold doors do have a higher first cost than the other doors. However, they open in approximately 4 seconds, which is faster than most sectional or overhead doors. They are maintenance friendly and have significantly less maintenance than overhead or sectional doors, which is where the value becomes significantly less than the other door types.

Bays should have proper exhaust to eliminate contamination from diesel fumes and off-gassing of equipment and gear. This should be done with a two-phase system consisting of exhaust fans tied to carbon monoxide detectors and an air purifying system or a direct-connect system, whichever is preferred by the department.

Bays should be drive-through if property allows as they are most economical and flexible, due to the ability to have double the Bay space in a more compact arrangement, with easier maneuverability of the trucks. It also allows for dual exit by parking vehicles rear to rear.

3.7 Bay Support

Bay Support should be located adjacent to and near the Bays for efficient operation and quicker response times in a fire station setup. These spaces include the Bunker Gear Room, Decontamination Room, Maintenance Workshop, Storage, Self-Contained Breathing Apparatus (SCBA) Room, and Medical Storage. These spaces should not be within the Bays, to avoid interference with the Bays' intended use and to minimize contamination. These spaces should allow for proper ventilation and ventilation of off gases of all stored items and should have minimal direct sunlight or UV lights to avoid degradation of materials.

3.8 Storm Shelter

The storm shelter is required by the building code for all public safety facilities. The shelter is required to meet the ICC 500 requirements. This area is Zone 4 which must be able to withstand wind speeds of 250 miles per hour. The shelter is required to protect the first responders for 2 hours so they can respond to the public need following the event. The storm shelter should be an existing program space that is used for another function so that the shelter does not sit empty and dark. The shelter must have access to restrooms, water, venting, and lighting.

A storm shelter can be provided in the basement of a facility if a basement is available or possible. If located in a basement the storm shelter would require a direct means of egress to the exterior. The storm shelter is only for the occupancy load of the facility and not for the public. It can be established for the public if the municipality desires to provide that function, but an occupant load must be established on how many public citizens will be let into the shelter. This is often the reason that they are not provided to the public because how does the municipality determines who is in and who is out. If they try to accommodate a large population the construction of that shelter would be too costly to build.



4

FACILITY PROGRAM

Based upon the information collected from the Lexington Fire Department staff, and the existing Building Analysis, the results of this data were used to develop Preliminary Concept Programs for the proposed facilities as defined during these interviews and analysis.

The Building Program is a listing of all rooms and spaces required for the facility to house the intended main program spaces and all supporting spaces, such as mechanical rooms, circulation, and other support functions in a facility. The program includes estimated space requirements for the various areas such as the classrooms, offices, kitchen, apparatus bays, bay support spaces, etc. The total area of the program is intended to portray the approximate area needed to accommodate functions of a modern 21st Century Fire Training Center.

BCI met with Fire Department Staff and Officials to assess current working conditions, relationships between functional spaces, and discuss future growth. During these interviews, staff were asked to address current needs, as well as future needs in terms of both training spaces, staffing, and equipment. In addition, adjacent space requirements were discussed to ascertain a functional layout for a more efficient operation. The goal of this process was to capture information that would allow the Architect to develop a program which would address the following:

1. Training space requirements
2. Storage requirements
3. Equipment and technology requirements
4. Physical relationships and adjacencies
5. Future growth

The Building Programs have been utilized to develop Concept Diagrams and estimate construction costs, using cost figures based on recent experience and historical data with similar types of projects.

Table 4.1: Preliminary Concept Space List - Training Center

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
"Dirty" Areas					
1.00	**Apparatus/Equipment**				
1.01	Vehicle Bays	Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props	4	1,600	6,400
1.02	POV Bays	Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props	1	1,600	1,600
				Subtotal Net Square Footage	**8,000**

Table 4.1: Preliminary Concept Space List - Training Center (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
2.00	**Bay Support Areas**				
2.01	Gear Room	100 Gear Lockers / Exhaust / Fans / Floor Drains	1	500	500
2.02	Tool Room	Workbench / Floor Drains	1	200	200
2.03	Decon/Laundry	Shower / Sink / Floor Drains / Emergency Eye Wash/Shower	1	200	200
2.04	Gear Wash	2 Gear Washers / 2 Linear Drying Racks / Regular Washer and Dryer	1	200	200
2.05	Storage Rooms	Fire and EMS Storage / Access Control	2	300	600
2.06	SCBA	Workbench / Bottle Storage / SCBA Machine / 24-Hour Access / Access Control	1	180	180
2.07	SCBA Maintenance	Workbench / 100 Bottle Storage / SCBA Machine	1	250	250
2.08	Technical Rescue Training	Combined in Bay Spaces / Landing Area	1	100	100
2.09	Auditorium Storage	Table and Chair / Portable Stage Storage	1	200	200
2.10	General Storage Room	Shelving	1	200	200
2.11	Dirty Restroom	Sink / Water Closet / Hose Bib / Near Decon	1	75	75
				Subtotal Net Square Footage	**2,705**
3.00	**Classrooms/Labs**				
3.01	Large Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division (Structure at a Minimum) / 60 Seats	1	1,800	1,800
3.02	Classroom Storage Room	Shelving / Table and Chair / Training Props	2	200	400
3.03	Medium Classroom	A/V / Monitors/ Markerboards / Air Walls for Division / 45 Seats / Shared with Fire and EMS	1	2,000	2,000
				Subtotal Net Square Footage	**4,200**
				Total Net Square Footage of "Dirty" Areas	**14,905**
"Clean" Areas					
4.00	**Entry**				
4.01	Vestibule	ADA Accessible	1	70	70
4.02	Lobby	ADA Accessible / Displays / Historic Truck	1	800	800
4.03	Public Restroom	Water Closets/ Sinks/ Fountains/ ADA Accessible	2	300	600
				Subtotal Net Square Footage	**1,470**
5.00	**Fire Training Areas**				
5.01	Auditorium	Air Walls for Dividing Space into multiple rooms / 400 People / A/V / Stage / Screens / Monitors / Projectors / Acoustical Panels / Shared with Bays	0	0	0
5.02	Classroom Storage Room	Shelving / Table and Chair / Training Props	2	200	400
				Subtotal Net Square Footage	**400**
6.00	**EMS Training Rooms**				
6.01	Breakout Rooms	A/V / Monitors/ Markerboards	4	360	1,440
6.02	Large Classroom	A/V / Monitors/ Markerboards / Air Walls for Division / 60 Seats	1	2,700	2,700
6.03	Classroom Storage Room	Shelving / Table and Chair / Training Props	3	100	300
6.04	Simulation Lab	Multi-Purpose / Access Controlled	1	625	625
6.05	Climate Controlled Storage	Climate Controlled / Access Control	1	300	300

Table 4.1: Preliminary Concept Space List - Training Center (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
6.06	Cold Storage Area	Access Control	1	300	300
				Subtotal Net Square Footage	**5,665**
7.00	**Administration Areas**				
7.01	Executive Officer	Desk/ File Cabinet / Book Case / Monitor	1	200	200
7.02	Training Officer Office	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.03	Admin. Specialist	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.04	Large Conference	Table and Chairs / Monitor / Marker board / 20 People	1	600	600
7.05	Work/Copy/Mail Room	Mailboxes / Copier / Work Counter / Cabinets	1	90	90
7.06	Training Instructor Office	12 Workstations 8x6 / Monitors / Book Case	12	60	720
7.07	A/V Office	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.08	Video Production/ Multimedia	Soundproof/ Quiet Area / A/V Equipment / Graphic Preparation Area / Laptop Cart Storage	1	250	250
7.09	Records Storage	Lockable / Fire Proof / Access Control	1	200	200
7.10	Recruiting Offices	Desk/ File Cabinet / Book Case / Monitor	2	120	240
7.11	Background Investigators	3 Workstations 8x6 / Monitor / Book Case	3	60	180
7.12	Admin. Specialist	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.13	Recruiting & Hiring Entry	Seating / Monitor	1	70	70
7.14	EMS Instructor Offices	Desk/ File Cabinet / Book Case / Monitor	4	120	480
7.15	Wellness Coordinator	Desk/ File Cabinet / Book Case / Monitor / Near Fitness / Future Growth for Workstations for Future Staff	1	250	250
				Subtotal Net Square Footage	**3,760**
8.00	**Staff Support Areas**				
8.01	Locker Room	120 1/2 Size 2x2 Metal Lockers/ Benches	1	400	400
8.02	Locker Room	15 Full Size 2x2 Metal Lockers / Benches	1	400	400
8.03	Gender Neutral Restroom	w/ Showers	19	90	1,710
8.04	Laundry	Laundry Equipment with Hookups / Venting / Shelving / Near Staff Locker Room	1	80	80
8.05	Custodial Closet	Mop Sink/ Shelving	1	36	36
8.06	Linen Closet	Shelving	2	20	40
8.07	Fitness	Exercise and Training Equipment / 24-Hour Access / Near Locker Rooms and Showers / Fans / Monitors	1	4,500	4,500
8.08	Kitchen	Commercial Kitchen & Appliances / Pantry / Near Cafeteria	1	600	600
8.09	Food Storage	Dry / Freezer / Coolers	1	200	200
8.10	Cafeteria	Seating for 60 people / Microwaves / 2 Reffrigerators	1	2,300	2,300
8.11	Bunk Rooms	12 Bunks / Night Stands / Monitors / Fans	12	50	600
8.12	Quarter Master Room	Shelving / Racks / Electronic Tracking / Access Control / 24-Hour Access / Exterior Access Point	1	600	600
8.13	Rehabilitation Area	Near Fitness Room / Limited Access / Monitors	1	1,500	1,500
				Subtotal Net Square Footage	**12,966**
9.00	**Physical Plant**				
9.01	Mechanical	Floor Drain / HVAC Equipment	1	500	500
9.02	Electrical	MDP/ Switchgear / Panels / Fire Alarm / Floor Drain	1	500	500
9.03	Water	Oil Water Separator / Water and Fire Entry / Water Heaters	1	150	150
9.04	MDF/Server Room	Separate HVAC / Facility Wi-Fi Spots / IP Phone System/ Fiber Entry / Grounding / Servers/ Floor Drain / Comm Equipment/ Cable Tray	1	300	300

Table 4.1: Preliminary Concept Space List - Training Center (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
9.05	Antennae Room	Floor Drain/ Antennae Equipment and Entry/ Grounding/ Station Alerting	1	80	80
9.06	I.T./IDF	Comm Equipment/ Cable Tray	1	80	80
				Subtotal Net Square Footage	**1,610**
				Total Net Square Footage of "Clean" Areas	**25,871**
				Total Net Square Footage	**40,776**

TOTAL NET BUILDING SQUARE FOOTAGE	**40,776**
CIRCULATION, WALLS, AND CORRIDORS GROSSING FACTOR OF 20%	**8,155**
TOTAL GROSS SQUARE FOOTAGE	**48,931**

OUTDOOR AMENITIES					
1.00	**STAFF AMENITIES**				
1.01	Staff Parking	Secure Fencing / Gate / Loop Detectors / Access Control or Transmitters / Electric and Charging Stations / Electrical / Covered Parking for Trailers	20	350	7,000
1.02	Outdoor Courtyard	Secure / Adjacent to Breakroom / Gas Connections / Electrical / Tables and Chair and Umbrellas	1	1,500	1,500
1.03	Secondary Access to Site	Secure / Gate / Access Control	1		0
1.04	Training Ground with Props	Extraction, Rail Car, Tunnel, Drafting Pit, Tower, etc.	1		0
1.05	Bridge	Loading for Apparatus / Pedestrian Access	1		0
1.06	Apparatus Parking	Secure Fencing / Gate / Loop Detectors / Access Control or Transmitters / Electric and Charging Stations / Electrical / Near Bays	10	800	8,000
1.07	Driving Pad	Training Pad 250x200	1	50,000	50,000
				Subtotal Net Square Footage	**66,500**
2.00	**PUBLIC AMENITIES**				
2.01	Public Parking	ADA Compliant Stalls / Public Parking	200	350	70,000
2.02	Civic Space	Civic Space for Public / Threat Mitigation Tactics	1	1,000	1,000
				Subtotal Net Square Footage	**71,000**



5 CONCEPTS

During the Consultant's review and analysis, the Consultant studied and reviewed potential scenarios for improving the training efficiencies and service delivery. It was apparent, due to the size of the existing facility, that it could not achieve all these goals. BCI analyzed the various needs and BCI along with the Fire Department was able to quickly ascertain that the building would need to maintain a fire component for response should a station need to be taken offline or if an emergency response would be needed. The recruits also need to have the department component for training purposes. To do a thorough analysis, the Consultant reviewed a variety of scenarios from an entirely new facility and a renovation and expansion of the existing building.

The following scenarios and concept diagrams identify various opportunities to achieve these goals.

5.1 Concept 1 – Renovation and Expansion Training Center Building

The first scenario analyzed renovating and expanding the existing building by "unpacking" and "repacking" the existing building and expanding the building where required for the needs of the Fire Department to provide adequate training space and address other needs of the department to obtain the necessary space to accommodate modern training center best practices and requirements. This allows for better service to the department who come to the building to attend to their variety of training needs and requirements of their profession, This will help to create new organizational efficiencies for the Fire Department.

This scenario though would be a cheaper option. However, a concern is that the existing building has significant deficiencies that will not be entirely eradicated such as HVAC and Plumbing systems. There will be compromises that will have to be made to utilize the existing structure and walls of the building.

5.2 Concept 2 – New Fire Department Training Center Building

The second scenario studied and analyzed the demolition of the existing facility and the construction of a completely new Training Center. Currently, the existing facility is not large enough to accommodate the modern needs of a fire department training center, therefore, it was quickly ascertained that a new facility would be a necessary option to consider.

This new building would be designed to be large enough to adequately serve the Fire Departments current and future training needs that is designed specifically for public safety best practices and requirements for training. This option also provides for a future shell space on the upper level which would allow the Fire Department to have future expansion that could potentially consolidate some other divisions or expand the department to add additional divisions or staff that they currently do not have in the department. A few other added benefits to a new facility are that compromises are not necessarily due to existing structure and other conditions. The building systems such as HVAC and plumbing will be all new systems without any inherited issues from an old existing facility.

The one negative of this scenario would be the total cost would be more than the renovation and expansion.

5.3 Concept 3 – New Support Building

The third scenario is a general analysis as this building has been covered briefly in the other concepts mentioned above. The concepts show a driving skills pad for apparatus driving training and some extraction, railroad, and over-the-road training props. These features are located across Town Branch Creek which means it is away from the Training Center location and main training grounds. This limits the support for the recruits or other personnel who may be using these props. There would be no access to restrooms, storage, etc. without walking or driving to the training center on the other side of the creek.

The third scenario looks at the potential for future support building that would consist of additional bay space for storage of vehicles for training or vehicles for the fire department from their city-wide fleet. There would also be access to the storage of training equipment, gear, and props, and provide restrooms which would support the training activities on that side of the Town Branch Creek. This would also allow for some gathering and instructional space. The training services would be enhanced and more fully address the goals and objectives of the Study Committee.

Through discussion, this building was intended to be a future building, however, in looking at the need to maintain operations during the construction of the new or expanded facility, this building could be built first which would allow that continued operation. The facility would give them a place to move and house equipment, vehicles, gear, and a potential space for training activities.

The only negative to this being done as an initial phase is the additional cost of the facility, which would require some potentially significant utility work.

5.4 Diagrams

The diagrams below represent the scenarios above and all meet the basic program requirements identified in the report. These plans are conceptual in nature and would need to be refined and modified as the City Officials decide on which option(s) to move forward to design and construction. Also, contained below is a comparison of the new space versus the existing space for each function of the building. As you can quickly see from the comparison chart, the existing facility does not adequately provide the space as identified in the program document or in the new concepts for renovation and expansion or a new building. It is also clear that many of the spaces, even though they may be provided, are not large enough to adequately serve the function and service of the individual departments. Please note that the Comparison Chart does not compare all concepts or programs with existing facilities. The existing was compared to the Renovated and Expanded Training Center and the New Training Center Building.

Figure 5.1: Renovation and Expansion - Concept Diagram, First Floor

FLOOR PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION



FIRST FLOOR

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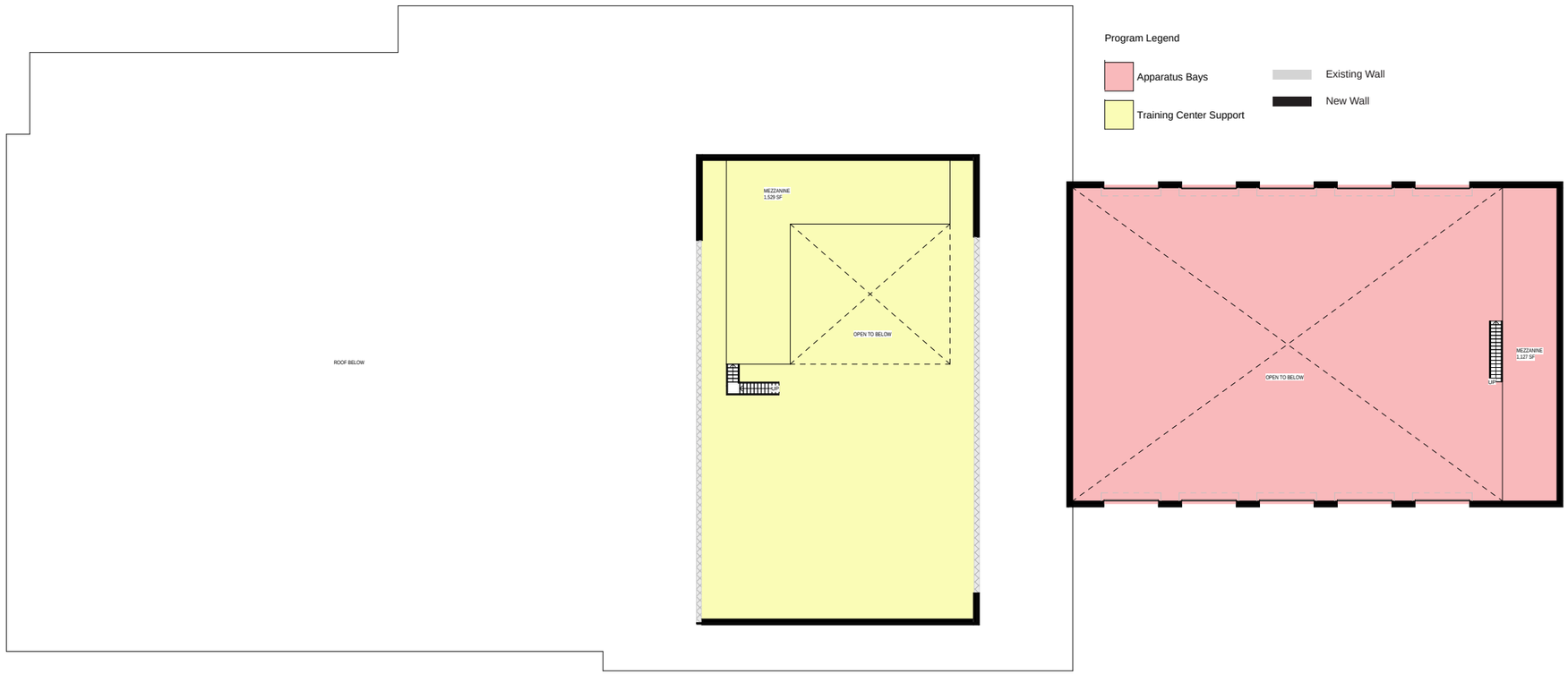
November 18th, 2024

SCALE:
3/32" = 1'- 0"

NORTH

Figure 5.2: Renovation and Expansion - Concept Diagram, Second Floor

FLOOR PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION



SECOND FLOOR

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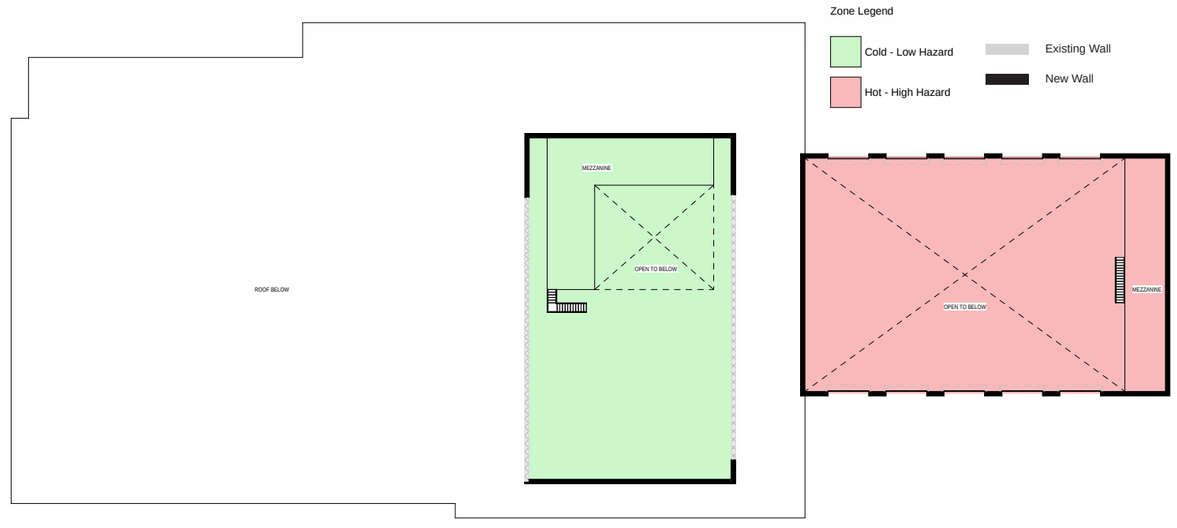
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SCALE:
3/32" = 1'- 0"

NORTH

Figure 5.3: Renovation and Expansion – Hot and Cold Floor Plan

HOT ZONES PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION



SECOND FLOOR



FIRST FLOOR

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SCALE:
1/16" = 1'- 0"

NORTH

Figure 5.4: New Training Center – Concept Diagram, First Floor

FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD



FIRST FLOOR

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SCALE:
1/8" = 1'- 0"

NORTH

Figure 5.5: New Training Center - Concept Diagram, Second Floor

FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD



SECOND FLOOR

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SCALE:
1/8" = 1'- 0"

NORTH

Figure 5.6: New Training Center – Hot and Cold Floor Plan

HOT ZONES PLAN CONCEPT OPTION 2 - NEW BUILD



SECOND FLOOR



FIRST FLOOR

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LFUCG Fire Training Center Study

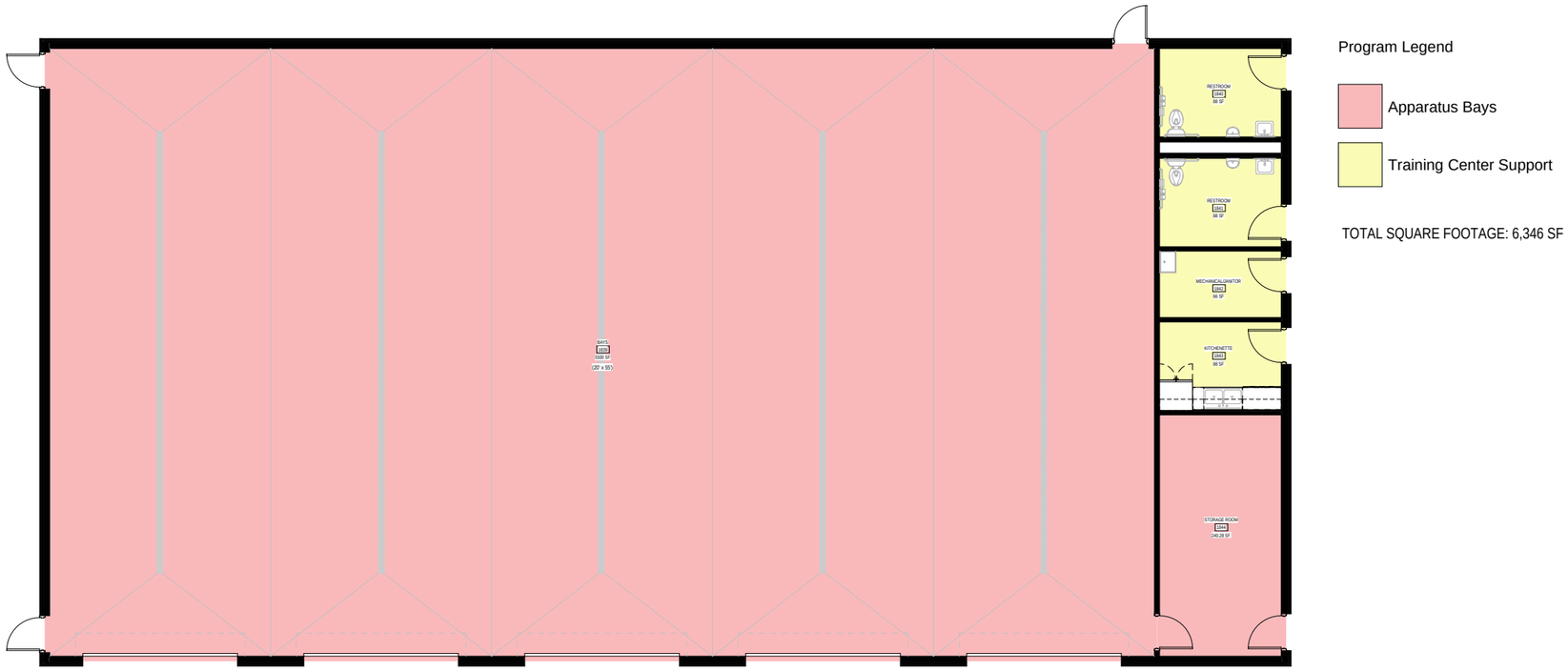
1375 Old Frankfort Pike, Lexington, KY 40504
November 18th, 2024

SCALE:
1/16" = 1'- 0"

NORTH

Figure 5.7: New Support Building – Concept Diagram

FLOOR PLAN CONCEPT 3 - SUPPORT BUILDING



Program Legend

Apparatus Bays

Training Center Support

TOTAL SQUARE FOOTAGE: 6,346 SF

FIRST FLOOR

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SCALE:
1/4" = 1'- 0"

NORTH

Table 5.1: Comparison Chart

Space Description	Existing	Renovation & Addition	New
Vestibule	Not Currently Present	86 SF	88 SF
Public Lobby	687 SF	840 SF	868 SF
Men's Public Restroom	214 SF	300 SF	290 SF
Women's Public Restroom	128 SF	300 SF	290 SF
Reception Admin Specialist	250 SF	120 SF	120 SF
Recruiting & Hiring Waiting Area	Not Currently Present	92 SF	105 SF
Background Investigators	Not Currently Present	187 SF	194 SF
Recruiting Office	Not Currently Present	120 SF	120 SF
Recruiting Office	Not Currently Present	120 SF	120 SF
Executive Officer Office	184 SF	250 SF	211 SF
Training Officer Office	93 SF	192 SF	144 SF
Admin Specialist	Not Currently Present	127 SF	120 SF
EMS Office	90 SF	132 SF	120 SF
EMS Office	Not Currently Present	132 SF	120 SF
EMS Office	Not Currently Present	132 SF	120 SF
EMS Office	Not Currently Present	132 SF	120 SF
Admin Restroom	61 SF	N/A	N/A
Records Storage	152 SF	358 SF	237 SF
Large Conference Room	457 SF	645 SF	647 SF
Work/ Copy/ Mail Room	Combined with Reception	230 SF	144 SF
Video Production/ Multimedia Room	Not Currently Present	298 SF	264 SF
A/V Office	Not Currently Present	127 SF	120 SF
Training Instructors Office	424 SF	726 SF	735 SF
Large Fire Classroom	1170 SF	1,997 SF	2,227 SF
Classroom Storage	171 SF	209 SF	190 SF
Medium Fire Classroom	1117 SF	1,750 SF	1767 SF
Classroom Storage	Not Currently Present	209 SF	220 SF
EMS Classroom	654 SF	2,884 SF	2,625 SF
Classroom Storage	Not Currently Present	360 SF	292 SF
Breakout Room	476 SF	369 SF	363 SF
Breakout Room	Not Currently Present	347 SF	363 SF
Breakout Room	Not Currently Present	355 SF	360 SF
Breakout Room	Not Currently Present	355 SF	360 SF
Breakout Room	Not Currently Present	333 SF	N/A
Breakout Room Storage	Not Currently Present	77 SF	N/A
Simulation Lab	Not Currently Present	608 SF	619 SF
Climate Controlled Storage	Not Currently Present	299 SF	293 SF
Cold Storage Room	Not Currently Present	291 SF	293 SF
Cafeteria	Combined with Kitchen	2,474 SF	2,636 SF
Kitchen	313 SF	634 SF	622 SF
Food Storage	Combined with Kitchen	252 SF	212 SF
Men's Bunk Room	396 SF	1,051 SF	1,113 SF
Women's Bunk Room	276 SF	Combined with Men's Bunk Room	Combined with Men's Bunk Room
Shift Linen Storage	Not Currently Present	77 SF	77 SF
Laundry Room	84 SF	241 SF	195 SF

Table 5.1: Comparison Chart (Continued)

Space Description	Existing	Renovation & Addition	New
Linen Storage	Not Currently Present	55 SF	72 SF
Locker Room	Not Currently Present	1,732 SF	1,918 SF
Restrooms w/ Showers (19)	Not Currently Present	1,432 SF	1,544 SF
Janitor	Combined with Men's Restroom	53 SF	47 SF
Fitness Room	Not Currently Present	4,866 SF	4,409 SF
Rehabilitation Area	Not Currently Present	1,419 SF	1,611 SF
Wellness Coordinator Office	Not Currently Present	299 SF	252 SF
Staff Men's Restroom	Not Currently Present	N/A	128 SF
Staff Women's Restroom	Not Currently Present	N/A	128 SF
Gender Neutral Staff Restroom (2)	Not Currently Present	N/A	151 SF
Apparatus Bays	6188 SF	8,891 SF	8,891 SF
Apparatus Bay Restroom	Not Currently Present	90 SF	84 SF
Decontamination	Not Currently Present	490 SF	617 SF
Gear Wash Room	Combined with Laundry	188 SF	190 SF
Tool Room	186 SF	217 SF	205 SF
SCBA Room	165 SF	188 SF	188 SF
SCBA Maintenance	Combined with Tool Room	256 SF	256 SF
Fire Storage	556 SF	303 SF	303 SF
EMS Storage	224 SF	303 SF	303 SF
Quarter Master	301 SF	620 SF	614 SF
Gear Room	228 Sf	1,117 SF	1,194 SF
Auditorium Storage	Combined with Apparatus Bays	217 SF	205 SF
General Building Storage	266 SF	1,079 SF	374 SF
Training Tower	N/A	N/A	408 SF
Stairs	N/A	N/A	204 SF
Elevator	N/A	N/A	90 SF
MDF/ Server Room	Combined with Laundry	342 SF	300 SF
Mechanical Room	Combined with Laundry	518 SF	503 SF
Electrical Room	Combined with Laundry	518 SF	503 SF
IT/ IDF Room	Not Currently Present	127 SF	123 SF
Antennea Room	Combined with Laundry	117 SF	135 SF
Water Room	Combined with Laundry	150 SF	154 SF
Mezzanine Storage	Not Currently Present	2,656 SF	1,127 SF



6

SITE CONSIDERATIONS

6.1 Introduction

Site selection for public buildings involves many factors such as size, location, cost, site restrictions, utilities, and soil. Many of these are common for most projects, however, since the Fire Department is involved, they require size, location, and access to be more important than other factors. The site for a training center has similar requirements but also must account for many people and vehicles to be present which must allow for proper vehicle turning, multiple buildings and structures, parking, access to main roads, accessibility, pedestrian use. This is not often possible, and a smaller lot size would contribute to many compromises which can affect cost, response time, and safety. A simple compromise is to use a two-story building which affects all factors mentioned and as you will see it is used in our new building concept scenario to assist with some of the site constraints which isn't as feasible for the renovation and expansion concept.

In training facility design this requirement for more land to provide adequate space for the factors already discussed above is critically important since the training involves both classroom and outdoor spaces along with the ability to use apparatus, vehicles, and other equipment that is vitally important to the everyday tasks that these men and women are required to perform. The Fire Department fortunately has existing property that can be and is used for these services. Though there are site constraints such as Town Branch Creek cutting through the site, a new Town Branch Trail being installed across the right-of-way of the site, soil conditions, EPA covenant on a portion of the property, and a variety of utility challenges, this site does provide adequate opportunities to meet the requirements noted above.

This site as it is redeveloped for the expansion of the training center as outlined in this report must account for the variety of events and uses the Fire Department will continue to use it for along with those that they intend on adding as they have the space to accommodate those events. In so doing, public circulation and security control is required not to jeopardize the safety and security of the staff or the ability for the public to achieve a quality level of service. However, the public must have the ability to park, have access to pedestrian friendly walkways, and enter the building. This extends into the areas they can access in the building once they are inside the facility. The Zoning Ordinance changed to not require parking minimums for a property. However, in looking at current codes and the previous LFUCG Zoning Ordinance, parking requirements will be met with the expanded parking including the required number of accessible parking spots.

The access to main thoroughfares is critically important for emergency response and access to the site. Safe and efficient vehicle travel through site is critically important and the ability to reach the major thoroughfare is important. It is also important not to create conflicts with pedestrians and public uses. There are some existing conditions that will predefine the vehicular traffic, however, limiting issues are important and were addressed in the conceptual designs. One critical component of the site is the bridge access to the northern side of Town Branch Creek. This existing bridge is not structurally sound and must be replaced. It is the Consultant Team recommendation as shown in the concepts to replace this bridge with a bridge that supports two-way traffic and a pedestrian walkway. This bridge will be able to support apparatus moving across in both directions and pedestrians walking across it at the same time. There have been accommodations in the concepts for a future access bridge from the training ground to the northern side of Town Branch Creek to provide small vehicular and pedestrian access across the creek to allow for quicker access to either side for expediency of the personnel for training activities on both sides of the creek.

After review, a Facility and Site Development Diagram was prepared for each, to see how the facility could operate on this site. Consideration was given to maintaining the existing building and expanding in its current location. A consideration was given to building a new building in the existing location as a two-story component to minimize site impacts. There was another consideration of relocating the building to the northern side of Town Branch Creek to try and avoid some of the site constraints on the southern side such as utilities, grading, and trail. This consideration was not desired but is available in the Appendices.

These options were explored to analyze how they might meet the needs of the department, provide additional development, and ultimately better service opportunities for the Fire Department. Other sections of the report discuss these options in more detail. The options presented will provide the Fire Department with enhanced and improved service delivery.

6.2 Site Conditions

The subject property is located on Old Frankfort Pike. This site is currently owned by the City of Lexington and is currently serving as the Lexington Fire Department training center. Building size and location affects the vehicle parking, training grounds, pedestrian access, and storage of equipment. This property has adequate space for the amount of equipment, vehicles, apparatus, props, and staff.

An updated property topographic and boundary survey was conducted along with a new geotechnical exploration report. These are located in the Appendices for full review. In summary, the survey information located the major utilities and topography and other site appurtenances. The surveyor also located the EPA covenant location that must be considered in building location and site development.

The geotechnical exploration report shows a large amount of building rubble, and fill around the property. The summary of this report establishes that further testing and exploration will need to be conducted upon moving forward with the project. This will include test pits and further drilling. It also identifies the need for deep foundations to be installed for the building to avoid the removal of all the fill material. The pavement locations currently have little to no sub-base or thickness to accommodate the weight of the vehicles and equipment used on this property. Moving forward an adequate sub-base and pavement thickness must be used to handle the vehicle, equipment, and apparatus that will be frequenting this site on a daily basis.

The utilities are available at this location but in the case of the existing facility they may need to be upgraded due to age and the current need for a larger facility. In the event of expansion or a new building, there are a few utilities that will need to be relocated and others that will need to be improved. At the time of the report, we did not know the extents or requirements of what those relocations or improvements of the existing utilities entail from the governing agencies and needs of the design of the facilities. However, based on the survey, most of the utility information is known and many are owned by the City. New easements may be required once the new development is determined, and agencies are engaged during the design process.

The main road to the parcel is two-way traffic. With the new development of the trail and platting of the site, there may be a new ultimate ROW that will need to be dedicated. The primary connection of the ingress/egress for the site seems to be staying in their current locations with the possibility of one of these being closed for trail construction. These will need to be aligned with the development of the property. At this time, we do not anticipate a traffic study will be required.

The existing zoning of the properties should not require any major amendments or zoning changes since the use of the existing property will remain as it is currently used and zoned.

The storm water and water quality issue has not been studied in this report. It is anticipated that due to the consent decree the City has on storm water, the site will need to improve the storm water drainage and water quality which is not up to current LFUCG Division of Engineering standards. Due to the large amount of previous area being added to this property, it is anticipated that the storm water and water quality will be dependent on underground detention chambers. Other means can be explored during the course of the design process, however, for the purposes of this report the underground detention was assumed in the cost estimates.

Figure 6.1: Site Diagram Renovation and Expansion

SITE PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION



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SCALE:
1" = 40'-0"

NORTH

Figure 6.2: Site Diagram New Build

SITE PLAN CONCEPT OPTION 2 - NEW BUILD



Legend:
1 - Civic Space
2 - Existing Flag Pole
3 - Apparatus Parking
4 - Generator
5 - Outdoor Courtyard
6 - Covered Staff Parking
7 - Public Parking
8 - Driving Pad
9 - Future Support Building
10 - EPA Covenent Area
11 - Future Town Branch Trail Extension
12 - Relocated Extraction Training
13 - Relocated Wild Fire Training
14 - Relocated Urban Search & Rescue Training
15 - Relocated Metal Sheds
16 - Future Bridge

Total Parking:
Staff - 20 Spots
Public - 200 Spots
Public ADA - 7 Spots

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SCALE:
1" = 40'-0"

NORTH



7

OPINION OF COSTS

7.1 Deferred Maintenance and Improvement Costs

The Consultant has identified approximately $8,676,000 in deferred maintenance and improvement items.

Investment in these items will improve the building envelope, code deficiencies, and building systems, site deficiencies, and some improvements to the existing space. However, it will not address the need for additional space and operational inefficiencies, both within the building, and on the site; nor will it provide the spaces that a modern fire training center facility would require to meet the current and future needs. For those reasons, it is recommended that the funds needed to address these deferred maintenance and improvement costs for the existing building be invested instead into the Consultant recommendations identified in the report. These recommendations will support current and future training operations for the department.

Recommended immediate maintenance and improvements for the existing facility and site includes:

▪ Interior Building Improvements	$1,100,000
▪ Exterior Building Improvements	$776,000
▪ Building Structural Repairs	$ 56,000
▪ Building Roof Repairs	$625,000
▪ Building Mechanical Upgrades	$764,500
▪ Building Electrical Upgrades	$820,000
▪ Building Plumbing Upgrades	$125,000
▪ Building Fire Protection Upgrades	$ 65,000
▪ Building Telecomm, Safety, and Security	$ 45,000
▪ Site Parking and Improvements	$3,000,000
▪ Bridge Replacement	$1,300,000
Total	**$8,676,000**

7.2 Opinion of Probable Cost

Opinion of Probable Costs have been prepared by the Consultant Team's Third-Party Estimator to indicate the potential funding required for the construction of a variety of scenarios that are identified in the report. Probable costs are broken down for construction costs, contingency and soft costs, and Owner costs. The intent is to represent a full project cost, not just a construction cost.

7.3 Probable Construction Cost

The primary areas of construction are represented by the physical elements of the proposed facility. This includes the general building, building systems, and site development.

7.4 Contingency and Soft Costs

Furniture, Fixtures, and Equipment (FF&E) is an allowance for all "loose" items in the building. This includes all furniture, kitchen equipment, and appliances, laundry appliances, support equipment, and office equipment such as printers and copiers.

There are separate contingencies that are covered in the contingency line item listed. The Design Contingency accounts for the fact that this is an opinion that is based solely on a space program, and a concept design. Once the actual design process is initiated, there may be many changes in the size, configuration, and/or materials desired, which will affect the overall construction cost. At this conceptual stage, a 2% to 5% contingency is allowed. Once the facility has been fully designed and Construction Cost Estimates are prepared based on that design, the Design Contingency can be eliminated.

The Construction Contingency is an allowance for unforeseen items that occur during construction. This may include unknown site conditions that are uncovered once excavation begins, errors, omissions, or last-minute design changes or additions directed by the Owner. The Construction Contingency is maintained throughout construction. Currently the Construction Contingency is combined with the Design Contingency at 5%. Many projects carry a contingency amount of 10% through construction.

The Escalation Contingency accounts for the potential for cost escalations that may occur during the time lapse of the project from when the report is finalized to the actual bidding of the project where a contractor is selected to start the actual construction and proceeds to about the half-way point of construction duration. This contingency has become very important over the last three years due to the construction cost surge we have experienced since the pandemic of 2020 and the post-pandemic world we now live in. The construction market has seen pricing climb over these last three years at about a 40% increase from 2020 pricing. The escalation contingency is important for municipalities to be aware of so that they are not surprised as they move forward. This contingency has been provided as part of the total project cost that should be considered by the City as they determine their course of action and budget.

Phasing costs is an allowance for costs associated with phasing a project as it typically causes a contractor to provide higher level of safety, accommodations for the entity, protection of the existing conditions and occupants and staging and remobilization of the contractor(s) to stage and organize work efforts around an entity and/or appurtenances over having full control of the project site.

7.5 Owner Costs

There are a series of costs that the Owner will bear beyond the construction and other costs listed above. These include Professional Design Fees, Testing Fees, Administrative and Legal Fees, Utility Connection and relocation fees, Special Inspections during construction, and many others. These should be considered in the budgeting process and are not shown in the total project costs as many times these are paid outside of the project funds.

Based on the Study, it is anticipated that the City may have phasing and relocation costs to maintain training operations for the Fire Department. There are some costs assumed in the project costs included at this point, but this cost may not account for all the intricacies of the relocation such as specific needs to make the temporary settings usable for the purpose of the department. Some additional costs may be necessary beyond the costs shown and should be considered in the budgeting process. The Fire Department has some initial estimates for portable classrooms and offices. It is an approximate cost of $118,000 annually. In the Renovation and Expansion and New Building options it is anticipated that they may need to rent these temporary facilities for a minimum of 2 years but a 3-year term may be necessary and should be at least initially considered in the budgeting process.

Table 7.1: Opinion of Probable Cost Renovation and Expansion

RENOVATION	16,000	sf
ADDITION	39,200	sf
GROSS SQ. FT.	55,200	sf

DATE: October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
EXISTING CONDITIONS	2.31	127,760
SUBSTRUCTURE	26.93	1,486,800
SUPERSTRUCTURE	46.62	2,573,400
EXTERIOR ENCLOSURE	43.50	2,401,400
ROOFING	31.27	1,726,200
INTERIOR CONSTRUCTION	97.57	5,385,750
FIRE PROTECTION	7.50	414,000
PLUMBING	11.33	625,385
HVAC	56.85	3,138,300
ELECTRICAL	60.00	3,312,000
COMMUNICATIONS	6.00	331,200
SECURITY	10.00	552,000
EXTERIOR IMPROVEMENTS	58.68	3,238,915
SITE UTILITIES	7.55	416,550
TOTAL DIRECT COST	**$466.12**	**25,729,660**
GENERAL REQUIREMENTS (8%)		2,058,373
G.C.'S FEE (5%)		1,389,402
DESIGN CONTINGENCY (15%)		4,376,615
PHASING (5%)		1,677,702
TOTAL ESTIMATED COST	**$638.41**	**$35,240,000**

Table 7.1: Opinion of Probable Cost Renovation and Expansion (Continued)

SUBSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	39,200	SF	18.00	705,600
033000/020	Concrete grade beams	1,300	LF	200.00	260,000
033000/030	Concrete footings	25	EA	2,900.00	72,500
					1,038,100
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	39,200	SF	11.00	431,200
316300/020	Mobilization	1	LS	17,500.00	17,500
					448,700
	SUBSTRUCTURE TOTAL				**$1,486,800**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete storm structure	6,400	SF	35.00	224,000
					224,000
051000	**STRUCTURAL METAL FRAMING**				
051000/010	Structural steel framing	150	TONS	8,400.00	1,260,000
051000/020	Floor and roof joists	75	TONS	8,200.00	615,000
051000/030	Roof deck	36,800	SF	8.00	294,400
051000/040	Miscellaneous steel framing	20	TONS	9,000.00	180,000
					2,349,400
	SUPERSTRUCTURE TOTAL				**$2,573,400**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
042113	**BRICK MASONRY**				
042113/010	Facing brick	22,400	SF	70.00	1,568,000
042113/020	Brick details, sills, etc	1	LS	392,000.00	392,000
					1,960,000
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	8	EA	2,400.00	19,200
					19,200
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
084110	**STOREFRONT SYSTEMS**				
084110/010	Aluminum framed windows	3,500	SF	75.00	262,500
084110/020	Aluminum storefront	300	SF	75.00	22,500
084110/030	Entrance doors, double	2	EA	6,600.00	13,200
					298,200
	EXTERIOR ENCLOSURE TOTAL				**$2,401,400**

Table 7.1: Opinion of Probable Cost Renovation and Expansion (Continued)

ROOFING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
074113	**ROOFING**				
074113/010	Single ply memebrane roofing, including flashing, fascia and access	39,200	SF	30.00	1,176,000
074113/020	Replace roofing	16,000	SF	30.00	480,000
074113/030	Caulking and sealants	55,200	SF	1.00	55,200
074113/040	Canopies	1	LS	15,000.00	15,000
					1,726,200
	ROOFING TOTAL				**$1,726,200**

INTERIOR CONSTRUCTION

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
099000	**INTERIOR CONSTRUCTION**				
099000/010	Aministration	4,245	SF	80.00	339,600
099000/020	Apparatus Bay	13,420	SF	110.00	1,476,200
099000/030	Building Systems	1,830	SF	50.00	91,500
099000/040	Circulation	6,495	SF	40.00	259,800
099000/050	Fire Training	4,815	SF	70.00	337,050
099000/060	Fitness	6,275	SF	60.00	376,500
099000/070	Lobby	1,585	SF	120.00	190,200
099000/080	Training support	9,765	SF	140.00	1,367,100
099000/090	EMS training	6,770	SF	140.00	947,800
					5,385,750
	INTERIOR CONSTRUCTION TOTAL				**$5,385,750**

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**STORM DRAINAGE**				
221400/010	Storm drainage system	55,200	SF	1.50	82,800
					82,800
221600	**GAS PIPING**				
221600/010	Pipe & fittings	55,200	SF	0.75	41,400
					41,400
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	55,200	SF	0.50	27,600
					27,600
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	55,200	SF	1.50	82,800
					82,800
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	20	EA	5,900.00	118,000
224000/020	Lavatories	20	EA	5,900.00	118,000
224000/030	Urinals	6	EA	5,900.00	35,400
224000/040	Shower	19	EA	2,415.00	45,885
224000/050	Emergency station	1	EA	2,300.00	2,300
224000/070	Kitchen sink, with grease trap	1	EA	19,000.00	19,000
224000/040	Sinks	4	EA	5,900.00	23,600
224000/050	Mop sinks	2	EA	5,900.00	11,800
224000/060	Washer box	3	EA	400.00	1,200
224000/060	Water coolers	2	EA	7,800.00	15,600
					390,785
	PLUMBING TOTAL				**$625,385**

Table 7.1: Opinion of Probable Cost Renovation and Expansion (Continued)

MECHANICAL - HVAC

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
238220	**HVAC SYSTEM**				
238220/010	Training facility	44,540	SF	65.00	2,895,100
238220/020	Truck bays	10,660	SF	20.00	213,200
238220/030	Kitchen hood	1	EA	30,000.00	30,000
					3,138,300
	HVAC TOTAL				**$3,138,300**

DIVISION 32 EXTERIOR IMPROVEMENTS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
321213	**ASPHALT PAVING**				
321213/010	Asphalt paving, heavy duty	2,300	SY	44.00	101,200
321213/010	Asphalt paving, apparatus	3,700	SY	44.00	162,800
321213/020	Asphalt paving	12,000	SY	36.00	432,000
					696,000
321313	**CONCRETE PAVING**				
321313/010	HD Concrete paving	58,630	SF	18.00	1,055,340
321313/020	Courtyard	1,500	SF	24.00	36,000
321313/030	Civic space	1,400	SF	30.00	42,000
					1,133,340
323100	**SITE IMPROVEMENTS**				
323100/010	Monumental sign base	1	EA	3,500.00	3,500
323100/020	Covered parking	4,400	SF	40.00	176,000
323100/030	Concrete steps	450	LF	75.00	33,750
323100/030	Retaining walls	840	SF	55.00	46,200
323100/030	Two lane bridge with pedestrian access	1,400	SF	750.00	1,050,000
					1,309,450
329000	**LANDSCAPING**				
329000/010	Trees	20	EA	950.00	19,000
329000/020	Shrubs	75	EA	175.00	13,125
329000/030	Landscaped beds	4,500	SF	8.00	36,000
329000/040	Seeding	4,000	SY	8.00	32,000
					100,125
	EXTERIOR IMPROVEMENTS TOTAL				**$3,238,915**

DIVISION 33 SITE UTILITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
334000	**SITE UTILITIES**				
334000/010	Domestic water & fire water	300	LF	75.00	22,500
334000/020	Fire hydrant	1	EA	2,300.00	2,300
334000/030	Water hook ups	3	EA	2,100.00	6,300
334000/040	Relocate force main	650	LF	95.00	61,750
					92,850
334100	**STORMWATER**				
334100/010	Storm drains	2,100	LF	45.00	94,500
334100/020	Headwalls	6	EA	2,900.00	17,400
334100/030	Catch basin	8	EA	2,100.00	16,800
					128,700
337000	**SITE ELECTRICAL**				
337000/010	Underground electric	150	LF	350.00	52,500
337000/020	Pole lightings	20	EA	4,500.00	90,000
337000/030	Bollard lights	15	EA	3,500.00	52,500
					195,000
	UTILITIES TOTAL				**$416,550**

Table 7.2: Opinion of Probable Cost New Fire Training Center

GROSS SQ. FT. 68,730 sf **DATE:** October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
EXISTING CONDITIONS	2.79	191,640
SUBSTRUCTURE	20.36	1,399,450
SUPERSTRUCTURE	68.71	4,722,250
EXTERIOR ENCLOSURE	47.98	3,298,000
ROOFING	18.02	1,238,730
STAIRS AND CONVEYING	1.81	124,500
INTERIOR CONSTRUCTION	86.94	5,975,150
FIRE PROTECTION	7.50	515,475
PLUMBING	12.34	847,848
HVAC	50.72	3,485,950
ELECTRICAL	54.47	3,743,800
COMMUNICATIONS	6.00	412,380
SECURITY	10.00	687,300
EXTERIOR IMPROVEMENTS	46.95	3,226,815
SITE UTILITIES	5.85	402,300
TOTAL DIRECT COST	**$440.44**	**30,271,588**
GENERAL REQUIREMENTS (8%)		2,421,727
G.C.'S FEE (5%)		1,634,666
DESIGN CONTINGENCY (15%)		5,149,197
PHASING (5%)		1,973,859
TOTAL ESTIMATED COST	**$603.23**	**$41,460,000**

Table 7.2: Opinion of Probable Cost New Fire Training Center (Continued)

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	38,550	SF	18.00	693,900
033000/020	Concrete grade beams	955	LF	200.00	191,000
033000/030	Concrete footings	20	EA	2,900.00	58,000
033000/040	Elevator pits	1	EA	15,000.00	15,000
					957,900
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	38,550	SF	11.00	424,050
316300/020	Mobilization	1	LS	17,500.00	17,500
					441,550
	SUBSTRUCTURE TOTAL				**$1,399,450**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete suspended slabs	29,500	SF	15.00	442,500
033000/020	Concrete storm structure	4,200	SF	35.00	147,000
					589,500
051000	**STRUCTURAL METAL FRAMING**				
051000/010	Structural steel framing	275	TONS	8,400.00	2,310,000
051000/020	Floor and roof joists	120	TONS	8,200.00	984,000
051000/030	Floor deck	29,500	SF	8.50	250,750
051000/040	Roof deck	28,500	SF	8.00	228,000
051000/050	Miscellaneous steel framing	40	TONS	9,000.00	360,000
					4,132,750
	SUPERSTRUCTURE TOTAL				**$4,722,250**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
042113	**BRICK MASONRY**				
042113/010	Facing brick	32,400	SF	70.00	2,268,000
042113/020	Brick details, sills, etc	1	LS	567,000.00	567,000
					2,835,000
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	17	EA	2,400.00	40,800
					40,800
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
084110	**STOREFRONT SYSTEMS**				
084110/010	Aluminum framed windows	3,500	SF	75.00	262,500
084110/020	Aluminum storefront	300	SF	75.00	22,500
084110/030	Entrance doors, double	2	EA	6,600.00	13,200
					298,200
	EXTERIOR ENCLOSURE TOTAL				**$3,298,000**

Table 7.2: Opinion of Probable Cost New Fire Training Center (Continued)

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
074113	**ROOFING**				
074113/010	Single ply memebrane roofing, including flashing, fascia and access	38,500	SF	30.00	1,155,000
074113/020	Caulking and sealants	68,730	SF	1.00	68,730
074113/030	Canopies	1	LS	15000.00	15,000
					1,238,730
	ROOFING TOTAL				**$1,238,730**

STAIRS AND CONVEYING SYSTEMS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
055100	**METAL STAIRS**				
055100/010	Metal pan stairs with metal railings	2	FLT	13,500.00	27,000
055100/020	Mezzanine stair	1	FLT	7,500.00	7,500
					34,500
142100	**ELEVATORS**				
142100/010	Passenger elevator, 2 stop	1	EA	90,000.00	90,000
					90,000
	STAIRS AND CONVEYING SYSTEMS TOTAL				**$124,500**

INTERIOR CONSTRUCTION

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
099000	**INTERIOR CONSTRUCTION**				
099000/010	Aministration	3,635	SF	80.00	290,800
099000/020	Apparatus Bay	14,600	SF	110.00	1,606,000
099000/030	Building Systems	2,315	SF	50.00	115,750
099000/040	Circulation	8,190	SF	40.00	327,600
099000/050	Fire Training	4,210	SF	70.00	294,700
099000/060	Fitness	6,190	SF	60.00	371,400
099000/070	Lobby	1,685	SF	120.00	202,200
099000/080	Training support	10,635	SF	140.00	1,488,900
099000/090	EMS training	7,770	SF	140.00	1,087,800
099000/100	Shell space	9,500	SF	20.00	190,000
					5,975,150
	INTERIOR CONSTRUCTION TOTAL				**$5,975,150**

Table 7.2: Opinion of Probable Cost New Fire Training Center (Continued)

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**STORM DRAINAGE**				
221400/010	Storm drainage system	68,730	SF	1.50	103,095
					103,095
221600	**GAS PIPING**				
221600/010	Pipe & fittings	68,730	SF	0.75	51,548
					51,548
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	68,730	SF	0.50	34,365
					34,365
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	68,730	SF	1.50	103,095
					103,095
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	31	EA	5,900.00	182,900
224000/020	Lavatories	32	EA	5,900.00	188,800
224000/030	Urinals	6	EA	5,900.00	35,400
224000/040	Shower	23	EA	2,415.00	55,545
224000/050	Emergency station	1	EA	2,300.00	2,300
224000/070	Kitchen sink, with grease trap	1	EA	19,000.00	19,000
224000/040	Sinks	6	EA	5,900.00	35,400
224000/050	Mop sinks	2	EA	5,900.00	11,800
224000/060	Washer box	3	EA	400.00	1,200
224000/060	Water coolers	3	EA	7,800.00	23,400
					555,745
	PLUMBING TOTAL				**$847,848**

MECHANICAL - HVAC

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
238220	**HVAC SYSTEM**				
238220/010	Training facility	47,330	SF	65.00	3,076,450
238220/020	Truck bays	11,700	SF	20.00	234,000
238220/030	Shell space	9,700	SF	15.00	145,500
238220/040	Kitchen hood	1	EA	30,000.00	30,000
					3,485,950
	HVAC TOTAL				**$3,485,950**

Table 7.2: Opinion of Probable Cost New Fire Training Center (Continued)

DIVISION 32 EXTERIOR IMPROVEMENTS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
321213	**ASPHALT PAVING**				
321213/010	Asphalt paving, heavy duty	2,300	SY	44.00	101,200
321213/010	Asphalt paving, apparatus	3,700	SY	44.00	162,800
321213/020	Asphalt paving	12,000	SY	36.00	432,000
					696,000
321313	**CONCRETE PAVING**				
321313/010	HD Concrete paving	58,630	SF	18.00	1,055,340
321313/020	Courtyard	1,500	SF	24.00	36,000
321313/030	Civic space	1,400	SF	30.00	42,000
					1,133,340
323100	**SITE IMPROVEMENTS**				
323100/010	Monumental sign base	1	EA	3,500.00	3,500
323100/020	Covered parking	4,400	SF	40.00	176,000
323100/030	Concrete steps	450	LF	75.00	33,750
323100/030	Retaining walls	620	SF	55.00	34,100
323100/030	Two lane bridge with pedestrian access	1,400	SF	750.00	1,050,000
					1,297,350
329000	**LANDSCAPING**				
329000/010	Trees	20	EA	950.00	19,000
329000/020	Shrubs	75	EA	175.00	13,125
329000/030	Landscaped beds	4,500	SF	8.00	36,000
329000/040	Seeding	4,000	SY	8.00	32,000
					100,125
	EXTERIOR IMPROVEMENTS TOTAL				**$3,226,815**

DIVISION 33 SITE UTILITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
334000	**SITE UTILITIES**				
334000/010	Domestic water & fire water	300	LF	75.00	22,500
334000/020	Fire hydrant	1	EA	2,300.00	2,300
334000/030	Water hook ups	3	EA	2,100.00	6,300
334000/040	Relocate force main	500	LF	95.00	47,500
					78,600
334100	**STORMWATER**				
334100/010	Storm drains	2,100	LF	45.00	94,500
334100/020	Headwalls	6	EA	2,900.00	17,400
334100/030	Catch basin	8	EA	2,100.00	16,800
					128,700
337000	**SITE ELECTRICAL**				
337000/010	Underground electric	150	LF	350.00	52,500
337000/020	Pole lightings	20	EA	4,500.00	90,000
337000/030	Bollard lights	15	EA	3,500.00	52,500
					195,000
	UTILITIES TOTAL				**$402,300**

Table 7.3: Opinion of Probable Cost Support Building

GROSS SQ. FT. 6,000 sf **DATE:** October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
SUBSTRUCTURE	58.25	349,500
SUPERSTRUCTURE	50.00	300,000
EXTERIOR ENCLOSURE	21.47	128,800
INTERIOR CONSTRUCTION	20.00	120,000
FIRE PROTECTION	7.50	45,000
PLUMBING	8.28	49,700
HVAC	10.00	60,000
ELECTRICAL	15.00	90,000
TOTAL DIRECT COST	**$190.50**	**1,143,000**
GENERAL REQUIREMENTS (8%)		91,440
G.C.'S FEE (5%)		61,722
DESIGN CONTINGENCY (15%)		129,616
PHASING (5%)		71,289
TOTAL ESTIMATED COST	**$250.00**	**$1,500,000**

Table 7.3: Opinion of Probable Cost Support Building (Continued)

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	6,000	SF	18.00	108,000
033000/020	Concrete grade beams	500	LF	200.00	100,000
033000/030	Concrete footings	20	EA	2,900.00	58,000
					266,000
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	6,000	SF	11.00	66,000
316300/020	Mobilization	1	LS	17,500.00	17,500
					83,500
	SUBSTRUCTURE TOTAL				**$349,500**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
051000	**STRUCTURAL METAL FRAMING**				
051000/010	PEMB	6,000	SF	50.00	300,000
					300,000
	SUPERSTRUCTURE TOTAL				**$300,000**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	2	EA	2,400.00	4,800
					4,800
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
	EXTERIOR ENCLOSURE TOTAL				**$128,800**

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	6,000	SF	0.50	3,000
					3,000
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	6,000	SF	1.50	9,000
					9,000
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	2	EA	5,900.00	11,800
224000/020	Lavatories	2	EA	5,900.00	11,800
224000/030	Urinals	2	EA	5,900.00	11,800
224000/040	Emergency station	1	EA	2,300.00	2,300
					37,700
	PLUMBING TOTAL				**$49,700**



8

FACILITY RECOMMENDATIONS

Facility recommendations are outlined below. The purpose of the recommendations is for the City and Fire Department to consider various options pertaining to their current facility and potential next steps per the analysis and review that the Consultant has performed.

The facility recommendations are formulated around what to do with the existing facilities; are there facilities that can be reused/repurposed for services; or are the services better served in a new building that better improves services to a more modern and efficiently designed facility.

In terms of options, it is very clear from the analysis and review that the Consultant has concluded that many of the existing facilities do not and cannot accommodate the space requirements for the Training Center without expansion or a new building without severe compromises which will not provide modern fire training best practices for needs and design standards.

The following recommendations have been given along with cost data (reference detailed cost data in other sections) based on the Consultant Team's historic cost information and experience with similar projects.

8.1 Recommendation 1: New Training Facility.

During the Consultant's analysis and review, it became very clear that the existing training center is inefficient and does not have enough space in the existing building to meet the needs of the department. The current facilities are not large enough to improve the space or services at this location. The building is inefficient in the layout of space and does not provide an adequate size to house the various sundry equipment that the department maintains and utilizes daily at this location for recruits and training purposes.

It became clear that a new building would be the best course of action for the Fire Department to improve efficiency and service to the department. The Consultant reviewed various scenarios for a new training building. The Consultant recommends this facility because the new training center building will achieve many of the desired objectives and goals of the department and enhance the training service delivery to the department in whole.

This recommendation also provides for site improvements. One such improvement is the consolidation of the driving training to this site which is now offsite at various locations. The recommendation and design concept also provides adequate parking for apparatus, staff parking, and public parking lots. It is also understood and required that a new bridge crossing Town Branch Creek is required as the current bridge is not structurally sound especially for the vehicular traffic and weight of the apparatus to cross over to the other side of the creek to utilize all of the property available. This bridge is shown as part of this concept and is shown large enough to have two-way traffic with adequate structure to handle the weight of the apparatus and provide for a pedestrian walk component. These site improvements will also allow this facility to handle the variety of events and training accommodation that the department provides annually and noted earlier in the study report.

This recommendation would also address the facility and operational efficiencies identified by the Consultant Team. The total project cost for this scenario is approximately $49.4 million dollars. This does not include any alternatives, temporary relocation, or escalation costs.

The Consultant Team tried to answer the question what are potential future needs that could be provided to further enhance the Fire Department's Training Facility which included a second access bridge and a future support building. The Consultant Team and department discussed that due to the Fire Department need to maintain operations, the building of the future support building would allow them to utilize the space in the building for equipment storage and temporary training spaces along with any portable classroom trailers that they would rent for the duration of the construction. It was also discussed that the building could be used once the training center is complete for fleet storage and as a support building for the driving training and extraction area for the recruits and staff. The total project cost for this scenario is approximately $1.5 million dollars. This does not include any alternatives, temporary relocation, or escalation costs. This recommendation would also address the storage deficiency for equipment and apparatus of the department city wide identified by the Consultant and Fire Department.

Figure 8.1: New Building Site Diagram

SITE PLAN CONCEPT OPTION 2 - NEW BUILD



Legend:
1 - Civic Space
2 - Existing Flag Pole
3 - Apparatus Parking
4 - Generator
5 - Outdoor Courtyard
6 - Covered Staff Parking
7 - Public Parking
8 - Driving Pad
9 - Future Support Building
10 - EPA Covenent Area
11 - Future Town Branch Trail Extension
12 - Relocated Extraction Training
13 - Relocated Wild Fire Training
14 - Relocated Urban Search & Rescue Training
15 - Relocated Metal Sheds
16 - Future Bridge

Total Parking:
Staff - 20 Spots
Public - 200 Spots
Public ADA - 7 Spots

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
November 18th, 2024

SCALE:
1" = 40'-0"

NORTH

Figure 8.2: New Building Plan Diagram First Floor

FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD



FIRST FLOOR

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

LFUCG Fire Training Center Study

1375 Old Frankfort Pike, Lexington, KY 40504
November 18th, 2024

SCALE:
1/8" = 1'- 0"

NORTH

Figure 8.3: New Building Plan Diagram 2nd Floor

FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD



SECOND FLOOR

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

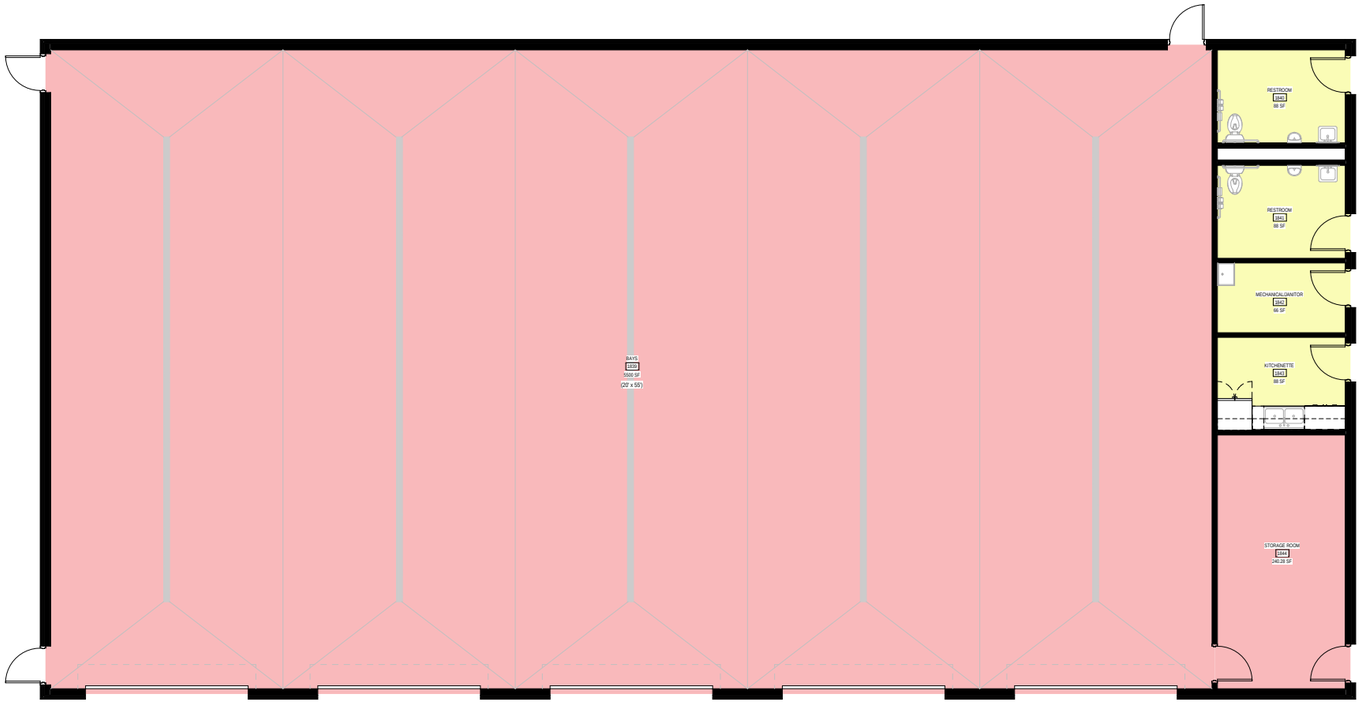
LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
November 18th, 2024

SCALE:
1/8" = 1'- 0"

NORTH

Figure 8.4: New Support Building Diagram

FLOOR PLAN CONCEPT 3 - SUPPORT BUILDING



FIRST FLOOR

Program Legend

Apparatus Bays

Training Center Support

TOTAL SQUARE FOOTAGE: 6,346 SF

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

LFUCG Fire Training Center Study

1375 Old Frankfort Pike, Lexington, KY 40504

November 18th, 2024

SCALE:
1/4" = 1'- 0"

NORTH

8.2 PHASING

If the City pursues this option, there are phasing and temporary relocation expenses that need to be considered. The Consultant Team has estimated that these costs could be approximately $400,000 dollars. This does not include any alternatives or escalation costs. Phasing is possible with this concept and the Consultant Team has put together a simple phasing diagram for the site development and building for consideration.

Figure 8.5: Phasing Diagram New Concept Site Plan

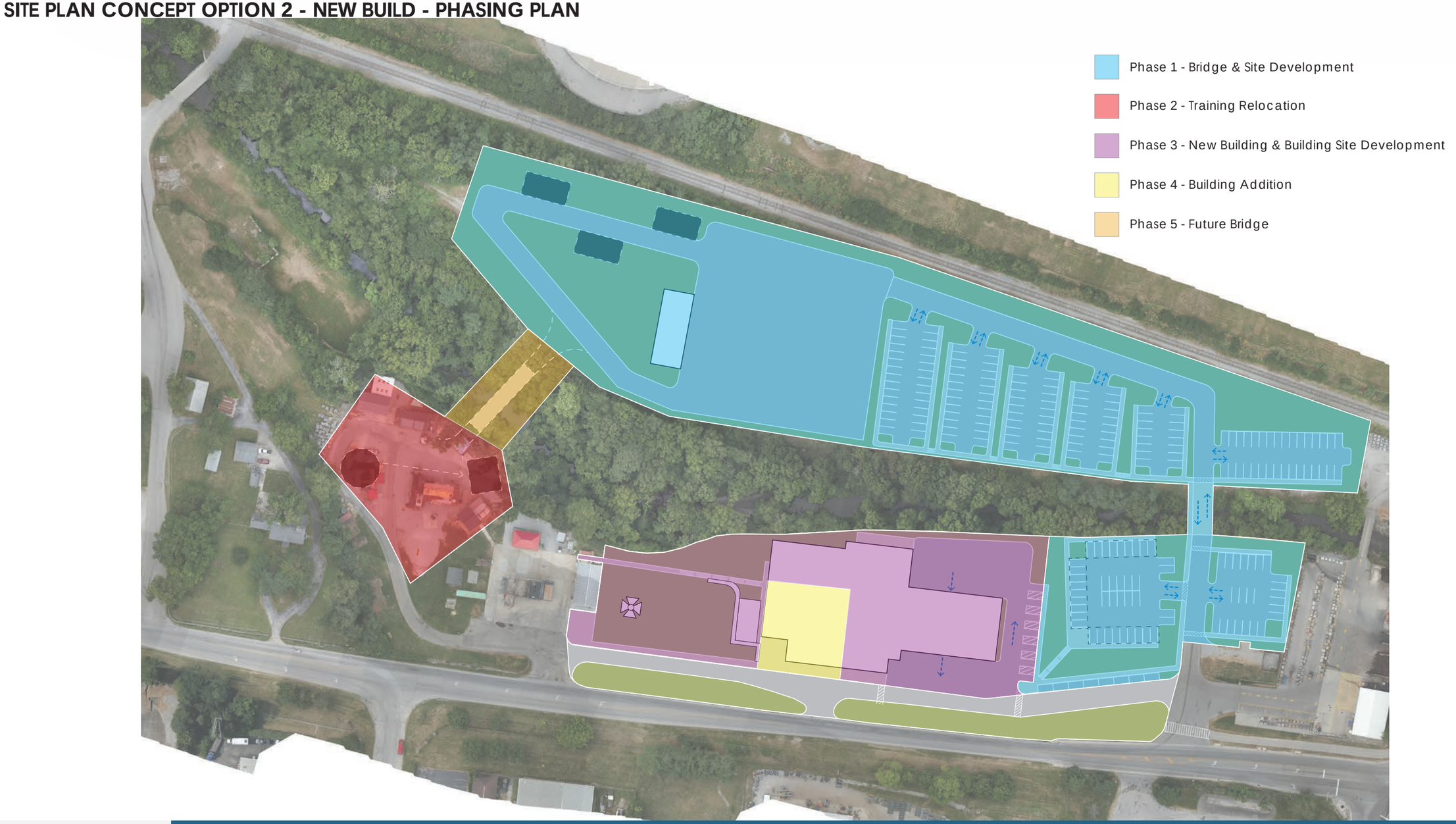
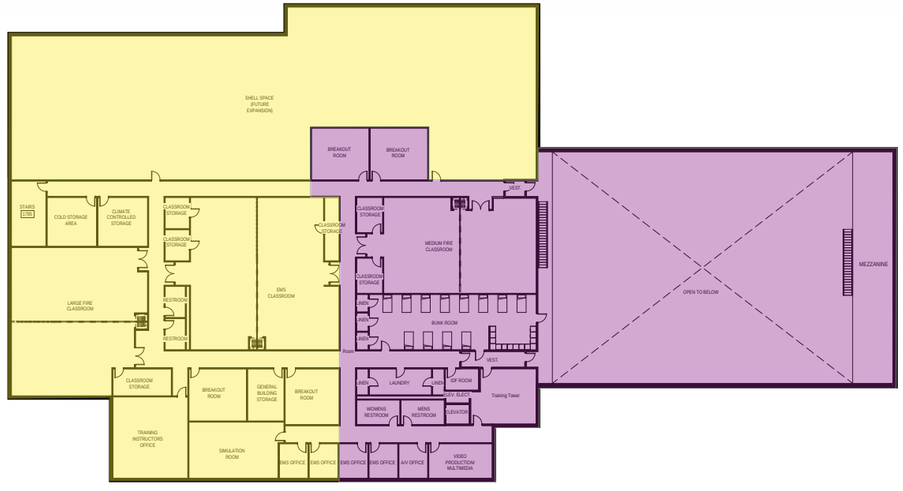


Figure 8.6: Phasing Diagram New Concept Floor Plan

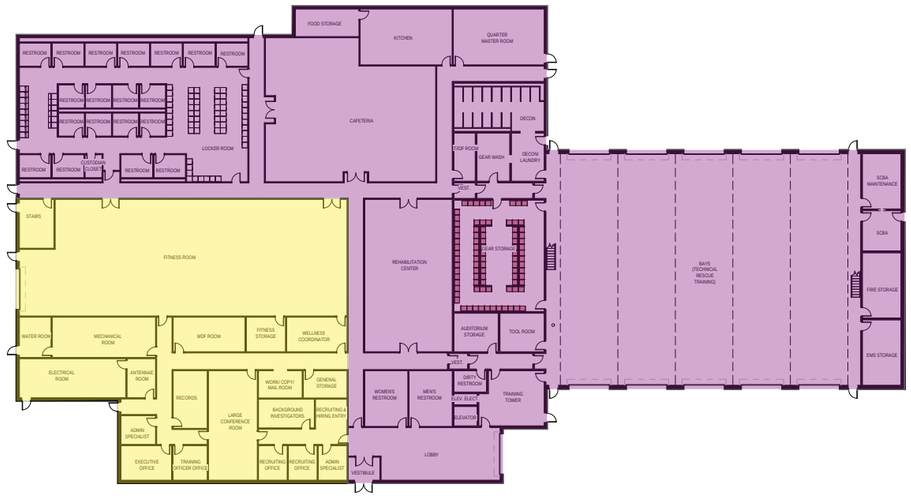
FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD - PHASING PLAN



Phase 3 - New Building

Phase 4 - Addition

SECOND FLOOR



FIRST FLOOR

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

LFUCG Fire Training Center Study

1375 Old Frankfort Pike, Lexington, KY 40504
November 18th, 2024

SCALE:
1/16" = 1'- 0"

NORTH



9

CONSTRUCTION DELIVERY METHODS

9.1 Introduction

Construction projects can be complex and difficult for a municipality to manage. There are many forms of construction delivery available for a municipality to utilize. The Commonwealth of Kentucky and the various Architect, Engineering, and Construction organizations have also provided guidance to municipalities by outlining and providing some common regulatory requirements. Typically, the three main construction delivery methods that are utilized in municipal work are the following:

1. Design – Bid - Build
2. Design Build
3. Construction Management
   - Advisor
   - At Risk

For the most part, these are the easiest to procure and to monitor because the contracts are very straight forward and define each entities responsibility clearly. For this study, we will identify each of these methods and provide pros and cons of each method. Once the City leadership decides on the recommendations provided, a delivery method can be pursued based on the size and complexity of the recommended path forward.

There are some additional nuances to these delivery methods along with a few other delivery methods such as Private, Public, Partnerships (P3) and Crowd funding but these are more difficult to manage and are more complex contractually. For this study, we will not provide any information pertaining to these other methods.

9.2 Delivery Methods

9.2.1 Design – Bid – Build

This method is the most common method whereby there are three entities involved in the project. The owner, architect, and general contractor. The municipality (owner) hires an architect/engineer to design the project. Once the project is designed then it is bid on by local general contractors. Once a general contractor is selected the project is then built. The contract is held by the owner with the contractor and the architect is contracted directly with the owner and there is no contract between the architect and contractor.

The general contracting can be defined as constructing and managing an entire public improvement project, including the branches or classes of work specified, under the award of a single aggregate lump sum contract.

The architect prepares plans and specifications, cost estimates, and is liable to redesign the project if the public bids are over the owner's budget. The architect provides construction administration services as the owner's representative during construction and must enforce contract conditions and provisions.

The general contractor holds all contracts with subcontractors that do work on the project and is solely responsible for the project and assumes construction and financial risk.

The success of this method depends on the quality of the general contractor and architect. It is advisable for the owner to have an in-house project manager.

This method is good for projects under $10 million with minimal owner relocation. It is also beneficial if local subcontractor involvement is necessary. This can be used with any level of project complexity.

Advantages:

1. Contractors bid competitively based on complete documents.
2. Owner selects Architect on basis of qualifications or ability.
3. Architect is active in Construction Administration.
4. Design and Construction roles are clearly defined.
5. The owner is an active participant in the design process.

Disadvantages:

1. Phases are sequential and may require more time.
2. The owner is at risk for final construction cost.

9.2.2 Design Build

This method has become a popular method over the last 10 to 15 years in the municipal construction market. Typically, there is a Criteria Architect hired by the owner to help develop the program, preliminary design, conduct site analysis, preliminary cost data, assist in development of the financial plan, and parameters for the design build procurement package for the project.

Then the owner issues a request for qualifications and then shortlists those received and receives proposals from those shortlisted entities. They then select a Design Build Team consisting of a contractor and architect team based on the "best value". The municipality (owner) hires the design-build team to finalize the design of the project. The contractor can begin construction earlier as the project is designed and can control costs through the process. The contract is held by the owner with the design-build contractor and the architect is contracted directly with the design build contractor. The owner is contracted with the Criteria Architect.

Design-Build services can be defined as services that form an integrated delivery system for which a person is responsible to a public authority for both the design and construction, demolition, alteration, repair, or reconstruction of a public improvement.

The design-build architect prepares plans and specifications for permitting, final costing, final contract, and construction.

The Criteria Architect provides construction administration services as the owner's representative during construction and must enforce contract conditions and provisions.

The design-build contractor holds all contracts with subcontractors that do work on the project and is solely responsible for the project and assumes construction and financial risk.

The owner takes on the negotiation risk and has less control during construction.

This method is good for projects that are simple buildings and there is less stringent quality control or if the construction marketplace is limited. It is also good when the design-build team is the lessor on the project, for example, university housing or utility companies.

Advantages:

1. Perceived to be the fastest project delivery system.
2. Single source responsibility.
3. Early cost and scheduling.
4. Conflicts occur internally and may not involve Owner.

Disadvantages:

1. Construction costs may not be competitive.
2. Owner has little involvement.
3. Reductions in quality are possible.

4. Documents generally are not complete when GMP is executed.
5. Conflict of interest in role as designer and contractor.
6. No objective agent to represent Owner's interests.
7. Construction processes are generally not monitored.

9.2.3 Construction Management at Risk (CMAR)

This method is a very common method whereby there are three entities involved in the project. The owner, architect, and construction manager. The municipality (owner) hires an architect/engineer to design the project.

Then the owner issues a request for qualifications and then shortlists those received and receives proposals from those shortlisted entities. They then select a Construction Manager based on the "best value". They hire the construction manager to assist in pre-construction activities. The construction manager is also responsible for the bidding and construction of the project which is very similar to the general contractor. The contract is held by the owner with the construction manager and the architect is contracted directly with the owner and there is no contract between the architect and construction manager.

CMAR can be defined as a person with substantial discretion and authority to plan, coordinate, manage, direct, and construct all phases of a project for the construction, demolition, alteration, repair, or reconstruction of any public building, structure or other improvement and who provides the public authority with a guaranteed maximum price.

The architect prepares plans and specifications. The architect provides construction administration services as the owner's representative during construction.

The construction manager provides pre-construction services such as constructability, sequencing, owner phasing, relocation, and costing during design. Following an agreed upon percentage of completion of design, the CMAR is responsible for providing a guaranteed maximum price (GMP). The CMAR will then seek bids for multiple bid packages (typically 15 to 20 packages). They review the bids, and the contracts are held between the CMAR and the contractors. The CMAR provides on site management and is responsible for schedule and cost.

This method is good for projects over $10 million or complex projects with phasing or owner relocation.

Advantages:

1. Architect still acts as agent for Owner.
2. Early cost commitment gives Owner project cost security.
3. Reduce Owner's burden in management of project.
4. The Construction Manager is responsible for managing the process and has more control of subcontractors.
5. Fast tracking and multiple prime contracts may speed up construction.

Disadvantages:

1. Added Cost due to fees for services. Like professional service fees (4-8%, plus expenses)
2. Bidding may be widespread and not as many local contractors.
3. GMP can vary and can be amended.

9.2.4 Construction Management Advisor

This method is like the CMAR however, the advisor does not have any "risk" as they are more of a mediator or advisor on project. The CM Advisor establishes the budget and schedule but does not control it.

The Advisor does not hold the contracts with the contractors. The owner holds all the contracts with the contractors.

This method is good for projects under $10 million or complex projects with phasing or owner relocation.

Advantages:

1. Provides additional expertise to Owner.
2. May fast-track to speed process.
3. Initial cost estimating will help control construction costs.

Disadvantages:

1. Added Cost due to fees for services. Like professional service fees (4-8%, plus expenses).
2. Multiple prime contracts add burden to Owner.
3. Less control serves only as mediator.



10

NEXT STEPS

There are a series of steps to take moving forward from this study towards the development of new facilities for the City of Lexington and Lexington Fire Department.

1. Council Approval of this Report
   - City to decide which recommendations to pursue in the short term and long term.
   - City to develop a capital plan for improvements, equipment and staff allocation, and other recommendations.
2. City to decide which facility option should be pursued, and these steps would be necessary:
   - Phase 1 & 2 Environmental Assessment, if applicable
   - Geotechnical Investigations (Soil Borings) – Completed Initial report but additional investigation is necessary.
   - Topographic and Property Boundary Survey – Completed
   - Identify financing options.
   - Determine if Phasing is required and begin logistics planning
   - City to pursue temporary classrooms and office space
3. Contract Design Services for the facility(s) and phase(s)
4. Construction Delivery Method decision.



11

CONCLUSION

In conclusion, the City of Lexington and Lexington Fire Department are in the early stages of planning for the next steps for the Fire Training Center and site improvements. The information in this report is offered to help in making those difficult decisions and determinations.

As noted earlier in the report, the current facility is heavily used for a variety of training opportunities for the Lexington Fire Department, including staff training, recruiting classes, Citizen Fire Academy, fire department banquets, dinners, and other internal events. The facility is also used for a variety of other events for the City of Lexington, local organizations, and Community outreach. The need for the improvement and enhancement of this facility is a great need for the Fire Department and should be a priority for the City. The delivery of fire services to the community is an essential and critical service that requires hours of training each year for the Fire Department to provide a high level of care and quality of service delivery to the citizens. The training center, if enhanced, provides better and more frequent training opportunities for the department, which provides an intrinsic value to the community because the more well-trained the department is the better service they receive in their greatest times of need. The training center, if it is enhanced, will also provide surrounding departments and agencies an opportunity to also enhance training and could be a revenue source for the City and Fire Department.

It is the recommendation of the Consultant, that at a minimum the City and Fire Department should renovate and expand the existing facility to improve and maximize the goals and objectives of the department by providing modern and more space for the Training Center. It is the Consultants recommendation that the best option for the City and Fire Department long term, is to construct a new Fire Training Center to not only provide them with a modern facility that enhances their training operations but ultimately improves their service delivery to their growing department which intrinsically brings better service to the community.

These recommendations in the report will create opportunities for the City and Fire Department to provide adequate services for several decades and provide the necessary modernization for its facilities and operations that will meet the current and future needs of the Fire Department. The recommendations in this study also give greater flexibility to the City and Fire Department so that implementation can take place as funds become available.

The Consultant Team is pleased to have been asked to perform this report and to work with the Fire Department to improve their operations and training center to continue to deliver a high level of training services to the Fire Department personnel, agencies, and citizens of the City and surrounding areas.

APPENDIX A - EXISTING CONDITIONS

Figure A.1: Existing Facility Condition Analysis

EXISTING FACILITY CONDITION ANALYSIS
LFUCG FIRE TRAINING CENTER
LEXINGTON, KENTUCKY
PROJECT NO. 24057

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

July 5, 2024

1.1 Standards

The assessment of the existing fire training center included both the physical building and systems, as well as the operational efficiency. The assessment was based on Best Practice Industry Standards from the following codes or standards:

A. International Association of Fire Chiefs (IAFC)
B. International Association of Fire Fighters (IAFF)
C. National Fire Chiefs Council (NFCC)
D. National Institute for Occupational Safety and Health (NIOSH)
E. National Fire Protection Agency (NFPA)
   i. NFPA 1- Uniform Fire Code
   ii. NFPA 1221 – Standard for the Installation, Maintenance, and Use of Emergency Service Communication Systems
   iii. NFPA 1500 - Standard on Fire Department Occupational Safety and Health Program
   iv. NFPA 1581 – Standard on Fire Department Infection Control Program
   v. NFPA 1710 – Standard for the Organization and Deployment of Fire Suppression Operations Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments
F. Safety and Health Considerations for the Design of Fire and Emergency Medical Services Stations
G. Whole Building Design Guide (WBDG) National Institute of Building Sciences
H. Kentucky Building Code (KBC)
I. ADA Standards for Accessible Design
J. Federal Emergency Management Agency (FEMA)
K. Occupational Safety and Health Administration (OSHA)

1.2 Key Exterior Issues Identified

1.2.1 Site

1. There are no identifiable handicap parking spots in the parking lot for staff or the public. Accessibility is provided to the facility via the sidewalk in front of the building.
2. The public has access to the entire site via the roadways through the site. This is not ideal because it leaves the Fire Department's vehicles susceptible to vandalism and damage.
3. There is not a designated grilling area. There is a designated outdoor seating area that is on the opposite side of the building from the current grilling area. Outdoor activities must take place in the way of the sidewalk and parking spots.

4. There are potentially hazardous materials and fire equipment that are scattered around the site unprotected and potentially hindering site movement.
5. The location of the emergency vehicle aprons causes potentially serious conflict between pedestrians, parked cars, and emergency vehicles.

1.2.2 Façade

1. Exterior doors are metal frames with single pane glazing providing minimal insulating value.
2. Joints and sealants need repair.
3. The windows are single pane glazing providing minimal insulating value. The sealants are deteriorated in places. These should be replaced in their entirety.
4. The concrete façade has cracks in it from building settlement which has led to unwanted openings in the walls and needs repairs.
5. The mortar joints of the CMU walls are primarily in good condition but have some areas in need of maintenance and repair.
6. No exterior wall insulation was found. Insulation will be required to meet current energy codes.

1.2.3 Roof

1. The existing roof is in okay condition. It is a ballasted roofing system over modified bitumen. The flashing is weathered with the sealant cracking.
2. The roof utilizes primarily gutters and downspouts. The downspouts are in relatively good condition.
3. The upper roofs utilize gutters and downspouts that drain down onto the lower roofs. This should be corrected as this method is prone to leaks.
4. The emergency generator for the facility is located on the roof. This makes it difficult to access for maintenance.
5. The air units are located on the roof and have faded materials and warps from the weather.
6. The skylights on the upper roof are sun faded with popped sealants.
7. Fall protection will need to be provided at all roof top equipment within ten feet of roof edges.
8. The existing roof structure consists of cantilevered double tee concrete beams that extend beyond the exterior walls. No thermal breaks were found at the intersection of exterior wall to beams, this can lead to condensation and mold concerns.

1.3 Key Interior Issues Identified

1.3.1 Fire Training Center

1.3.1.1 General

1. There is typically a maximum of seventy-seven (77) people at the Training Center each day. The personnel currently consist of (17) Full-Time Employees. There are typically two (2) recruit classes at the Training Center.
    a. (20-40) Firefighter Recruits that are split into two (2) 6-month classes per year.
    b. (20-40) Paramedic Students that are in a one (1) 9-month class per year.
2. The Training Center currently houses:
    a. (3) Fire Engines – All stored in the Bay
    b. (1) Ladder Truck – Stored in the Bay

c. (3) 15-Passanger Vans – Stored on Site

d. (9) Small Fleet Vehicles – 2 stored in the Bay, 7 stored on Site

e. (2) UTVs – All stored in the Bay

f. (1) Utility Trailer – Stored on Site

1.3.1.2 Vehicle Bays

1. Storage for miscellaneous equipment is along the exterior walls of the bay. There is also a small stage in the bay used for presentations.
2. There are gear lockers in the bay because there is not enough space in the gear room.
3. The bay is not large enough for the size of the apparatus. With the additional amount of equipment stored in the bays this limits the maneuverability of staff and ability to open and close vehicles.
4. The bay utilizes one (1) overhead sectional door while storing up to four (4) vehicles at a time. This makes vehicle maneuverability severally limited and greatly increases the likelihood of an accident damaging the trucks.
5. The bay does not have any floor drains. There is limited ability to keep the bay floor dry during rain or snow events since the drainage is minimal. This is dangerous for the crew and inefficient for them to have to manually evacuate water and debris from the bay floor.
6. The pendant lights are old but seem to be in good condition. The lights are not the correct fixtures for this environment.
7. The floor slab has several cracks in it due to the weight of the vehicles. The joint at the lobby flooring is deteriorated.
8. The vehicle bays are separated from the living and office areas by a CMU wall with no vestibules. It is not evident if the 2-hour separation is achieved due to current conditions. It is assumed that this is not achieved per today's building code. This is not the best practice for apparatus bays.
9. The vehicle bay area currently has no vehicle exhaust extraction system. This should be added to protect the occupants within the building and to meet current codes.

1.3.1.3 Lobby / Vestibule

1. There is no vestibule.
2. The lobby is open to the public with no reception area and is not secure to keep the public out of the rest of the training center.
3. The lobby is in good condition and is used for displaying miscellaneous Lexington Fire Department memorabilia. More space is needed to display all the Fire Department's items.
4. The exterior wall of the lobby is a precast concrete wall system, no insulation was noted.

1.3.1.4 Public Restrooms

1. Restrooms are limited in the building. The restrooms are small and do not meet current building and plumbing codes for size and quantity needed to comply with the codes.
2. There is limited ADA required clearances and turning radiuses. These do not meet current ADA accessibility codes.
3. The restrooms and showers have general cosmetic needs like new fixtures, tile, etc.

1.3.1.5 Administrative Suite

1. The offices are limited in size for typical administration office use but do accommodate a desk and chair and some other amenities. The lack of storage has caused many of the offices to be used for storage and office space.
2. There are cosmetic needs such as ceiling systems, flooring, paint, and wall base, etc.
3. Storage and filing for these offices are severely limited and additional space is needed for the department.
4. There is not a dedicated room for an administrative conference room. The common space between the administration offices is used as a small conference room.
5. The administrative suite is located directly off the apparatus bay. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
6. The administrative suite currently does not have direct viewing of the entry doors or lobby area.
7. The administrative suite walls are not sound rated.

1.3.1.6 Classrooms

1. Classrooms are located off the bay with access also from the exterior. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
2. The classrooms are small for the number of trainees and other staff that use the classrooms daily.
3. There is not proper storage accommodation for the classrooms and training props and other equipment must stay out in the bays.
4. The technology in the rooms is outdated.
5. The classroom walls are not sound rated.

1.3.1.7 Training Officers Office

1. The EMS Office is a shared common area with several desks that are overcrowded and require more space for filing and gear.
2. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
3. The office walls are not sound rated.

1.3.1.8 Bunk Room

1. The bunk room is located upstairs. The stairs are not compliant with the codes for treads and railing requirements.
2. The room is too small for the standard needs of the staff. The rooms have limited storage.
3. The rooms are adjacent to the Apparatus Bay with no vestibule. This can cause exhaust to enter the living areas which is against NFPA standards. The walls are not soundproof, which causes issues for staff sleeping. This is a community sleeping room which has its own problems with the snoring and use of C-Pap machines. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.

4. The lighting in this room is not efficient and is not tied to the station alerting for adjustable light levels for those coming out of sleep when a call comes. This is per industry Best Practices for health and safety of the firefighters.
5. There are general cosmetic needs in the room such as flooring, wall base, ceiling systems, painting, etc.
6. This area is currently not accessible and would require an elevator to meet current code requirements.
7. The walls are not sound rated.

1.3.1.9 Kitchen

1. The kitchen area is small and cramped. There is limited dining space.
2. The kitchen is a residential grade with solid surface counters and wood cabinets.
3. Lighting in this area is old fluorescent lights.
4. The overall quantity of storage space and appliances for staff and trainees is not adequate for current needs.
5. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.

1.3.1.10 Conference Room

1. There is limited conference room space in the building. The room has miscellaneous storage in it.
2. The technology in the room is outdated.
3. There are general cosmetic needs in the room such as flooring, wall base, ceiling systems, painting, etc.
4. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
5. The walls are not sound rated.

1.3.1.11 EMS Office & Storage

1. The EMS Office is crowded with little area for desk space.
2. The room is used mainly for storage, which severely limits the operational use of the office.
3. The EMS storage room is small and does not accommodate the needs of the department.
4. A two-hour fire-rated separation with a vestibule should be added to keep contaminated areas separated and to meet current codes.
5. The walls are not sound rated.

1.3.1.12 Bay Storage

1. The Storage Room is small and additional storage capacity is needed for the bays.
2. There are a few storage shelves around the bay. These are not sizable for any significant storage, so the bays are being used for storage of a variety of equipment, supplies, furniture, vehicles, and other miscellaneous items.
3. Some gear lockers are in bay which is not preferred due to the UV degradation and exposure to contaminates and vehicle exhaust.
4. The Gear Room has general cosmetic needs such as ceiling systems, flooring, paint, and wall base, etc.

1.3.1.13 Cascade & Tool Rooms

1. The Cascade Room is small and needs more space to adequately accommodate the needs of the department.
2. The Tool Room is small and has limited space to perform maintenance duties.
3. The rooms are used for additional building and janitorial storage.
4. Access to these rooms requires personnel to exit the main building. The adjacencies of these rooms is not ideal and should be better located.

1.3.1.14 Electrical / Washroom

1. The gear wash area is located away from the Apparatus Bay through the kitchen. This is not best practice because it requires contaminated gear to be brought through an eating area to be cleaned.
2. The washer and dryer are in the electrical room and are inadequate in number for the size and number of staff at the Training Center. Per Best Practices it is advised to add a decontamination room, and laundry room dedicated to the Apparatus Bay for staff convenience and to keep contaminated areas separated.

1.3.2 Structure

1. The existing facility constructed in 1969 consists of a one-story load bearing concrete block for all exterior and bearing walls with the exception of the front wall which is pre-cast concrete. The roof over the high bay (vehicle bay) consists of steel bar joists 36" deep @ 5' 0.c. clear spanning the bay and bearing on 12" concrete block walls. The roof decking over the high bay area is steel roof decking.
2. The lower roof areas (classrooms, offices and lobby area) consist of exterior 8" load bearing concrete block and the roof structure is pre-cast concrete double tees (approximately 18" deep with ribs at 2' on center. These concrete double tees cantilever past the exterior block wall creating an overhang.
3. There are two additions to the low roof areas along the west end. The oldest addition consists of concrete block walls and wood roof framing. This addition appears to have a foundation and to have been constructed to commercial standards from a structural standpoint. The more recent addition does not have a foundation and appears to be a slab poured on asphalt. This newer addition does not appear to have been constructed in accordance with the Kentucky Building Code and should be considered a temporary structure for storage only.
4. The existing precast concrete bridge over the town branch creek to the rear of the property was briefly reviewed and agree with the provided report from DLZ that the bridge itself is in poor structural condition and needs to be replaced. The abutments could potentially be re-used if the same size and location works for a potential replacement precast concrete bridge.
5. In general the overall structural condition of the original building appears to be sound and suitable for renovations/reuse. The few items noted were some minor cracking of the concrete block, especially over and around openings. It is likely none of the concrete blocks are grouted or reinforced. This was acceptable and met the structural loading requirements of the Kentucky Building Code in 1969. I recommend the cracking areas of the concrete block be tuck-pointed and partially grouted in the areas of cracks.
6. The added apartments inside the high-bay area were constructed with wood and do not appear to be in compliance with the Kentucky Building Code. It is most likely these apartments would need to be replaced and reconstructed with non-combustible materials.

1.4 Operational Assessment

1.4.1 General Analysis

1. The existing Training Center does not provide an ideal or functional layout for a modern Fire Training Center with modern staffing requirements, vehicles, equipment, and apparatus that is utilized in the 21st century. The configuration of the spaces affects the operational efficiency and resulting response times. The facility does not have adequate separation of public and staff spaces.

1.4.2 Exhaust and Carcinogen Systems

1. Protection of First Responders from exhaust carcinogens and contaminants is a critical concern in today's work environment. The various standards address these concerns and provide requirements for proper safety and precautions that should be adhered to for the safety of First Responders. Exposure to these elements is a significant contributing factor for the high rate of cancer in Fire Fighters.

1.4.3 Exterior

1. The roof has minimal insulation thickness. The current energy code requires a minimum rating of R25 to R30 for roof insulation value. The efficiency of the mechanical systems and the energy efficiency of the building is greatly compromised.
2. The exterior windows of the facility are single glass pane windows. These windows do not meet the current Building and Energy Codes. They are very inefficient and cause a tremendous amount of heat loss and heat load for the building. This also puts undue stress on the HVAC system creating energy inefficiencies.
3. The exterior walls appear to have no thermal insulation, selective demolition would be needed to confirm.

1.4.4 General Interior

1.4.4.1 Lobby / Main Entry

1. The main entry is good size but does not have a vestibule or access to a receptionist. A window should be in the vestibule to allow for direct communication between the Fire Department Administration and the Public.
2. The main lobby allows for access to the entire building. Access points should be installed to restrict public access to the rest of the building. The current situation makes access to the building inadequate for public use, but access to employee areas unrestricted and unsafe.
3. There should be adequate restrooms off the Lobby that are ADA compliant and meet all the requirements of the current building code.
4. There should be general signage for public use.

1.4.4.2 Bays

1. The Vehicle Bays are not only used for vehicle storage, but they are also utilized for storage of gear and other equipment. Due to the limited storage and support areas of the Bay, the Bay itself is unable to provide adequate maneuverability for equipment and Staff. This causes an undue burden on daily operations and can result in higher response times and potential injury to staff.
2. The Bays do not have proper NFPA clearances for equipment. The bay widths are not adequate per current standards. The width does not allow for maintenance of the apparatus from the sides or access to equipment in the vehicles.
3. There are no drains in the Bay. This makes it difficult for vehicles to be cleaned and maintained during inclement weather.

4. There is one apparatus bay that is not a drive-thru bay. This allows for the potential for accidents from backing into the bays causing significant damage and cost to equipment and the building. The bay can accommodate multiple vehicles if parked properly. Bays should be drive-thru, if at all possible, per NFPA Standards and Best Practices. This may not be possible in the current building but should be explored.
5. Gear is housed in the Bays. Gear should be housed in a separate Storage Area to protect from carcinogen contamination.
6. Lockers should be sized at a minimum of 24" x 24" x 72".
7. The Apparatus Bay utilizes a sectional door. These doors create maintenance and safety issues for the Department. The use of newer technology such as bi-fold or four-fold doors would be beneficial, not only from a maintenance and operation perspective, but also from a response time perspective. If these are not economical, the sectional doors should be modified to heavy-duty commercial sectional doors with higher use cycles and safety features.
8. There is no Decontamination Room in the facility. A Decontamination Room should be provided that allows for decontamination of gear and staff. This should also allow for quick access to a shower. Per NFPA Standards and Best Practices, this will minimize the tracking of contaminations into the living areas.
9. There is not a restroom in the Bay area. There should be a restroom facility provided in the Bay adjacent to the Decon Room. Per best practices, this is highly recommended to minimize tracking of contaminates into the living areas.
10. A two-hour fire-rated separation should be added at all walls and openings shared with the apparatus bay.

1.4.4.3 Bedrooms / Dorm Room

1. The dorm room is a community area with beds and personal storage units for the firefighters. This arrangement is acceptable but in industry best practices and modern trends, these are going to individual bunk rooms due to C-Pap and snoring issues and privacy. It also does not allow for gender separation.
2. If individual bunk rooms were pursued these should have adequate space to accommodate a small desk, bed, nightstand, and a set lockers or closet.
3. The dorm room does not have windows to the exterior. As a means of health, safety, and welfare of the staff, there should be means of natural light and the use of black out shades can help darken the room.

1.4.4.4 Offices

1. The office arrangement at the station is not desirable as the offices are shared spaces.
2. NFPA Standards and Best Practices for Fire Station design locate all offices in a general Administration Area. This would minimize duplication of spaces and services such as the need for copy machines, filing cabinets, etc. This will also prevent the public from entering the workspace of the staff.
3. Office(s) should have visibility to exit and entry aprons, which currently is not possible.
4. Office(s) should have full walls for privacy and less distractions while working.
5. There should be separate rooms with adequate space for a reports room, a fire prevention office, EMS offices, conference rooms, and a code review area which is not available now.

1.4.4.5 Storage

1. The storage capacity of this building is woefully short of the needs of the station. As aforementioned, the Bays are being utilized for storage as are other Staff spaces.
2. The bay storage is also inadequate for the storage of supplies.

1.4.4.6 Kitchen and Dining Room

1. There is no true dining room, but an eating area is located in the kitchen.
2. The Kitchen is too small for the use of the facility. The kitchen should be larger to accommodate the proper clearances around the equipment, appliances, and cook top.

1.4.4.7 Locker Rooms and Restrooms

1. NFPA Standards require that Locker Rooms be accommodated and be gender specific including the restrooms and shower facilities. The current facilities are not adequate for the size of this department or per the Plumbing Code. These facilities should be enlarged and provide ADA accessible fixtures.
2. Lockers should be sized at a minimum of 24" x 24" x 72".
3. The lockers should accommodate current ADA accessibility codes and provide adequate facilities for the number of first responders and staff who use the facility.

1.4.4.8 Classrooms

1. Classrooms should be large enough and flexible to accommodate the many recruit classes that use the Training Center daily.
2. Classrooms should have adequate storage for the tables and chairs used by the classes.

1.4.4.9 Miscellaneous Support

1. There should be two laundry areas. A Laundry Area in the Living Area separate from a laundry area in the bays to minimize contamination in the Living Areas.
2. There is not a fitness area in the facility which does not meet NFPA Standards or best practices. The fitness area should be near the living areas away from the bays and dirty areas of the facility.
3. The fitness room is a vital part of the firefighter conditioning and overall health. Due to the duties of their positions, they need to be in top physical shape and a fitness room would allow them to use it while on duty and not have to go to another location. This encourages fitness and is beneficial to both the Fire Department and the firefighters.
4. The Tool Room should have adequate storage and a work bench to accommodate all department maintenance needs.
5. The Cascade Room should have adequate space for all the SCBA equipment and for future training and storage needs.

1.4.4.10 Technology

1. The detailed investigation of communications and technology was beyond the scope of this assessment.
2. At the time in which this building was built, technology was not as great a concern for computer and phone access, however, over time, technology demands have required installation of phone and data jacks throughout the building. These have been done during the life of the facility and they have been surface-mounted where needed for use.

3. There are multiple locations that were viewed during the review where technological equipment has been installed in spaces which are not dedicated to technological equipment. Many of these areas do not have the proper HVAC components to maintain humidity and temperature control. The equipment is also unsecure and the opportunity for vandalism or damage exists.
4. There is a limited access control and surveillance system provided for the building. Security is limited.
5. In many instances, proper labeling is not provided on wiring, jacks, or boards.
6. There should be dedicated rooms with adequate space for the Department's technology storage needs such as for radio equipment.

1.4.5 Energy Efficiency

1. As noted throughout the Operational Assessment, there are various items that have energy implications, such as the roof, HVAC, lighting, and plumbing fixtures. These items can be addressed to increase the energy efficiency of the facility. These decisions are beneficial and will also increase the quality of life of the facility.
2. Other items for consideration are as follow:
    a. Install a building automation system with night setbacks. This will help reduce energy consumption. Understanding that this building is primarily a 24/7 facility, the energy reduction is minimal in comparison to typical public facilities, however, it would still provide operational cost savings over the life of the building.
    b. Install a lighting control system. Lighting will be turned off by occupation or motion sensors if rooms are not being utilized.
    c. Automatic flush valves and faucets will reduce water usage.
    d. New energy efficient windows and daylight harvesting controls in the facility will reduce energy consumption. This will also benefit the HVAC system, reducing the load on the system, therefore decreasing energy use and operation costs.
    e. The use of ceiling fans throughout the facility will minimize the energy consumption of the HVAC system.
    f. Utilization of proper exhaust methods and the creation of positive and negative pressure areas in the facility will deter a "sick building syndrome". This will also benefit the health and welfare of the staff.
    g. Increasing insulation on the exterior walls and roof will mitigate heat loss in the building. This will reduce the load on the HVAC system, making it more efficient and reducing operational costs.
    h. The use of an energy recovery unit would be a benefit to the facility. This would allow for energy generated by the HVAC and exhaust systems to be recaptured and converted to heat or a tempered distribution.

Jonathan Chesser 07/05/2024
Jonathan Chesser, Associate AIA
Assistant Project Manager

A.1 Preliminary Building Code and ADA Compliance Review

A preliminary Building Code and ADA Compliance Review was developed and used during the analysis and assessments to identify any building code or accessibility deficiencies throughout the facility. The building is not subject to compliance with the current codes if no renovations or improvements are undertaken. They would only be required to meet the current codes and guidelines if improvements or renovations are conducted.

The following Building Code review is based on the International Building Code (2015 IBC), and the State of Kentucky Building Code (2018 KBC), and 2010 ADA and ANSI Guidelines.

A.2 Code Data Analysis:

A.2.1 Building Area (Section 503)

Area included within exterior walls:

Group B = 7,370 SF

Group R-2 = 809 SF

Group S-2 = 8,884 SF

Total Area = 17,063 SF

Occupancy Classifications (Chapter 3 and Chapter 10):

Group B Occupancy (Section 304.1, Table 1004.1.2) Business

100 Gross SF/Occupant Maximum = 7,370 SF/100 = 74 Occupants

Group R-2 Occupancy (Section 310, Table 1004.1.2) Residential

200 Gross SF/Occupant Maximum = 809 SF/200 = 5 Occupants

Group S-2 Occupancy (Section 311.3) Low-Hazard Storage

200 Gross SF/Occupant Maximum = 8,884 SF/200 = 45 Occupants

Occupancy Separation (Table 508.4): A 1-hour separation is required to separate Group R and Group S-2. A 1-hour separation is not evident per the Existing Building Condition Assessment.

Allowable Height and Area (Table 503 and 504):

Type IIB – 3 Stories, 23,000 SF/Floor. The existing building is two story which = 17,063 SF. The existing allowable height and area meet the current Building Code.

Type of Construction (Chapter 5 and Chapter 6):

Type IIB is assumed based on existing materials encountered during the Existing Condition Assessment and existing drawings.

Sprinkler System (Section 903, 904, 905): A sprinkler system is required throughout the building. The existing building does not have a sprinkler system.

Fire Extinguishers (Section 906): Portable Fire Extinguishers are not provided throughout the existing building.

Fire Alarm System (Section 907): A fire alarm system is required throughout the building. The existing building has no fire alarm system.

Fire Resistance of Building Elements for Type IIB (Table 601):

Structural Frame = 0 hr.

Bearing Walls – Exterior = 0 hr.

Bearing Walls – Interior = 0 hr.

Non-Bearing Walls – Exterior = 0 hr.

Non-Bearing Walls – Interior = 0 hr.

Floor Construction = 0 hr.

Roof Construction = 0 hr.

Fire-Resistance Rating Requirements for Exterior Walls of Type IIB (Table 602):

Less than 10' (fire separation distance) = 1 hr.

Greater than 10' and less than 30' (fire separation distance) = 0 hr.

Greater than 30' (fire separation distance) = 0 hr.

Means of Egress:

Occupant Load = 124 Occupants

Number of Exits (Table 1006.3.1) 2 Required. The existing building has multiple exits. The exits do meet the current code.

Exit Access Travel Distance (Table 1017.2) = 200 feet

Minimum Width of Exit Passage (Section 1005) = 44":

The existing building meets this requirement in most locations; however, any modifications to the building will be needed to meet this code requirement for all exit corridors.

Minimum Corridor Width (Sections 1005.1 and 1018.2) = 44":

The existing building meets this requirement.

2012 R-Values (International Energy Conservation Code)

(ci = continuos insulation)

Roof = R-25 ci

Walls Above Grade = R-9.5 ci

Slab-On-Grade = R-10, for 24" below slab and depth of 10' vertically.

The current R-values are not met with the existing building envelope construction. These R-values should be considered if any modifications are pursued to aid in energy efficiency of the building.

Plumbing Fixture Count (Kentucky State Plumbing Code) – Mixed Occupancy (B, R2, S2)

Storage (S2) need minimal fixtures and are covered by the more stringent use groups.

Occupancy 124 = 62 Males and 62 Females

Business (B) Fixture Requirements

Water Closets:

Male = 4 Required, Have 2 Existing and 2 Existing Urinal

Female = 4 Required, Have 2 Existing

Unisex = 0

Lavatories:

Male = 4 Required, Have 2 Existing

Female = 4 Required, Have 2 Existing

Unisex = 0

Service Sinks = 1 Required, this is met.

Drinking Fountain:

1:75 = (1) total fountains required, (1) ADA Accessible Unit Required. There is 1 water fountain in the building, but it does not meet the ADA Accessible Unit requirements.

Showers:

Male = Not Required, have none

Female = Not Required, have none

Residential (R2) Fixture Requirements based on 5 Occupants.

Water Closets:

Male 1:10 = 1 Required, Have 1 Existing and 2 Existing Urinal

Female 1:10 = 1 Required, Have 2 Existing

Unisex = 0

Lavatories:

Male 1:10 = 1 Required, Have 2 Existing

Female 1:10 = 1 Required, Have 2 Existing

Unisex = 0

Service Sinks = 1 Required, Have 1 Existing

Drinking Fountain:

1:75 = (1) total fountains required, (1) ADA Accessible Unit Required. There is 1 water fountain in the building, but it does not meet the ADA Accessible Unit requirements.

Showers:

Male = 1 Required, have none

Female = 1 Required, have none

Parking:

Public Stalls = there are 70 existing spots.

Handicap Stalls (Regular and Van Accessible) = Minimum of 3 Required (Table 1106.2), 0 Existing but plenty of parking area to provide the required numbers.

Restrooms:

- There are not enough total fixtures for the Code Requirements, and ADA accessibility is limited.
- The existing Restrooms have limited ADA accessible toilet fixtures provided; however, the restrooms are not large enough to meet all the current ADA or ANSI accessibility codes with respect to clear floor space and clearances.
  - The restrooms and individual stalls need to have a 60" clear turning radius which they do not have currently.
- The Restrooms do not have the required clear turning radius or clear floor space in all locations.
- There are no showers located in the building. Showers need to meet ADA accessibility requirements for transfer or pull-in type showers.

Doors:

ADA clear floor space and maneuvering clearances do not meet current ADA or ANSI accessibility standards in all cases.

Egress:

Exiting through adjoining spaces is not acceptable. Currently, there are instances where the second means of egress would need to go through other spaces or through an Apparatus Bay (S-2) which is not admissible by the Building Code in all cases. The second floor Bunk Rooms (R-2) does not have multiple means of egress available which is not admissible by the Building Code in all cases.

Lexington Fire Training Center
PROJECT NO. 24057

Present: **Charlie Schneider, Brandstetter Carroll Inc.**

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

10:00 am
July 3rd , 2024

1. The site is located on the North side of Frankfort Pike. There are three access points into the site. All three are asphalt. The first 25% (east) of the site, Trail Branch has been extended. That project was recently completed. The first entrance has proper traffic control (cross walk, stop sign, etc., the other two are wide and shallow and lack any controls.





2. Moving west on Frankfort Pike there is an old four plank fence that extends the length of the site, it is in need of minor repair and repainting. There are also two dry stacked stone masonry pillars, one of which is in need of repair. It may have been hit by a vehicle at some point.







3. In the center entrance there is an asphalt hump installed to divert drainage down to the ditch so that water does not come directly onto Old Frankfort Pike.



4. Moving west on the site there is a fair number of classes going on at the facility today. A lot of vehicles are parked on the grass towards Old Frankfort Pike. If this area is to be used for parking regularly, the area should be paved, or better stabilized with grass pavers.



5. There is an old foundation in that same area that does not appear to be used at this time. It is recommended that the foundation be removed.



6. The drive from the main training facility building to west training areas is in need of replacement, it is evident that the subgrade has failed. The asphalt pavement is cracked and "alligatored".



7. There is an old set of bleachers between the facility. There is some undermining of the foundation occurring due to storm water runoff, if the bleachers are being used, the foundation should be repaired, if they are unused, it is recommended they be removed.



8. The rock wall on the western most entrance is beginning to fail and deteriorates more as you move westward.



9. Moving to the parking lot on the left side of the same building, again the asphalt is older and there is a lot of cracking signifying failure of subgrade. Three is a water storage tank and shed at the end of the lot.




10. Runoff from storms is directed towards one corner of the parking lot and drains directly into Town Branch. It is recommended that storm water runoff be sent through a water quality unit. Storm water quantity should be looked at as well, but as a broader look at the Town Branch Watershed.




11. On the west side of the building there is a small retaining wall adjacent to the parking area. It is in fair condition. The fence/rail on top of it stretches along the parking area and is in good condition. The concrete adjacent to the building is in fair condition.




12. The downspouts are connected to underground storm system. I did not see an indication of where that storm pipe leads, most likely directly to Town Branch.



13. On the west side of the building at the front there is a set of four steps. There are no handrails on these steps. It is recommended that handrails be added to meet current codes.



14. On the front side of the building there is sidewalk about 4' off the face and in fair condition. There is no curb so it is flush with the asphalt, therefore no ADA ramps but there is also no tactile warning strips at the front of the building.





15. Moving to the east side of the building there is a parking lot that is adjacent to the building. Asphalt is again in the same similar condition. May be a little more wear and there is some recent repairs for a gas line installation.



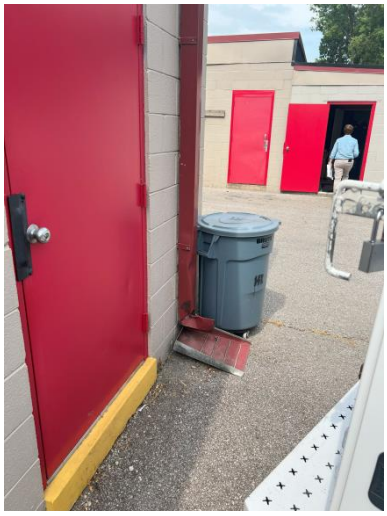
16. The sidewalk on the east side of the building is in similar condition to the other walks. Downspouts again are in good condition and lead to a pipe most likely draining to Towns Branch.



17. The sidewalk and asphalt are flush but there are no tactile waring strips as you walk out into the parking area. It is recommended to installing parking bumpers and tactile warning strips at entry/exit points along this walk.

18. All the stripping in the parking lots needs to be repainted.

19. Moving on the backside of the building there is an additional asphalt parking area that extends straight up to the building. There is no sidewalk in this area. The rear two doors have a six-inch step down as you exit. There is a downspout here that has been damaged and splashes directly onto the asphalt pavement. It is recommended to install concrete stoops at these locations and repair the downspout.

20. There is a dumpster pad at the rear of the building and a surround, the surround is in poor condition. There are no gates for this and there is no concrete pad for the truck to stop and maneuver on. However, the asphalt has held up remarkably well considering. Location could be improved. At least the angle for the approach of the dumpster should be modified.




21. Moving over into the adjacent parking lot to the east, this parking lot is for using cars for training. Asphalt is in good condition in this area, concrete pads are in fair to good condition considering their intended use.



22. In this parking area there is some remnants of an old foundation.I t is used for their training vehicles. It is in poor to fair condition.



23. As we move on down to the bridge crossing into the rear area, the asphalt here is in good condition and was just repaved when they extended the trail.





24. The bridge over Town Branch has been condemned and will need to be replaced.





25. Drives leading up to and from the bridge are in fair condition.



26. The property on the back side of Town Branch, between the creek and the railroad is an old storage yard for various materials. Mostly paved asphalt in fair to good condition until you get to the top where it turns more into ashalt in poor condition and then just straight into gravel.







27. Adjacent to the asphalt areas are various concrete foundations and bins. Various types of materials gravel, soils, mulch, bricks and other items. This area slopes rather gently from the bridge, westward up behind the fire training facility. Slope is never great but is probably an estimated 20' rise. At the very top of the upper area is a large soil stockpile and more various materials. Topsoil earth is just old waste material and appears to be rather good soil.








28. Like the main side of the site, there is no storm drainage, no retention, all runoff and goes directly into Town Branch. Again, Water Quantity would require a larger study of the Town Branch Watershed, water quality should be addressed.

29. Final item on this side to the east of the bridge, as you come across Town Branch to the east there is an old structure with a tank on top, The structure appears to be a water storage tank to fill water trucks.

30. There is no access point except for one window area on the west side, about 1/2 way up the wall.





If you should disagree with any information contained herein, please kindly notify our office in writing within 5 days of receipt of this memorandum.

Charlie Schneider 07/01/2024

CLS/lg

c: _____

_____

File

PALADÍN
Game changer in building systems

FIRE TRAINING ACADEMY MEP STUDY
INITIAL REPORT

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KY

SUBMITTED BY |

PALADIN, INC.
121 OLD LAFAYETTE AVENUE
LEXINGTON , KY 40502

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RELEASE | JULY 2024

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PALADIN
Game changer in building systems

EXECUTIVE SUMMARY



Paladin, Inc. was contracted to perform a Mechanical, Electrical, Plumbing (MEP) Study at the Lexington Fire Department (LFD) Fire Training Academy Campus located at 1375 Old Frankfort Pike, Lexington, KY 40504 for the Lexington-Fayette Urban County Government (LFUCG).

Paladin completed the walk-through of the facility and observed MEP systems on the property on July 3, 2024.

The 1969 property is an approximately 16,400 square foot building that is not served by a physical plant; all mechanical HVAC equipment and systems are stand-alone systems. The MEP systems have been replaced at different stages of the building's life where the HVAC, consisting mostly of packaged Rooftop Units (RTUs), was replaced approximately in 2001.

The lighting in the facility has been replaced at various points in the past. The latest partial replacement occurred in 2017. Prior to the 2017 lighting replacement, an upgrade to LED fixtures occurred in approximately 2010. The electrical distribution system has been upgraded as necessary at varying intervals. The main switchboard is original to the building, while the majority of the electrical distribution panels are estimated to have been replaced in 2008. A backup generator serves the west side of the building and was installed in 2015.

Plumbing fixtures were replaced in approximately 2009. Two domestic water heaters serve the building: one tankless and the other traditional tank style. The domestic water heaters were replaced in 2015 and 2023, respectively.

Finally, an interior addition was added in 2023 that included office and bunk space. The MEP fixtures in the 2023 addition were installed new with the addition.

This report reviews the findings from the MEP conditions walk-through. It also documents Paladin's recommendations and opinion of costs for the identified Facility Improvements Measures (FIMs)

Overall, Paladin's opinion is that there is $390,000 of MEP work to be performed to reduce the risk posed by MEP systems that are approaching the end of beneficial use as well as reduce the cost of operations.

LEXINGTON FIRE DEPARTMENT - FIRE TRAINING ACADEMY			
SUMMARY OF MEP STUDY COST OPINION			
SYSTEM	GENERAL CONDITION	OPINION OF COST	PRIORITY
TOTAL		$ 390,000	
PACKAGED ROOFTOP UNITS	The RTUs (7 total) have exceeded their operational life and are showing increased signs of age. The facility is often outside of the temperature range desired by the occupants, which is largely caused by the failure of these units.	$285,000	HIGH
ELECTRICAL DISTRIBUTION	The main switchgear is outdated, and the industry no longer recommends the use of its make and model. There is a high risk to the facility if this equipment were to fail.	$75,000	HIGH
LIGHTING FIXTURES	The light fixtures have been replaced at various points over the life of the facility. The majority of fixtures have been converted to LED. Converting or replacing the remainder of the fixtures (48 total) to LED would yield some boost in energy efficiency.	$10,000	MODERATE
TERMINAL DEVICES	The packaged terminal air conditioning units (2 total), exhaust fans (4 total), and unit heaters (2 total) have exceeded their operational life or are nearing it closely. To allow for extended use of the facility as it is, a replacement of these units would be necessary.	$15,000	LOW
PLUMBING FIXTURES	The plumbing fixtures have been upgraded in 2009 and the fixtures do not show concerning signs of aging. These fixtures are able to continue their use with very little risk. However, one lobby water fountain has well exceeded its operational life, needing replacement.	$5000	LOW
HVLS FANS	The HVLS Fans serving the Bay are in good condition and still appear to have the majority of their operational life remaining. Very little benefit would be gained from their replacement at this time.	$0	LOW
BACKUP GENERATOR	The generator has been well maintained and is in good condition without showing dramatic signs of aging. Replacement of this unit would be costly with very little gained benefits. Replacement of this unit is not recommended at this time.	$0	LOW
DOMESTIC WATER HEATERS	Both domestic water heaters are in good condition and have well over a decade left of remaining operational life. There is little risk of these failing in the near future.	$0	LOW
2023 ADDITION	All MEP equipment in the new 2023 addition is unnecessary to replace as it is at the beginning of its operational life.	$0	LOW



SECTION 2:

OVERVIEW OF MEP CONDITIONS

OVERVIEW OF MEP CONDITIONS

MEP STUDY OBJECTIVES

Paladin was contracted to complete an MEP investigation of the Fire Training Academy. The primary objectives for this project are:

1. Evaluating all mechanical, electrical, and plumbing systems for the building. This includes air handling systems, singular equipment such as mini-split systems and unit heaters, electrical distribution panels, and domestic water heaters.
2. Determining the prioritization of repairs and replacements needed for the facilities
3. Supporting the agency in identifying other improvements that would align with standards and operational requirements.

Paladin has organized this information into an MEP inventory management log and a list of findings and recommendations with estimated costs for performing corrective action.

MEP CONDITIONS OVERVIEW

During Paladin's initial site visit on July 3, 2024, it was found that the majority of spaces were outside of the desired space temperature. The facility operator has installed multiple temporary air conditioning units in an attempt to bring the space temperature down to a more accommodating level.

A complete list of findings can be found in SECTION 3: SUMMARY OF FINDINGS. The images and descriptions below are intended to provide an overview of the state of the MEP systems as observed during the walk-through.

Many pieces of equipment and systems were found to be operating beyond the typical service life. The type of equipment and systems that were originally selected are no longer performing at their peak efficiencies and show signs of wear. The following is an evaluation of each primary system: mechanical, electrical, and plumbing.

MECHANICAL

The air handling equipment consists of seven packaged rooftop units (RTUs). Four of these rooftop units serve the large bay area while two serve the east wing and one serves the west wing. The west wing RTU is the most recently replaced unit, which occurred in 2016. The RTUs serving the east wing were replaced in 2008. The four RTUs serving the Bay were replaced in 2001.

According to ASHRAE's life expectancy for the RTUs, all the RTUs except the west wing unit are beyond their typical life expectancy. Although the RTU serving the west wing has approximately five years of operational life remaining, replacement of this unit to a higher tonnage would help serve the spaces. The west wing typically is further off zone setpoint than the other areas in the facility. This is further exemplified by the multiple temporary air conditioning units installed in the west wing. Due to this, Paladin recommends a full replacement of the RTUs.

The ductwork for the rooftop units appears to be original. Above ceiling, it appears that the supply ductwork is externally insulated while the return ductwork is internally lined. Due to the age of the ductwork and internal conditions, it is Paladin's recommendation that the ductwork be replaced.





Images #01 & 02: Rooftop Units

The new addition of the office spaces and bunks is served by a mini-split system heat pump. This features one outdoor unit mounted on the roof and four indoor units serving each of the four newly added spaces. This system and addition were installed in 2023, so the mechanical equipment has effectively its whole operating life remaining. If the programming of this addition does not change, it is not advisable to replace the mechanical systems in the new addition area.





Images #03 & 04: Heat Pump System - Outdoor Unit and Indoor Unit

Classroom 2 and the adjacent EMS Room are each served by a packaged terminal air conditioner (PTAC) unit. The PTAC units are estimated to have been installed in 2001. According to ASHRAE's life expectancy for the PTAC units, both are almost a decade past their life expectancy. Due to this, Paladin recommends the replacement of the PTAC units.



Image #05: PTAC Unit

The Bay is currently served by three high volume low speed (HVLS) fans. The estimated installation date for the HVLS fans was 2016. The ASHRAE life expectancy for these fans indicates that they have twelve years of operating life remaining. With over half of their lifetime remaining, it is Paladin's recommendation that these fans continue operating unchanged. Even if the air distribution is altered for the Bay, these fans will continue to combat thermal stratification that can more easily affect an area like the Bay with high ceilings.



Image #06: HVLS Fans

The Bay is also served by a singular wall mounted exhaust fan. It is estimated that this exhaust fan's installation date was 2001. The ASHRAE life expectancy for this fan indicates that it is three years past its operational life expectancy. Furthermore, it is reported that diesel fumes accumulate when the fire engines are in the Bay. The purpose of this fan was to assist with engine exhaust, and it is no longer able to fulfill its purpose effectively. Paladin recommends the replacement of this exhaust fan.

In the Apparatus Closet attached to Classroom 1, there is a small exhaust fan that discharges directly outside. This exhaust fan is estimated to have been installed in 2001. The ASHRAE life expectancy for this fan indicates that it is three years past its operational life expectancy. Paladin recommends the replacement of this exhaust fan.





Images #07 & 08: Interior and Exterior Views of Bay Exhaust Fan

The men's and women's restrooms each have a ceiling mounted electric unit heater. It is estimated that these were installed when the restrooms were renovated in 2009. The ASHRAE life expectancy for these heaters indicates that they are past their operational life expectancy by two years. Due to this, it is Paladin's recommendation that the unit heaters be replaced.



Image #09: Restroom Unit Heater

The three restroom areas: men's, women's, and Chief's, all include ceiling mounted exhaust fans. It is estimated that these fans were installed when the restrooms were renovated in 2009. The ASHRAE life expectancy for these fans indicates that they have approximately five years of remaining operational life. It is Paladin's recommendation that the restroom exhaust fans be replaced. The fans are nearing the end of their 20-year life expectancy and replacing them during the upcoming project is safer than allowing them to exceed their life expectancy and replace them as they fail.



Image #09: Restroom Exhaust Fan

The Kitchen includes a kitchen hood exhaust fan. This exhaust fan has been estimated to have been installed in 2019. The ASHRAE life expectancy for a fan of this type is 20 years. The hood and fan seem to be in acceptable condition for continued operation. Due to this, it is Paladin's recommendation that the kitchen exhaust fan remain. The exception to this is if the Kitchen is to expand and a higher capacity exhaust fan is required.



Image #10: Kitchen Exhaust Hood

ELECTRICAL

The electrical distribution system consists of one main 600 Amp switchboard, ten electrical distribution panels, and two large disconnect switches. The main switchboard is original to the building. The ten electrical distribution panels all vary in age. However, most are from approximately 2001-2008. The two large disconnect switches each serve a distribution panel on the roof for the east and west wings respectively. These disconnect switches appear to be from 2008.

The main switchboard serves the entire building. The typical operational lifespan of a main switchboard is expected to be thirty years. Since this switchboard is original to the building, that puts the current life of this equipment at almost twice what it was expected to achieve. Furthermore, the main switchboard is a Federal Pacific model which is outdated. These are often recommended for replacement regardless of their age. Due to this, Paladin recommends that the main switchboard be replaced.



Image #11: Main Switchboard

The electrical distribution panels can be separated into two categories based upon manufacturer: Square D panels and non-Square D panels. There are two non-Square D panels. There is an ITE panel that serves the men's restroom and a Cutler-Hammer panel that serves the computer room. The ITE panel appears to be from 1977 and was not replaced with the restroom renovation project. The ITE panel is almost two decades past its expected operational life. The Cutler-Hammer panel has approximately 5 years of expected operational life remaining. Due to this, Paladin recommends that both panels be replaced. Replacing both panels with updated Square D panels would allow for increased versatility in the spaces, increased capacity, and a safer environment.



Images #12 & 13: ITE Panel (Left) and Cutler-Hammer Panel (Right)

The eight Square D panels are generally in a similar good condition with approximately half of their thirty-year operational life expectancy remaining. The exceptions to this are the newly added panel to serve the 2023 office addition and the panels that are located on the roof to serve the RTUs. The new panel has its entire operational life remaining. The roof panels appear to be in acceptable condition; however, it cannot be determined when these panels were installed. The earliest estimate for the roof panels is 2001, while they could have been upgraded with the remaining panels in approximately 2008. The roof panels' enclosures have shown signs of aging but the equipment itself appears to be in acceptable condition. Due to this, Paladin recommends that all the Square D electrical distribution panels are to remain.





Images #14 & 15: Interior Square D Panel (Left) and Rooftop Panel (Right)

The two large disconnect switches each serve a roof distribution panel. These disconnect switches were both made by Square D and approximately installed in 2008. There appears to be no significant signs of distress or failures. Due to this, Paladin recommends that the large disconnect switches serving the roof are to remain.



Image #16: Disconnect Switches for Roof Panels

The backup generator serving the building was installed in 2015. It has been reported that it serves only the west half of the building. The expected life span of the generator is thirty years. Reports show that the generator is up to date on regularly scheduled maintenance. Due to this, Paladin recommends that the generator remains as is.



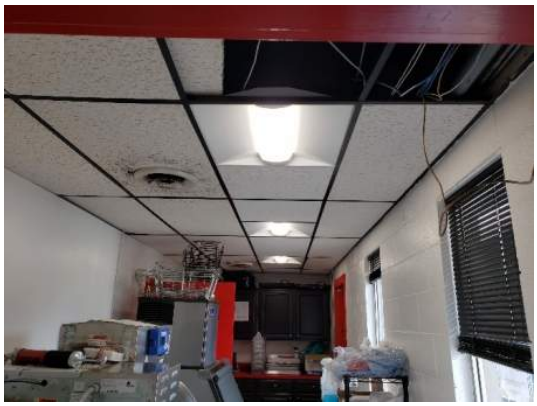






Images #17, 18, 19, & 20: Generator Exterior and Interior Components

The lighting in the building has been replaced at various points, causing lighting color and fixtures to be non-uniform throughout the facility. The majority of the lighting fixtures were reported to be replaced with LED fixtures in approximately 2010. A separate replacement project was implemented for the lighting fixtures in approximately 2017 for a small number of fixtures in the office spaces. The 2017 replacement project featured another upgrade of lighting fixtures to LED fixtures. Finally, the 2023 addition included its own new LED fixtures as well. Paladin recommends the LED fixtures to remain. The exception to this would be if uniform lighting fixtures are desired. This conformity would require a replacement of lighting fixtures.





Images #21 & 22: LED Fixture from 2010 Replacement (Left) and LED Fixture from 2017 Replacement (Right)

The lighting fixtures for the facility are not all LED fixtures. There are metal halide lights in the Bay, incandescent can lights in the Lobby, Computer Room, and Chief's Restroom, and incandescent exterior light fixtures. To increase energy efficiency, Paladin recommends replacing all lighting fixtures that are not LED to be updated to LED fixtures.





Images #23 & 24: Metal Halide Fixtures (Left) and Exterior Incandescent Lights (Right)

PLUMBING

The building's domestic hot water is generated by two sources: an electric tank-style water heater and an instantaneous gas water heater. Each of these water heaters serves a different side of the building. The electric water heater serves the west side of the building. This includes the men's restroom and the chiefs' office restroom. The gas water heater serves the east side of the building. This includes the women's restroom, the laundry room, and the kitchen. The electric water heater was replaced in 2023. The gas water heater was installed in 2015. Both pieces of equipment are in good condition, and both also have over ten years of operable life remaining. Due to this, it is Paladin's recommendation that these units remain.





Images #25 & 26: Tanked Electric Water Heater (Left) and Instantaneous Gas Water Heater (Right)

The building underwent a restroom renovation in 2009. During this renovation, the plumbing fixtures were updated into more efficient fixtures as well as becoming more uniform fixtures. There are three restrooms in the facility: a men's restroom, a women's restroom, and an individual restroom serving the chiefs' offices. In the men's restroom, there are three urinals, a water closet, and two lavatories. In the women's restroom, there are two water closets and two lavatories. In the individual chief restroom, there is one water closet, one lavatory, and one shower. Since all of the fixtures have been recently updated, it is Paladin's recommendation that these fixtures remain.







Images #27, 28, & 29: Typical Water Closet (Top Left), Individual Shower (Top Right), Urinal and Lavatories (Bottom)

The building is equipped with two water fountains in the Lobby. In the east side of the Lobby, an Elkay water fountain with bottle filler has been installed. This installation occurred in 2019. The Elkay water fountain is in good condition, and it has approximately ten years of expected operational life remaining. It is Paladin's recommendation that this fixture is to remain. The west side of the Lobby is served by an Oasis water fountain. This water fountain is estimated to have been installed in 2001. With this being the case, the water fountain is well beyond its expected operational life. It is Paladin's recommendation that the Oasis water fountain be replaced with a fixture that is similar to the Elkay model on the east side of the Lobby. This will offer some energy efficiency enhancement to the building and allow for more flexible service to the occupants of the building.





Images #30 & 31: Oasis Water Fountain (Top) and Elkay Water Fountain (Bottom)

VAV AHUs

Of the mechanical equipment that is recommended to be replaced, the RTUs are the most critical items. The RTU replacement can be a one-for-one replacement as described in the previous section of this report with some notable inclusions: Kentucky Building Code (KBC) stipulates conformance with International Energy Conservation Code 2012 (IECC 2012). Replacement RTUs would require various features such as single zone VAV fan control and outside air economizer features. These features are code-required. However, if further savings and operation efficiencies are desired, other design configurations should be considered.

As an alternative to a one-for-one replacement of the RTUs, Paladin recommends a system that would allow for more versatility in the spaces and increased energy efficiency. Paladin believes that the demolition of the existing RTUs and the installation of two Variable Air Volume (VAV) Air Handlers would fit the programming of the facility. Each VAV Air Handler (VAV AHU) would separately serve a wing. A large, single zone, RTU would be installed to be dedicated to handling the Bay. This would consolidate the seven RTUs into three. The VAV AHUs would include an exhaust fan to allow for the exhaust to be collected before being rejected. This would allow for capture and reuse of the exhausted thermal energy to be used as preheat during cooler months. The installation of VAV AHUs would result in significant improvement to the building's energy efficiency and individual zone temperature control as required by ASHRAE 55.1.

With a new VAV AHU system in mind, the elimination of multiple pieces of terminal equipment would be possible. Instead of replacement, this would allow for the demolition of the PTAC units, the restroom unit heaters, and the general exhaust fans. To allow for enhanced control and conditioning of the zones in the facility, the VAV AHU would supply air to VAV terminal units. Each zone would be equipped with a VAV Box with electric or hot water reheat to allow for individualized cooling and heating control. This allows for further improvements to the building's energy efficiency and quieter operation of mechanical equipment in the area, allowing for a more conducive learning environment.

Variable Refrigerant Flow (VRF) System

A variable refrigerant flow system may be a practical alternative to the existing direct-expansion (DX) packaged equipment currently installed at the fire training academy. A VRF system is a refrigerant DX system like the traditional rooftop units. However, one key difference is that the indoor air handling units are smaller and distributed to individual rooms. Having indoor air handling units in individual spaces allows for precise zone temperature control and excellent energy efficiency when utilized in a 'heat-recovery' VRF system. Indoor units come in many different varieties and may be ducted or non-ducted, concealed or exposed for flexibility with architectural space programming.

Another key benefit of VRF systems is the consolidation of load to the outdoor unit and the elimination of gas consumption with heat recovery heat pump systems. These types of systems may move heat from one room to another, automatically increasing overall system efficiency.

Key drawbacks of VRF systems are that they are capital-intensive to install, require very meticulous design to perform, and have very specific maintenance and operational requirements. Trained factory service technicians are generally the only people that can appropriately service and maintain the equipment to the standards set forth in most manufacturers' warranties.



SECTION 3:

SUMMARY OF FINDINGS

Fire Training Academy Campus Feasibility Study - Mechanical
7/30/2024

Inventory Replacement Priority Evaluation

0-5, 0 is good/positive or low priority; 5 is poor/negative or critical

Equipment Tag	Replacement Priority Composite Rating	Equipment Type	Manufacturer	Model #	Serial #	Area Served	Equipment Location	Volts	Phase	Startup Date	Cooling Capacity	Gas Heating Capacity (BTUH)	ASHRAE Life Expectancy (Years)	Remaining Life Est (Years)	Remaining Life Rating	Repair State	System Efficiency	Risk	Notes:
RTU-1	4	Packaged Rooftop Unit with Gas Heat	International Comfort Products	PGR560130HGS0A1	C162830512	West Wing	Rooftop	208/230	3	2016	4.5 Tons	130,000	15	7	3	3	5	5	Refrigerant R410A
RTU-2	5	Packaged Rooftop Unit with Gas Heat	Tempster	N/A	L9635-28779	Northwest Bay	Rooftop	208/230	3	2001	3 Tons	75,000	15	-8	5	5	5	5	Startup date and cooling capacity both estimated due to deteriorated info tag.
RTU-3	5	Packaged Rooftop Unit with Gas Heat	American Standard/Trane	YCC036F3H0BF	Z082RKU1H	Southwest Bay	Rooftop	208/230	3	2001	3 Tons	75,000	15	-8	5	5	5	5	
RTU-4	5	Packaged Rooftop Unit with Gas Heat	American Standard/Trane	YCC036F3H0BF	Z2125J71H	Southeast Bay	Rooftop	208/230	3	2001	3 Tons	75,000	15	-8	5	5	5	5	
RTU-5	5	Packaged Rooftop Unit with Gas Heat	Carrier	N/A	2008H60426	Training and Kitchen	Rooftop	208/230	3	2008	4 Tons	72,000	15	-1	5	5	5	5	Tag faded and unable to get all info at unit.
RTU-6	5	Packaged Rooftop Unit with Gas Heat	American Standard/Trane	YCC036F3H0BF	Z2144F1H	Northeast Bay	Rooftop	208/230	3	2001	3 Tons	75,000	15	-8	5	5	5	5	
RTU-7	5	Packaged Rooftop Unit with Gas Heat	Carrier	48SD-048115511	2408G41491	Classrooms 3&4	Rooftop	208/230	3	2008	4 Tons	115,000	15	-1	5	5	5	5	
HP-1	1.5	Split System Heat Pump - Outdoor Unit	LG	LM36CHV	A4UW36GFA0-AWGBEUS	New office spaces	Rooftop	208/230	1	2022	3 Tons	N/A	20	18	1	1	2	2	Refrigerant R410A
HP-A	1.5	Split System Heat Pump - Indoor Unit	LG	LMN079HVT	2C1M0759	1st Floor New Small Office	1st Floor New Small Office	208/230	1	2022	0.5 Tons	N/A	20	18	1	1	2	2	
HP-B	1.5	Split System Heat Pump - Indoor Unit	LG	LSN120HSV5	104KAGS1PU31	1st Floor New Large Office	1st Floor New Large Office	208/230	1	2022	1 Ton	N/A	20	18	1	1	2	2	
HP-C	1.5	Split System Heat Pump - Indoor Unit	LG	LSN120HSV5	203KAZK3K345	2nd Floor New Dorm	2nd Floor New Dorm	208/230	1	2022	1 Ton	N/A	20	18	1	1	2	2	
HP-D	1.5	Split System Heat Pump - Indoor Unit	LG	LMN079HVT	204KCDG06E46	2nd Floor New Office	2nd Floor New Office	208/230	1	2022	0.5 Tons	N/A	20	18	1	1	2	2	
PTAC-1	4.5	Packaged Terminal Air Conditioner	Comfort Aire	N/A	N/A	Classroom 2	Classroom 2	N/A	N/A	2001	N/A	N/A	15	-8	5	4	5	4	Estimated installed date
PTAC-2	4.5	Packaged Terminal Air Conditioner	Comfort Aire	N/A	N/A	EMS	EMS	N/A	N/A	2001	N/A	N/A	15	-8	5	4	5	4	Estimated installed date
UH-1	4	Ceiling Mounted Fan Forced Electric Unit Heater	Marley Engineered Products	F-4004	N/A	Men's Restroom	Men's Restroom	N/A	N/A	2009	N/A	N/A	13	-2	5	4	4	3	Estimated installed date
UH-2	4	Ceiling Mounted Fan Forced Electric Unit Heater	Marley Engineered Products	F-4004	N/A	Women's Restroom	Women's Restroom	N/A	N/A	2009	N/A	N/A	13	-2	5	4	4	3	Estimated installed date
EF-1	2.75	Ceiling Exhaust Fan	Zephyr	59124-O	N/A	Men's Restroom	Men's Restroom	N/A	N/A	2009	N/A	N/A	20	5	3	3	3	2	Estimated installed date
EF-2	2.75	Ceiling Exhaust Fan	Zephyr	59124-O	N/A	Women's Restroom	Women's Restroom	N/A	N/A	2009	N/A	N/A	20	5	3	3	3	2	Estimated installed date
EF-3	2.75	Ceiling Exhaust Fan	N/A	N/A	N/A	Chiefs' Office Restroom	Chiefs' Office Restroom	N/A	N/A	2009	N/A	N/A	20	5	3	3	3	2	Estimated installed date
EF-4	4	Ceiling Exhaust Fan	N/A	N/A	N/A	Apparatus	Apparatus	N/A	N/A	2001	N/A	N/A	20	-3	5	4	4	3	Estimated installed date
EF-5	4	Wall Mounted Exhaust Fan - 36"	N/A	N/A	N/A	Bay	Bay	N/A	N/A	2001	N/A	N/A	20	-3	5	4	4	3	Estimated installed date
HVLS-1	1.5	High Volume Low Speed Fan	Big Ass Fans	N/A	N/A	Bay	Bay North	N/A	N/A	2016	N/A	N/A	20	12	1	1	2	2	Estimated installed date
HVLS-2	1.5	High Volume Low Speed Fan	Big Ass Fans	N/A	N/A	Bay	Bay Center	N/A	N/A	2016	N/A	N/A	20	12	1	1	2	2	Estimated installed date
HVLS-3	1.5	High Volume Low Speed Fan	Big Ass Fans	N/A	N/A	Bay	Bay South	N/A	N/A	2016	N/A	N/A	20	12	1	1	2	2	Estimated installed date
KEF-1	2.25	Kitchen Exhaust Fan	N/A			Kitchen	Kitchen			2019			20	15	2	2	2	3	Estimated installed date

Fire Training Academy Campus Feasibility Study - Electrical
7/30/2024

Inventory Replacement Priority Evaluation

0-5, 0 is good/positive or low priority; 5 is poor/negative or critical

Equipment Tag	Replacement Priority Composite Rating	Equipment Type	System Served	Manufacturer	Model #	Serial #	Area Served	Equipment Location	Fed From	Amps	Volts	Phase	Wire	Count	Startup Date	Life Expectancy (Years)	Remaining Life Est (Years)	Remaining Life Rating	Repair State	System Efficiency	Risk	Notes:
MSB	5	Main Switch Board	Electrical Distribution	FPE	QMQB	337317	Building	Elec/Wash	Utility	600	120/208	3	4	1	1969	30	-25	5	5	5	5	Install date is estimated
PNL-A	1.75	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Kitchen and Bay	Elec/Wash	MSB	200	120/208	1	N/A	1	2008	30	14	2	1	2	2	Install date is estimated
PNL-B	1.75	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	New Offices	Elec/Wash	MSB	200	120/208	1	N/A	1	2008	30	14	2	1	2	2	Install date is estimated
PNL-C	1.75	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Computer Room, Kitchen, Wash	Elec/Wash	MSB	200	120/208	1	N/A	1	2008	30	14	2	1	2	2	Install date is estimated
PNL-MR	4.25	Distribution Panel	Electrical Distribution	ITE Imperial Corporation	N/A	N/A	Men's Restroom	Men's Restroom	N/A	125	240	3	3	1	1977	30	-17	5	5	4	3	Install date is estimated
PNL-CO	1.75	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Chiefs' Offices	Chiefs' Offices	N/A	225	120/208	1	N/A	1	2008	30	14	2	1	2	2	Install date is estimated
PNL-CL2	2.5	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Classroom 2 and EMS	Classroom 2	N/A	125	120/208	1	N/A	1	2002	30	8	3	3	2	2	
PNL-CP	3.75	Distribution Panel	Electrical Distribution	Cutler-Hammer	N/A	N/A	Computer Room	Computer Room	N/A	125	120/240	1	3	1	2000	30	6	4	4	3	4	
PNL-2NO	1	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	New Offices - Second Floor	New Office - Second Floor	N/A	200	120/208	1	N/A	1	2024	30	30	1	1	1	1	
PNL-RE	3.25	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Roof East	Roof East	D-1E	150	240	3	N/A	1	2001	30	7	3	3	2	5	Install date is estimated
PNL-RW	3.25	Distribution Panel	Electrical Distribution	Square D	N/A	N/A	Roof West	Roof West	D-1W	150	240	3	N/A	1	2001	30	7	3	3	2	5	Install date is estimated
D-1E	1.5	Panel Disconnect Switch	Electrical Distribution	Square D	N/A	N/A	Roof	Elec/Wash	MSB	200	240	3	N/A	1	2008	30	14	2	1	1	2	Install date is estimated
D-1W	1.5	Panel Disconnect Switch	Electrical Distribution	Square D	N/A	N/A	Roof	Elec/Wash	MSB	400	240	3	N/A	1	2008	30	14	2	1	1	2	Install date is estimated
Generator	2	Backup Generator	Emergency Power	Generac	SG0130GG1890S18HPSYE	9802912	West Wing	Roof East	Generator	400	120/208	3	N/A	1	2015	30	21	2	2	2	2	
L1	2.5	Skylight	Lighting	N/A	N/A	N/A	Bay	Bay	N/A	N/A	N/A	N/A	N/A	20	2001	30	7	3	2	1	4	
L2	3.75	Metal Halide	Lighting	Metal Halide	N/A	N/A	Bay	Bay	N/A	N/A	N/A	N/A	N/A	11	1969	30	-25	5	4	3	3	
L3	3	4" Can Light	Lighting	Incandescent	N/A	N/A	Varies	Varies	N/A	N/A	N/A	N/A	N/A	15	1969	30	-25	4	3	3	2	
L4	2	2'x4' Lay-in	Lighting	LED	N/A	N/A	Varies	Varies	N/A	N/A	N/A	N/A	N/A	32	2010	30	16	2	3	1	2	
L5	1.75	2'x2' Lay-in	Lighting	LED	N/A	N/A	Varies	Varies	N/A	N/A	N/A	N/A	N/A	42	2010	30	16	2	2	1	2	
L7	3	1'x8' Surface Mount	Lighting	Fluorescent	N/A	N/A	Cascade/ Shop	Cascade/ Shop	N/A	N/A	N/A	N/A	N/A	2	1969	30	-25	4	3	3	2	
L8	2	1'x4' Surface Mount	Lighting	LED	N/A	N/A	Shop/ Shed	Shop/ Shed	N/A	N/A	N/A	N/A	N/A	2	2010	30	16	2	3	1	2	
L9	2.5	Wall Sconce	Lighting	Incandescent	N/A	N/A	Main Entrance	Main Entrance	N/A	N/A	N/A	N/A	N/A	6	1969	30	-25	3	2	3	2	
L10	2.5	Wall-Mounted Can Light	Lighting	Incandescent	N/A	N/A	Main Entrance	Main Entrance	N/A	N/A	N/A	N/A	N/A	2	1969	30	-25	3	2	3	2	
L11	1	18" Round Light	Lighting	LED	N/A	N/A	Upstairs Bunk Room	Upstairs Bunk Room	N/A	N/A	N/A	N/A	N/A	2	2023	30	29	1	1	1	1	
L12	1	Updated 2'x4' Lay-in	Lighting	LED	N/A	N/A	Reception	Reception	N/A	N/A	N/A	N/A	N/A	2	2017	30	23	1	1	1	1	
L13	3.75	Caged Bulb Light	Lighting	Incandescent	N/A	N/A	Exterior Sides	Exterior Sides	N/A	N/A	N/A	N/A	N/A	10	1969	30	-25	5	4	3	3	
L14	3.75	Exterior Floodlight	Lighting	Incandescent	N/A	N/A	Exterior Rear	Exterior Rear	N/A	N/A	N/A	N/A	N/A	2	1969	30	-25	4	5	3	3	
L15	1.75	4" Can Light	Lighting	LED	N/A	N/A	Varies	Varies	N/A	N/A	N/A	N/A	N/A	39	2010	30	16	2	2	1	2	

Fire Training Academy Campus Feasibility Study - Mechanical
7/30/2024

Inventory Replacement Priority Evaluation

0-5, 0 is good/positive or low priority; 5 is poor/negative or critical

Equipment Tag	Replacement Priority Composite Rating	Equipment Type	Manufacturer	Model #	Serial #	Area Served	Equipment Location	Count	Capacity (Gallons)	Heating Capacity	Volts	Phase	Startup Date	Life Expectancy (Years)	Remaining Life Est (Years)	Remaining Life Rating	Repair State	System Efficiency	Risk	Notes:
DWH-1	1.25	Electric Water Heater	Rheem	PROE50T2 RH95	Q142306984	West Wing Restrooms	Men's Restroom	1	50	4500 Watts	208/240	N/A	2023	15	14	1	1	1	2	
DWH-2	2	Instantaneous Gas Water Heater	Rinnai	REU-KB3237FFUD-US	FF.BA-018760	Women's Restroom, Kitchen, Wash	Wash	1	N/A	200,000 BTUH	120	1	2015	20	11	2	2	1	3	
WF-1	3.75	Water Fountain	Oasis	N/A	N/A	West Lobby	West Lobby	1	N/A	N/A	115	1	2001	15	-8	5	4	4	2	Estimated startup date
WF-2	1.5	Water Fountain and Bottle Filler	Elkay	LZS8WSSP	160325580	East Lobby	East Lobby	1	N/A	N/A	115	1	2019	15	10	2	2	1	1	Estimated startup date
WC-1	1.75	Water Closet	Unknown	N/A	N/A	Men's RR, Women's RR	Men's RR, Women's RR, Chief's Office Restroom	4	N/A	N/A	N/A	N/A	2009	30	15	2	2	2	1	1 in Women's RR, 2 in Men's RR
WC-2	1.75	Water Closet (Motion sensor)	Sloan	N/A	N/A	Women's RR	Women's RR	1	N/A	N/A	N/A	N/A	2009	30	15	2	2	2	1	1, Occupancy flush sensor
UR-1	1.75	Urinal (Motion Sensor)	Sloan	N/A	N/A	Men's RR	Men's RR	3	N/A	N/A	N/A	N/A	2009	30	15	2	2	2	1	3, Automatic flush
LAV-1	2	Lavatory Sink (Wall-mounted)	Unknown	N/A	N/A	Men's RR, Women's RR	Men's RR, Women's RR	2	N/A	N/A	N/A	N/A	2009	25	10	3	2	2	1	1 in each restroom
LAV-2	2	Lavatory Sink (Cabinet)	Unknown	N/A	N/A	Men's RR, Women's RR, Chief's Office Restroom	Men's RR, Women's RR, Chief's Office Restroom	3	N/A	N/A	N/A	N/A	2009	25	10	3	2	2	1	2 in each restroom
P-1	2	Walk-in Shower	Unknown	N/A	N/A	Chief's Office Restroom	Chief's Office Restroom	1	N/A	N/A	N/A	N/A	2009	25	10	3	2	2	1	

Preliminary Construction Cost Opinion

CONSTRUCTION COST ESTIMATE FOR A ONE-TO-ONE REPLACEMENT OF NECESSARY MEP EQUIPMENT

		Labor Rate ($/hr):	$ 85.00		Materials Cost Breakdown			
PLUMBING		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
220523	GENREAL DUTY VALVES FOR PLUMBING PIPING	$ -	0	$ -	0			
221116	DOMESTIC WATER PIPING	$ 743	8	$ 63	25		$ 2.50	
221119	DOMESTIC WATER PIPING SPECIALTIES	$ -	0	$ -	0			
223300	ELECTRIC WATER HEATER TANK	$ -	0	$ -	0			
223300	INSTANTANEOUS GAS WATER HEATER	$ -	0	$ -	0			
224713	WATER FOUNTAINS	$ 2,850	10	$ 2,000	1	$ 2,000.00		
224000	WATER CLOSETS	$ -	0	$ -	0			
224000	URINALS	$ -	0	$ -	0			
224000	LAVATORIES	$ -	0	$ -	0			
224000	SHOWERS	$ -	0	$ -	0			
DIV 22	DEMOLITION	$ 1,430	8	$ 750	1	$ 750.00		
		$ 5,023	26	$ 2,813				

		Labor Rate ($/hr):	$ 92.00		Materials Cost Breakdown			
HVAC		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
230900	INSTRUMENTATION AND CONTROL	$ 4,717	50	$ 117	25			$ 4.66
236213	PACKAGED ROOFTOP UNITS	$ 221,040	120	$ 210,000	7	$ 30,000.00		
233113	DUCTWORK	$ 31,040	120	$ 20,000	400		$ 50.00	
238126	SPLIT SYSTEM HEAT PUMPS - OUTDOOR	$ -	0	$ -	0			
238126	SPLIT SYSTEM HEAT PUMPS - INDOOR	$ -	0	$ -	0			
233423	RESTROOM EXHAUST FANS	$ 1,520	10	$ 600	3	$ 200.00		
233423	GENERAL EXHAUST FANS	$ 2,120	10	$ 1,200	2	$ 600.00		
233423	KITCHEN EXHAUST FAN	$ -	0	$ -	0			
233400	HVLS FANS	$ -	0	$ -	0			
238200	PTAC UNITS	$ 5,840	20	$ 4,000	2	$ 2,000.00		
238200	UNIT HEATERS	$ 2,420	10	$ 1,500	2	$ 750.00		
DIV 23	DEMOLITION	$ 33,280	120	$ 22,240	2000		$ 11.12	
		$ 301,977	460	$ 259,657				

		Labor Rate ($/hr):	$ 87.00		Materials Cost Breakdown			
ELECTRICAL		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
260519	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	$ 10,906	120	$ 466	100			$ 4.66
262413	SWITCHBOARDS	$ 40,440	120	$ 30,000	1	$ 30,000.00		
262400	DISCONNECT SWITCHES	$ -	0	$ -	0			
262416	DISTRIBUTION PANELS	$ 5,480	40	$ 2,000	2	$ 1,000.00		
263213	ENGINE GENERATORS	$ -	0	$ -	0			
265100	LIGHTING	$ 13,080	40	$ 9,600	48	$ 200.00		
DIV 26	DEMOLITION	$ 13,290	120	$ 2,850	1000			$ 2.85
		$ 83,196	440	$ 44,916				

Consulting	**$ 50,000**
Construction Total	**$ 440,195**

PALADIN
Game changer in building systems

Preliminary Construction Cost Opinion

CONSTRUCTION COST ESTIMATE FOR AN HVAC REPLACEMENT WITH NEW VAV AHU SYSTEM

		Labor Rate ($/hr): $ 92.00			Materials Cost Breakdown				
HVAC		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft	$/Ton
230900	INSTRUMENTATION AND CONTROL	$ 9,433	100	$ 233	50			$ 4.66	
236213	PACKAGED ROOFTOP UNITS	$ 119,040	120	$ 108,000	18				$ 6,000.00
236213	VAV AHUS	$ 422,080	240	$ 400,000	40				$ 10,000.00
236213	VAV TERMINAL UNITS	$ 33,540	120	$ 22,500	30	$ 750.00			
233113	DUCTWORK	$ 31,040	120	$ 20,000	400		$ 50.00		
238126	SPLIT SYSTEM HEAT PUMPS - OUTDOOR	$ -	0	$ -	0				
238126	SPLIT SYSTEM HEAT PUMPS - INDOOR	$ -	0	$ -	0				
233423	RESTROOM EXHAUST FANS	$ -	0	$ -	0				
233423	GENERAL EXHAUST FANS	$ -	0	$ -	0				
233423	KITCHEN EXHAUST FAN	$ -	0	$ -	0				
233400	HVLS FANS	$ -	0	$ -	0				
238200	PTAC UNITS	$ -	0	$ -	0				
238200	UNIT HEATERS	$ -	0	$ -	0				
DIV 23	DEMOLITION	$ 33,280	120	$ 22,240	2000		$ 11.12		
		$ 648,413	820	$ 572,973					

Consulting	**$ 50,000**
Construction Total	**$ 698,413**

Preliminary Construction Cost Opinion

CONSTRUCTION COST ESTIMATE FOR AN HVAC REPLACEMENT WITH NEW VRF AHU SYSTEM

		Labor Rate ($/hr):	$ 92.00			Materials Cost Breakdown				
HVAC		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/In.ft.	$/sq.ft	$/Ton
230900	INSTRUMENTATION AND CONTROL	$ 9,433	100	$ 233	50			$ 4.66	
236213	VRF RTU	$ 311,040	120	$ 300,000	50				$ 6,000.00
238126	VRF CASSETTE UNIT	$ 360,600	120	$ 360,000	30				$ 12,000.00
233423	RESTROOM EXHAUST FANS	$ -	0	$ -	0				
233423	GENERAL EXHAUST FANS	$ -	0	$ -	0				
233423	KITCHEN EXHAUST FAN	$ -	0	$ -	0				
233400	HVLS FANS	$ -	0	$ -	0				
238200	PTAC UNITS	$ -	0	$ -	0				
238200	UNIT HEATERS	$ -	0	$ -	0				
DIV 23	DEMOLITION	$ 33,280	120	$ 22,240	2000		$ 11.12		
		$ 714,353	460	$ 682,473					

Consulting	**$ 50,000**
Construction Total	**$ 764,353**

Preliminary Construction Cost Opinion

CONSTRUCTION COST ESTIMATE FOR A ONE-TO-ONE REPLACEMENT OF ALL MEP EQUIPMENT

		Labor Rate ($/hr):	$ 85.00		Materials Cost Breakdown			
PLUMBING		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
220523	GENREAL DUTY VALVES FOR PLUMBING PIPING	$ 1,817	20	$ 117	25			$ 4.66
221116	DOMESTIC WATER PIPING	$ 4,650	40	$ 1,250	500		$ 2.50	
221119	DOMESTIC WATER PIPING SPECIALTIES	$ 11,967	40	$ 8,567	75	$ 114.22		
223300	ELECTRIC WATER HEATER TANK	$ 1,600	10	$ 750	1	$ 750.00		
223300	INSTANTANEOUS GAS WATER HEATER	$ 2,850	10	$ 2,000	1	$ 2,000.00		
224713	WATER FOUNTAINS	$ 3,850	10	$ 3,000	2	$ 1,500.00		
224000	WATER CLOSETS	$ 4,200	20	$ 2,500	5	$ 500.00		
224000	URINALS	$ 2,350	10	$ 1,500	3	$ 500.00		
224000	LAVATORIES	$ 2,950	20	$ 1,250	5	$ 250.00		
224000	SHOWERS	$ 625	5	$ 200	1	$ 200.00		
DIV 22	DEMOLITION	$ 12,700	120	$ 2,500	1000		$ 2.50	
		$ 49,558	305	$ 23,633				

		Labor Rate ($/hr):	$ 92.00		Materials Cost Breakdown			
HVAC		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
230900	INSTRUMENTATION AND CONTROL	$ 4,717	50	$ 117	25			$ 4.66
236213	PACKAGED ROOFTOP UNITS	$ 221,040	120	$ 210,000	7	$ 30,000.00		
233113	DUCTWORK	$ 31,040	120	$ 20,000	400		$ 50.00	
238126	SPLIT SYSTEM HEAT PUMPS - OUTDOOR	$ 6,840	20	$ 5,000	1	$ 5,000.00		
238126	SPLIT SYSTEM HEAT PUMPS - INDOOR	$ 5,840	20	$ 4,000	4	$ 1,000.00		
233423	RESTROOM EXHAUST FANS	$ 1,520	10	$ 600	3	$ 200.00		
233423	GENERAL EXHAUST FANS	$ 2,120	10	$ 1,200	2	$ 600.00		
233423	KITCHEN EXHAUST FAN	$ 3,920	10	$ 3,000	1	$ 3,000.00		
233400	HVLS FANS	$ 18,100	50	$ 13,500	3	$ 4,500.00		
238200	PTAC UNITS	$ 5,840	20	$ 4,000	2	$ 2,000.00		
238200	UNIT HEATERS	$ 2,420	10	$ 1,500	2	$ 750.00		
DIV 23	DEMOLITION	$ 33,280	120	$ 22,240	2000		$ 11.12	
		$ 336,677	560	$ 285,157				

		Labor Rate ($/hr):	$ 87.00		Materials Cost Breakdown			
ELECTRICAL		Division Cost	Labor Hrs	Materials Cost Total	Quantity	$/Each	$/ln.ft.	$/sq.ft
260519	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES	$ 10,906	120	$ 466	100			$ 4.66
262413	SWITCHBOARDS	$ 40,440	120	$ 30,000	1	$ 30,000.00		
262400	DISCONNECT SWITCHES	$ 3,870	10	$ 3,000	2	$ 1,500.00		
262416	DISTRIBUTION PANELS	$ 16,960	80	$ 10,000	10	$ 1,000.00		
263213	ENGINE GENERATORS	$ 48,480	40	$ 45,000	1	$ 45,000.00		
265100	LIGHTING	$ 50,440	120	$ 40,000	200	$ 200.00		
DIV 26	DEMOLITION	$ 11,865	120	$ 1,425	500			$ 2.85
		$ 182,961	610	$ 129,891				

Consulting	**$**	**50,000**
Construction Total	**$**	**619,196**

PALADIN
Game changer in building systems

Figure A.2: Existing Floor Plan

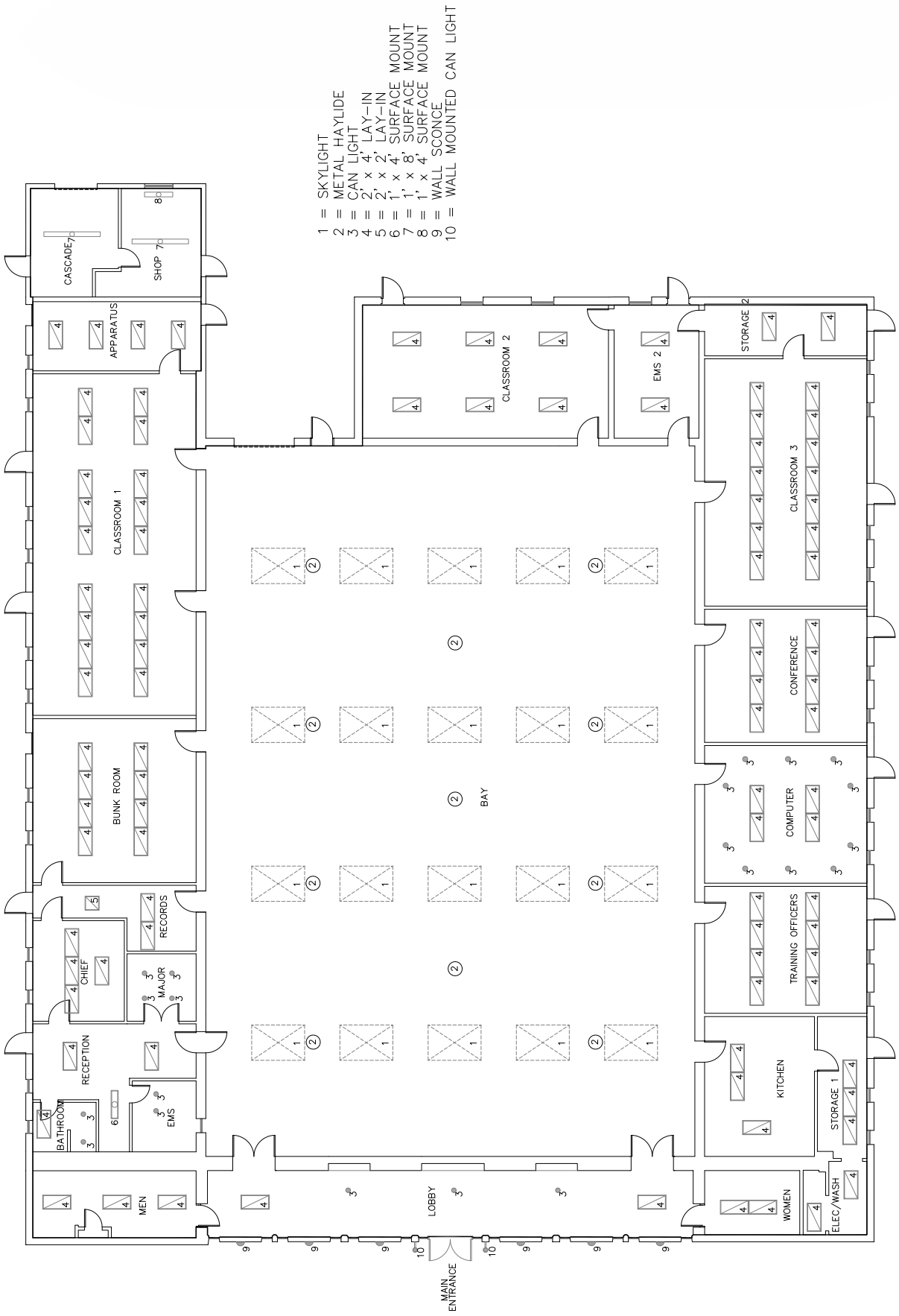


Figure A.3: Floor Plan Field Measurements

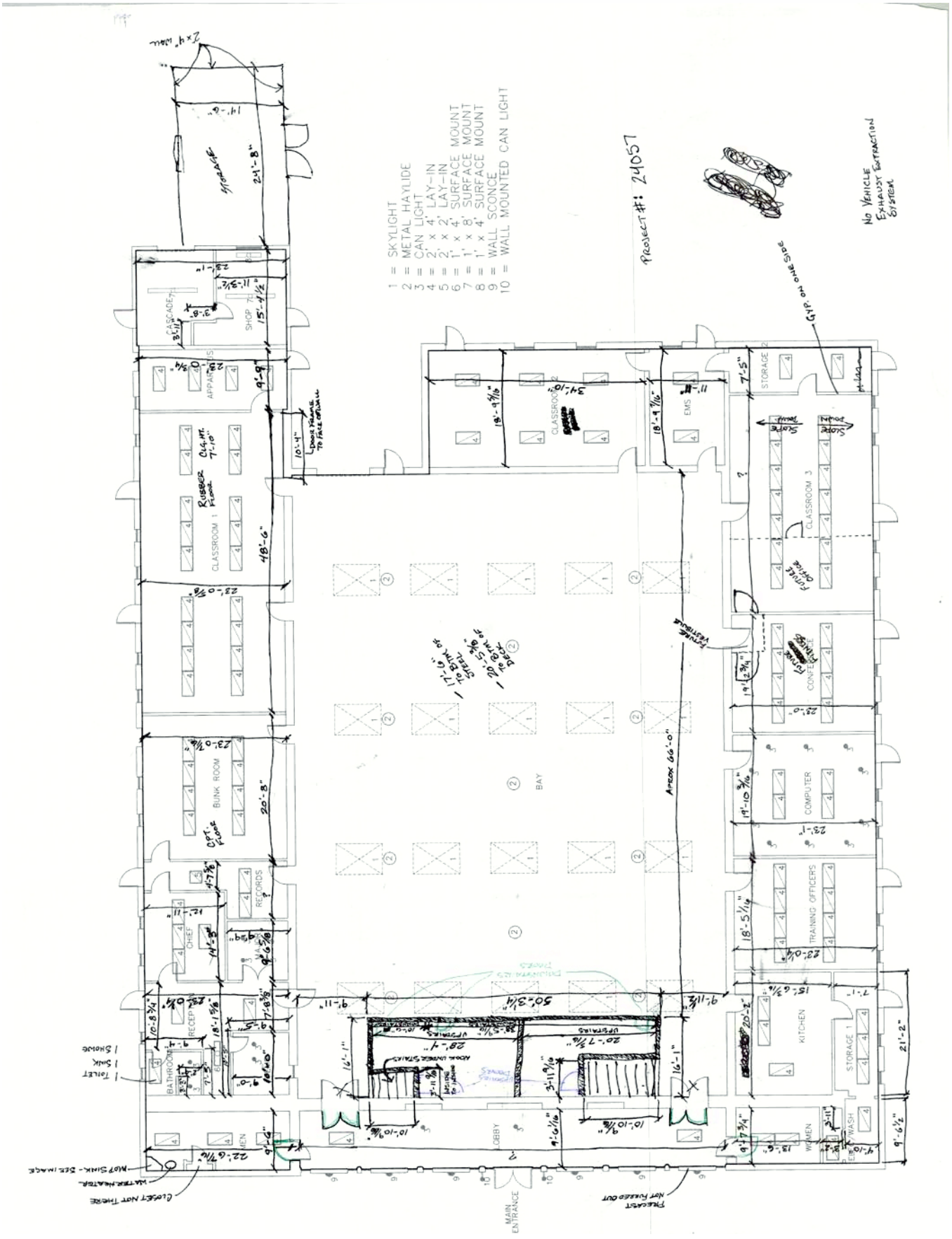


Figure A.4: 24057 Floor Plan Dimensions

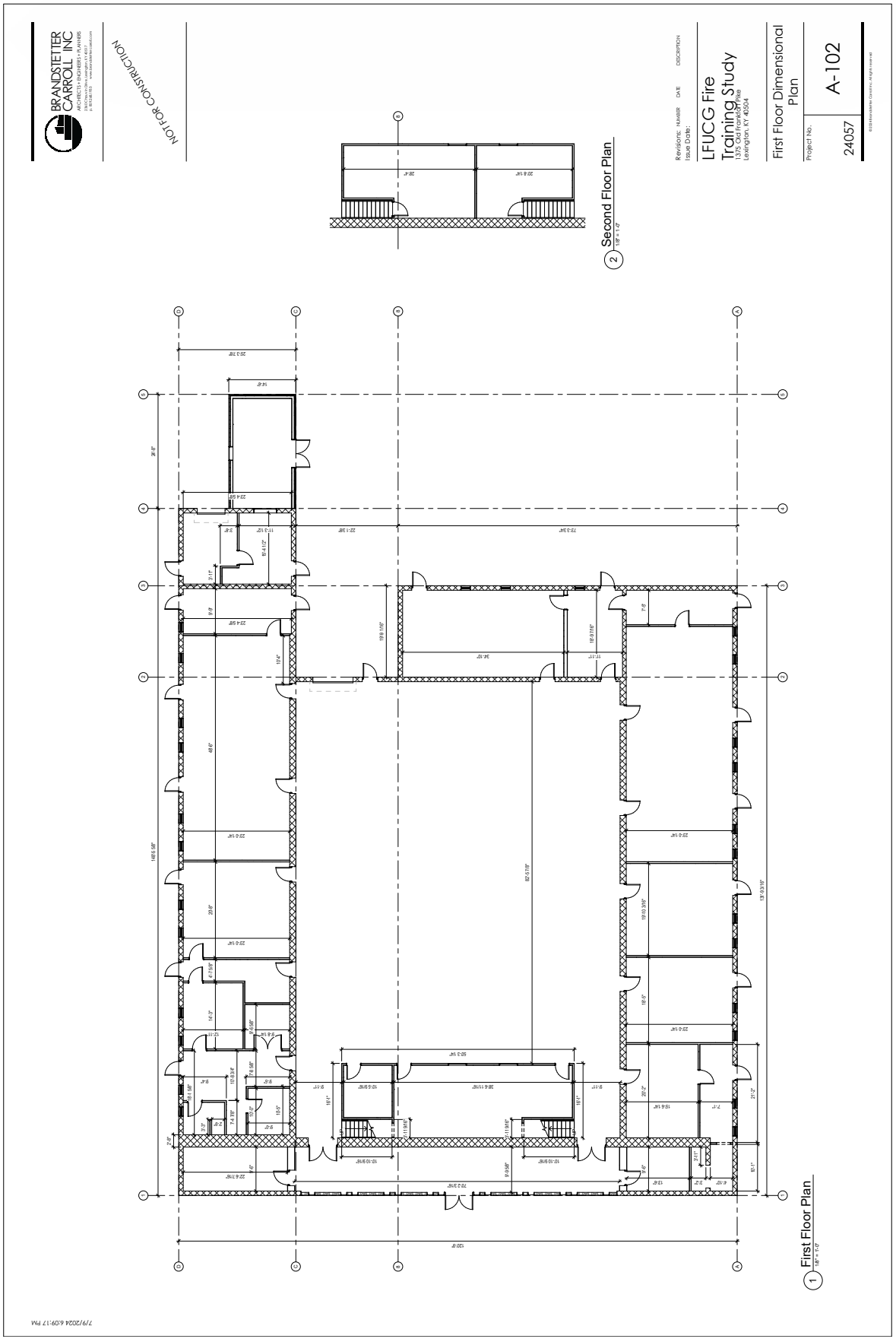
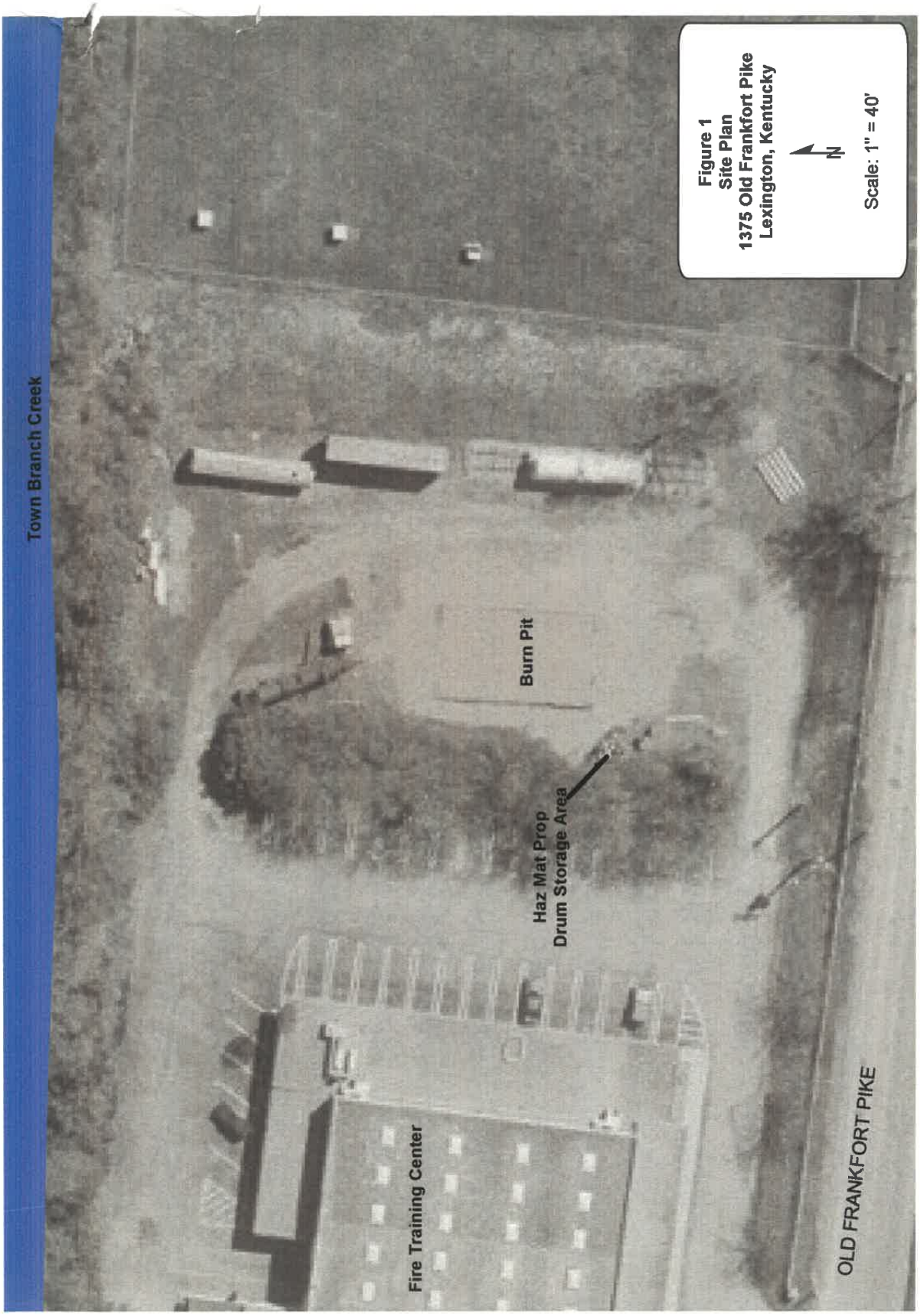
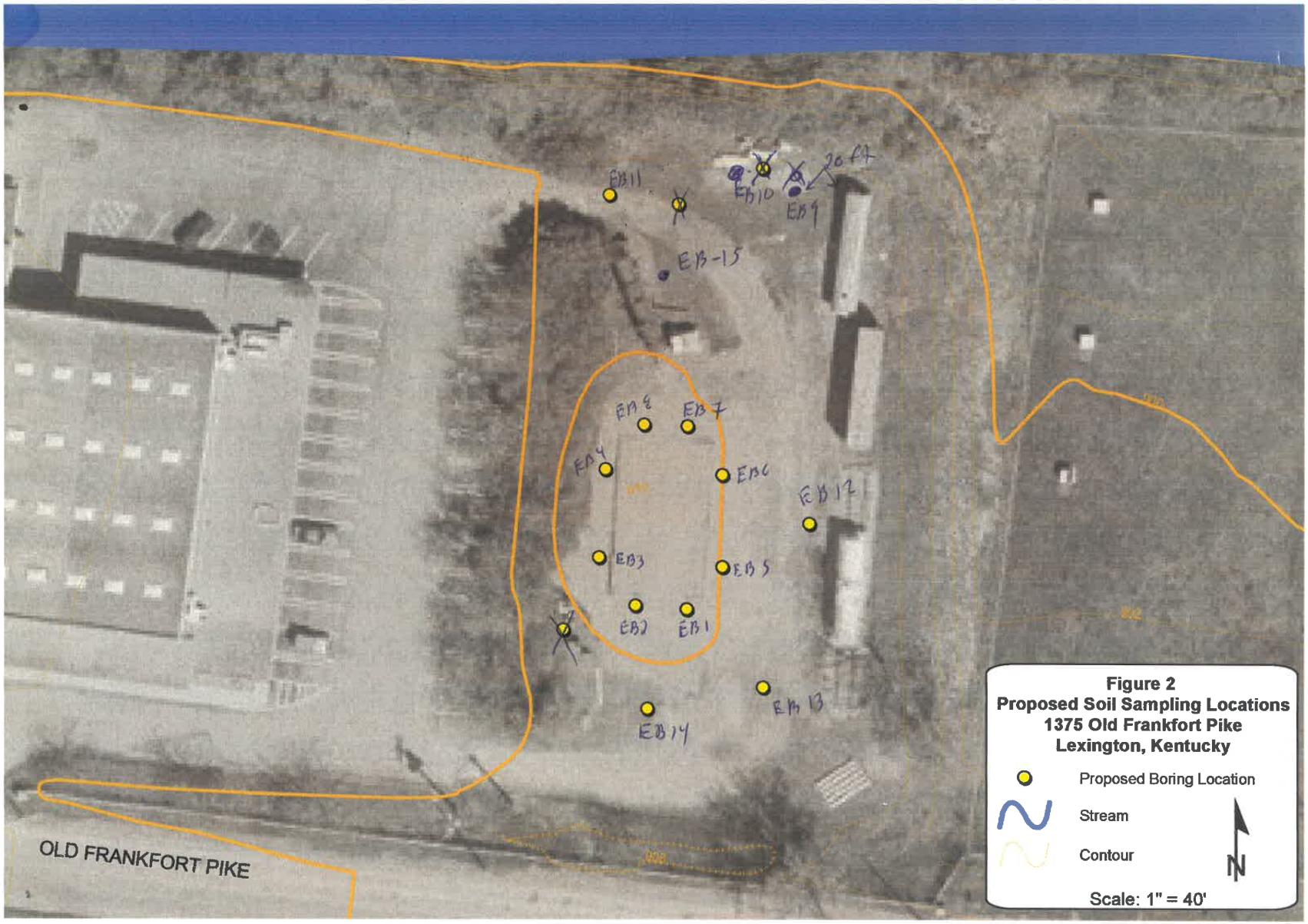


Figure A.5: Historical Maps and Photographs





File Copy

Path: f:\eng_data\gis_data\ ev_soil\misc_requests\...

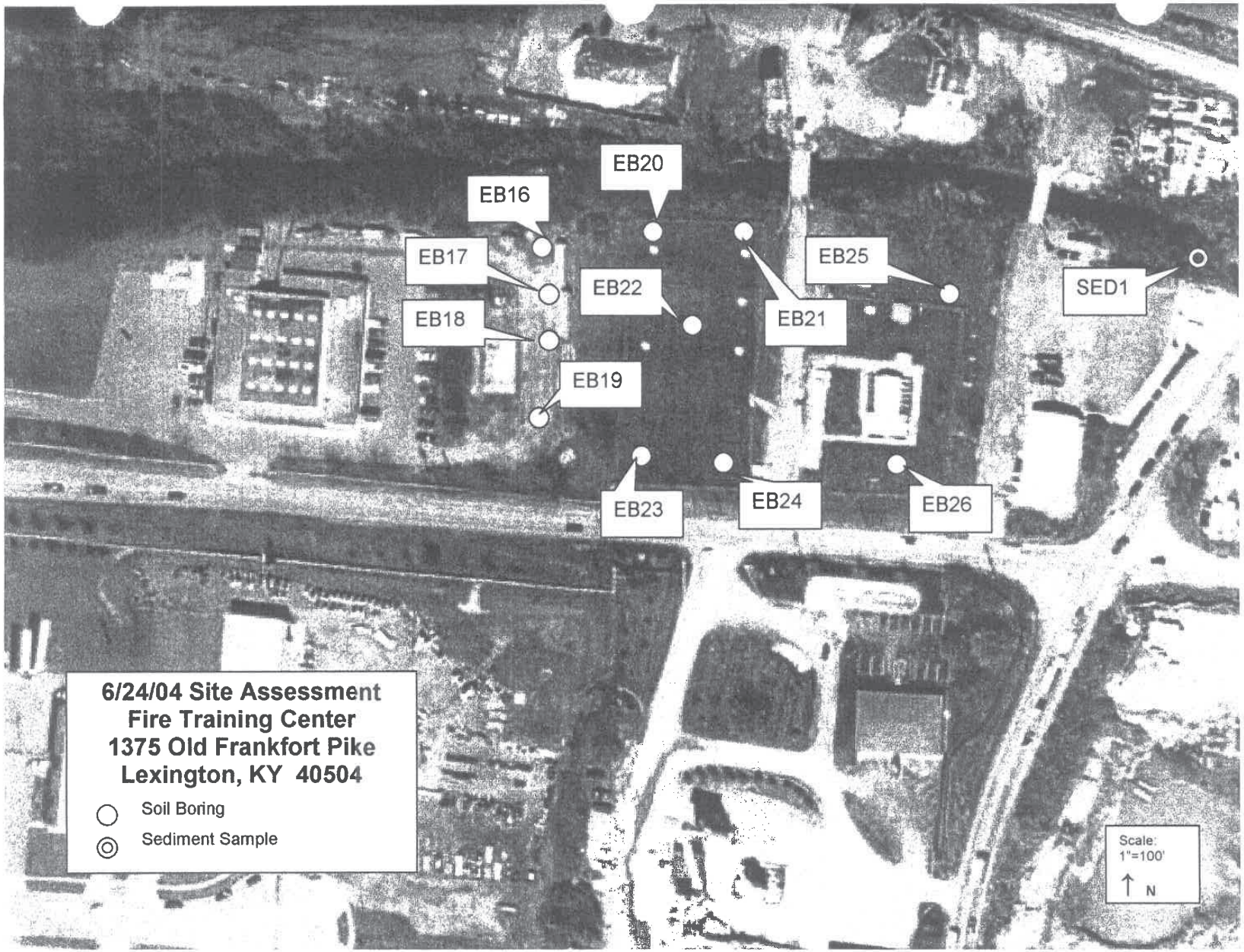

EB16
EB20
EB17
EB22
EB25
SED1
EB18
EB21
EB19
EB23
EB24
EB26
6/24/04 Site Assessment
Fire Training Center
1375 Old Frankfort Pike
Lexington, KY 40504
Soil Boring
Sediment Sample
Scale:
1"=100'
N



Photo 1. View looking southwest at fire basin. Low concrete wall of basin is visible in the right foreground. Trackhoe is beginning excavation of the fill gravel.



Photo 2. View to the northwest showing trackhoe excavating gravel from the northeast corner of the fire basin. Aboveground tanks are on-site as fire training aids.



Photo 3. View of the southeast corner of the fire basin. The PECCO vacuum tanker is removing water from the basin.



Photo 4. PECCO crew is vacuuming water from the basin. A total of 5,132 gallons water was removed from the basin.



Photo 5. View to the north of the loading process. The PECCO trackhoe is loading gravel and fill material to the PECCO trailer.



Photo 6. View to the southwest with the fire training center in background. PECCO crew is using the vacuum tanker to remove water and the skid steer to stage gravel.



Photo 7. View east with rail car for fire training prop. The floor at the north end of the fire basin emerges as the vacuum tanker and skid steer remove gravel and water.



Photo 8. View of the southwest corner of the basin after the south end of the basin has been cleaned.



Photo 9. View to the northeast of the north end of the basin after all the gravel and water have been removed.



Photo 10. View to the north of the basin after excavation of all the gravel and water.



Photo 11. View to the southwest of the floor of the basin after excavation and removal of the gravel to a clean dry concrete surface.



Photo 12. Another view to the south of the fire basin after excavation. Old Frankfort Pike is visible in the background.

Figure A.6: 2022-05-09 Fire Training Center Five Year Review report – AI 52695

MAYOR LINDA GORTON

LEXINGTON

JENNIFER M. CAREY, P.E.
DIRECTOR
ENVIRONMENTAL SERVICES

May 9, 2022

Ms. Jennifer Cowen, Environmental Scientist
Superfund State Section
Department for Environmental Protection
Division of Waste Management
300 Sower Blvd.
Frankfort, Kentucky 40601

Re: LFUCG Fire Training Center Five Year Review Report - 2022
1375 Old Frankfort Pike, Lexington, Kentucky 40504
Agency Interest Number -52695

Ms. Cowen:

As requested in your March 23, 2022 correspondence, Lexington Fayette Urban County Government (LFUCG) is submitting for your consideration the following Five Year Review Report for the LFUCG Fire Training Center documenting compliance with the Environmental Covenant and evaluating effectiveness of the Site Management Plan. Our five year review has determined that site conditions and controls in place are protective of human health and the environment and that no additional controls are necessary. We will continue to monitor the impacted area at the site to ensure that institutional controls and protective measures specified in the agreement remain in place.

Attached to the review you will find a copy of the environmental covenant that includes the County Court Clerk certification of recording, and photos of the site showing controls in place and a completed Appendix 2 checklist. Please note, this report contains added information for proposed changes to the property for KDWM's consideration. Please feel free to contact me at 859-425-2518 or sdonaldson@lexingtonky.gov if you have questions about this submittal.

Sincerely,

Sarah M. Donaldson

Sarah M. Donaldson, CHMM, PG
Environmental Compliance Coordinator

cc: Jason Wells, Fire Chief, LFUCG Division of Fire & Emergency Services
Jordan Saas, Battalion Chief, Training
Michael Sanner, Attorney Sr. LFUCG Department of Law
Demetria Kimball Mehlhorn – LFUCG, Division of Environmental Services

200 East Main St., Lexington, KY 40507 / 859.425.2800 Phone / 859.425.2859 Fax / lexingtonky.gov

Five Year Review and Proposed Future Use Report

LFUCG Fire Training Center
Agency Interest Number 52695
1375 Old Frankfort Pike
Lexington, Kentucky 40504

Prepared for
Kentucky Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management
Superfund State Section

Prepared by
Lexington Fayette Urban County Government
Division of Environmental Services

May 2022

LEXINGTON

1.0 Background

The Lexington Fayette Urban County Government (LFUCG) Fire Training Center is located at 1375 Old Frankfort Pike in Lexington, Fayette County, Kentucky. The property is used by the LFUCG Fire Department as a regional training center for new fire recruits. From 1990 to 2001, a Hazmat Training Area was located on the property which included a concrete containment basin built to simulate live fires. In 1998, LFUCG discontinued use of the fire basin and began taking steps to decommission the basin and assess the area for impacts. The LFUCG conducted two subsurface site investigations in an attempt to determine if petroleum contamination was present that could be attributed to hazmat training activities. Low levels of polynuclear aromatic hydrocarbons (PAHs) in excess of allowable residential (unrestricted use) standards were detected in soil samples collected from several borings during these investigations.

Because the depth of some of the impacted soils made excavation not feasible at the time, LFUCG explored the option of managing the impacted soils in place on the property. In order to comply with the Kentucky Department for Environmental Protection, Division of Waste Management (KDWM) managed closure requirements and to ensure LFUCG was being protective of the environment, the portion of the property with elevated PAH concentrations was placed under an Environmental Covenant (also sometimes referred to as deed restrictions, or institutional controls). LFUCG developed a Site Management Plan which documented how the property would be managed to remain in compliance with the covenant. The Environmental Covenant was fully executed on July 3, 2007. Since that time, LFUCG has submitted annual certifications confirming that the property use complies with the environmental covenant and has also submitted Five Year Review reports as required in 2012 and 2017. This report is the third such Five Year Review report.

As outlined in the covenant, the following contaminants were documented to be present in soils on the property in excess of the unrestricted residential use criteria. Both the concentrations documented in the covenant as being present on the site and the current residential use criteria (limits) are listed on the table below. The residential use criteria are derived from the most current version of the United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs).

Contaminant	Onsite Concentration (Covenant) – mg/kg	Residential Use Criteria – USEPA RSLs mg/kg
Benz(a)anthracene	1.91	1.1
Chrysene	1.62	110
Benzo(b)fluorenthene	1.47	1.1
Benzo(k)fluoranthene	1.40	1.1
Benzo(a)pyrene	1.80	0.11
Indeno(1,2,3-cd)pyrene	1.38	1.1
Dibenz(a,h)anthraene	0.31	0.11

2.0 Site Setting

The Site is located on the north side of Old Frankfort Pike and is bordered by Old Frankfort Pike to the south, Town Branch Creek to the north, the main fire training center parking lot and training building to

the west and unoccupied land owned by LFUCG to the east (formerly the police dog training and housing facility). The original deed restricted area map is included in **Attachment A** along with a copy of the Environmental Covenant. The area of the site associated with the restrictions (Managed Area) outlined in the covenant is primarily used as a paved driveway.

3.0 Current Site Conditions

In the last year no significant changes have occurred to the Managed Area. A photo log of current site conditions is included as **Attachment B**. The Managed Area contains a paved asphalt driveway with ancillary areas along the driveway used for nominal surface storage. A railroad track and railcars have been located within the eastern portion of the Managed Area since the restrictions were in place. A building was historically located outside the western edge of the Managed Area. This building was owned by the Kentucky Fire Commission/State Fire Rescue Training and was moved offsite on September 10, 2021 (building was a pre-manufactured on grade constructed building which was disassembled onsite and reassembled at a different location). No other significant site changes have occurred in the last year. The Managed Area's protective asphalt cap driveway was inspected on April 7, 2022 and remains in good condition.

4.0 Annual Environmental Covenant Compliance

Institutional controls (deed restrictions) have been in place on the property since July 2007. The Environmental Covent dated March 22, 2007 and fully executed on July 12, 2007 contains various use restrictions. Based on the use restrictions, the following were the agreed upon goals of site management:

1. The LFUCG agreed to enter into an Environmental Covenant with the Cabinet as described in KRS 224.80-100 through KRS 224.80-210 to help ensure that activities at this site do not adversely impact the environment.
   Covenant was signed and recorded with the Fayette County Court Clerk on July 12, 2007.

2. As specified in the Environmental Covenant, groundwater at the property shall not be used for domestic purposes.
   Groundwater at the property is not being used for domestic purposes.

3. As specified in the Covenant, no residences/dwellings shall be permitted on the impacted area.
   No residences/dwellings have been built or placed on the managed/impacted area.

4. As specified in the Covenant, the LFUCG shall not construct any new buildings on the impacted area without prior Cabinet approval.
   No new buildings have been constructed on the managed/impacted area.

5. The LFUCG agreed to create a "cap" by paving those portions of the impacted area in the vicinity of borings 9, 10, 12, 13, 16, 17 and 18 to help limit the amount of precipitation percolating through the fill material. Any fill material/soil disturbed during paving activities was to be left on site.
   Cap has been constructed and maintained.

6. The LFUCG agreed to ensure that the pavement and the fill material/soils in the impacted area are not disturbed without prior approval by the Cabinet. The LFUCG did retain the right to conduct additional paving in the impacted area without obtaining Cabinet approval, since this would extend the cap and be more protective of the environment.

Pavement cap and soils have remained undisturbed.

7. The LFUCG agreed to repair the pavement should it become unserviceable.
Pavement is inspected and maintained. Pavement remains serviceable.

8. The LFUCG agreed to visually inspect the impacted area annually to ensure the pavement (cap) is intact and site conditions have not changed significantly and to send the Cabinet written correspondence summarizing the results of this visual inspection within 30 days of the inspection.
Impacted area and pavement has been inspected annually with results submitted to Division of Waste Management Superfund Section.

5.0 Five Year Review

Pursuant to KRS 224.01-400(17), the KDWM requires that a review of site environmental conditions be performed at five-year intervals on sites that have been closed under the management option. This section represents the third Five-Year Review for the site. The questions listed on Checklist for Five-Year Reviews, provided by the KDWM, are listed in the table below, followed by the associated answers. The Owner's Certification of this Five-Year Review is included as **Attachment C**.

	Checklist Question	Yes	No	NA
1	Are soils on the site under management, and contain regulated substances above *de minimus* concentrations? If Yes, go to 2. If No, go to 6. **PAH Impacted Soils**	X		
2	If the remedy includes capping, are caps/covers, etc. in good condition?	X		
3	If buildings or other structures are covering areas of contamination, are they still intact and providing an adequate cover?			X
4	Are other engineering controls designed to contain and manage soil contamination intact, in good condition, and performing as designed?			X
5	If applicable, have levels of COCs in soil remained consistent or decreased since last review?			X
6	Is groundwater at the site under management, and contain regulated substances above *de minimus* concentrations? If yes, go to 7. If no, got to 10.		X	
7	Does analysis of monitoring data show significant changes in COC levels since last review?			
8	Does analysis of monitoring data indicate migration of the contaminant plume beyond limits designed in the final remedy or risk management plan since last review?			
9	Have groundwater flow directions/hydraulic gradients significantly changed since last review?			
10	Are engineering controls in use as part of the contain-and-manage remedy at the site? If yes, go to 11. If no, go to 16. **Asphalt Protective Cap**	X		
11	If pump-and-treat methods are in use, have water withdrawal rates significantly changed since last review?			X
12	If groundwater extraction is occurring, have any other stresses on the aquifer in the area been introduced that might influence the capture zone, such as installation of additional wells at the nearby locations?			X
13	Are engineering systems performing adequately and as designed in the remedy?	X		

	Checklist Question	Yes	No	NA
14	Are there indicates of problems or potential problems in the design and capacity of engineered systems that may compromise the effectiveness of the remedy?		X	
15	Are maintenance procedures for engineered systems adequate in maintaining system performance?	X		
16	Have a restrictive covenant or other institutional controls been executed for the property (ies) under management? If yes, **please include a copy**, and go to 17. If no, got to 20.	X		
17	Is the restrictive covenant still attached to the deed recorded in the county clerk's office?	X		
18	Is the current land use consistent with the restrictions placed on the deed? If no, explain the inconsistency.	X		
19	If applicable, are other controls in place, including site security measures, fencing, signage, etc.?	X		
20	Has the land use changed since management plan implementation or since last review?		X	
21	Have toxicity values for COCs changed since management plan implementation or since last review?		X	
22	Exposure pathways/potential receptors changed since management plan implementation or since last review?		X	

In Summary:

- Land use has remained the same since the management plan was implemented.
- Exposure pathways/potential receptors remain unchanged.
- Institutional controls (the Environmental Covenant) remain in place and the property is being used in compliance with those controls.
- Engineering controls (asphalt cap) remain in place. The paved area over most of the managed area has been maintained and cracks have been sealed as necessary to preserve the integrity of the capping material.
- No additional soil or groundwater analysis or monitoring has occurred since implementation of the site management plan and therefore a trend analysis or present contaminant assessment was not performed for this Five Year Review.

6.0 Proposed Planned Future Use of the Managed Area

Outside of the Managed Area along Old Frankfort Pike, a public access paved recreational trail has been planned for and will be constructed along Old Frankfort Pike (the Town Branch Trail). Trail construction on this section of the path is planned to occur in the Fall of 2023 or Spring of 2024. The area where the trail will be located on the larger Fire Training Center Property (outside of the Managed Area) is currently used for overflow parking. Once the trail is constructed, the Fire Training Center will not have enough parking available during times when new recruits are using the property for training activities. Therefore, internally it has been proposed that an area of the property which includes the Managed Area, be turned into an asphalt paved parking lot. A figure depicting both the bounds of the Managed Area and the approximately location of the proposed parking lot is included as **Attachment D.**

LFUCG believes that a parking area would be in agreement with the Environmental Covenant and would serve a dual purpose, providing more parking on the site while continuing to provide a physical cap barrier over the managed area.

In order to create the larger parking area, current buildings (not located in the Managed Area, but located within the footprint of the proposed parking lot) will be moved. Some grading may need to occur to ensure that the parking lot is level and supports positive drainage. It has not been determined whether the current asphalt cap over the Managed Area can be incorporated into the new larger parking lot (remain undisturbed) or whether the current cap (driveway) will need to be removed and a larger continuous asphalt cap created. Regardless, during the project, some shallow soils (less than two feet below ground surface) in the Managed Area may be disturbed.

It is proposed that if any soils within the Managed Area are disturbed during construction, the following protocols will be followed:

- All soils disturbed, excavated and removed from the Managed Area will be segregated and stored onsite to be characterized.
- Soils excavated from the Managed Area will be inspected for any visual or olfactory evidence of impacts. Any obviously stained or impacted soils will be stored separately from other soil excavated from the Managed Area that don't present obvious evidence of impacts. Regardless, soils will be stored on plastic and covered in plastic while awaiting characterization results.
- Excavated managed areas soil will be characterized by collecting composite samples for the PAH compounds listed in Section 1.0 (Parameters of Concern, or POCs). The number of soil samples to be collected will be based on the actual volume of soil excavated from the Managed Area. Obviously impacted stored piles will be sampled separately from stored piles of soil without obvious impacts.
- Based on the results:
    - If PAH results for the soils are below residential (unrestricted) use standards the soils may be used as fill material on the contiguous adjacent land to the east (also owned by LFUCG). This property is lower in elevation than the Fire Training Center and in order to be usable land in the future, may need to be brought up to grade.
    - If PAH results for stored and characterized soils are above residential use standards, those soils will be profiled and disposed of offsite at an approved disposal facility.

7.0 Summary

LFUCG will continue to keep engineering and institutional controls in place and in good condition and will continue to comply with annual inspection and reporting requirements.

LFUCG would like to proceed with the changes and improvements to the property as summarized in Section 6.0. We are requesting that KDWM provide a formal review and approval of this proposed use.

ATTACHMENT A

Environmental Covenant

SCALE: 1"=30'


38
0.00
EC
S87°14'29"E
55.15'
37
0.00
EC
Area
contains:
11,032.39
sqft
0.253
Acres
15
908.72
BLD
14
908.82
BLD
S02°13'53"W
202.38'
16
908.68
BLD
910.28
BLD LINE OFF 12
35
0.00
EC
S87°30'05"E
55.38'
36
0.00
EC
9
0.00

Mayor Jim Newberry

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

Department of Law

July 26, 2007

Bruce Scott, Director
Division of Waste Management
14 Reily Road
Frankfort, Kentucky 40601

Re: Environmental Covenant
Log No. 13,731

Dear Mr. Scott:

Enclosed please find a copy of the recorded Environmental Covenant for 1375 Old Frankfort Pike Fire Training Center. Please contact me with any additional questions.

Sincerely,

Michael R. Sanner
Attorney Sr.

Cc: Tom Webb
Department of Environmental Quality

00131778.DOC

R-119-2007

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT PURSUANT TO KRS CHAPTER 224 SUBCHAPTER 80

ENVIRONMENTAL COVENANT

The City of Lexington, Kentucky n/k/a Lexington-Fayette Urban County Government grants an Environmental Covenant ("Covenant") this 22nd day of March, 2007 to the following Holder, the City of Lexington n/k/a Lexington-Fayette Urban County Government, Kentucky Environmental and Public Protection Cabinet, pursuant to KRS Chapter 224 Subchapter 80.

WHEREAS, The City of Lexington, Kentucky n/k/a Lexington-Fayette Urban County Government (hereinafter "Grantor") is the owner of certain real property located at 1375 Old Frankfort Pike, Lexington, Kentucky, (hereinafter "the Property") more particularly described in Deed Book 581 Page 9 of the Fayette County Clerk's office as follows:

> All that tract or parcel of land situated on the northerly side of the Old Frankfort Pike between Lisle Road and the Viley Pike, near Lexington in Fayette County, Kentucky and more fully described and bounded as follows; to wit:
>
> BEGINNING at a point in the northerly side of the Old Frankfort Pike, corner to the property of Fayette County; thence along the northerly side of the Old Frankfort Pike S 61 deg. 13 min E 348.4 feet to an iron pin; thence N 40 deg. 56 min. E 160.1 feet to an iron pin; thence N 20 deg. 37 min. E 220.8 feet to an iron pin; thence S 69 deg. 05 min. E 500 feet to an iron pin; thence S 11 deg. 00 min. W 320 feet to an iron pin in the northerly side of the Old Frankfort Pike; thence with the northerly side of the Old Frankfort Pike for two calls S 79 deg. 29 min. E 64 feet and S 79 deg. 48 min. E 461 feet; thence leaving the Old Frankfort Pike and parallel to and 30 feet west of the center line of a driveway for three calls N 00 deg. 37 min. W 189 feet, N 4 deg. 50 min. E 130 feet and N 8 deg. 20 min. E 74 feet; thence crossing said driveway N. 76 deg. 29 min. E 69 feet to a point near a fence; thence S 35 deg. 59 min. E 260 feet to an iron pin near a stone fence; thence S 19 deg. 02 min. E 262.3 feet near and along said stone fence to an iron pin near a stone fence; thence S 19 deg. 02

return to preparer

min. E 262.3 feet near and along said stone fence to an iron pin in the north line of the Old Frankfort Pike; thence with the north line of the Old Frankfort Pike for three calls S 82 deg. 00 min. E 383.5 feet to an iron pin, S 82 deg. 55 min. E 528.5 feet to an iron pin and S 85 deg. 07 min. E 329.7 feet to an iron pin, corner to Mrs. Alverta Ritchey; thence with the line of Mrs. Ritchey and crossing Town Branch N 11 deg. 36 min. E 447 feet to a point 33 feet from the center of the Louisville and Nashville Railroad; thence parallel to and 33 feet south of the center of the Louisville and Nashville Railroad; thence parallel to and 33 feet south of the center line of said railroad for seven calls N 71 deg. 01 min. @ 492 feet, N 69 deg. 05 min. W 288 feet, N 65 deg. 40 min. W 119 feet, N. 61 deg. 20 min. W 327 feet, N 56 deg. 41 min. W 158 feet, N 53 deg. 20 min. W 208 feet and N 49 deg. 11 min. W 218 feet, said point being in the line with the line of Shraberg property on the northerly side of the Louisville and Nashville Railroad; thence crossing Town Branch S 39 deg. 07' W 366 feet; thence N 47 deg. 39 min W 206 feet; thence S 49 deg. 14 min. W 472 feet; thence N 69 deg. 05 min W 40 feet; thence N 40 deg. 46 min. W 471 feet; thence N 49 deg. 14 min. E 398 feet to a point in Town Branch; thence along the south bank of Town Branch for three calls N 65 deg. 01 min. W 138 feet, N 32 deg. 25 min W 170.2 feet and N 22 deg. 27 min. W 72 feet to a point in the line of the Fayette County property; thence with the line of the Fayette County property for two calls

S 21 deg. 53 min. W 693 feet and S 22 deg. 00' W 472.5 feet to the beginning and containing 42.857 acres.

There is reserved across the above described property a 60 foot easement for roadway purposes which is described as follows:

BEGINNING at a point, said point being 30 feet from the center of a driveway and said point being N 00 deg. 37 min. W 189 feet, N 4 deg. 50 min. E 130 feet and N 8 deg. 20 min. E 74 feet from the north line of

the Old Frankfort Pike; thence N 76 deg. 29 min. E 60 feet; thence N 13 deg. 31 min. W 95 feet, N 19 deg. 07 min. W 96 feet, N. 13 deg. 38 min. W 115 feet, N 47 deg. 39 min. W 185 feet; S 39 deg. 07 min. E 93 feet and S 13 Deg. 31 min. E 92 feet to the beginning.

WHEREAS, this instrument is an Environmental Covenant developed and executed pursuant to KRS 224.80-100 through KRS 224.80-210.

WHEREAS, [pursuant to Agreed Order File No. 52695], the Property is the subject of enforcement and/or remedial action pursuant to KRS 224 et seq.; and

WHEREAS, a release/disposal of polynuclear aromatic hydrocarbons has occurred on the Property. The release consisted of an unknown amount. "More specifically, the release occurred on and impacted the area of the Property (hereinafter "the Impacted Area") more particularly described as follows:

Being a part of a parcel located at 1375 Old Frankfort Pike, as described and record in Deed Book 581 Page 9, in the Fayette County Clerk's Office, and being more particularly described as follows:

Beginning at Lexington Fayette Urban County Government GPS Monument Station 0073, State Plane Coordinates (SPC) North (N): 203417.75,(feet) East (E): 1559735.44 (feet), see Exhibit "A"; thence N58°45'18"E 313.46 feet, (to an Iron Pin found east of a rock wall) SPC N:203580.34, E:1560003.43; thence S71°42'38"E 962.82 feet, SPC N:203278.19, E:1560917.61, to the Point of Beginning of environmental covenant; thence S82°30'50"E 55.38 feet, SPC N:203270.96, E:1560972.52; thence N02°13'53"E 202.38 feet, SPC N:203473.19, E:1560980.40; thence N87°14'29"E 55.15 feet, SPC N:203473.19, E:1560925.31; thence S02°13'53"W 197.78 feet, SPC N:203270.96, E:1560003.43, to the Point of Beginning and containing 0.253 acres, 11032 square feet.

WHEREAS, Grantor has proposed a Corrective Action Plan of capping the impacted portion of the property (paving) and limiting disturbances (hereinafter "the Plan") to correct the effects of the release/disposal which includes controlling exposure to the hazardous waste, hazardous constituents, hazardous

substances, pollutants, or contaminants by restricting use of and activities on the property.

WHEREAS, An estimated concentration of

1.91 ppm Benz[a]anthracene
1.62 ppm Chrysene
1.47 ppm Benzo[b]fluorenthene
1.40 ppm Benzo[k]fluoranthene
1.80 ppm Benzo[a]pyrene
1.38 ppm Indeno[1,2,3-cd]pyrene
0.31 ppm Dibenz[a,h]anthracene parts per million will remain on the property after implementation of the Plan.

WHEREAS, the purpose of this Covenant is to ensure protection of human health and the environment by placing restrictions on the Property to reduce the risk to human health to below the target risk levels for those hazardous wastes, hazardous constituents, substances, pollutants, or contaminants that remain on the property. In particular, the impacted portion of the property will be capped (paving) and disturbances will be limited.

WHEREAS, further information concerning the release and the activities to correct the effects of the release may be obtained by contacting the Custodian of Records of the Kentucky Division of Waste Management at 14 Reilly Road, Frankfort, Kentucky 40601. Records concerning this property may be found under file number AI 52695 Release.

NOW, THEREFORE, Grantor hereby grants this Environmental Covenant to the Holder, and declares that the Property shall hereinafter be bound by, held, sold, and conveyed subject to the following requirements set forth in paragraphs 1 through 3, below.

1. DEFINITIONS

A. Owner. "Owner" means the Grantor, The City of Lexington n/k/a Lexington-Fayette Urban County Government, his/her/its, successors in interest, and their successors in interest, including heirs and assigns, who at any time hold title to all or any portion of the Property.

2. USE RESTRICTIONS

As part of the remedial actions set forth in the Plan, Owner hereby imposes and agrees to comply with the following activity and use limitations:

A. Use. No residential use of the Property shall be permitted. This shall include any residence or dwelling, including a house, apartment, or condominium, or other purposes with a similar potential for human exposure.

B. Groundwater. Groundwater at the Property shall not be used for drinking or other domestic purposes.

C. Except as necessary to protect human health, safety or the environment, no action shall be taken, allowed, suffered, or omitted on the Property if such action or omission is reasonably likely to:

i. Create a risk of migration of hazardous substances, pollutants or contaminants or a potential hazard to human health or the environment; or

ii. Result in a disturbance of the structural integrity of any engineering controls designed or utilized at the Property to contain hazardous substances, pollutants or contaminants or limit human exposure to hazardous substances, pollutants or contaminants;

D. Disturbance of the cap. Prior to any disturbance of any approved cap placed on the Impacted Area, the Owner shall submit to the Director, Kentucky Division of Waste Management a written rationale for the disturbance and detailed plans of the proposed construction for their review and written approval. No such disturbance is permitted without this prior written approval.

E. Soil Disturbances. Soil at the Impacted Area, shall not be disturbed in any manner without the Owner obtaining prior approval of the Director, Kentucky Division of Waste Management.

F. Construction. No building shall be constructed on the Impacted Area, without the Owner obtaining prior approval of the Director, Kentucky Division of Waste Management.

3. GENERAL PROVISIONS

A. Restrictions to Run with the Land. This Environmental Covenant runs with the land pursuant to KRS 224.80-140; is perpetual unless modified or terminated pursuant to the terms of this Covenant; is imposed upon the entire Property unless expressly stated as applicable only to a specific portion thereof, and inures to the benefit of and passes with each and every portion of the Property and binds the Owner(s), the Holder(s), all persons using the land, all persons their heirs, successors and assigns

having any right, title or interest in the Property, or any part thereof, who have subordinated those interests to the Environmental Covenant, and all persons, their heirs, successors and assigns who obtain any right, title or interest in the Property, or any part thereof, after the recordation of this Environmental Covenant.

B. Conveyances of the Property. Owner shall notify the Director, of the Kentucky Division of Waste Management at least thirty (30) days in advance of any proposed grant, transfer, or conveyance of any interest in any or all of the Property. Notice shall include the name address and telephone number of the prospective transferee, a copy of the proposed deed or other documentation evidencing the conveyance, and a survey map that shows the boundaries of the property being transferred.

C. Incorporation into Deeds and Leases. Each instrument hereafter conveying any interest in the Property or any portion of the Property shall contain a notice of the activity and use limitations set forth in this Environmental Covenant, and provide the recorded location of this Environmental Covenant. The notice shall be substantially in the following form:

> THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL COVENANT, DATED _____, 200_, RECORDED IN THE OFFICIAL RECORDS OF THE _____ COUNTY CLERK'S OFFICE IN DEED BOOK _____, Page _____.

D. Zoning Changes. Owner shall notify the Director, Kentucky Division of Waste Management simultaneously when any application is submitted to a local government for a building permit for the Property. Owner shall notify the Kentucky Division of Waste Management of any proposed change in the land use for the Property.

E. Compliance Certification. Owner shall submit an annual report to the Director of the Kentucky Division of Waste Management, on the anniversary of the date this Covenant was signed by the Owner, detailing the Owner compliance, and any lack of compliance with the terms of the Covenant.

F. Right of Access. Owner hereby grants the Kentucky Environmental and Public Protection Cabinet, its agents, contractors and employees the right of access to the Property for implementation or enforcement of this Environmental Covenant.

G. Representations and Warranties. Grantor hereby represents and warrants to the other signatories hereto:

1. that the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;

2. that the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered;

3. that the Grantor has complied with all public notice requirements in KRS § 224.80-110;

4. that this Environmental Covenant will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which Owner is a party or by which Owner may be bound or affected;

5. that this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property;

6. that this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over the Environmental Covenant.

7. no other parties hold an interest in the Property that is the subject of this Environmental Covenant.

H. Compliance Enforcement. The terms of the Environmental Covenant may be enforced by the Kentucky Environmental and Public Protection Cabinet or any person identified in KRS 244.80-200 in accordance with applicable law. Failure to timely enforce compliance with this Environmental Covenant or the use limitations contained herein by any person shall not bar subsequent enforcement by such person and shall not be deemed a waiver of the person's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict the Kentucky Environmental and Public Protection Cabinet from exercising any authority under applicable law.

I. Modifications/Termination. This Environmental Covenant runs with the land and is perpetual, unless modified or terminated in accordance with KRS 224.80-180 or KRS 244.80-190. The term "Amendment" as used in this Environmental Covenant, shall mean any changes to the

Environmental Covenant, including the activity and use limitations set forth herein, or the elimination of one or more activity and use limitations when there is at least one limitation remaining. The term "Termination" as used in this Environmental Covenant, shall mean the elimination of all activity and use limitations set forth herein and all other obligations under this Environmental Covenant.

J. Notices. Any document or communication required to be sent to Kentucky Environmental and Public Protection Cabinet under this Covenant shall be sent to:

Director, Division of Waste Management
Department for Environmental Protection
14 Reilly Road
Frankfort, KY 40601

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

L. Governing Law. This Environmental Covenant shall be governed by and interpreted in accordance with the laws of the Commonwealth of Kentucky.

M. Recordation. Within ten (10) business days after the date of the final required signature upon this Environmental Covenant, Owner shall file this Environmental Covenant in the county clerk's office in each county that contains any portion of the real property subject to this environmental covenant.

N. Effective Date. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded as a deed record for the Property with the Fayette County Clerk's Office.

O. Distribution of Environmental Covenant. The Owner shall within thirty (30) days of filing this Environmental Covenant in the Fayette County Clerk's Office, distribute a file and date stamped copy of the recorded Environmental Covenant to the following persons: Director, Kentucky Division of Waste Management, Mayor Lexington-Fayette Urban County Government, Fayette County Judge Executive, every Holder of this Environmental Covenant, each person who is in possession of the Property, each person who holds a recorded interest in the Property, each person who signed this Environmental Covenant.

P. Cabinet and Division References. All references to the Kentucky Environmental and Public Protection Cabinet and the Kentucky Division of Waste Management shall include successor agencies/departmental division or other successor entities.

The City of Lexington, n/k/a Lexington-Fayette Urban County Government has caused this Environmental Covenant to be executed pursuant to KRS Chapter 224, Subchapter 80 on this 29th day of March, 2007.

IN TESTIMONY WHEREOF, the parties have hereunto set their hands this the day and year first above written.

IT IS SO AGREED:

THE CITY OF LEXINGTON, N/K/A
Lexington-Fayette Urban County Government

By: _____ 3/29/07
Jim Newberry, Mayor Date

COMMONWEALTH OF KENTUCKY

COUNTY OF Fayette

The foregoing Environmental Covenant was acknowledged before me this 29th day of March, 2007 by Jim Newberry, Mayor, the City of Lexington, n/k/a Lexington-Fayette Urban County Government, on behalf of the City of Lexington, n/k/a Lexington-Fayette Urban County Government.

My Commission expires: 11-21-2008

Elizabeth T. Darnell
Notary Public, Commonwealth of Kentucky

KENTUCKY ENVIRONMENTAL AND PUBLIC PROTECTION CABINET

This Environmental Covenant is hereby approved by the Environmental and Public Protection Cabinet this 3rd day of July, 2007

By: _____ 7/3/07
Bruce Scott, Director, Division of Waste Management — Date

COMMONWEALTH OF KENTUCKY

COUNTY OF Franklin

Subscribed, sworn to and acknowledged before me by K. Bruce Scott, this 3rd day of July, 2007.

_____
Notary Public

My Commission expires: My commission expires on 09-15-07

This document prepared by:

_____
Michael R. Sanner
Corporate Counsel
Lexington-Fayette Urban County Government
Department of Law

DEED BOOK 2741 PAGE 671

I, Donald W Blevins, County Court Clerk of Fayette County, Kentucky, hereby certify that the foregoing instrument has been duly recorded in my office.

Donald W Blevins

By: DOUG BRADLEY , dc

200707120118

July 12, 2007 10:15:30 AM

Fees $37.00 Tax $.00

Total Paid $37.00

THIS IS THE LAST PAGE OF THE DOCUMENT

12 Pages

660 - 671

ATTACHMENT B

Photo Log



PHOTO 1:

Photograph of the asphalt cap driveway located within the Managed Area at the Fire Training Center. Photograph taken facing southeast from the central portion of the driveway. Evidence of crack repair, which remains in good condition.



PHOTO 2:

Photograph of the eastern boundary of the managed area facing north towards Town Branch. This is the area which had railcars stored.



PHOTO 3:

Photograph of the asphalt cap driveway facing northwest. Building in the central portion of the photo is located outside the western edge of the Managed Area.



PHOTO 4:

Photograph of the asphalt cap in the foreground with the main Fire Training Center building in the background. The area where the Kentucky Fire Commission building was located is to the left of the smaller storage building, just outside the Managed Area.



PHOTO 5:

Photograph facing north of the concrete pad where the former Kentucky Fire Commission building was located.



PHOTO 6:

View of asphalt crack repairs along the driveway of the Managed Area.



PHOTO 7:

View of the northern edge of the Managed Area, facing west along the driveway.

ATTACHMENT C

Certification Statement

Appendix 3
Certification Statement – Five Year Review

The party responsible for the five year review, or an authorized agent, must sign the following certification. Examples of authorized agents include the owner, president, plant manager/engineer, city engineer, or other appropriate person authorized to certify the accuracy of documents submitted.

"I certify under penalty of law that the information contained in this document, including attachments and supporting data, is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information."

Sarah Donaldson — Applicant or legally authorized representative (print)

Env. Compliance Coordinator — Title

Sarah Donaldson — Signature

May 9, 2022 — Date

"I certify under penalty of law that the information contained in this document, including attachments and supporting data, is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information."

Property Owner (if different from Applicant) (print)

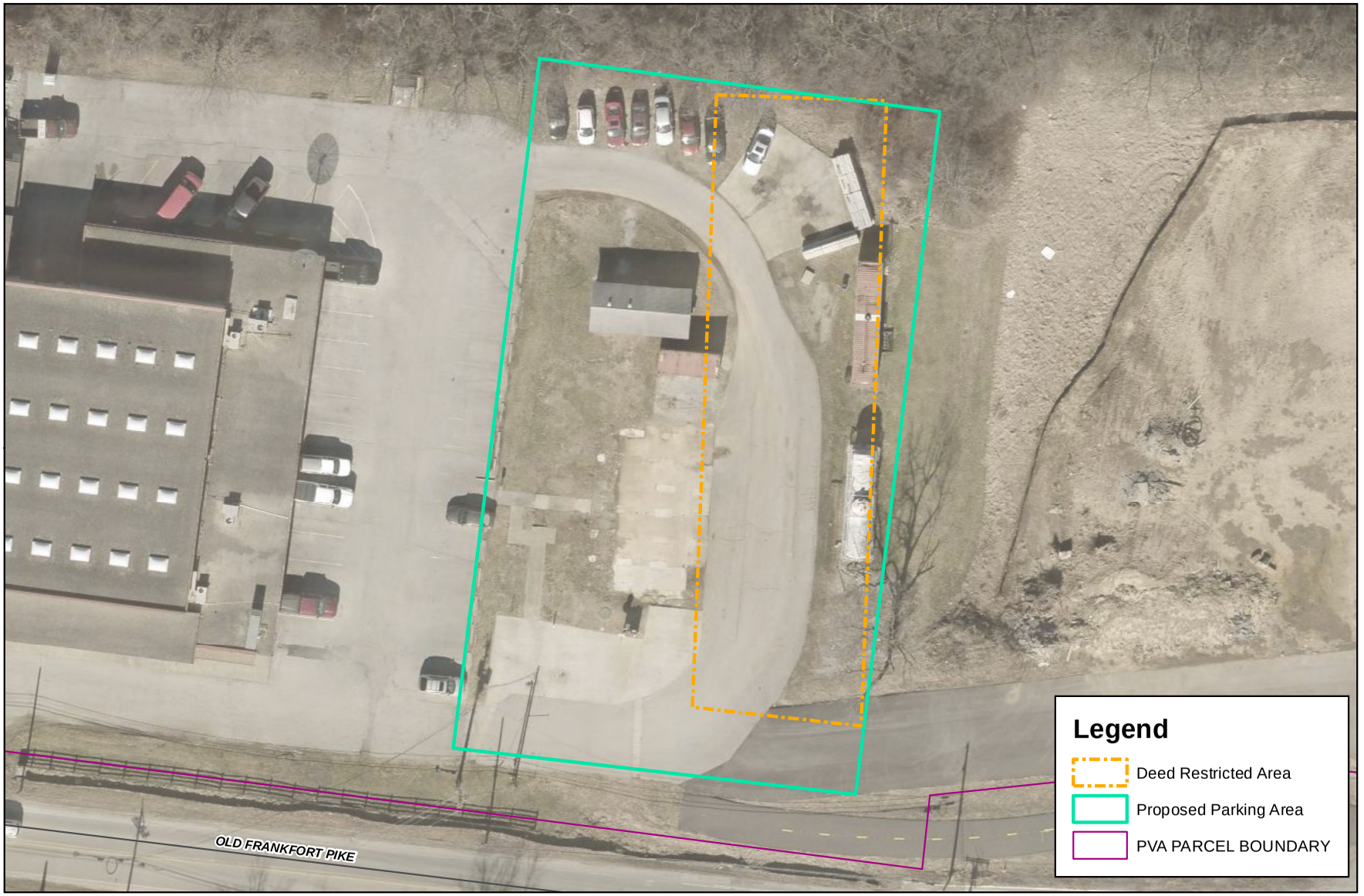
Signature

Date

ATTACHMENT D

Proposed Parking Area Map

LFUCG Environmental Services



Fire Training Center - Proposed New Parking Area

Print Date
4/8/2022

Figure A.7: 2022-05-10 Five Year Review Report Approval from KDWM

ANDY BESHEAR
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

REBECCA W. GOODMAN
SECRETARY

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

May 10, 2022

Sarah Donaldson, CHMM, PG
Lexington/Fayette Urban County Government
200 East Main Street
Lexington, KY 40507

RE: Acceptance of 3rd Five-Year Review
AI 52695: Lexington Fire Training Center
Lexington, Fayette County

Dear Ms. Donaldson,

The Kentucky Division of Waste Management (KDWM) Superfund Branch has reviewed the Five Year Report you submitted on May 10, 2022 for the above referenced property. The report evaluates the effectiveness of the engineering and institutional controls used at the site, and whether those controls are, and will continue to be, protective of human health and the environment.

On July 26, 2007, closure Option B of KRS 224.01-400 (18)(b) was granted and the management plan was approved. The current report indicates that the Environmental Covenant remains in place on the subject property. The current land use also remains consistent with the Environmental Covenant, and the engineering and institutional control measures have remained in place.

Based on its review of the submitted report, the Superfund Branch has determined that the site remains in compliance with KRS 224.01-400 (18)(b). The next Five Year Review submittal will be due on or before April 19, 2027.

As a reminder, an environmental covenant states, "Owner shall notify the Director of Kentucky Division of Waste Management at least thirty (30) days in advance of any proposed grant, transfer, or conveyance of any interest in any or all of the property." This notification needs to be a formal letter stating the intended sale date and the name, address and phone number of the potential buyer. A copy of the proposed deed needs to be included with the letter.

An Equal Opportunity Employer M/F/D

Thank you for your continued efforts to manage this site in a manner that is protective of human health and the environment. If you have any questions, please contact me at 502-782-1225.

Sincerely,

Jennifer Cowan, Environmental Scientist
Superfund State Section
Division of Waste Management

Cc: Central File
Ec: Tammi Hudson, DWM Director
Todd Mullins, Risk Assessment Manager
Christopher Jung, Superfund Section Supervisor
Richard Thomas, Supervisor Frankfort Regional Office

Figure A.8: 2024-03-20 Fire Training Center Compliance Certification A! 52695

MAYOR LINDA GORTON

LEXINGTON

JENNIFER M. CAREY, P.E.
DIRECTOR
ENVIRONMENTAL SERVICES

March 20, 2024

Ms. Jennifer Cowen, Environmental Scientist
Superfund State Section
Department for Environmental Protection
Division of Waste Management
300 Sower Blvd.
Frankfort, Kentucky 40601

Re: LFUCG Annual Compliance Certification
Lexington Fire Training Center
1375 Old Frankfort Pike, Lexington, Kentucky 40504
Agency Interest Number 52695

Ms. Cowen:

As requested in your March 5, 2024 correspondence, Lexington Fayette Urban County Government (LFUCG) is submitting the following Environmental Covenant Compliance Certification for the LFUCG Fire Training Center documenting compliance with the Environmental Covenant and the Site Management Plan. As you are aware, the Site Management Plan as well as the Environmental Covenant apply to the impacted portion of the site (0.253 acres) as described by the metes and bounds description in the Environmental Covenant. Therefore the below certification is for the managed portion of the property.

BACKGROUND

The LFUCG Division of Fire and Emergency Services operates a Fire Training Center at 1375 Old Frankfort Pike. From 1990 to 2001 the Hazmat training area included a concrete containment basin that was built to simulate live fires. In 1998, LFUCG discontinued use of the fire basin and began taking steps to decommission the basin and assess the Hazmat training area to determine whether past training activities had resulted in a release of petroleum to the environment. LFUCG conducted two subsurface site investigations in an attempt to determine if petroleum contamination was present that could be attributable to Hazmat training activities. Low levels of polynuclear aromatic hydrocarbons (PAHs) in excess of allowable residential limits were detected in soil samples collected from several borings during these investigations. In order to comply with the Department of Environmental Protection cleanup requirements and to ensure we are being protective of the environment, LFUCG entered into an Environmental Covenant and developed the Site Management Plan which was subsequently approved by the Division of Waste Management.

SITE MANAGEMENT PLAN

LFUCG agreed to manage the PAHs identified at this site through the steps listed below.

200 East Main St., Lexington, KY 40507 / 859.425.2800 Phone / 859.425.2859 Fax / lexingtonky.gov

- LFUCG agreed to enter into an Environmental Covenant with the Cabinet as described in KRS 224.80-100 through KRS 224.80-210 to help ensure that activities at this site do not adversely impact the environment.
- As specified in the Environmental Covenant, groundwater at the property shall not be used for domestic purposes.
- As specified in the Covenant, no residences/dwellings shall be permitted on the impacted area.
- As specified in the Covenant, the LFUCG shall not construct any new buildings on the impacted area without prior Cabinet approval.
- The LFUCG agreed to create a "cap" by paving those portions of the impacted area in the vicinity of borings 9, 10, 12, 13, 16, 17 and 18 to help limit the amount of precipitation percolating through the fill material. Any fill material/soil disturbed during paving activities was to be left on site.
- LFUCG agreed to ensure that the pavement and the fill material/soils in the impacted area are not disturbed without prior approval by the Cabinet.
- LFUCG agreed to repair the pavement should it become unserviceable.
- LFUCG agreed to visually inspect the impacted area annually to ensure the pavement (cap) is intact and site conditions have not changed significantly and to send the Cabinet written correspondence summarizing the results of this visual inspection within 30 days of the inspection.

COMPLIANCE WITH THE COVENANT
We have reviewed the terms of the Covenant and believe LFUCG is in substantive compliance with the Covenant based on the results of visual inspection of the property completed on March 18, 2024.

The extended parking lot area plan that was summarized in the Five Year Review report submitted on May 9, 2022 is on hold pending a longer term reevaluation of the property layout. Should any plans be solidified which may impact the managed area of the property, LFUCG will notify the Cabinet of any proposed changes during the planning stages of the project.

Please feel free to contact me at 859-425-2518 or sdonaldson@lexingtonky.gov if you have questions about this submittal.

Sincerely,

Sarah M. Donaldson

Sarah M. Donaldson, CHMM, PG
Environmental Compliance Coordinator, Division of Environmental Services

cc: Jason Wells, Fire Chief, LFUCG Division of Fire & Emergency Services
Shane Poynter, Battalion Chief, Training
Michael Sanner, Attorney Sr. LFUCG Department of Law

Figure A.9: Roy Mardis Drive over Town Branch

Lexington-Fayette
Urban County Government

Roy H. Mardis Drive over
Town Branch

Prepared by:

DLZ Kentucky, Inc.
1950 Haggard Ct
Lexington, KY 40505
(859) 299-5226

Prepared for:

R.E. Jackson Engineers, PLLC
811 Corporate Drive
Lexington, KY 40503



November 20, 2018

DLZ

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1 – Introduction and Scope of Work	1.1 to 1.2
2 – Findings and Maintenance Recommendations Summary	2.1 to 2.2
3 – NBI Mini Coding Guide Reference	3.1 to 3.2
4 – Structure Inventory and Appraisal (SIA)	4.1 to 4.5
5 – Photo Report	5.1 to 5.12
6 – Stream Section	6.1 to 6.3

Section 1

Introduction and Scope of Work

Introduction

The Lexington-Fayette Urban County Government (LFUCG) developed an agreement with R.E. Jackson Engineers, PLLC to perform a field inspection and evaluation of the Roy H. Mardis Dr. bridge over Town Branch. This report includes the condition assessments and maintenance recommendations for this structure for use by the LFUCG in maintaining a safe travel network.

Scope of Work

The work for the structure included a field inspection and documentation through inspection notes and photographs. Structure characteristics such as type, material, and number of spans was recorded along with dimensions from field measurements for span length, structure length, approach roadway width, horizontal clearance, out-to-out width, and approximate skew.

General appraisal ratings were provided for bridge railing, rail transition, approach railing, and end treatments based on meeting current standard railing requirements. Photographic documentation of the structure, channel, and any deficiencies was provided in the photo report included.

Ratings and notes on deficiencies were provided for the deck, superstructure, substructure, and channel as applicable for the structure. Ratings were based on a 0 to 9 scale for NBI Elements 58 through 61 of the National Bridge Inspection Standards. A summary of these ratings can be found in the NBI Mini Coding Guide in Section 3. Notes were also provided for the railings and approach pavement, which do not receive an NBI Rating.

Maintenance recommendations were provided for the structure and channel. The ratings, notes, and maintenance recommendations were compiled in a format consistent with current Structure Inventory and Appraisal (SIA) forms.

Among maintenance needs, the structure was found to have an NBI Rating of 3 for Superstructure (Item 59), which would mandate a 3 ton gross posting for capacity by KYTC, but because of the types and extent of the deficiencies, the superstructure is being recommended for replacement.

1.2

Section 2

Findings and Maintenance Recommendations Summary

Findings Summary

Both the deck (NBI Item 58) and superstructure (NBI Item 59) ratings were found to be a 3, meaning that the structure is in serious condition. Items 58 and 59 were found to be a 3 due to the extensive spalling, cracking, loss of section from advanced corrosion, and failure of numerous primary structural components in the prestressed beams. Evidence of possible other failure of primary structural components that are not currently visible also exist.

Among the major structural deficiencies are deep deck spalls that have exposed stirrups and longitudinal reinforcement. The visible reinforcement shows corrosion and section loss. The sections of the beams that have been patched over with hot mixed asphalt (HMA) have been assumed to have spalls deep enough to expose reinforcement, subjecting the reinforcement to corrosion and section loss similar to that seen in the visible reinforcement. Several other locations throughout the deck not spalled or patched over were found to have unsound concrete that was easily removed with some prodding by an inspection hammer.

From below the bridge, there is clear evidence that the prestressed beams are working independently, rather than as a system as they were designed to. This evidence is seen in the deterioration of the longitudinal shear keys between beams, evident from the heavy leakage through beams and the efflorescence below the beams at the shear keys. Differential sag also exists between the beams, meaning that the shear keys are deteriorated enough to where the beams are working independently.

Most significantly, numerous prestressed strands were found to be completely corroded through or broken. Beam 1 has two strands broken near Abutment 1, two strands broken near mid-span, and two strands that have about 50% section loss near Abutment 2. Beam 2 has two strands broken near mid-span. Beam 3 had no strands visible at time of inspection. Beam 4 has two strands broken near Abutment 2 and a strand with about 50% section loss near mid-span. All beams have extensive spalling, delaminations, efflorescence, and

rust staining, suggesting deterioration of structural components and possible other strands with major or complete section loss.

Maintenance Recommendations Summary

Because of the pervasiveness of the structural deficiencies and inability to correct deficiencies such as broken prestressing strands, the superstructure is being recommended for replacement. With the substructure (NBI Item 60) having been found to have a rating of 5 (fair condition), no maintenance recommendations are currently being suggested as all primary structural elements are sound. The substructure would be able to remain for use with only minor structural repairs. The embankment protection systems in place are in fair condition with the exception of the torn gabion basket at the northwest wing wall that is spilling into the stream. It is recommended that the gabion basket be repaired or replaced to prevent further embankment erosion at that quadrant in addition to strengthening embankment protection at the other wing walls.

Section 3

NBI Mini Coding Guide Reference

NBIP FIELD REVIEW MINI CODING GUIDE

[58]DECK, [59]SUPERSTRUCTURE, [60]SUBSTRUCTURE	
N	NOT APPLICABLE
9	EXCELLENT CONDITION
8	VERY GOOD CONDITION - no problems noted.
7	GOOD CONDITION - some minor problems.
6	SATISFACTORY CONDITION - structural elements show some minor deterioration
5	FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
4	POOR CONDITION - advanced section loss, deterioration, spalling, or scour.
3	SERIOUS CONDITION - loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible, Fatigue cracks in steel or shear cracks in concrete may be present.
2	CRITICAL CONDITION - advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	"IMMINENT" FAILURE CONDITION - major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
0	FAILED CONDITION - out of service - beyond corrective action.

[41] STRUCTURE OPEN, POSTED OR CLOSED TO TRAFFIC	
A	Open, no restriction
B	Open, posting recommended but not legally implemented (all signs not in place or not correctly implemented)
D	Open, would be posted or closed except for temporary shoring, etc. to allow for unrestricted traffic
E	Open, temporary structure in place to carry legal loads while original structure is closed and awaiting replacement or Rehabilitation
G	New structure not yet open to traffic
K	Bridge closed to all traffic
P	Posted for load (may include other restrictions such as temporary bridges which are load posted)
R	Posted for other load-capacity restriction (speed, number of vehicles on bridge, etc.)

[43]STRUCTURE TYPE, MAIN

Record the description on the inspection form and indicate the type of structure for the main span(s) with a 3-digit code composed of 2 segments. The first digit indicates the kind of material and/or design and shall be coded using one of the following codes(43A). The second and third digits indicate the predominant type of design and/or type of construction and shall be coded using one of the following codes(43B).

[43A] STRUCTURE TYPE – Material/Des.	
1	Concrete
2	Concrete continuous
3	Steel
4	Steel continuous
5	Prestressed concrete *
6	Prestressed concrete continuous *
7	Wood or Timber
8	Masonry
9	Aluminum, Wrought Iron, or Cast Iron
0	Other

* Post-tensioned concrete should be coded as prestressed concrete.

[43B] STRUCTURE TYPE –Des./Constr.	
01	Slab
02	Stringer/Multi-beam or Girder
03	Girder and Floorbeam System
04	Tee Beam
05	Box Beam or Girders - Multiple
06	Box Beam or Girders - Single or Spread
07	Frame (except frame culverts)
08	Orthotropic
09	Truss - Deck
10	Truss - Thru
11	Arch - Deck
12	Arch - Thru
13	Suspension
14	Stayed Girder
15	Movable - Lift
16	Movable - Bascule
17	Movable - Swing
18	Tunnel
19	Culvert (includes frame culverts)
20	* Mixed types
21	Segmental Box Girder
22	Channel Beam
00	Other

* Applicable only to appr. spans - Item 44

Note: all Items listed have been excerpted from the NBI Coding Guide. Some parts of Item descriptions may have been omitted from this sheet. See coding guide for complete coding requirements.

[62]CULVERTS

This item evaluates the alignment, settlement, joints, structural condition, scour, and other items associated with culverts. The rating code is intended to be an overall condition evaluation of the culvert.
Integral wingwalls to the first construction or expansion joint shall be included in the evaluation. For a detailed discussion regarding the inspection and rating of culverts, consult Report No. FHWA-IP-86-2,
Culvert Inspection Manual, July 1986.
Item 58 - Deck, Item 59 - Superstructure, and Item 60 – Substructure shall be coded N for all culverts.

N	Not applicable. Use if structure is not a culvert.
9	No deficiencies.
8	No noticeable or noteworthy deficiencies which affect the condition of the culvert. Insignificant scrape marks caused by drift.
7	Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
6	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
5	Moderate to major deterioration or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
4	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joint permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
3	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
2	Integral wingwalls collapsed, severe settlement of roadway due to loss of fill. Section of culvert may have failed and can no longer support embankment. Complete undermining at curtain walls and pipes. Corrective action required to maintain traffic. Metal culverts have extreme distortion and deflection throughout with extensive perforations due to corrosion.
1	Bridge closed. Corrective action may put back in light service.
0	Bridge closed. Replacement necessary.

[72] APPROACH ROADWAY ALIGNMENT

Code the rating based on the adequacy of the approach roadway alignment. This item identifies those bridges which do not function properly or adequately due to the alignment of the approaches. It is not intended that the approach roadway alignment be compared to current standards but rather to the existing highway alignment. This concept differs from other appraisal evaluations. The establishment of set criteria to be used at all bridge sites is not appropriate for this item. The basic criteria is how the alignment of the roadway approaches to the bridge relate to the general highway alignment for the section of highway the bridge is on. For example, if the highway section requires a substantial speed reduction due to vertical or horizontal alignment, and the roadway approach to the bridge requires only a very minor additional speed reduction at the bridge, the appropriate code would be a 6. This concept shall be used at each bridge site. Speed reductions necessary because of structure width and not alignment shall not be considered in evaluating this item.

3 or less	the horizontal or vertical curvature requires a substantial reduction in the vehicle operating speed from that on the highway section
6	A very minor speed reduction
8	a speed reduction is not required

Additional codes may be selected between these general values.

NBIP FIELD REVIEW MINI CODING GUIDE

[61]CHANNEL & CHANNEL PROTECTION

This item describes the physical conditions associated with the flow of water through the bridge such as stream stability and the condition of the channel, riprap, slope protection, or stream control devices including spur dikes. The inspector should be particularly concerned with visible signs of excessive water velocity which may affect undermining of slope protection, erosion of banks, and realignment of the stream which may result in immediate or potential problems. Accumulation of drift and debris on the superstructure and substructure should be noted on the inspection form but not included in the condition rating.

N	Not applicable. Use when bridge is not over a waterway (channel).
9	There are no noticeable or noteworthy deficiencies which affect the condition of the channel.
8	Banks are protected or well vegetated. River control devices such as spur dikes and embankment protection are not required or are in a stable condition.
7	Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift.
6	Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the channel slightly.
5	Bank protection is being eroded. River control devices and/or embankment have major damage. Trees and brush restrict the channel.
4	Bank and embankment protection is severely undermined. River control devices have severe damage. Large deposits of debris are in the channel.
3	Bank protection has failed. River control devices have been destroyed. Stream bed aggradation, degradation or lateral movement has changed the channel to now threaten the bridge and/or approach roadway.
2	The channel has changed to the extent the bridge is near a state of collapse.
1	Bridge closed because of channel failure. Corrective action may put back in light service.
0	Bridge closed because of channel failure. Replacement necessary.

[103] TEMPORARY STRUCTURE

Code this item to indicate situations where temporary structures or conditions exist. This item should be blank if not applicable. Temporary structure(s) or conditions are those which are required to facilitate traffic flow. This may occur either before or during the modification or replacement of a structure found to be deficient. Such conditions include the following:

! Bridges shored up, including additional temporary supports.
! Temporary repairs made to keep a bridge open.
! Temporary structures, temporary runarounds or bypasses.
! Other temporary measures, such as barricaded traffic lanes to keep the bridge open.

Any repaired structure or replacement structure which is expected to remain in place without further project activity, other than maintenance, for a significant period of time shall not be considered temporary. Under such conditions, that structure, regardless of its type, shall be considered

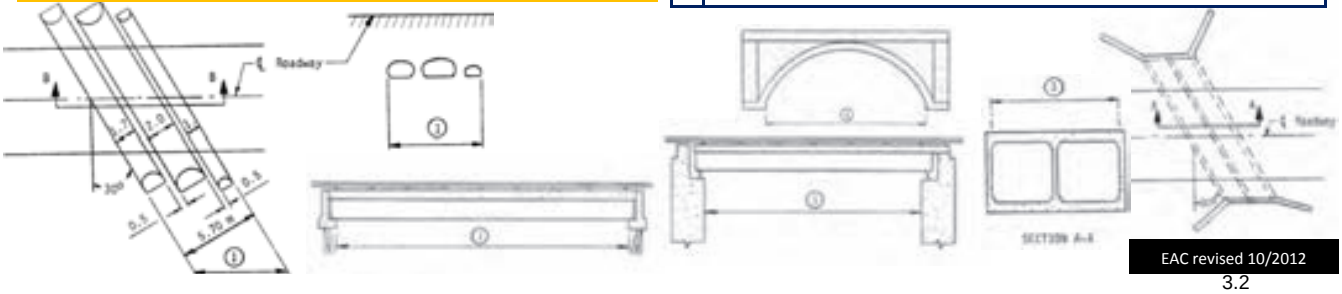
[112] NBIS BRIDGE LENGTH

The following definition of a bridge is to be used: A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet* between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.

[113] SCOUR CRITICAL BRIDGES

Use a single-digit code as indicated below to identify the current status of the bridge regarding its vulnerability to scour. Whenever a rating factor of 2 or below is determined for this item, the rating factor for Item 60 -- Substructure and other affected items (i.e., load ratings, superstructure rating) should be revised to be consistent with the severity of observed scour and resultant damage to the bridge. A plan of action should be developed for each scour critical bridge. A scour critical bridge is one with abutment or pier foundation rated as unstable due to (1) observed scour at the bridge site (rating factor of 2, 1, or 0) or (2) a scour potential as determined from a scour evaluation study (rating factor of 3). It is assumed that the coding of this item has been based on an engineering evaluation, which includes consultation of the NBIS field inspection findings.

N	Bridge not over waterway.
U	Bridge with "unknown" foundation that has not been evaluated for scour. Until risk can be determined, a plan of action should be developed and implemented to reduce the risk to users from a bridge failure during and immediately after a flood event (see HEC 23).
T	Bridge over "tidal" waters that has not been evaluated for scour, but considered low risk. Bridge will be monitored with regular inspection cycle and with appropriate underwater inspections until an evaluation is performed ("Unknown" foundations in "tidal" waters should be coded U.)
9	Bridge foundations (including piles) on dry land well above flood water elevations.
8	Bridge foundations determined to be stable for the assessed or calculated scour condition. Scour is determined to be above top of footing (Example A) by assessment (i.e., bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge4), by calculation or by installation of properly designed countermeasures (see HEC 23).
7	Countermeasures have been installed to mitigate an existing problem with scour and to reduce the risk of bridge failure during a flood event. Instructions contained in a plan of action have been implemented to reduce the risk to users from a bridge failure during or immediately after a flood event.
6	Scour calculation/evaluation has not been made. (Use only to describe case where bridge has not yet been evaluated for scour potential).
5	Bridge foundations determined to be stable for assessed or calculated scour condition. Scour is determined to be within the limits of footing or piles (Example B) by assessment (i.e., bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge), by calculations or by installation of properly designed countermeasures (see HEC 23).
4	Bridge foundations determined to be stable for assessed or calculated scour conditions; field review indicates action is required to protect exposed foundations (see HEC 23).
3	Bridge is scour critical; bridge foundations determined to be unstable for assessed or calculated scour conditions: -Scour within limits of footing or piles. (Example B) -Scour below spread-footing base or pile tips. (Example C)
2	Bridge is scour critical; field review indicates that extensive scour has occurred at bridge foundations, which are determined to be unstable by: -a comparison of calculated scour and observed scour during the bridge inspection, or an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60.
1	Bridge is scour critical; field review indicates that failure of piers/abutments is imminent. Bridge is closed to traffic. Failure is imminent based on: -a comparison of calculated and observed scour during the bridge inspection, or –an engineering evaluation of the observed scour condition reported by the bridge inspector in Item 60.
0	Bridge is scour critical. Bridge has failed and is closed to traffic.



EAC revised 10/2012

3.2

Section 4

Structure Inventory and Appraisal (SIA)

Bridge Inspection Report

IDENTIFICATION

Structure Num (8):	069C00014N
NBI Number:	069C00014N
Structure Name:	
Location (9):	.1 MI S OF JCT KY 698
Carries (7):	GREASY RIDGE RD
Type of Service (42A):	1 Highway
Feature Crossed (6):	GREEN RIVER
Type of Service (42B):	5 Waterway
Placecode (4):	Not Applicable
County (3):	Lincoln (069)
State (1):	21 Kentucky
Admin Area:	Inventory
District:	District 8
Latitude (16):	37° 26' 46"
Longitude (17):	84° 42' 9"
Owner (22):	County Hwy Agency
Maint. Resp. (21):	County Hwy Agency
Year Built (27):	1970
Year Recon (106):	0
Border State (98A):	Unknown (P)
Border Number (99):	
% Responsibility (98B):	-1

Heath Index: 82.73

SubStd: No **SubStd Reason:** Not Sub-Standa

Inspection Type	Freq (92)	Last Insp (93)	Next Insp
Routine	12	11/9/2017	11/9/2018
Element	12	11/9/2017	11/9/2018
Fracture Critical (A)		1/1/1901	1/1/1901
Underwater (B)		1/1/1901	1/1/1901
Special Insp (C)		2/19/2013	1/1/1901

LOAD RATING AND POSTING

Posting Status(41):	P Posted for load
Posting (70):	5 At/Above Legal Loads
Signs Posted Cardinal:	Yes
Signs Posted Non-Cardinal:	Yes
Recmd Date:	**Posted Date:**

Required Postings (Tons.)		Field Postings (Tons.)	
Gross:		**Gross:**	15.00
Truck Type 1:		**Truck Type 1**	
Truck Type 2:		**Truck Type 2**	
Truck Type 3:		**Truck Type 3**	
Truck Type 4:		**Truck Type 4**	
SUV 5:		**SUV 5:**	
SUV 6:		**SUV 6:**	
SUV 7:		**SUV 7:**	
EV2:			
EV3:			

DECK GEOMETRY

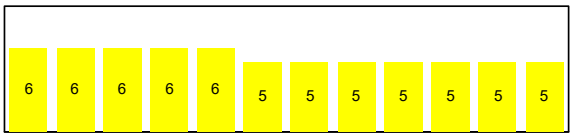
Deck Geometry (68):	4 Tolerable
Deck Area:	979.52 ft²
Deck Type (107):	2 Concrete Precast Panel
Wearing Surface (108A):	
Membrane (108B):	0 None
Deck Protection (108C):	None
Approach Roadway width (32):	ft.
Width Curb to Curb (51):	19.69 ft.
O. to O. Width (52):	21.33 ft.
Curb / Sidewalk Width L (50A):	0.75 ft.
Curb / Sidewalk Width R (50B):	0.75 ft.
Median (33):	0 No median

DECK CONDITION

Deck Rating (58):
Bridge Rail (36A):
Transition (36B):
Approach Rail (36C):
Approach Rail Ends (36D):

SUPERSTRUCTURE GEOMETRY

# of Main Spans (45):	1
# of Approach Spans (46):	0
Main Material (43 A):	5 Prestressed Concrete
Main Design (43 B):	05 Multiple Box Beam
Max Span Length (48):	43.96 ft.
Structure Length (49):	45.93 ft.
NBIS Length (37):	Long Enough
Temp Structure (103):	Not Applicable (P)
Skew (34):	15°
Structure Flared (35):	0 No flare
Parallel Structure (101):	No || bridge exists
Approach Alignment (72):	8 Equal Desirable Crit



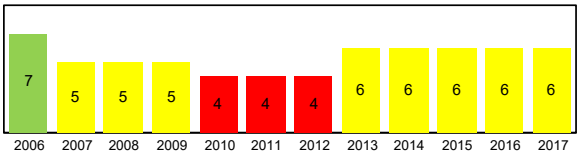
SUPERSTRUCTURE CONDITION

Superstructure Rating (59):
Structure Evaluation (67):

Bridge Inspection Report

SUBSTRUCTURE GEOMETRY

Navigation Control (38):	Permit Not Required
Nav Vert Clearance (39):	
Nav Horiz Clearance (40):	
Pier Protection (111):	Not Applicable (P)
Lift Bridge Vertical Clearance (116):	
Scour Rating (113):	8 Stable Above Footing
Waterway Adequacy (71):	7 Above Minimum



SUBSTRUCTURE CONDITION

Substructure Rating (60):	6 Satisfactory
Channel Rating (61):	5 Bank Prot Eroded

KYTC FIELDS

Overlay:	Yes	**Scour Observed:**	No Scour
Overlay Type:	Asphalt	**Scour Risk :**	Low Risk
Overylay Thickness:	2.00 in.	**Scour Analysis/Assessment :**	Completed by Ogden
Overlay Year:		**Scour POA :**	Not Required
Cross Section:	Yes	**Scour POA Date :**	
Cross Section Date:	11/15/2016		

ROUTE ON STRUCTURE: GREASY RIDGE RD

ROADWAY LOCATION

Pos Prefix (5A):	Route On Structure
Kind of Hwy (5B):	4 County Hwy
Route Num (5D):	01202
LRS Route (13A/B):	
Milepost (11):	0.14 mi
Suffix (5E):	0 N/A (NBI)
Lanes On (28A):	2
Detour Length (19):	8.08 mi

ROADWAY CLASSIFICATION

Funct Class (26):	09 Rural Local
Level Service (5C):	1 Mainline
NHS (104):	0 Not on NHS
Defense Hwy (100):	0 Not a STRAHNET hwy
Toll Facility (20):	3 On free road
ADT (29):	128 Cars/Day
Pct Trucks (109):	11.00%
ADT Year (30):	2011

CLEARANCES

Vertical (10):	99.99 ft.
Min Vert Over (53):	99.99 ft.
Vert Ref (54A):	N Feature not hwy or RR
Horizontal (47):	19.36 ft.
Min Lat Left (56):	0.00 ft.
Min Lat Right (55B):	0.00 ft.
Horiz Ref (55A):	N Feature not hwy or RR
Underclearance (69):	N Not applicable (NBI)

STRUCTURE NOTES

INSPECTION NOTES

SCOUR NOTES

LOAD RATING NOTES

COMPLIANCE NOTES

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
15	**Pre Concrete Top Flange**	**3**	**11/09/2017**	**987.00**	**sq.ft**	**787.00**	**200.00**	**0.00**	**0.00**

The deck area between the concrete curbs and the asphalt wearing surface is filled with dirt and debris.

510	Wearing Surfaces	3	11/09/2017	910.00	sq.ft	610.00	300.00	0.00	0.00

Asphalt overlay has transverse cracking at ends & longitudinal cracks over the shear keys between box beams.

3220	*Crack (Wearing Surface)*	*3*	*11/09/2017*	*1.00*	*sq.ft*	*1.00*	*0.00*	*0.00*	*0.00*

–

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
104	**Pre Clsd Box Girder**	**3**	**11/09/2017**	**329.00**	**ft**	**149.00**	**164.00**	**16.00**	**0.00**

The bottom of all beams are discolored from deck drainage and also around the keys.Beam 6 has a 12 ft. section of exposed steel and an additional foot of delamination, where cracking is developing. Beams have some efflorescence around the shear keys as well..

1080	Delamination/Spall/Patched Area	3	11/09/2017	15.00	ft	0.00	0.00	15.00	0.00

–

1120	Efflorescence/Rust Staining	3	11/09/2017	65.00	ft	0.00	65.00	0.00	0.00

–

2310	Leakage	3	11/09/2017	100.00	ft	0.00	99.00	1.00	0.00

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
215	**Re Conc Abutment**	**3**	**11/09/2017**	**86.00**	**ft**	**38.00**	**48.00**	**0.00**	**0.00**

The abutments and wingwalls have fine cracking, discoloration and light to moderate scale. Wingwalls have minor diagonal cracking.Previously recorded scour at this structures abutments has been remedied by forming around footers and pouring concrete under & around old footers. These countermeasures are in good condition.

1130	Cracking (RC and Other)	3	11/09/2017	38.00	ft	0.00	38.00	0.00	0.00

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ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
220	**Re Conc Pile Cap/Ftg**	**3**	**11/09/2017**	**86.00**	**ft**	**80.00**	**6.00**	**0.00**	**0.00**

ELEM NBR	ELEMENT NAME	ENV	INSP. DATE	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
330	**Metal Bridge Railing**	**3**	**11/09/2017**	**94.00**	**ft**	**0.00**	**94.00**	**0.00**	**0.00**

The steel guardrail has prevalent surface rust throughout all.

515	Steel Protective Coating	3	11/09/2017	376.00	sq.ft	0.00	0.00	376.00	0.00

Bridge Inspection Report

Work Candidates Report

BRIDGE ID	WORK ID	DESCRIPTION	DATE RECOMMENDED	DATE COMPLETED	TARGET YEAR	STATUS	PRIORITY	WORK ASSIGNE	SOURCE

Section 5

Photo Report

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





2/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





4/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





6/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





8/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





10/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18





11/12

Roy H. Mardis Dr. Over Town Branch
Standard Inspection 11-20-18



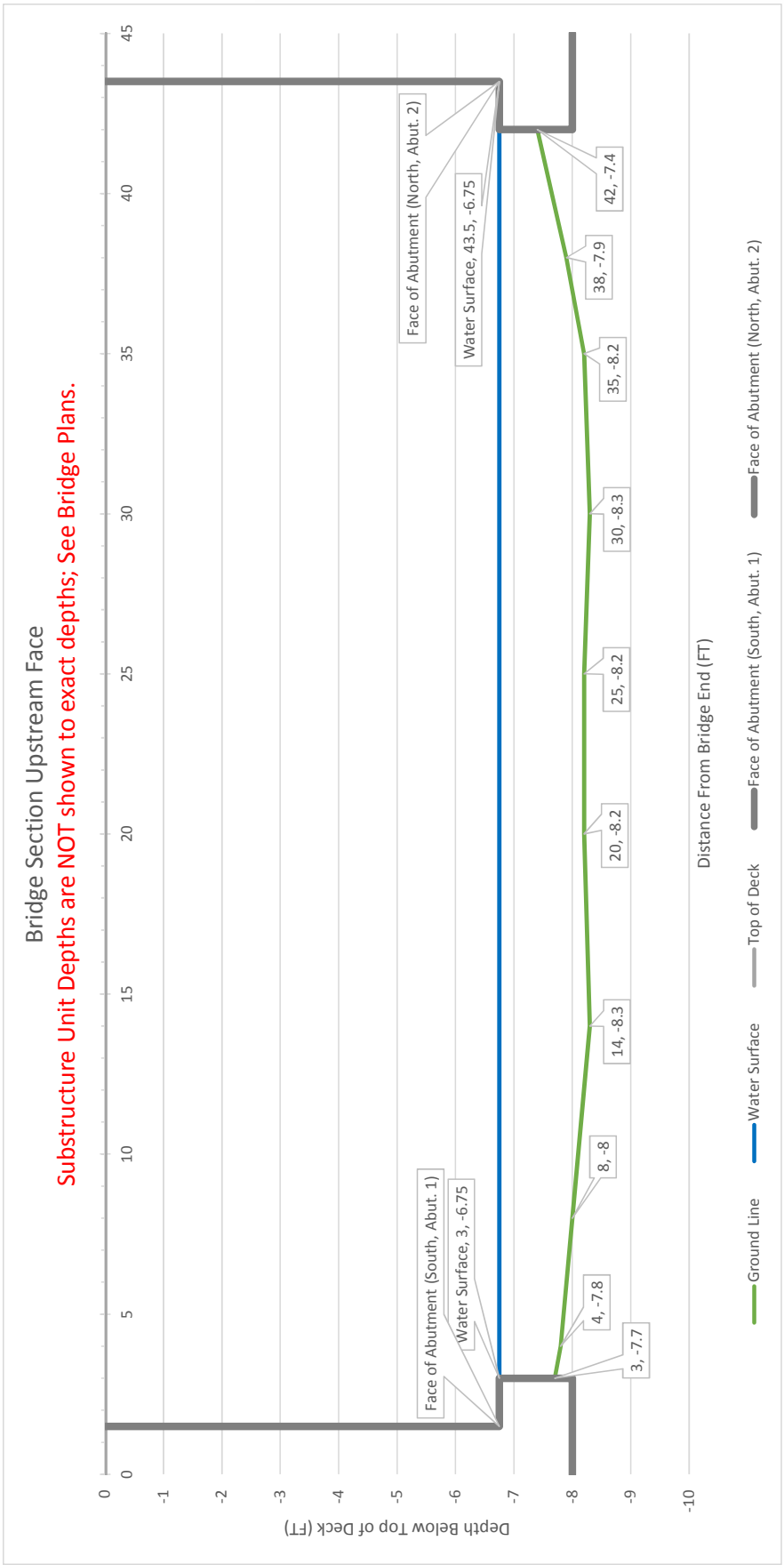
12/12

Section 6

Stream Section

Stream Cross Section Notes

Inspector: M. Feltz, J. Agler
Date: 11/20/2018
Bridge ID: N/A
Owner: LFUCG
Notes: Y=0 was taken along top of deck
X=0 was taken at the end of the south abutment beam ends and along the centerline of the bridges for both the upstream and downstream cross-sections: the skew is either or close to 0 degrees.
The upstream and downstream cross sections are looking downstream (west).


Bridge Section Upstream Face
Substructure Unit Depths are NOT shown to exact depths; See Bridge Plans.
Depth Below Top of Deck (FT)
Distance From Bridge End (FT)
Face of Abutment (North, Abut. 2)
Water Surface, 43.5, -6.75
Face of Abutment (South, Abut. 1)
Water Surface, 3, -6.75
42, -7.4
38, -7.9
35, -8.2
30, -8.3
25, -8.2
20, -8.2
14, -8.3
8, -8
4, -7.8
3, -7.7
Ground Line
Water Surface
Top of Deck
Face of Abutment (South, Abut. 1)
Face of Abutment (North, Abut. 2)

6.2

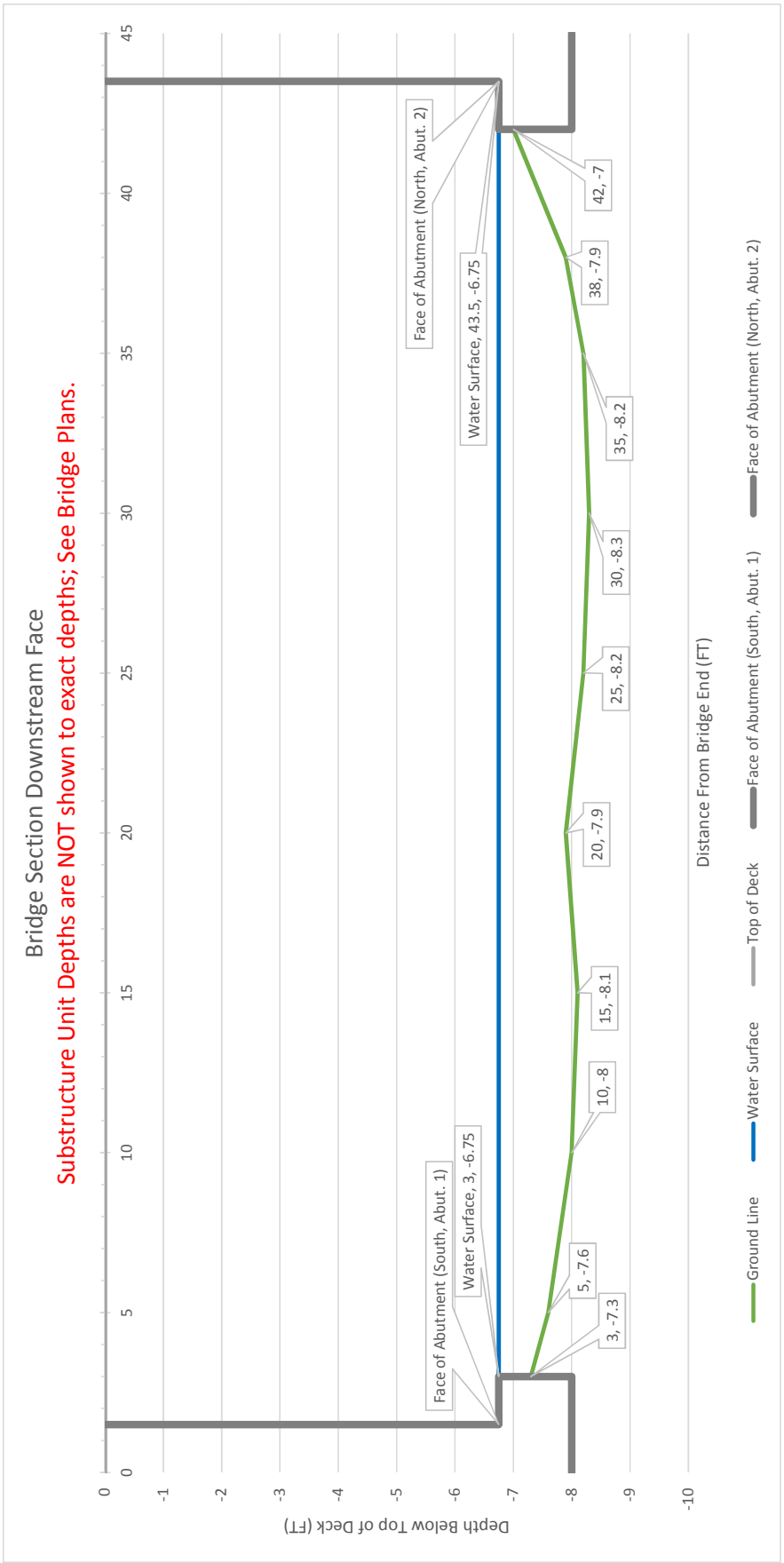

Bridge Section Downstream Face
Substructure Unit Depths are NOT shown to exact depths; See Bridge Plans.
Depth Below Top of Deck (FT)
Distance From Bridge End (FT)
Face of Abutment (North, Abut. 2)
Water Surface, 43.5, -6.75
42, -7
38, -7.9
35, -8.2
30, -8.3
25, -8.2
20, -7.9
15, -8.1
10, -8
5, -7.6
3, -7.3
Face of Abutment (South, Abut. 1)
Water Surface, 3, -6.75
Ground Line
Water Surface
Top of Deck
Face of Abutment (South, Abut. 1)
Face of Abutment (North, Abut. 2)

Figure A.10: Site and Exterior Photos



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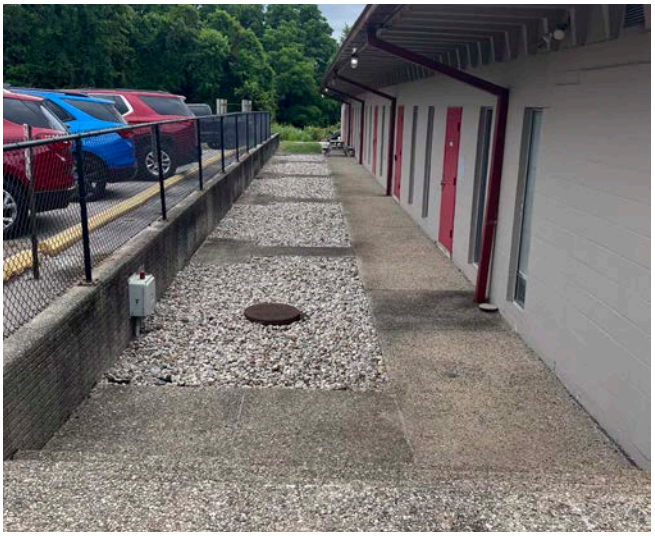
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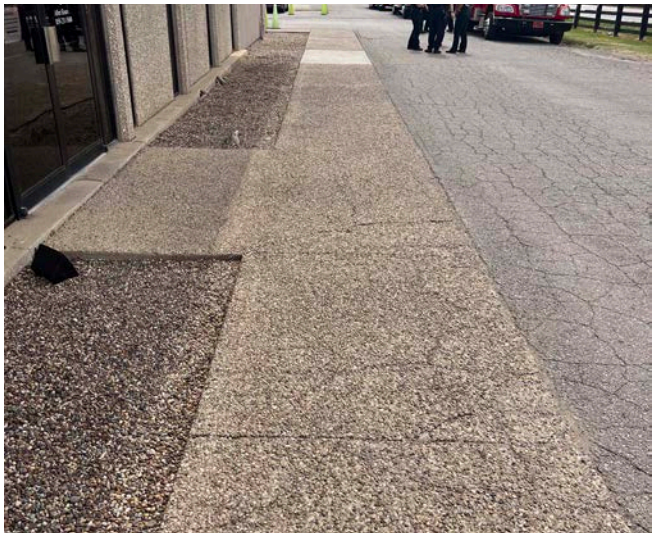
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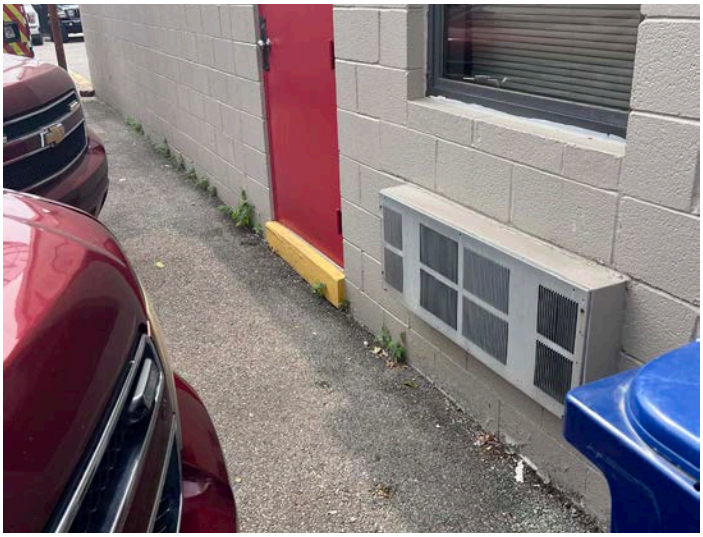
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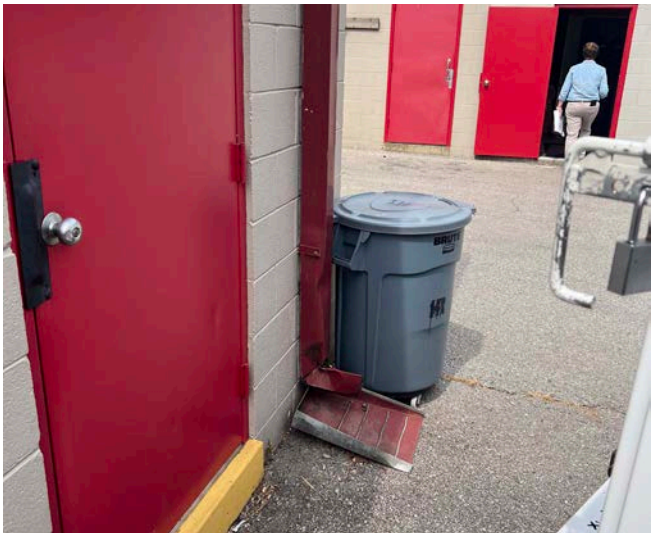
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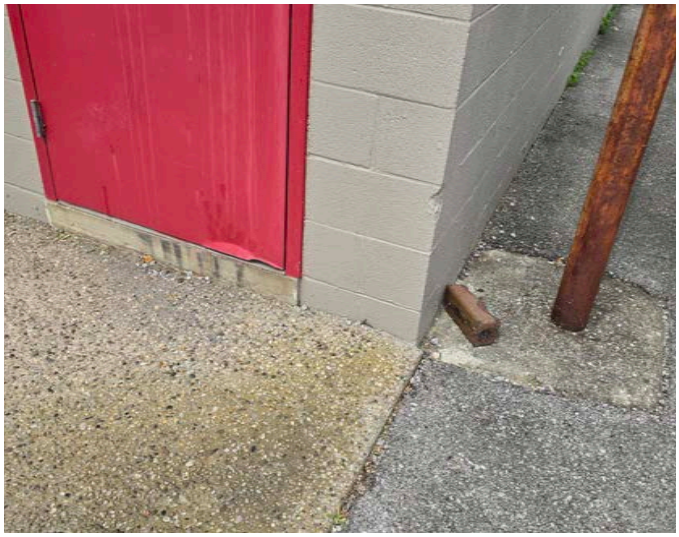
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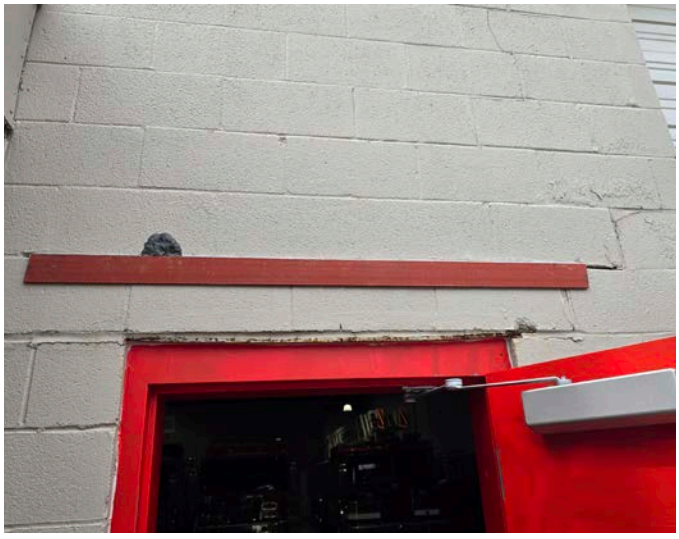
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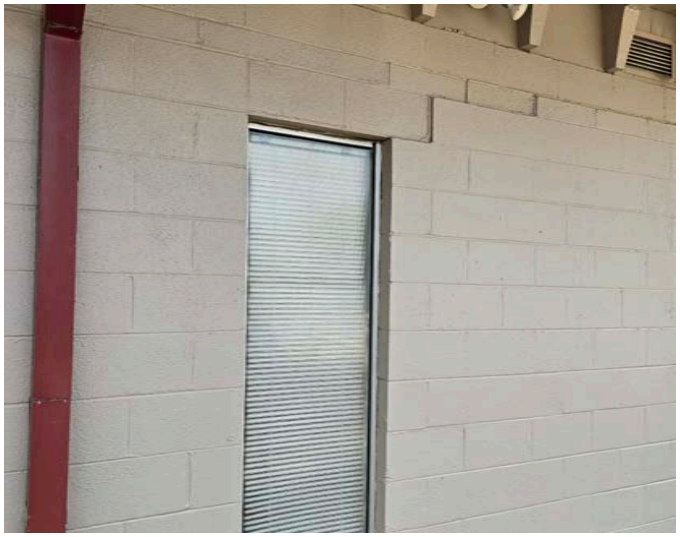
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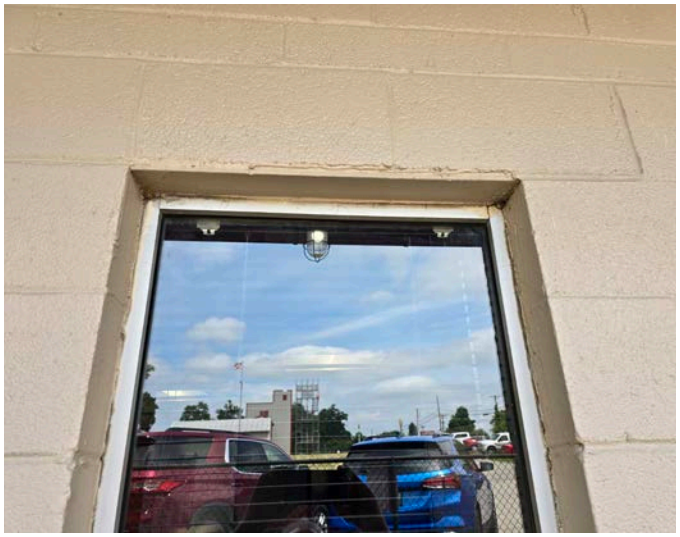
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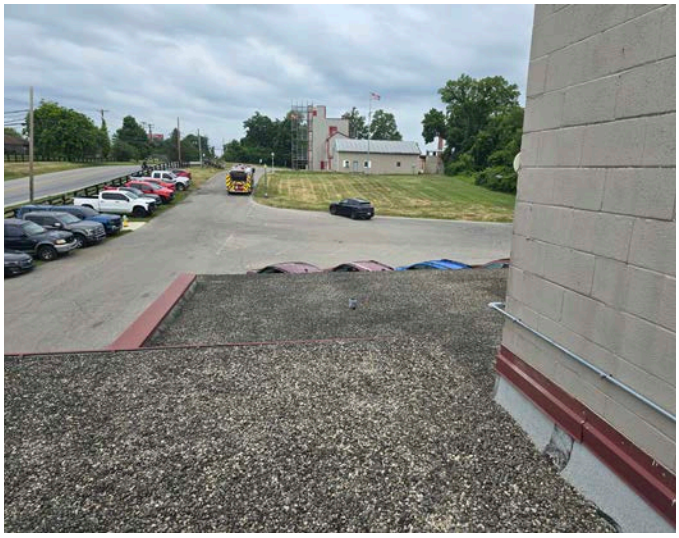
Figure A.11: Roof Photos



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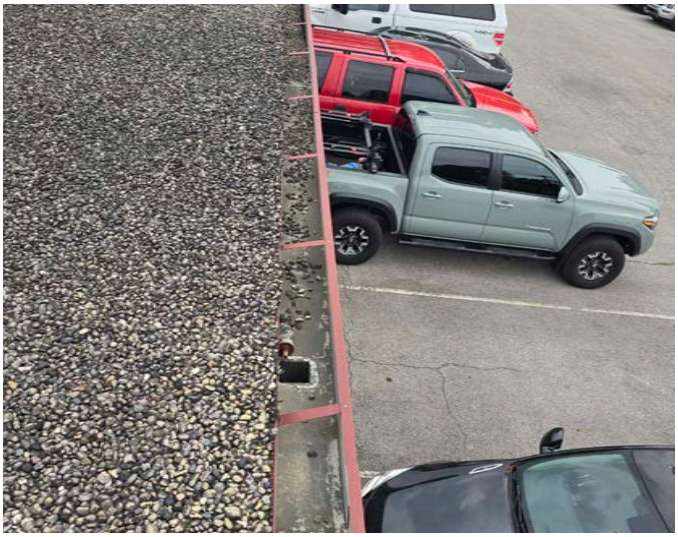
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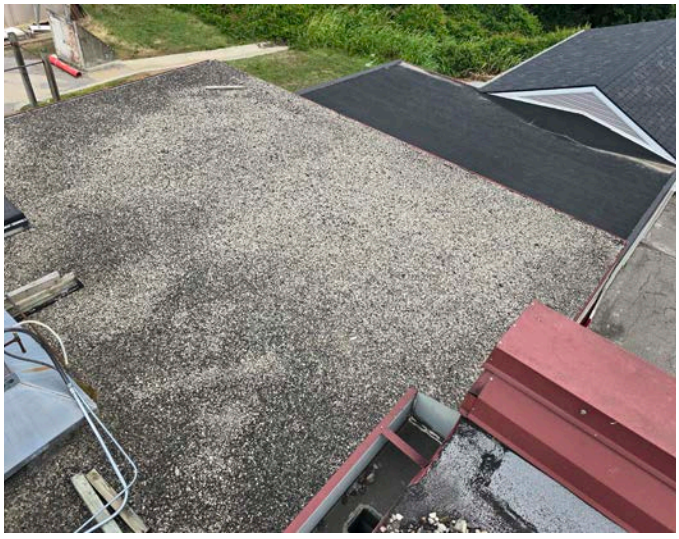
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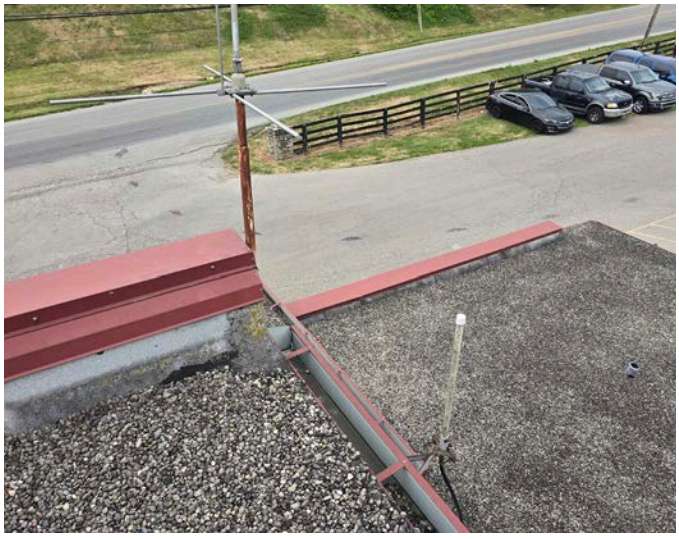
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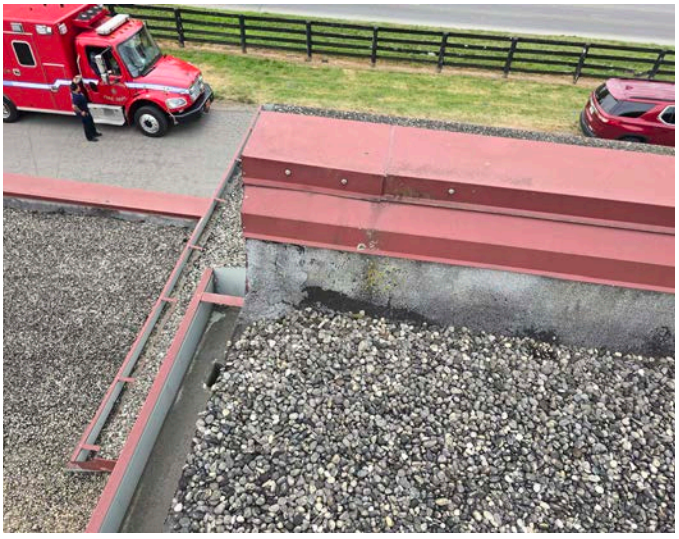
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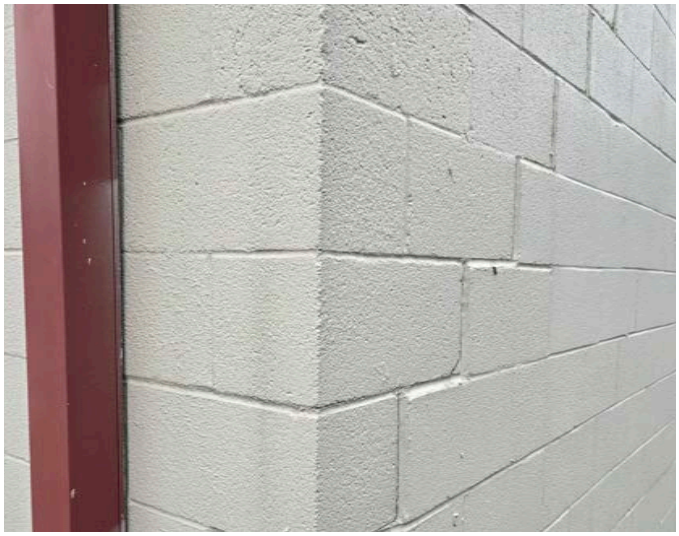
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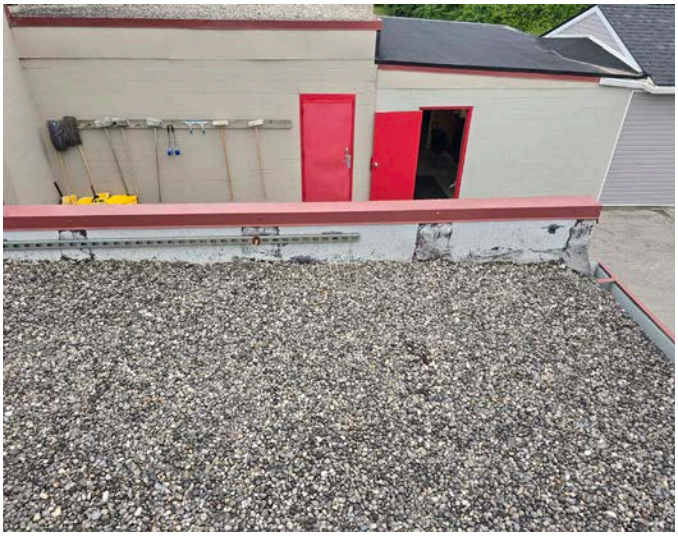
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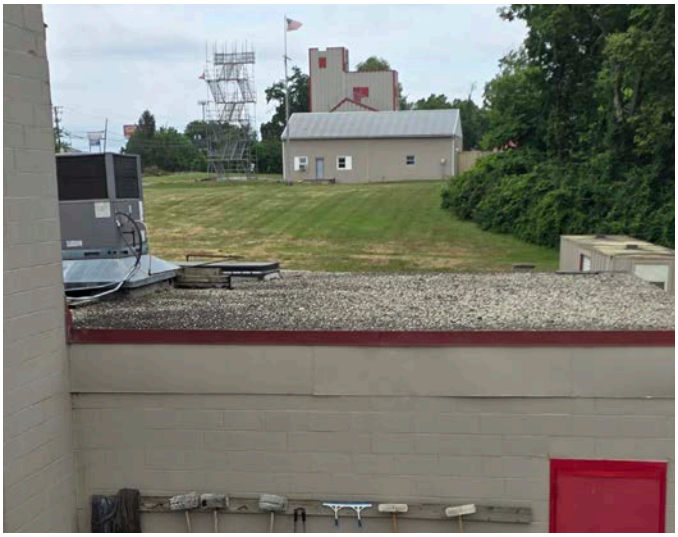
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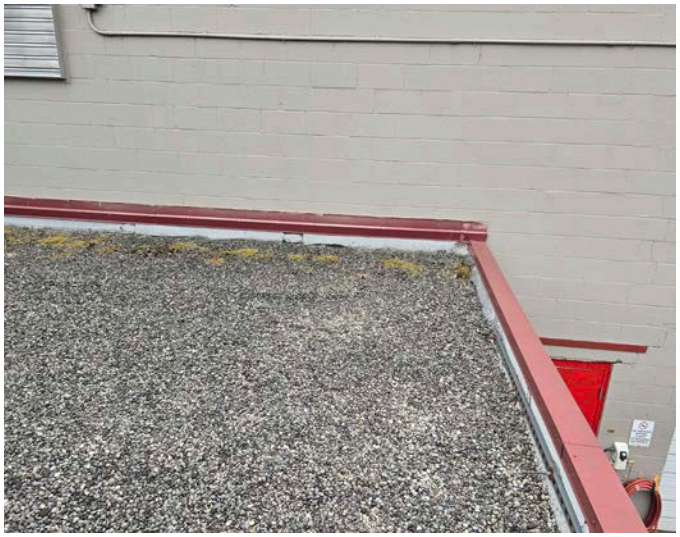
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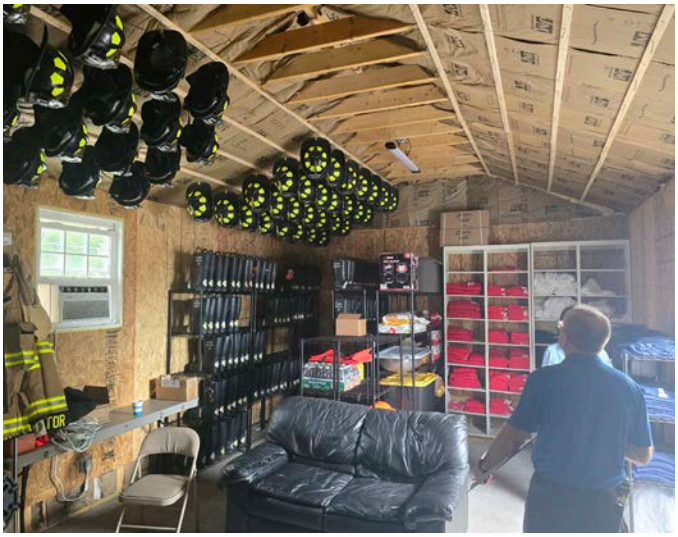


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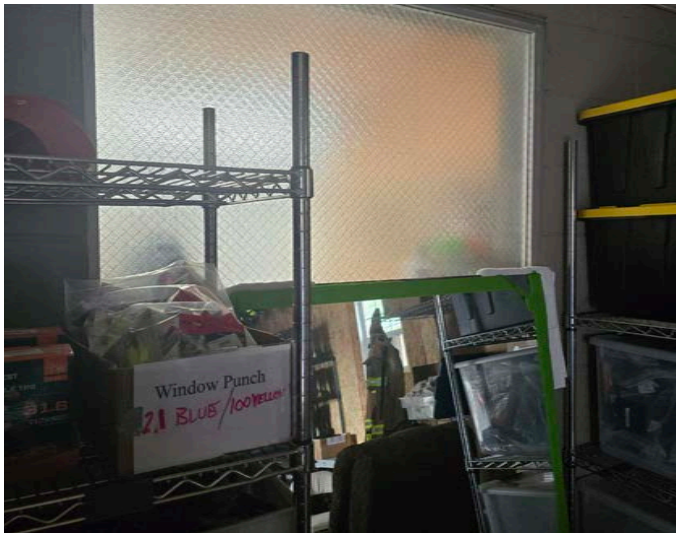
Figure A.12: Interior Photos



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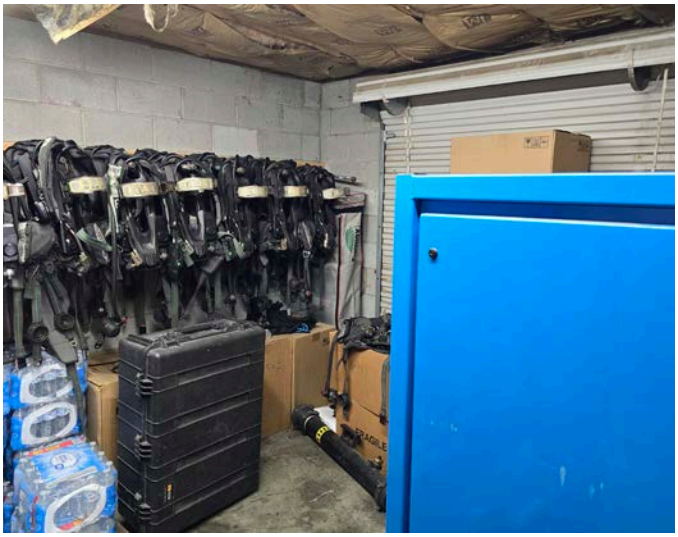
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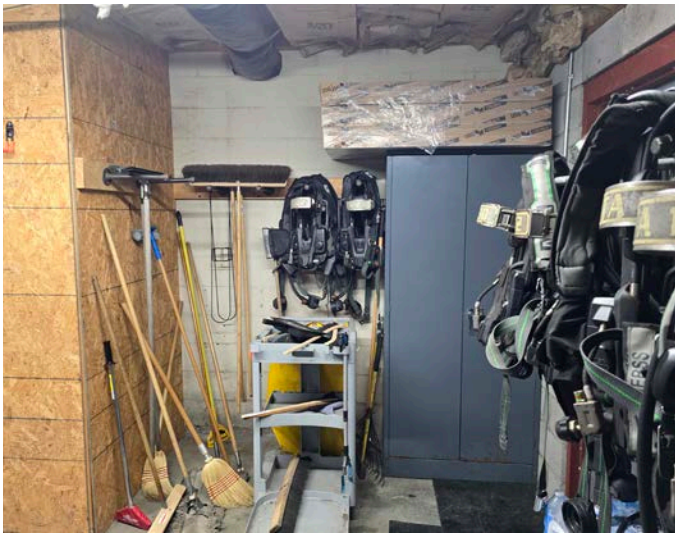
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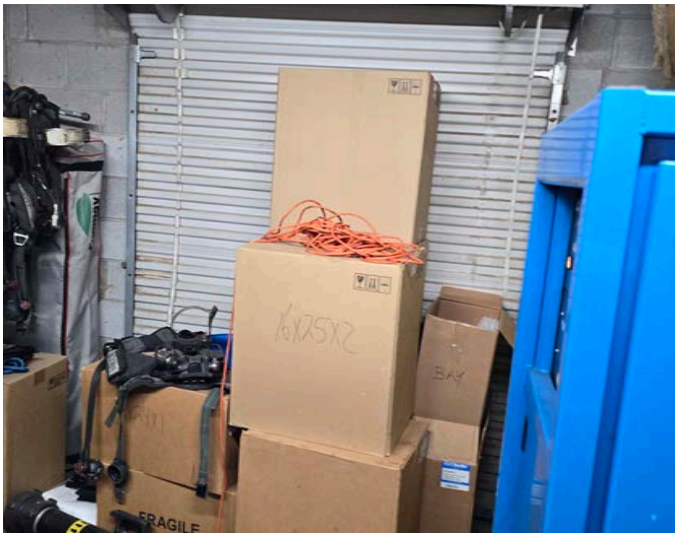
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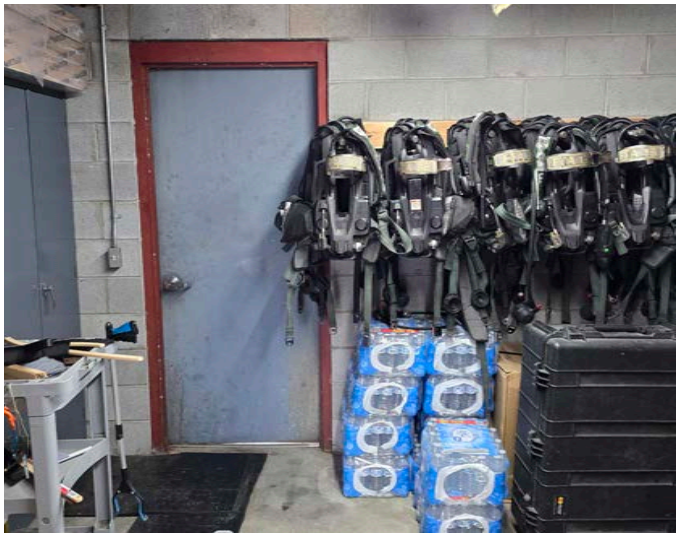
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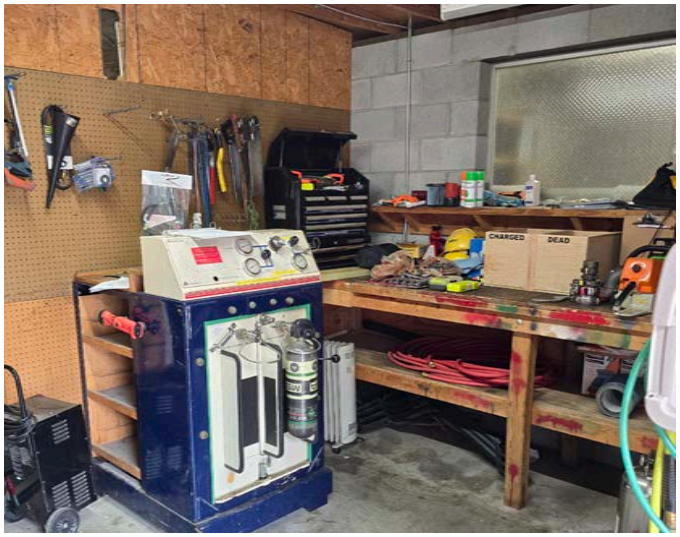
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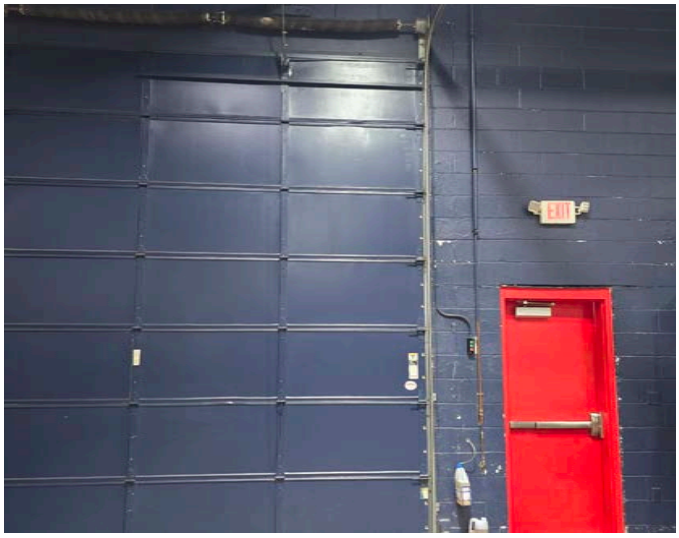
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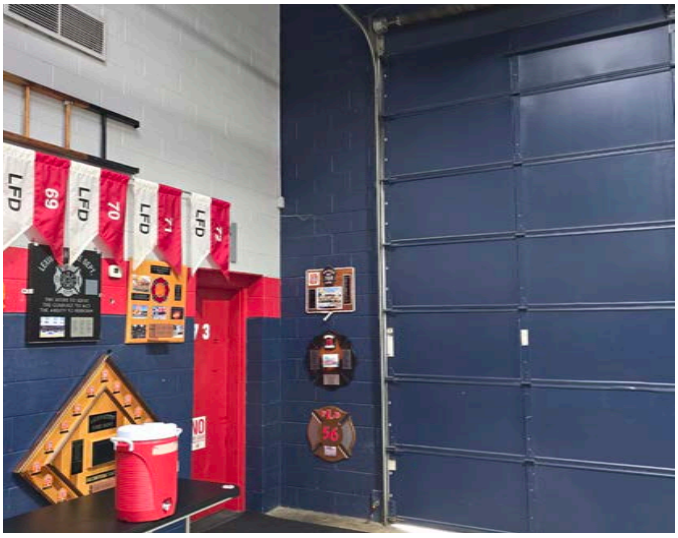
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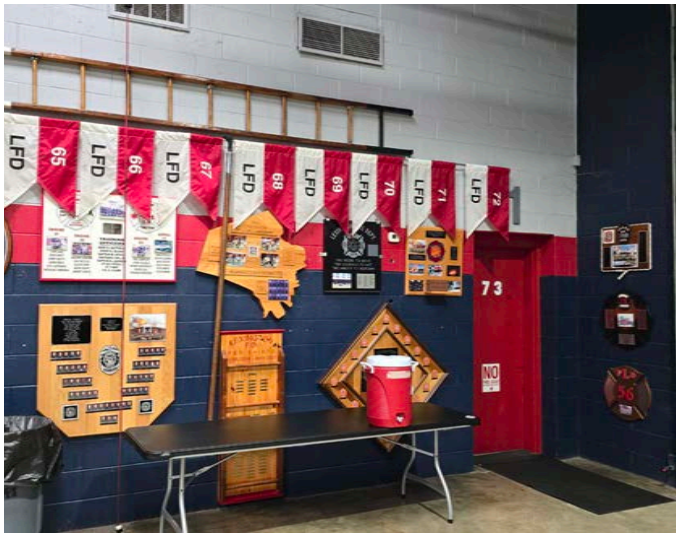
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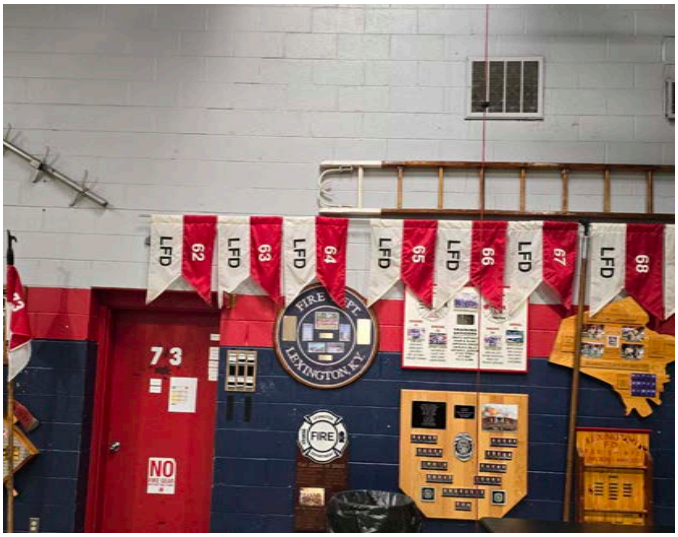
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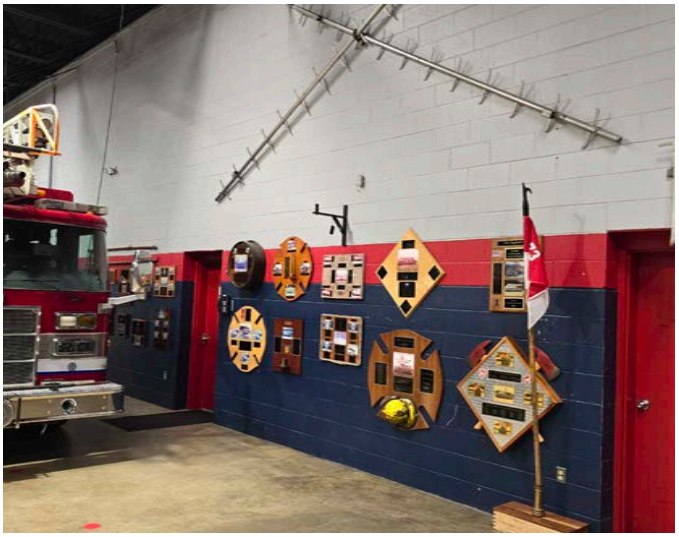
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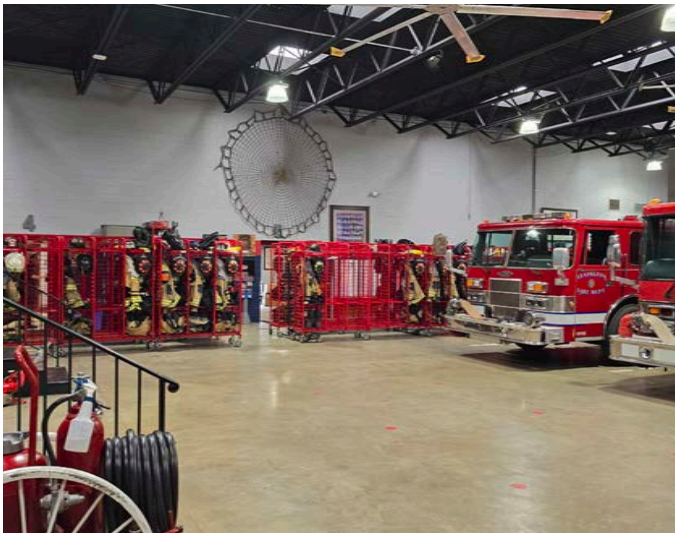
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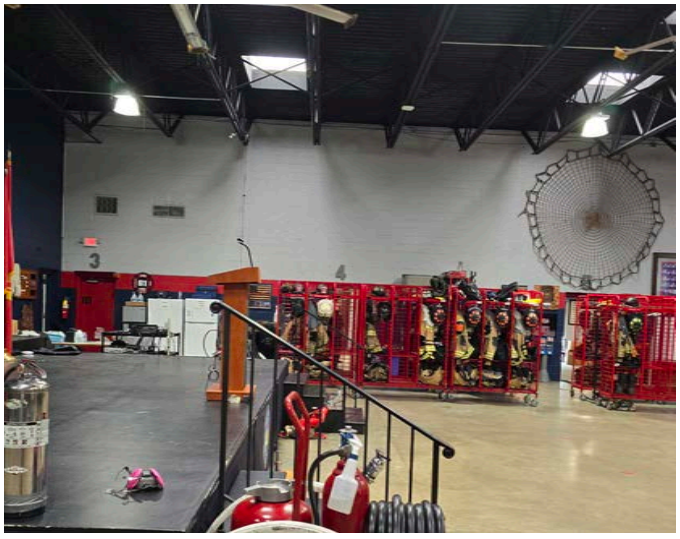
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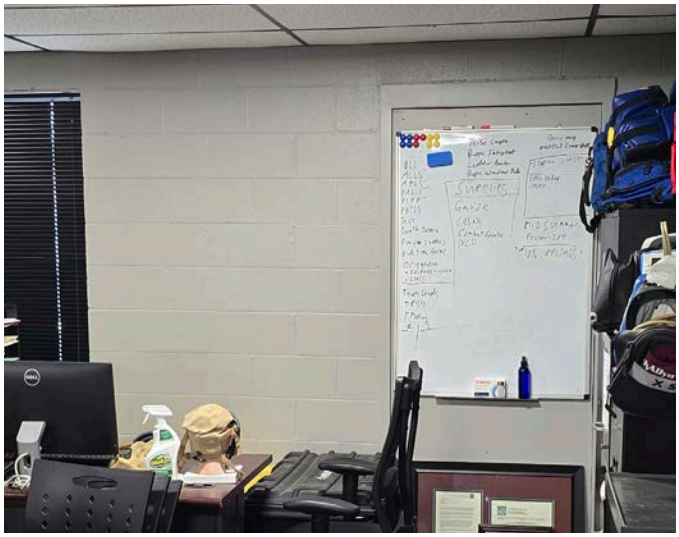
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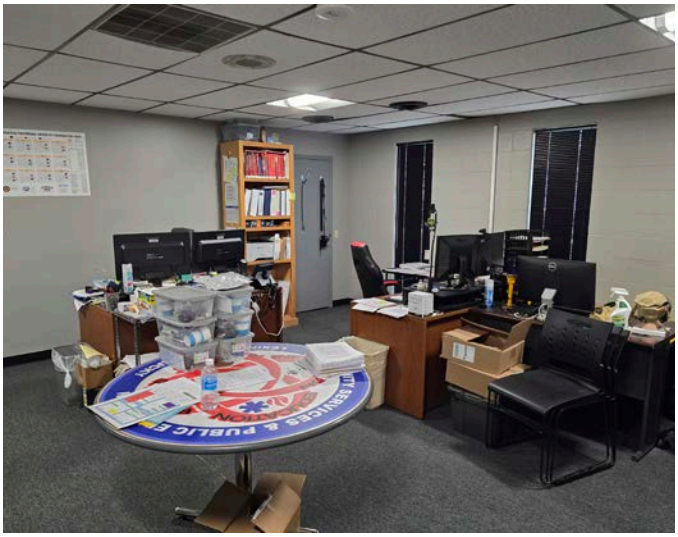
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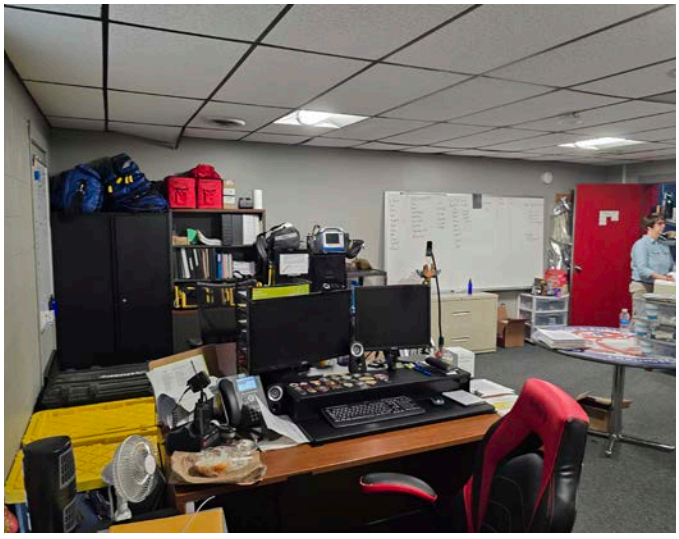
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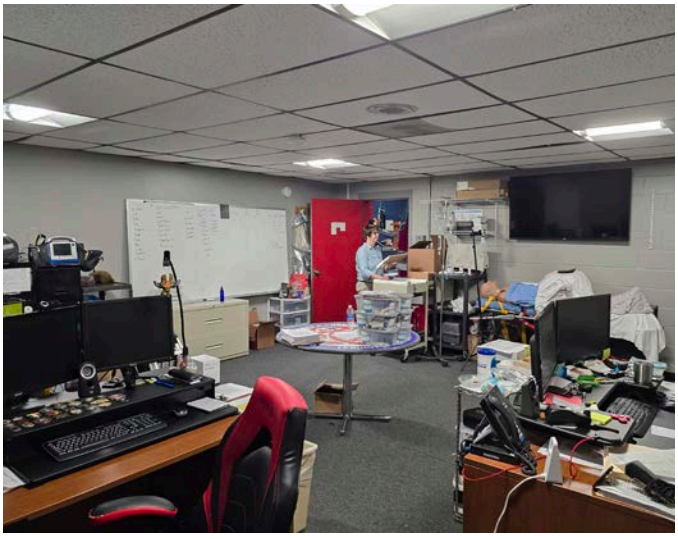
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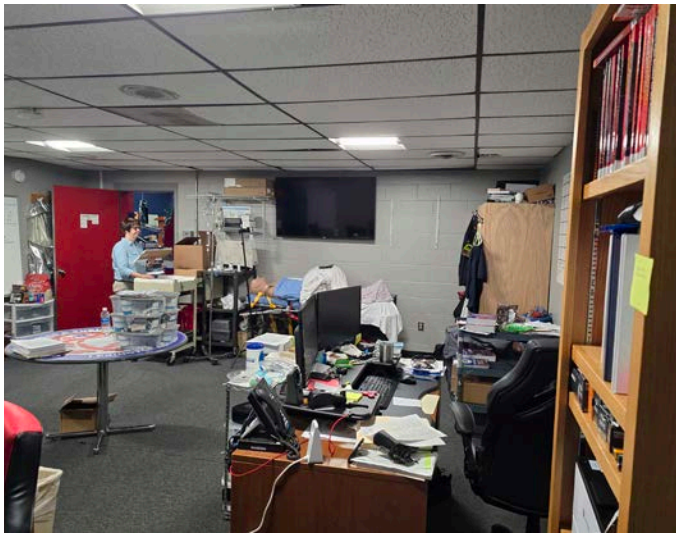
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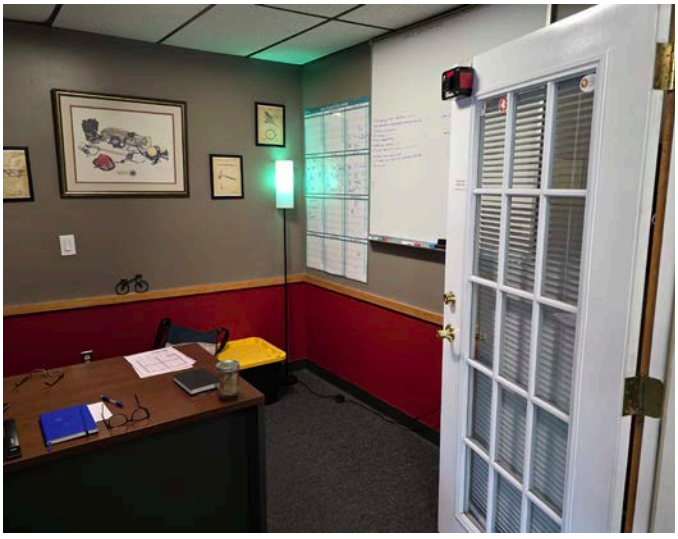
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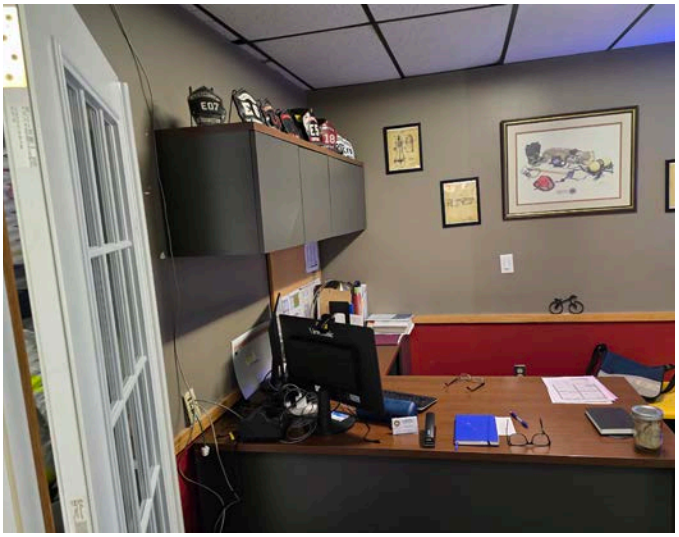
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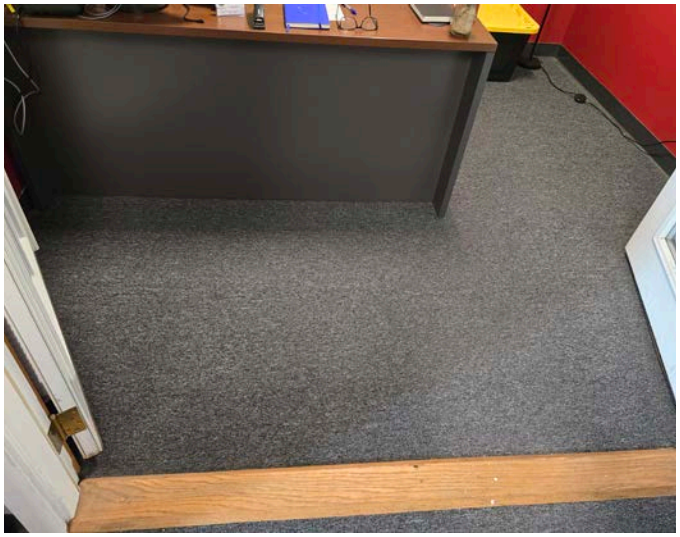
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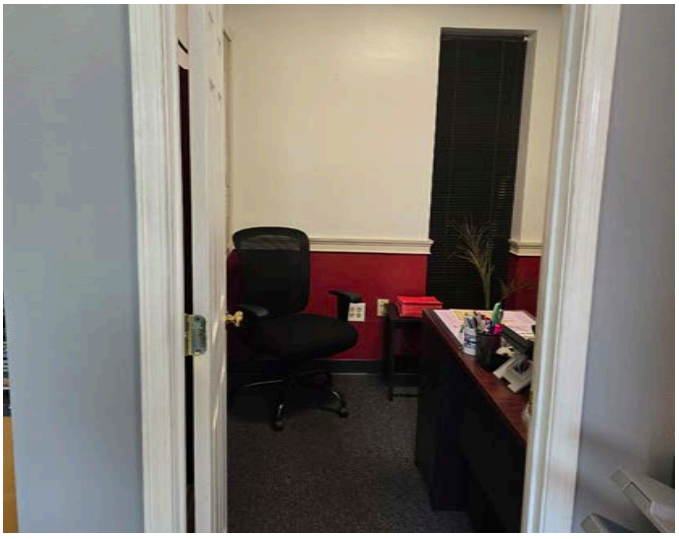
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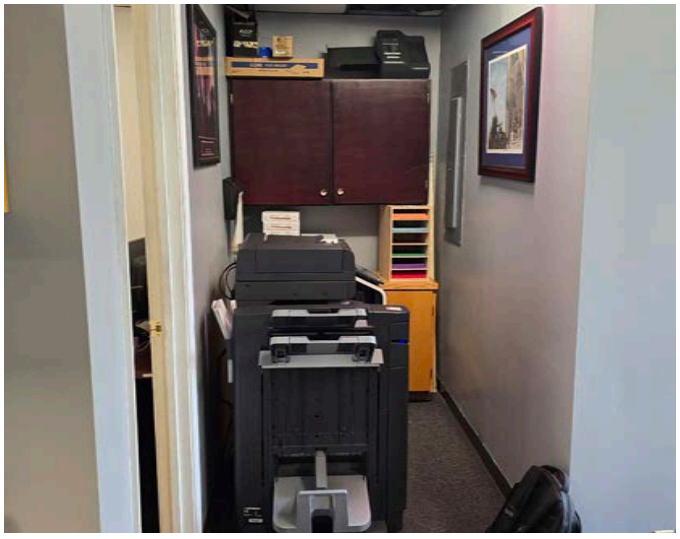
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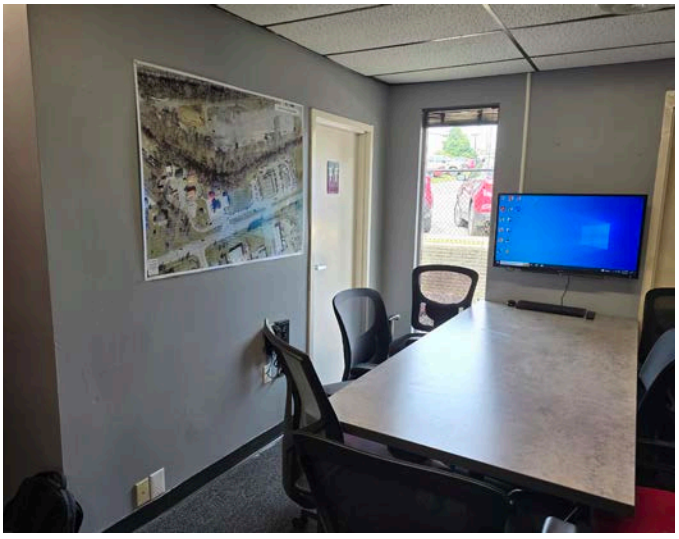
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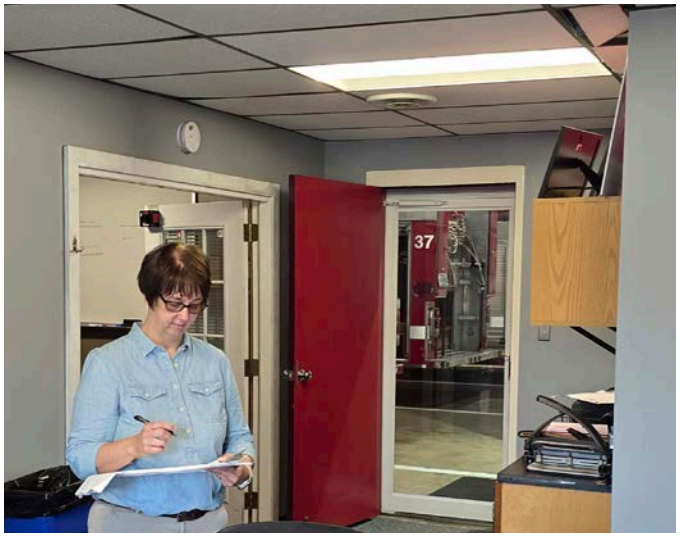
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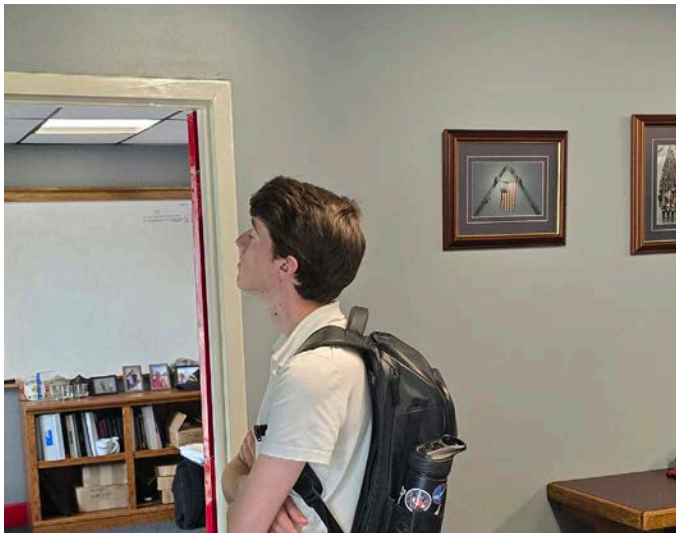
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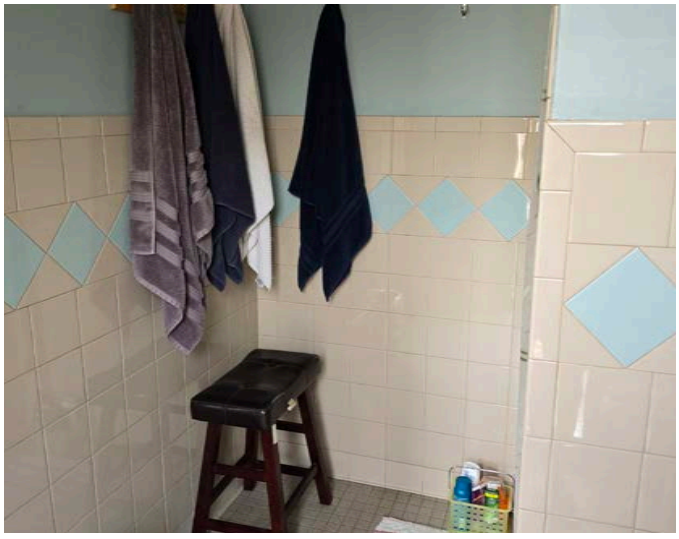
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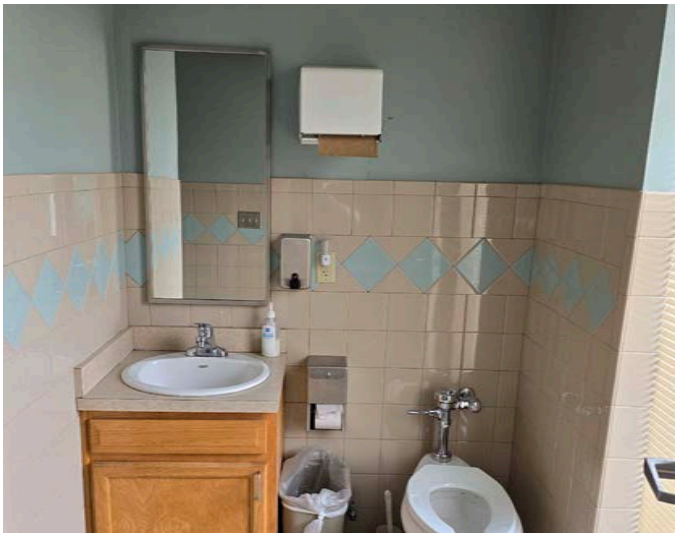
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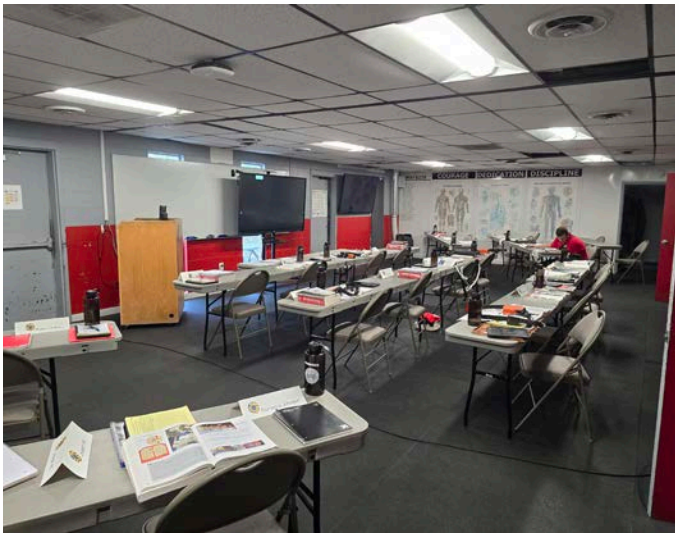
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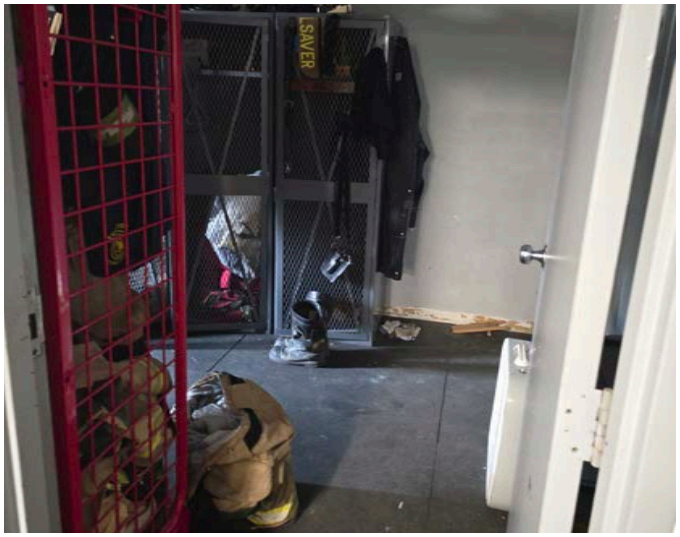
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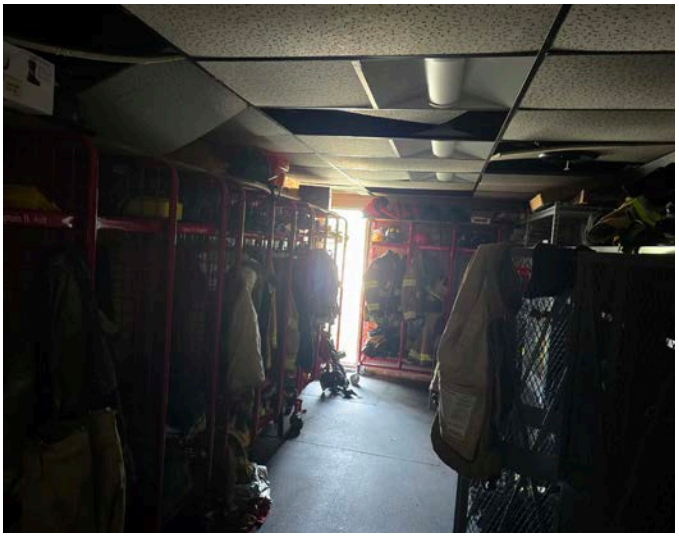
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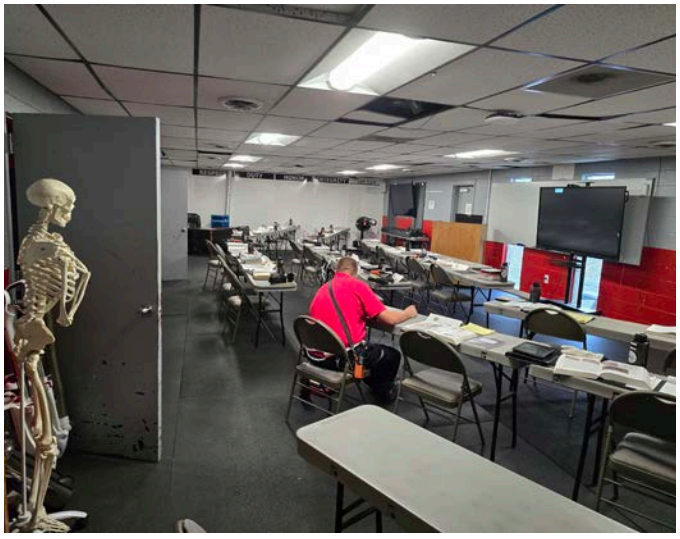
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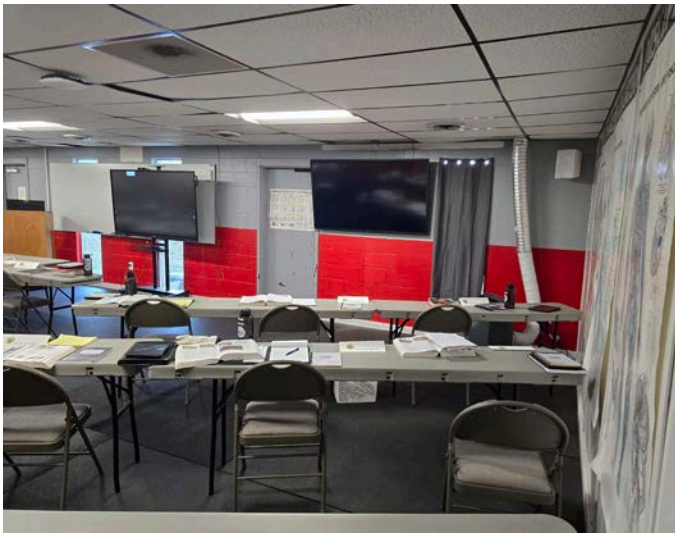
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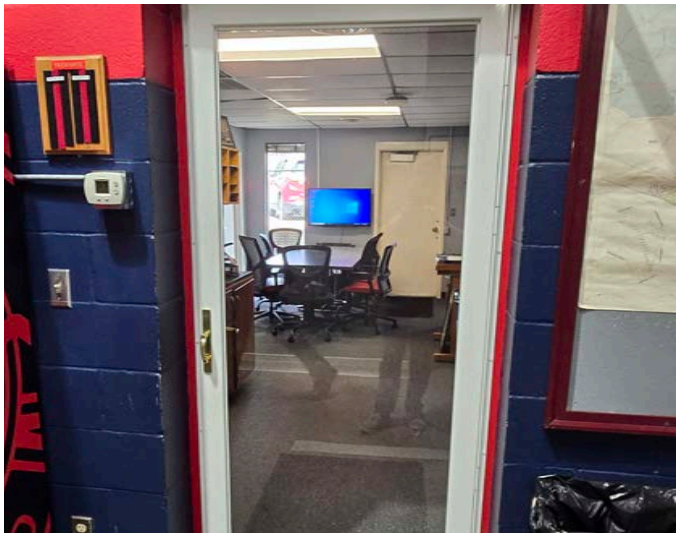
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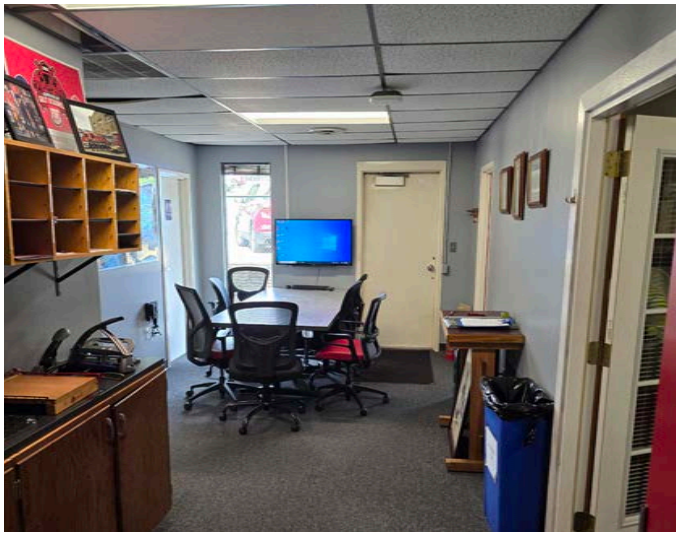
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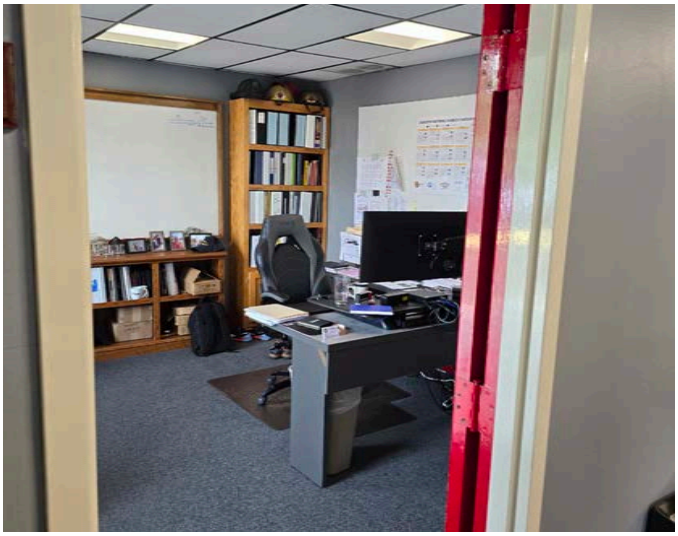
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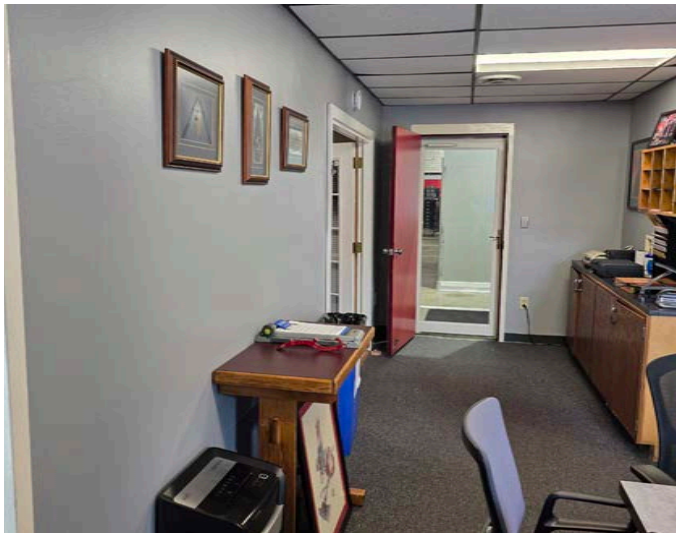
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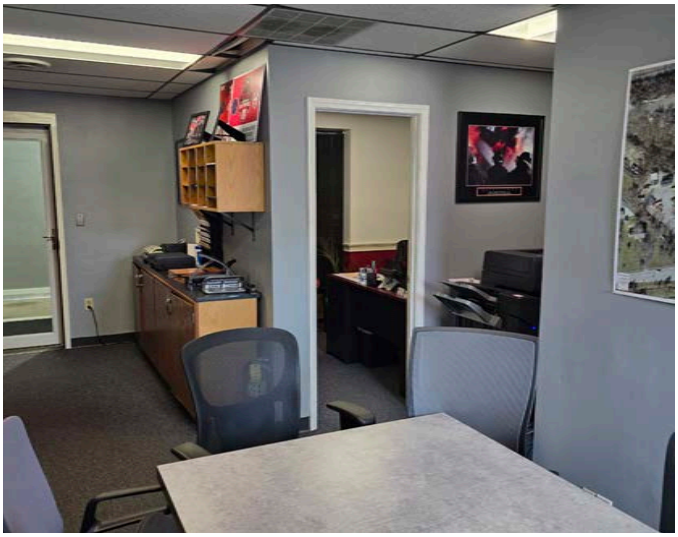
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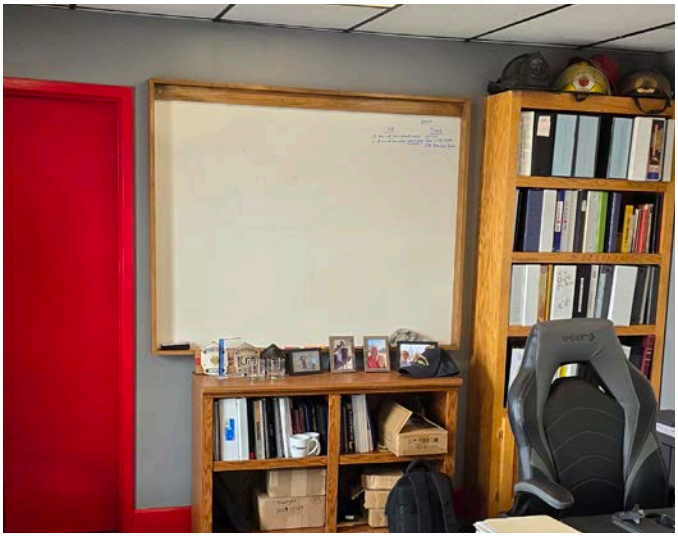
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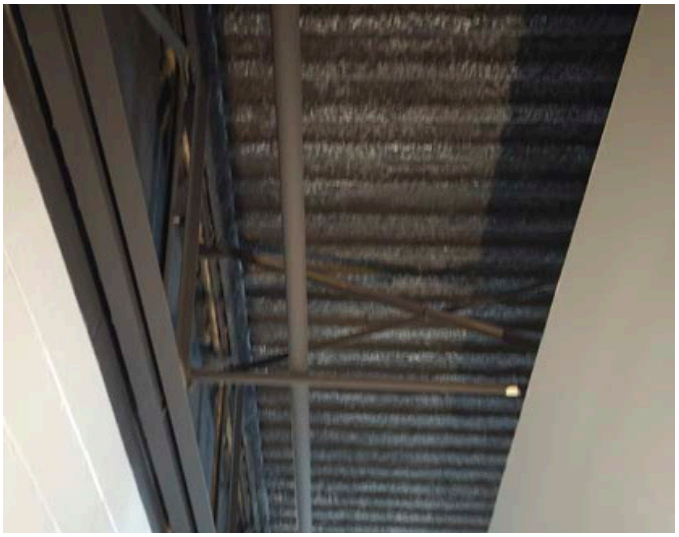
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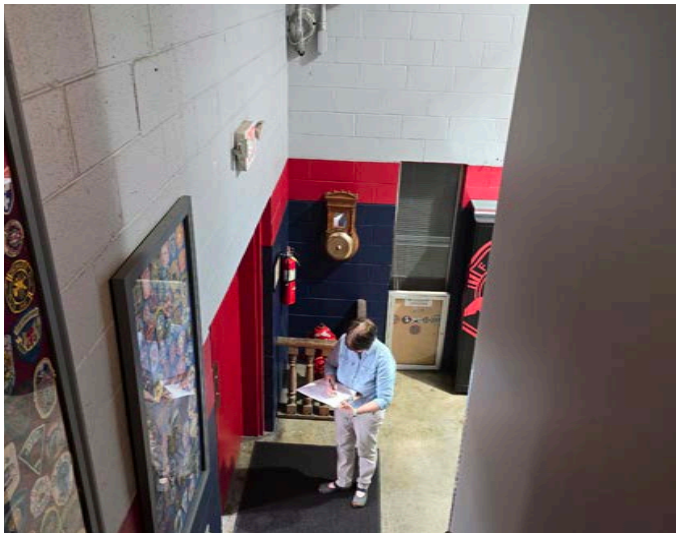
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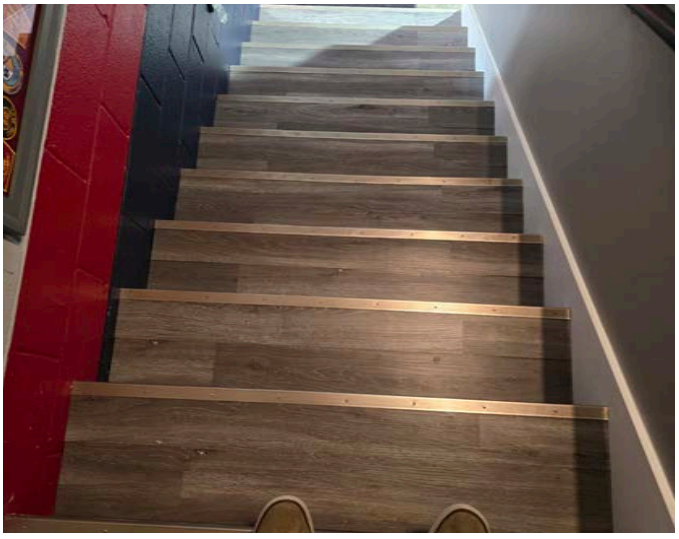
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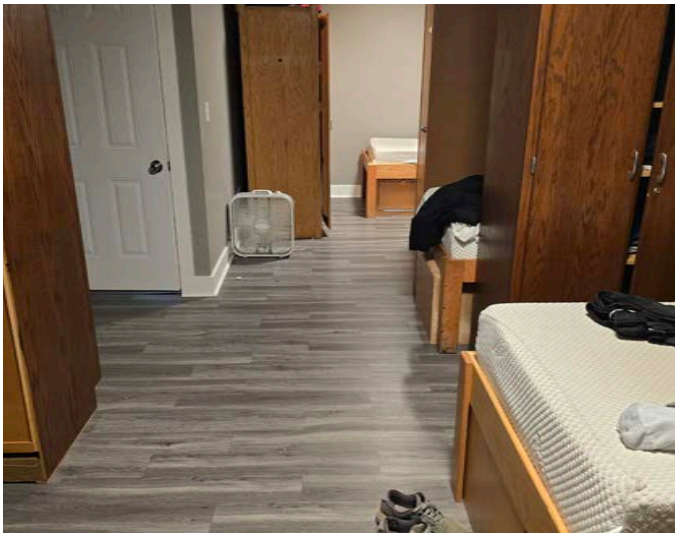
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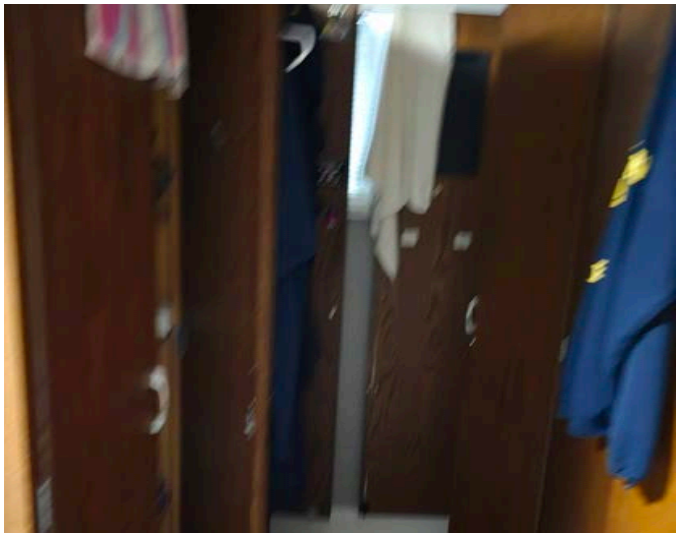
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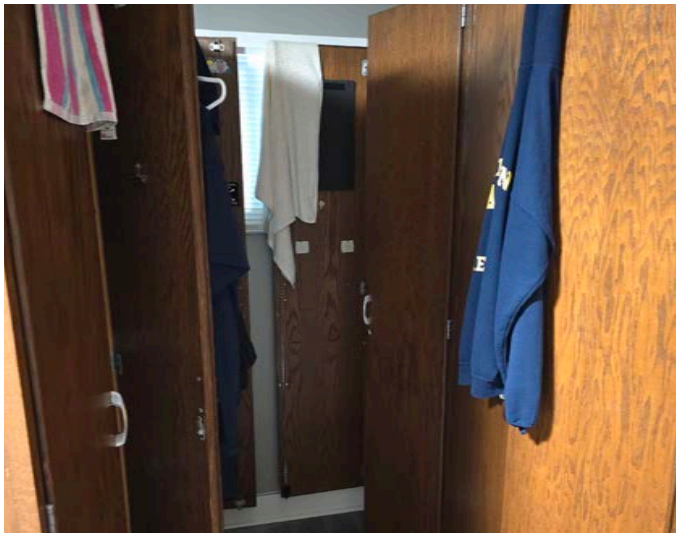
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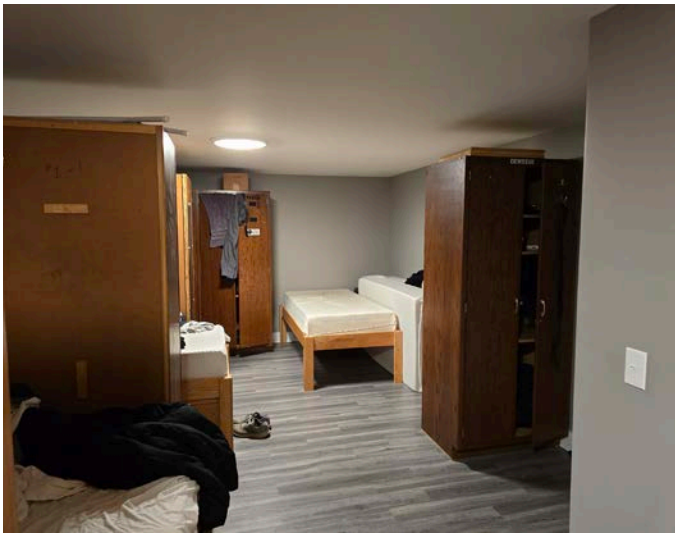
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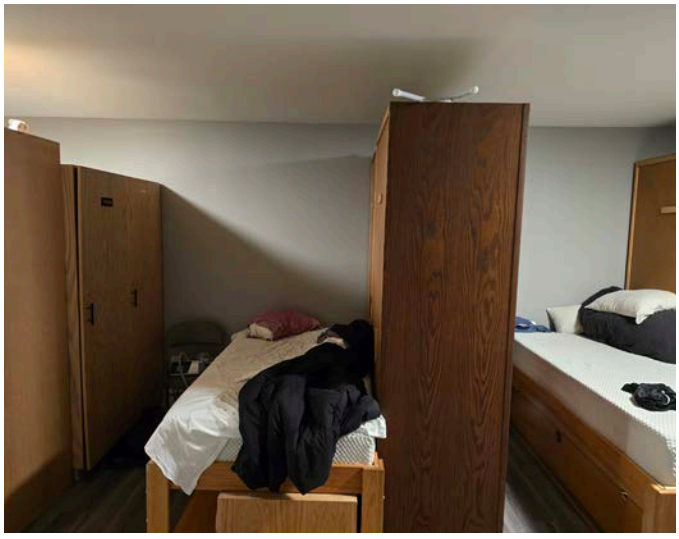
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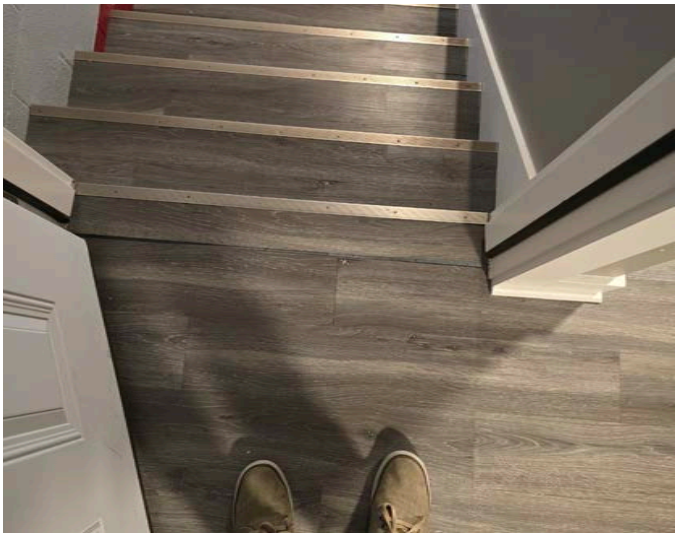
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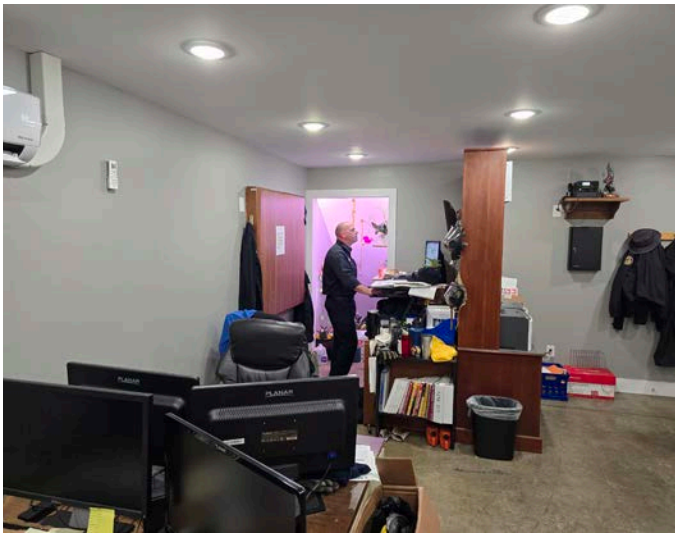
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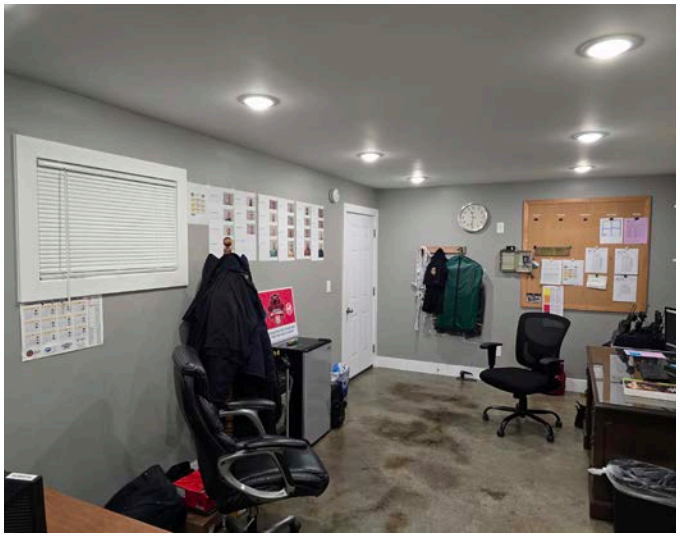
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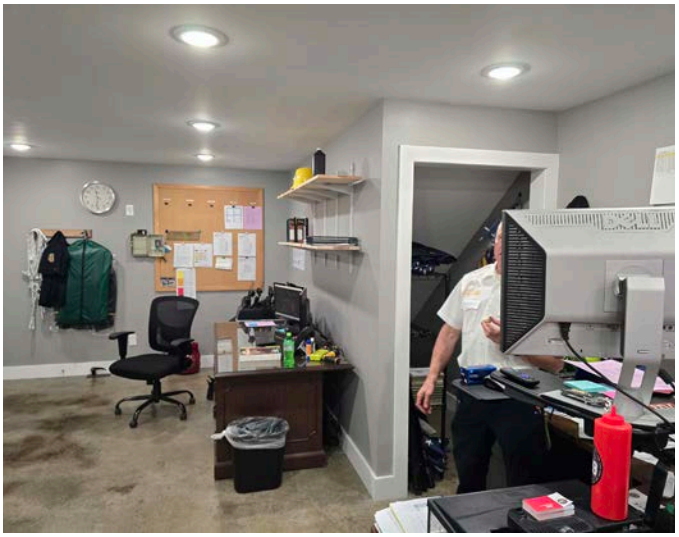
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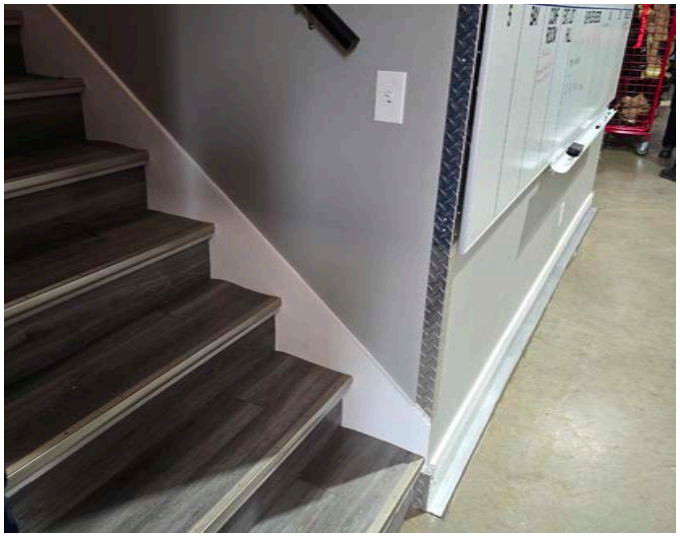
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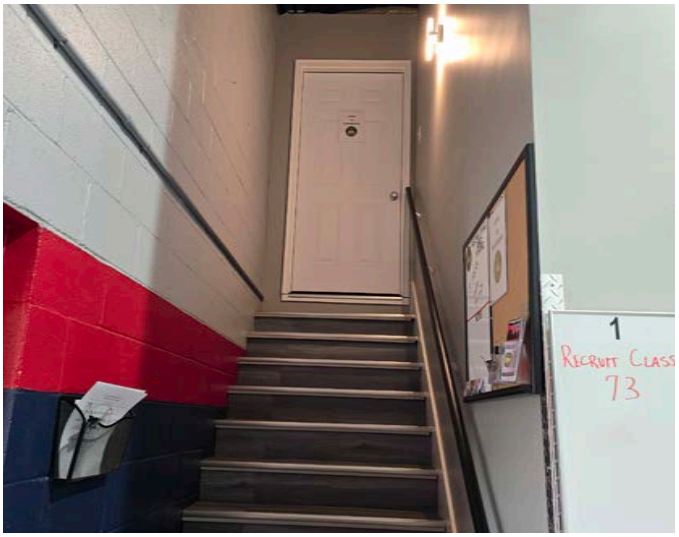
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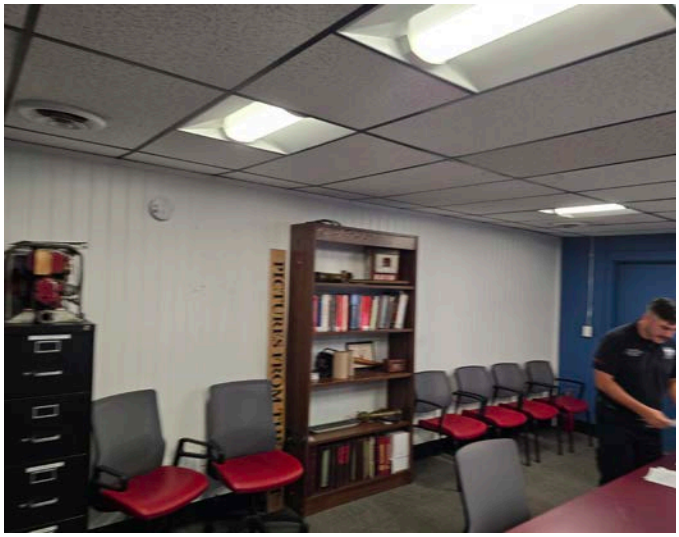
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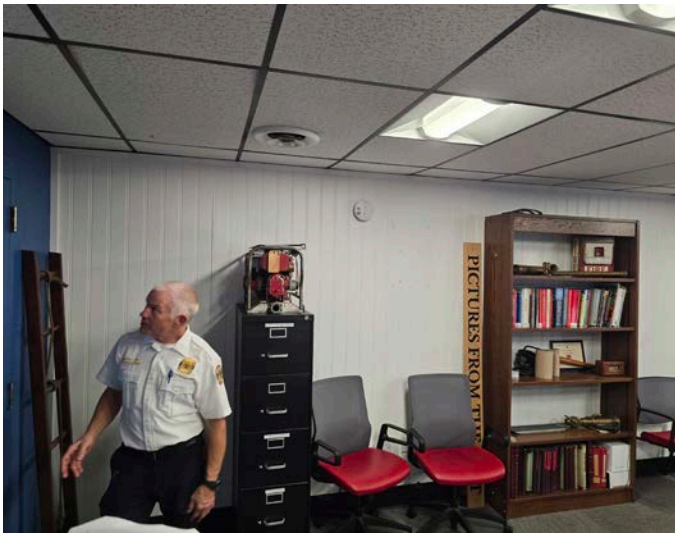
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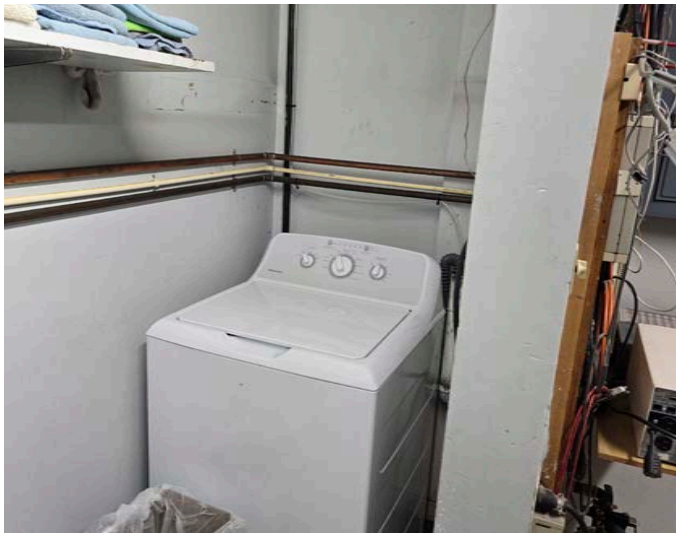
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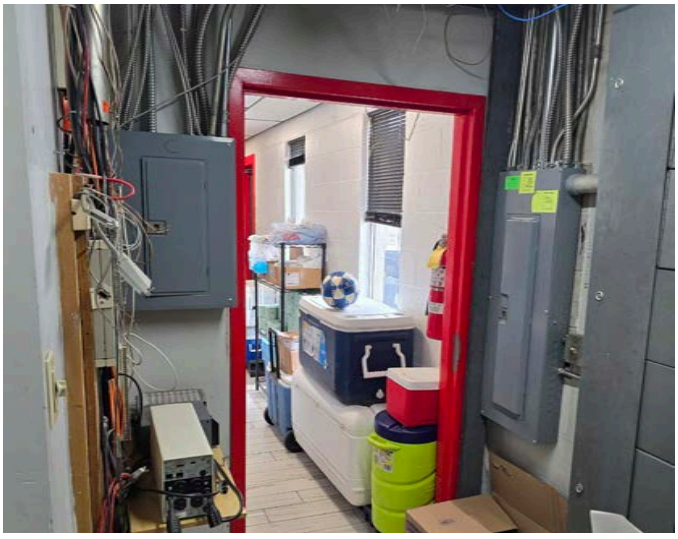
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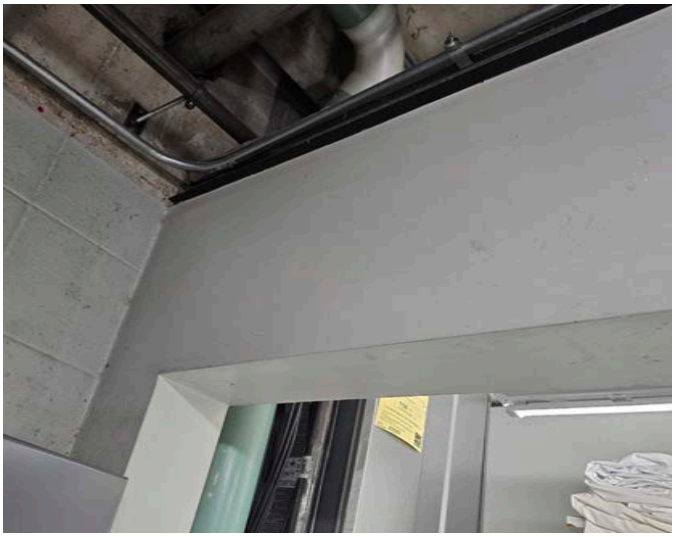
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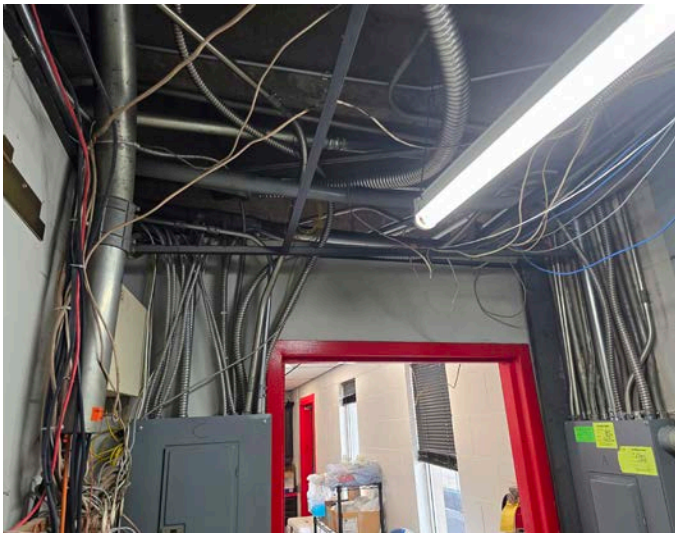
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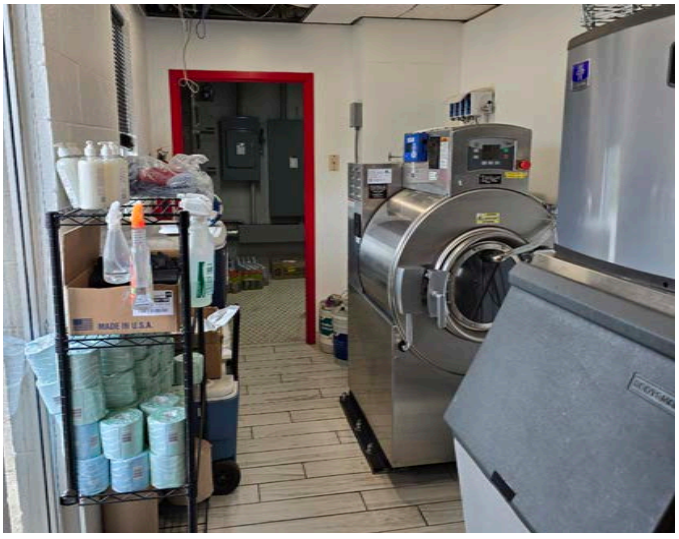
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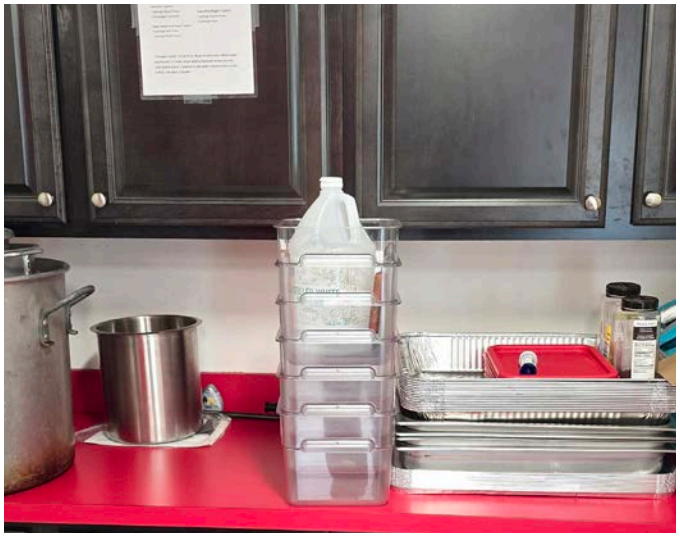
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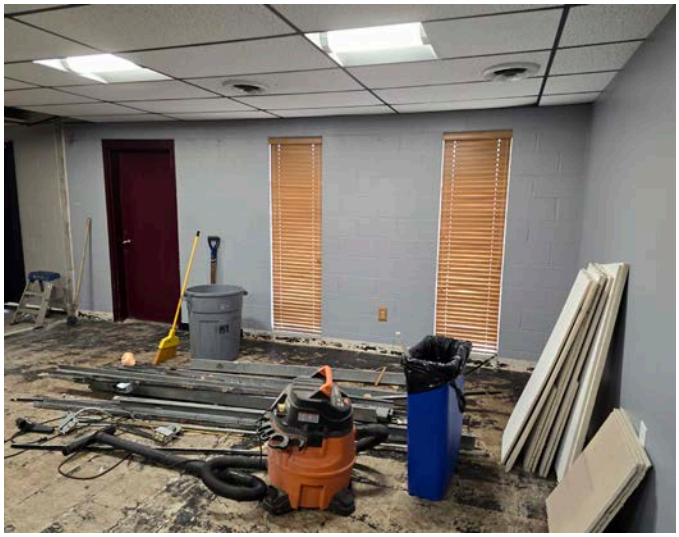
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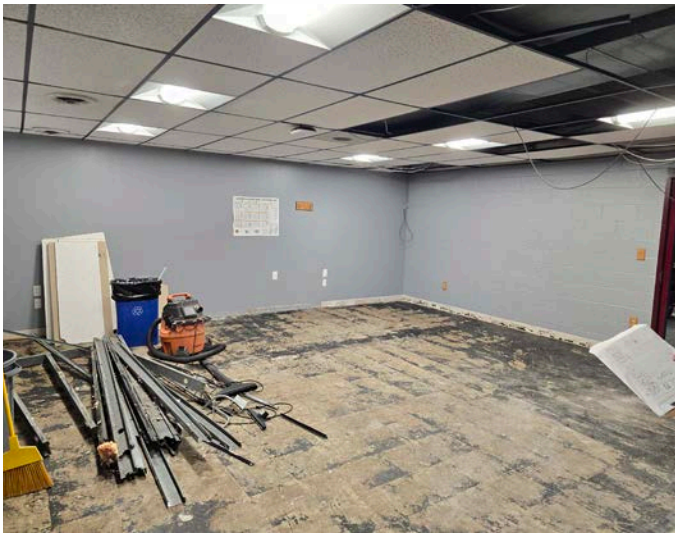
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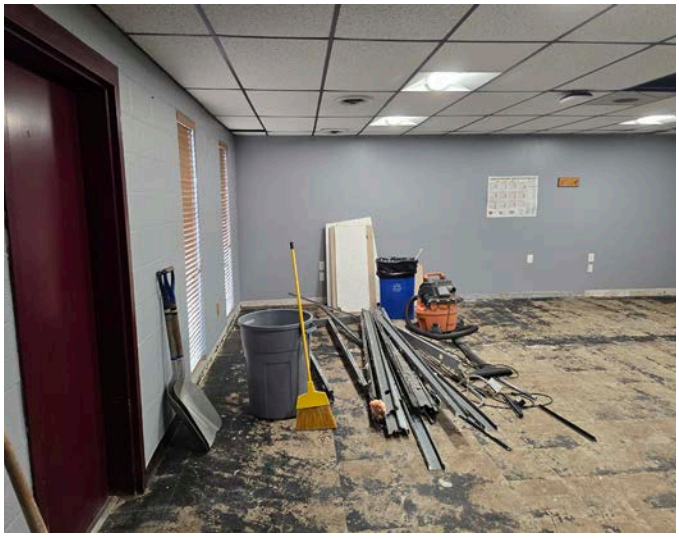
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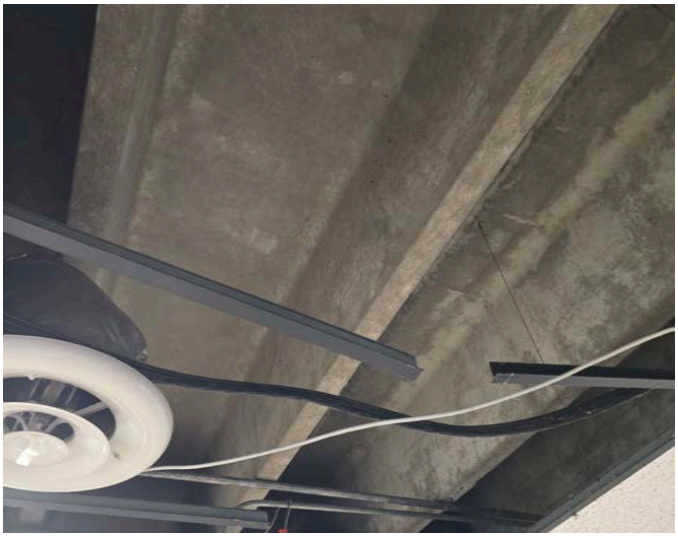
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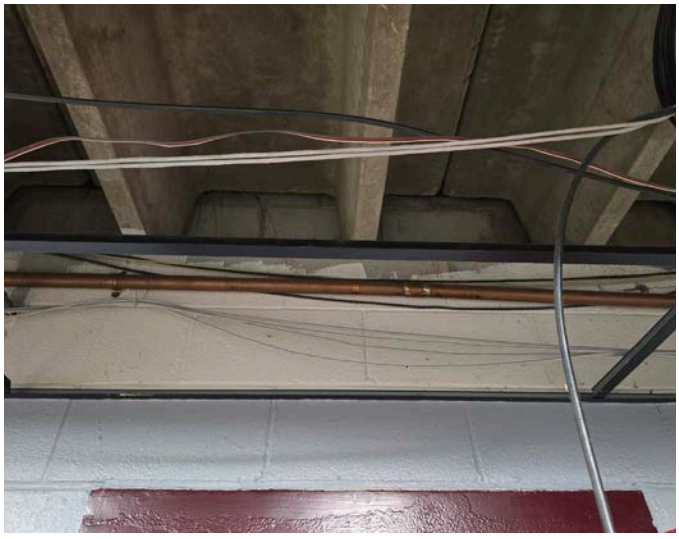
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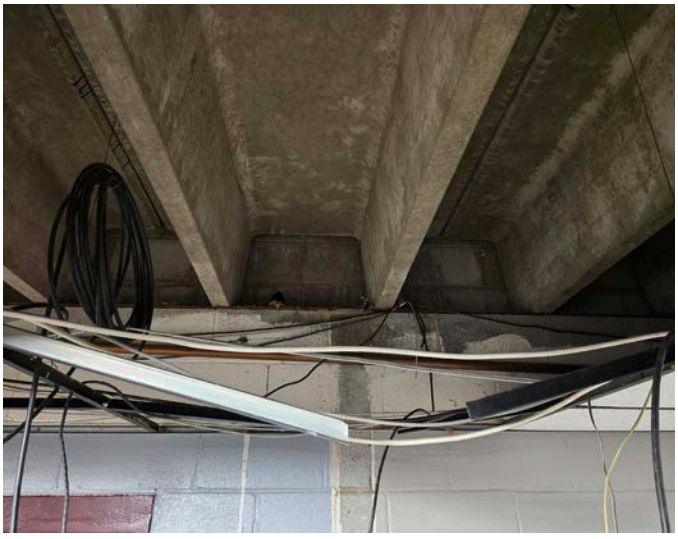
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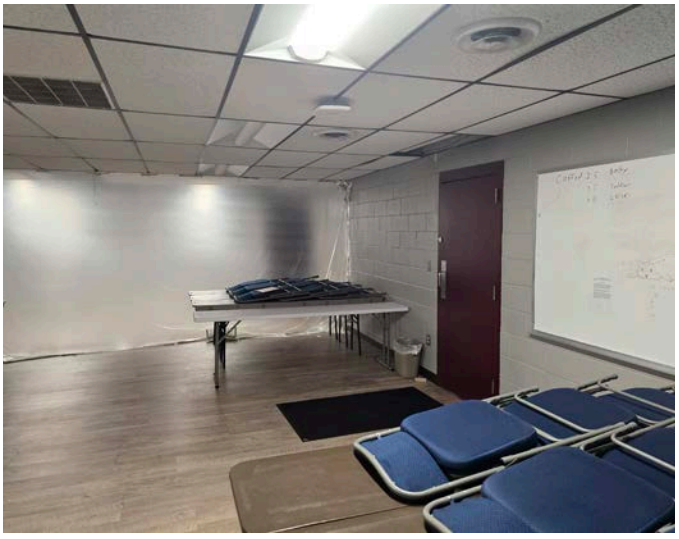
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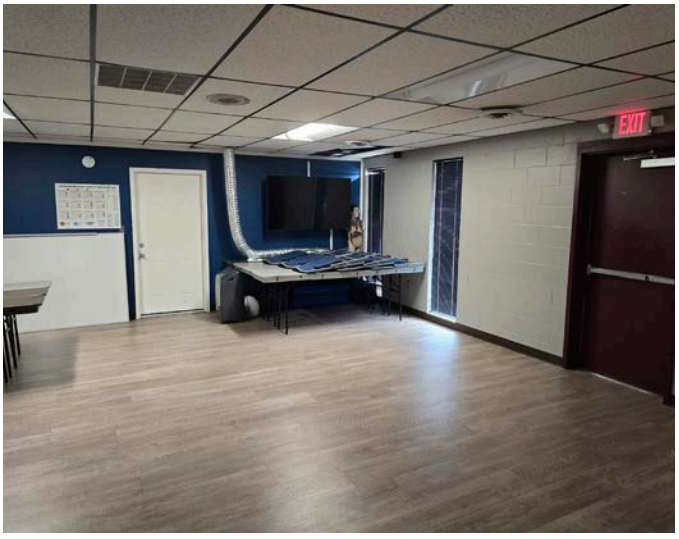
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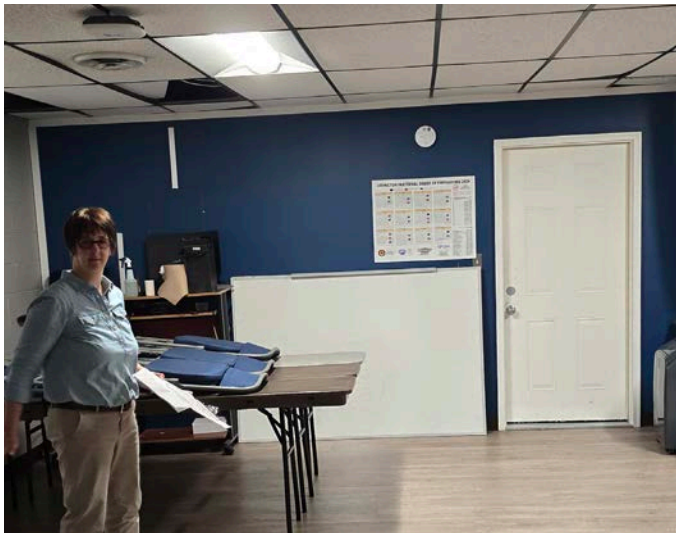
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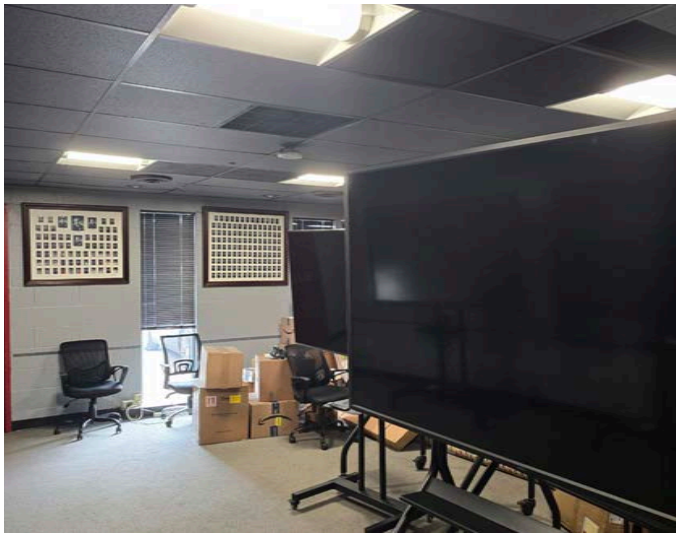
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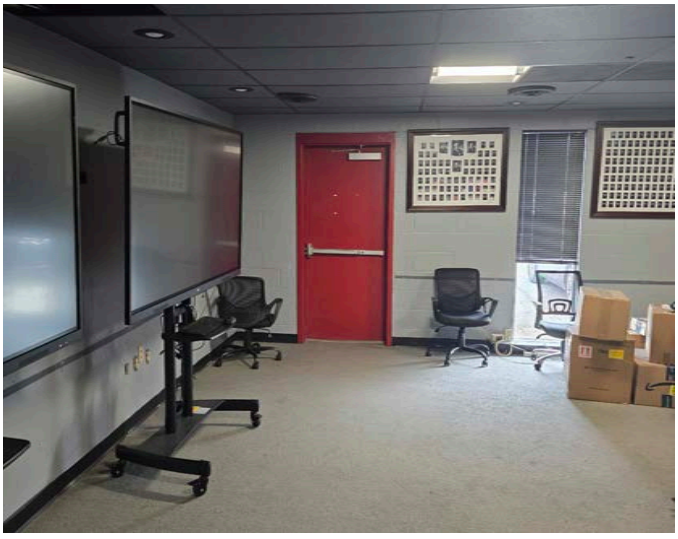
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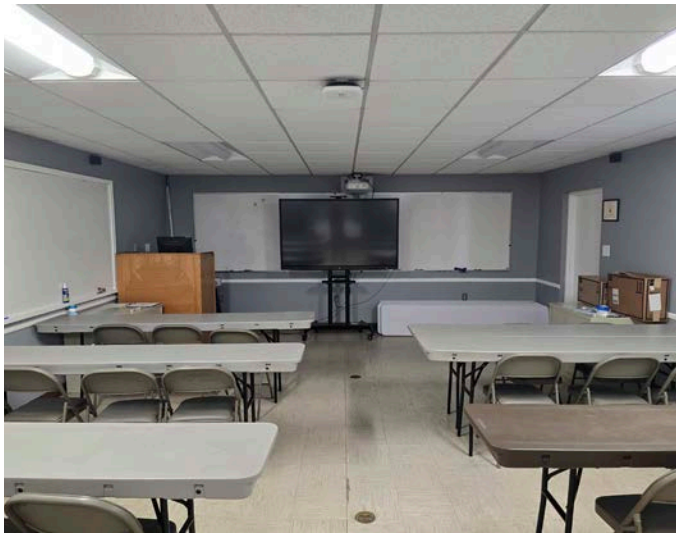
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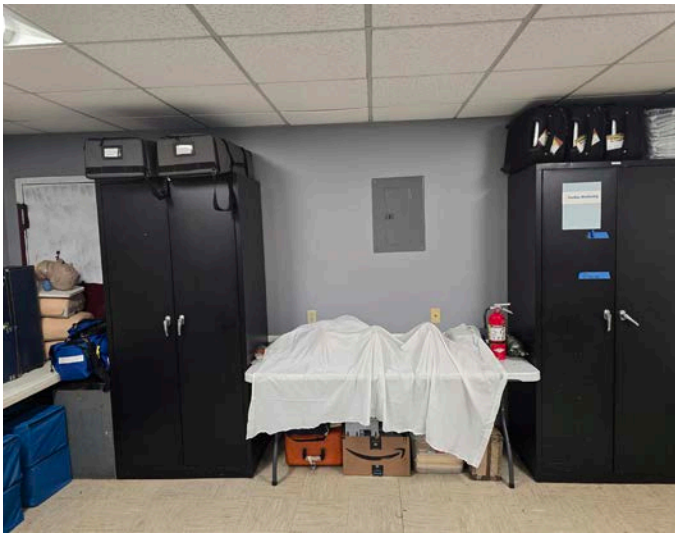
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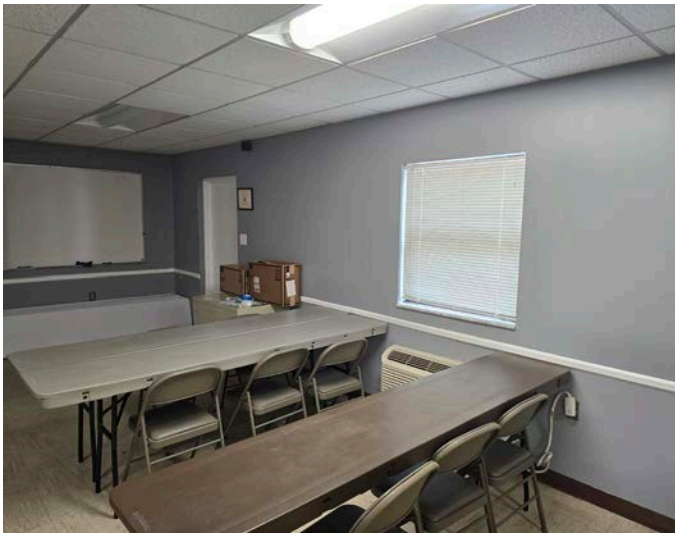
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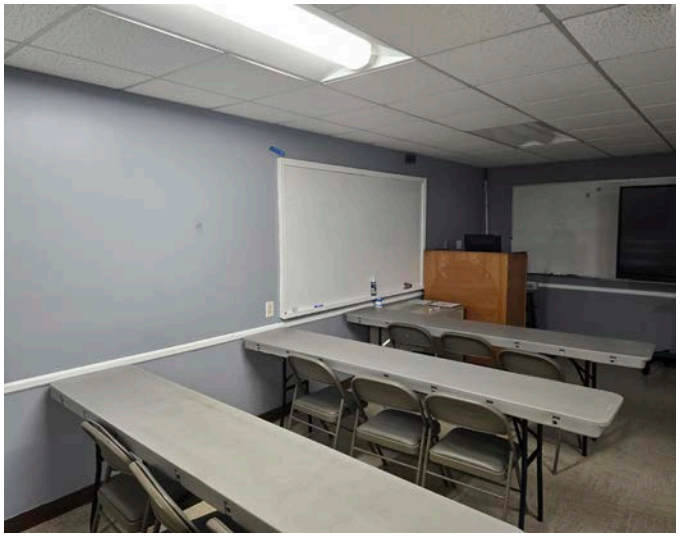
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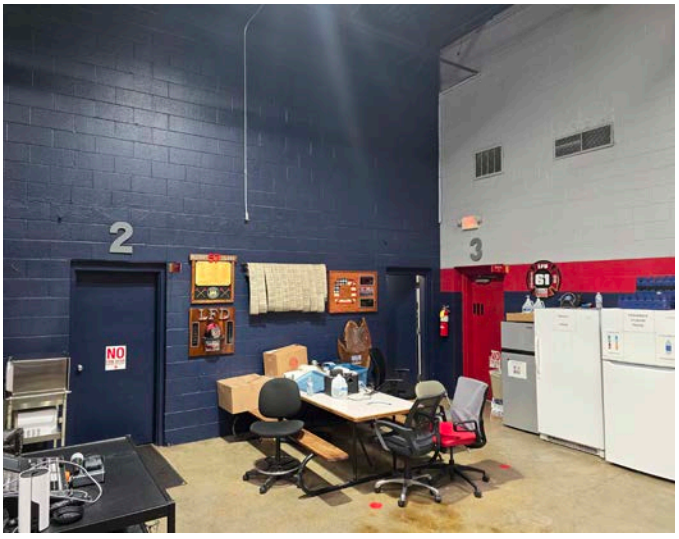
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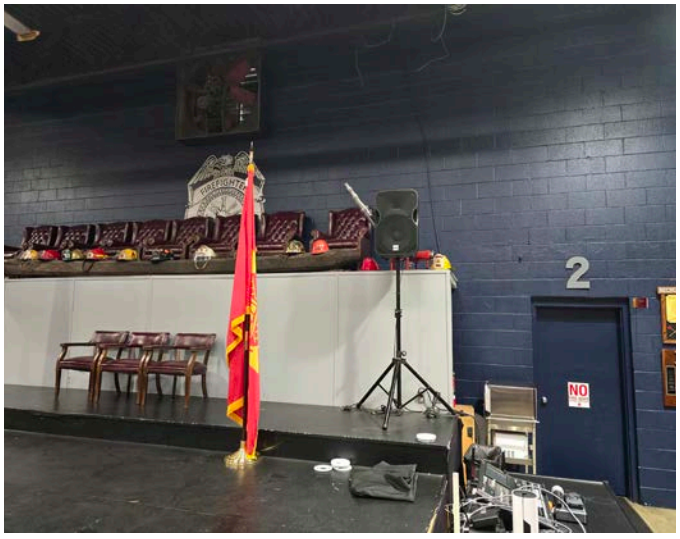
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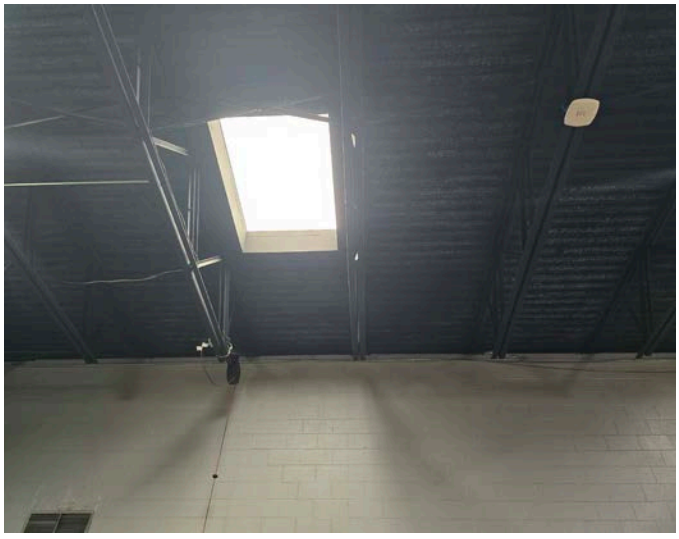
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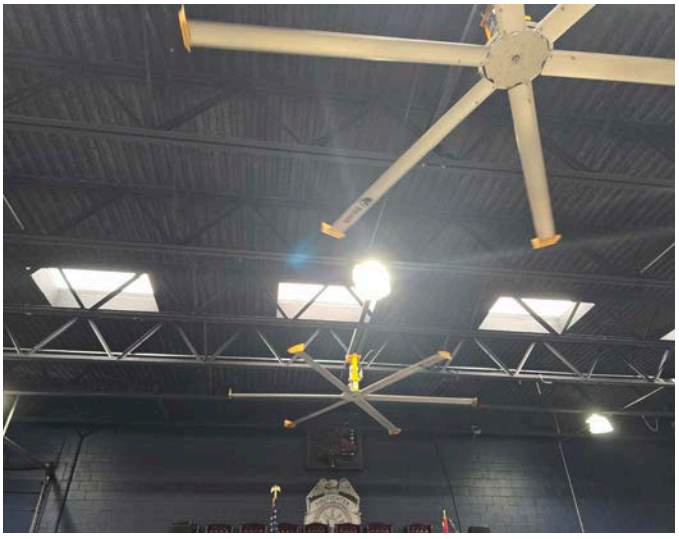
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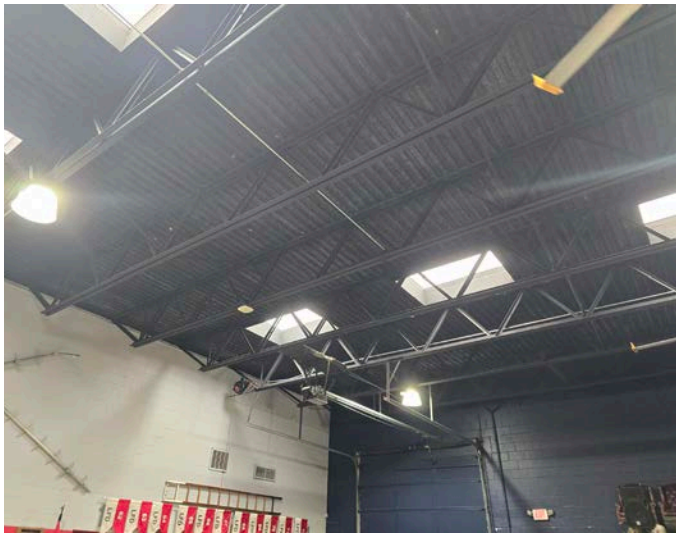
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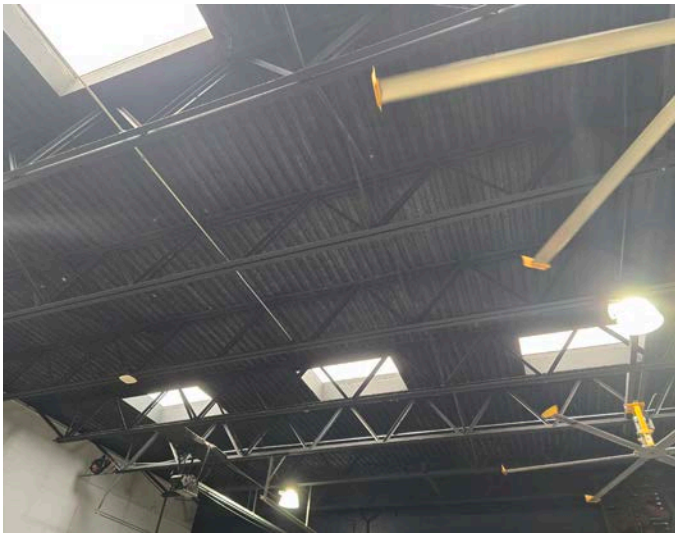
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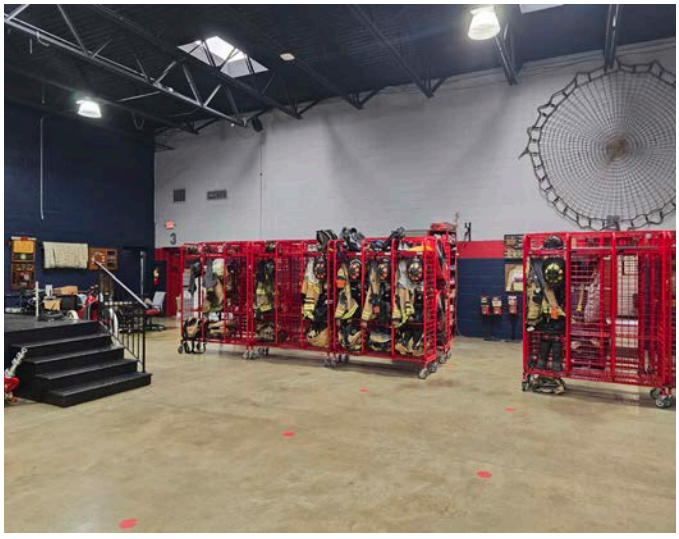
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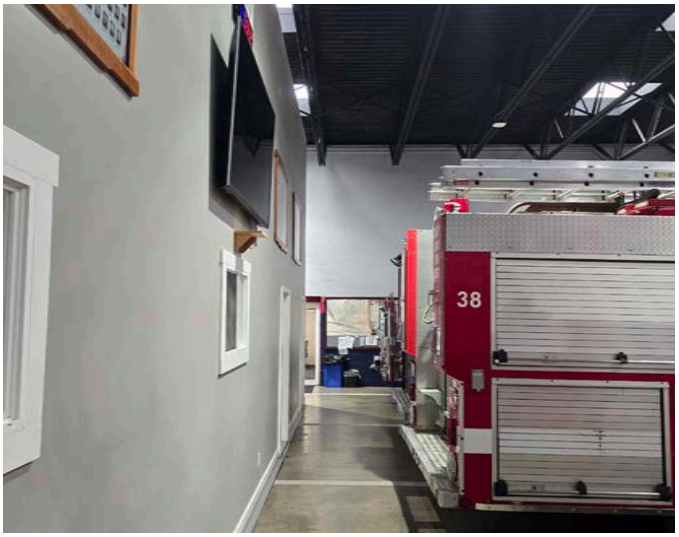
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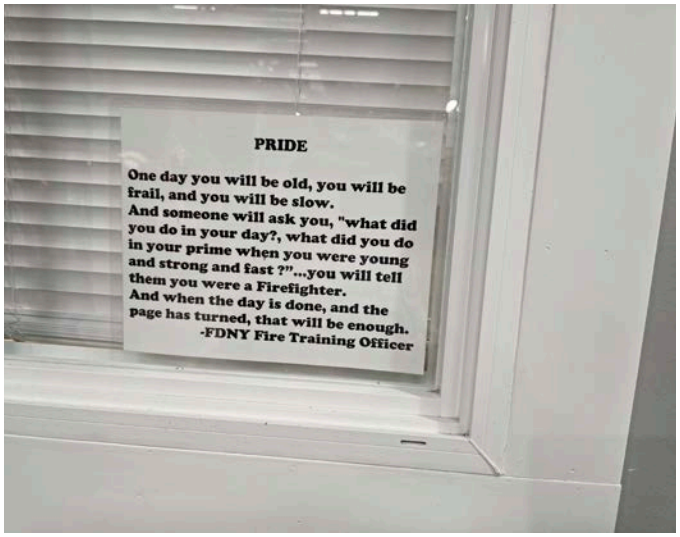
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131.



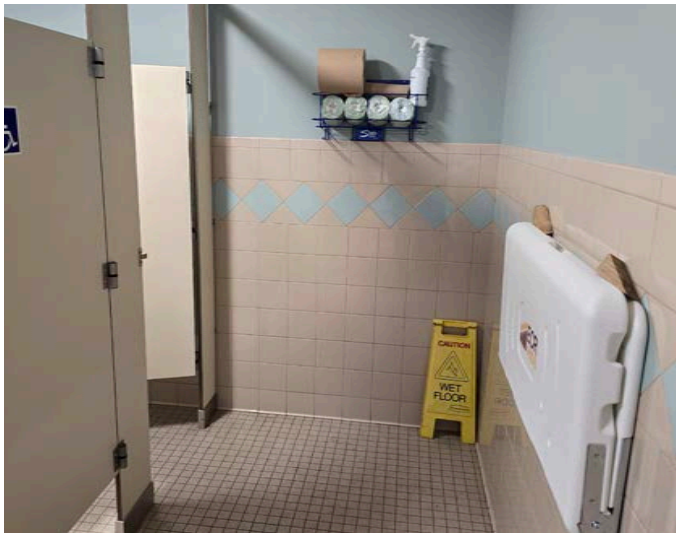
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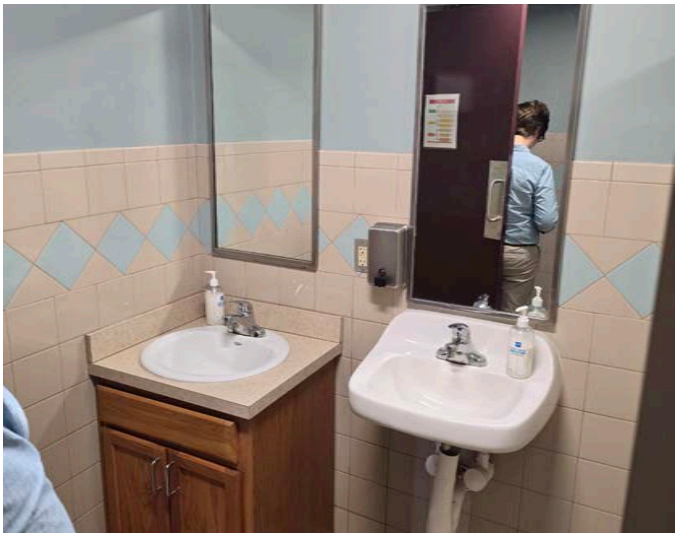
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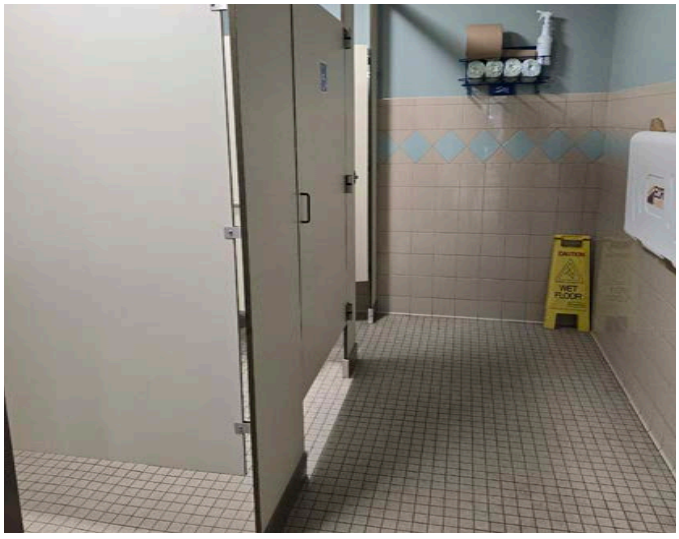
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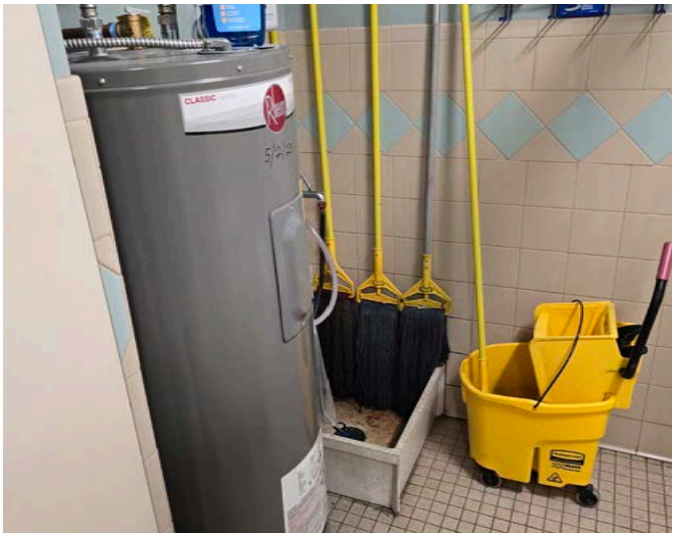
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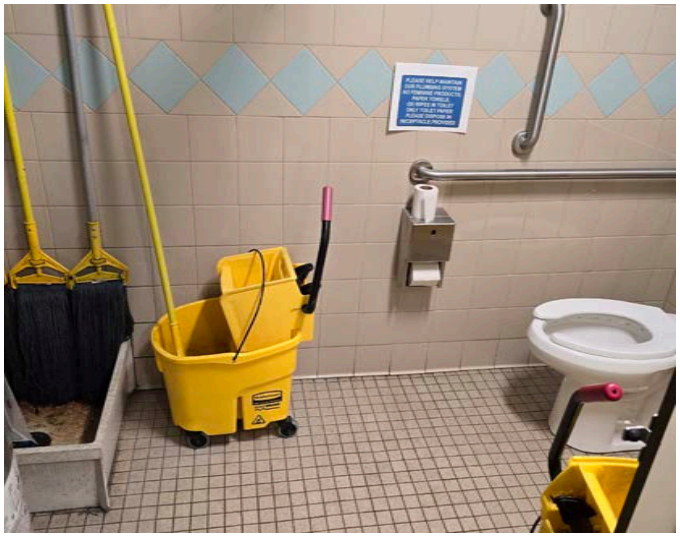
137.



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142.

APPENDIX B - DEMOGRAPHIC PROFILE

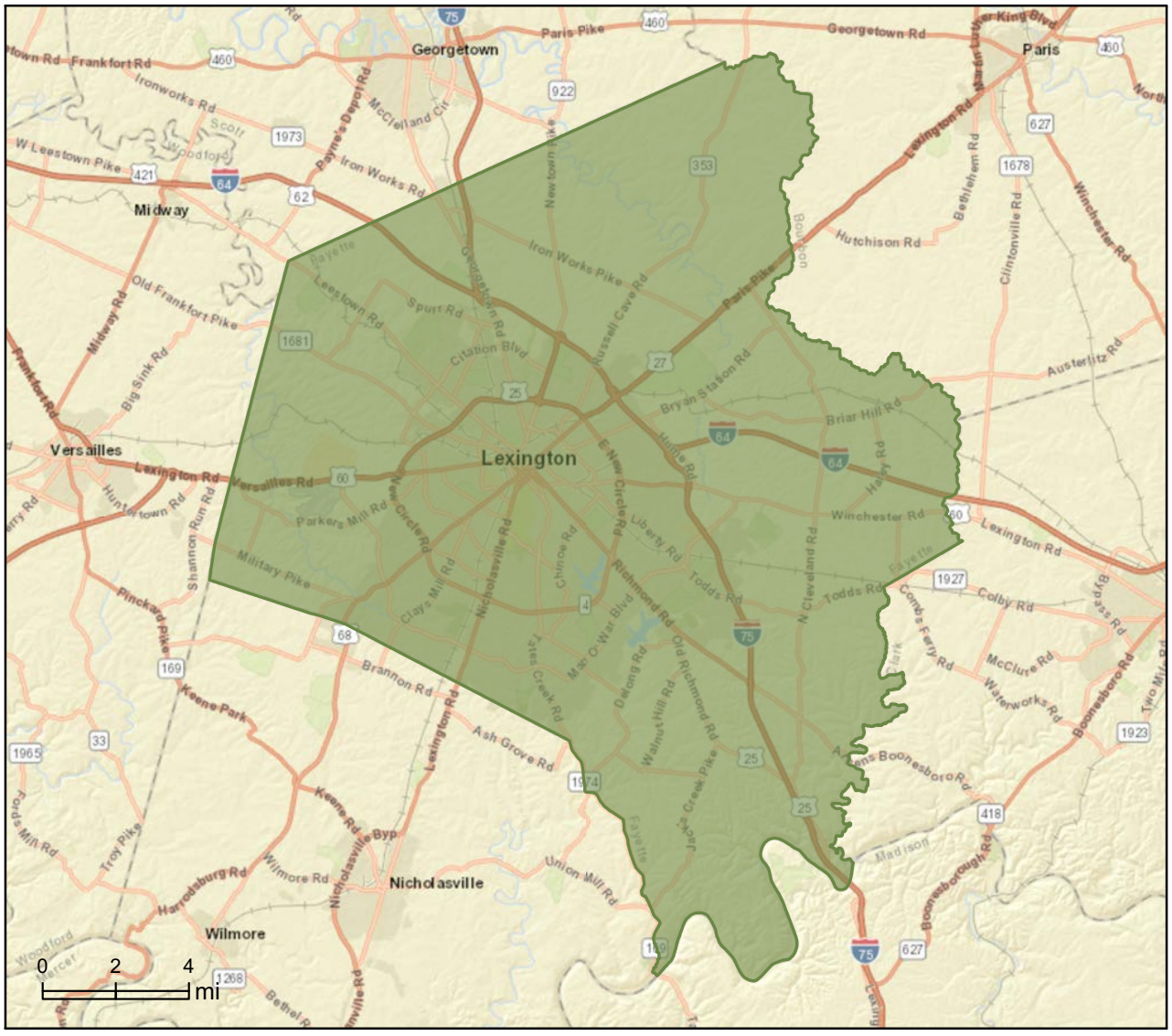
Figure B.1: Demographic Profile

esri
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Site Map

Fayette County, KY
Fayette County, KY (21067)
Geography: County

Prepared by Esri







October 25, 2024

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Demographic and Income Profile

Fayette County, KY
Fayette County, KY (21067)
Geography: County

Prepared by Esri

Summary	Census 2010	Census 2020	2024	2029
Population	295,803	322,570	324,981	327,854
Households	123,043	134,535	136,900	139,115
Families	69,661	75,756	76,206	76,851
Average Household Size	2.30	2.30	2.29	2.27
Owner Occupied Housing Units	68,818	70,740	75,289	77,498
Renter Occupied Housing Units	54,225	63,795	61,611	61,617
Median Age	33.8	35.2	35.8	37.2

Trends: 2024-2029 Annual Rate	Area	State	National
Population	0.18%	0.17%	0.38%
Households	0.32%	0.26%	0.64%
Families	0.17%	0.15%	0.56%
Owner HHs	0.58%	0.58%	0.97%
Median Household Income	3.63%	3.11%	2.95%

	2024		2029	
Households by Income	Number	Percent	Number	Percent
<$15,000	14,252	10.4%	13,040	9.4%
$15,000 - $24,999	10,802	7.9%	8,654	6.2%
$25,000 - $34,999	9,485	6.9%	7,784	5.6%
$35,000 - $49,999	16,910	12.4%	14,943	10.7%
$50,000 - $74,999	22,369	16.3%	21,427	15.4%
$75,000 - $99,999	14,218	10.4%	14,265	10.3%
$100,000 - $149,999	20,865	15.2%	23,496	16.9%
$150,000 - $199,999	12,945	9.5%	17,254	12.4%
$200,000+	15,054	11.0%	18,252	13.1%
Median Household Income	$67,248		$80,360	
Average Household Income	$102,744		$119,242	
Per Capita Income	$43,435		$50,749	

	Census 2010		Census 2020		2024		2029	
Population by Age	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0 - 4	19,145	6.5%	18,525	5.7%	18,445	5.7%	18,086	5.5%
5 - 9	17,746	6.0%	19,035	5.9%	18,675	5.7%	17,467	5.3%
10 - 14	16,195	5.5%	19,361	6.0%	18,308	5.6%	18,304	5.6%
15 - 19	20,711	7.0%	23,449	7.3%	23,100	7.1%	22,899	7.0%
20 - 24	30,567	10.3%	29,596	9.2%	29,498	9.1%	29,168	8.9%
25 - 34	49,233	16.6%	50,221	15.6%	50,609	15.6%	47,308	14.4%
35 - 44	39,272	13.3%	43,033	13.3%	44,799	13.8%	46,134	14.1%
45 - 54	39,926	13.5%	36,996	11.5%	37,859	11.6%	39,462	12.0%
55 - 64	31,870	10.8%	36,331	11.3%	34,396	10.6%	33,291	10.2%
65 - 74	16,943	5.7%	27,916	8.7%	28,919	8.9%	30,694	9.4%
75 - 84	9,892	3.3%	12,984	4.0%	15,103	4.6%	18,816	5.7%
85+	4,303	1.5%	5,123	1.6%	5,270	1.6%	6,225	1.9%

	Census 2010		Census 2020		2024		2029	
Race and Ethnicity	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White Alone	223,999	75.7%	220,236	68.3%	217,898	67.0%	214,820	65.5%
Black Alone	42,972	14.5%	48,076	14.9%	49,651	15.3%	51,093	15.6%
American Indian Alone	755	0.3%	1,105	0.3%	1,054	0.3%	1,069	0.3%
Asian Alone	9,553	3.2%	13,427	4.2%	14,555	4.5%	15,971	4.9%
Pacific Islander Alone	141	0.0%	144	0.0%	150	0.0%	173	0.1%
Some Other Race Alone	10,949	3.7%	16,732	5.2%	17,838	5.5%	19,168	5.8%
Two or More Races	7,434	2.5%	22,850	7.1%	23,835	7.3%	25,560	7.8%
Hispanic Origin (Any Race)	20,474	6.9%	29,750	9.2%	31,650	9.7%	34,087	10.4%

Data Note: Income is expressed in current dollars.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 decennial Census in 2020 geographies.

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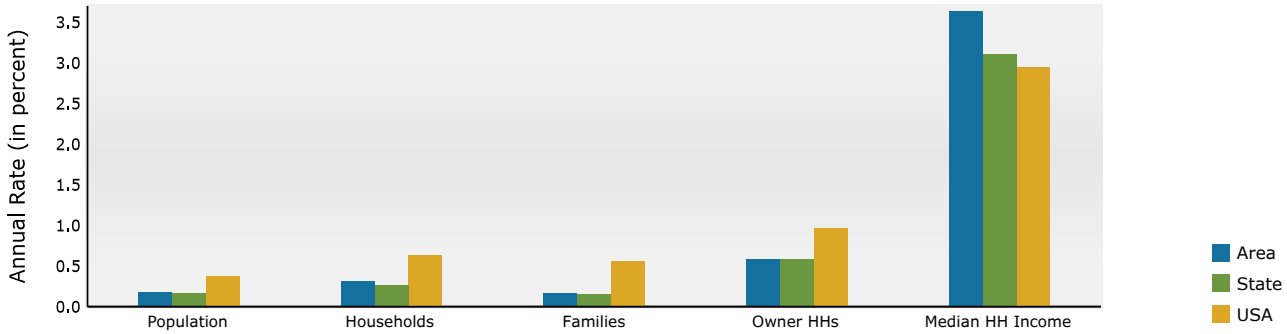
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Demographic and Income Profile

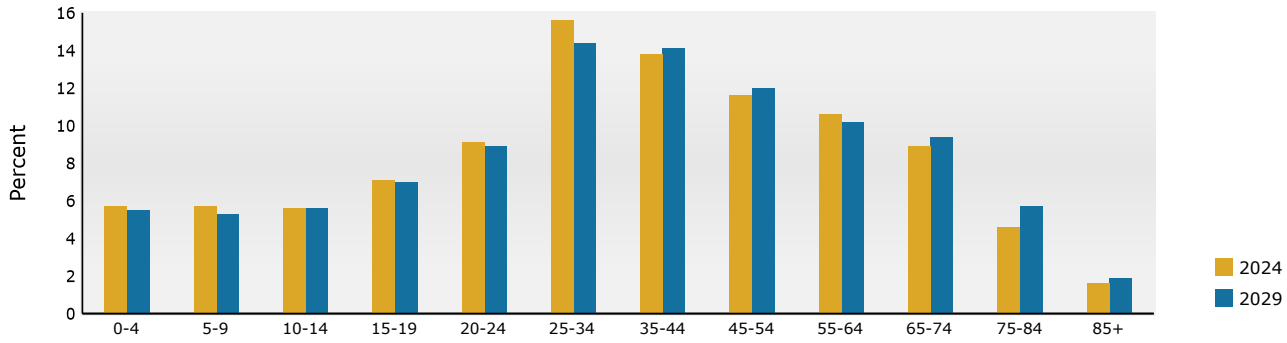
Fayette County, KY
Fayette County, KY (21067)
Geography: County

Prepared by Esri

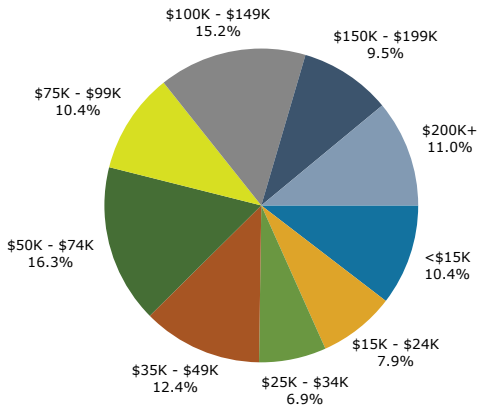
Trends 2024-2029



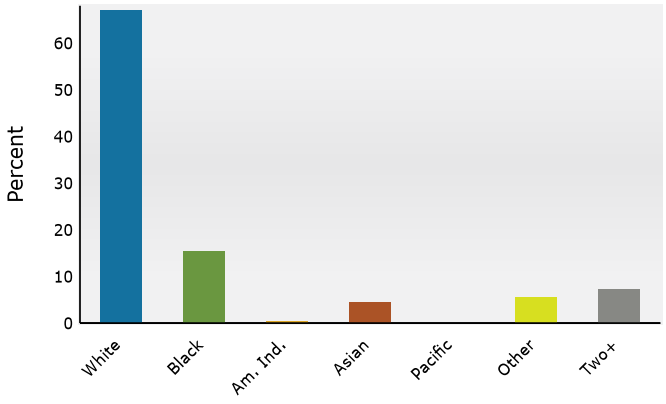
Population by Age



2024 Household Income



2024 Population by Race



2024 Percent Hispanic Origin:9.7%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 decennial Census in 2020 geographies.

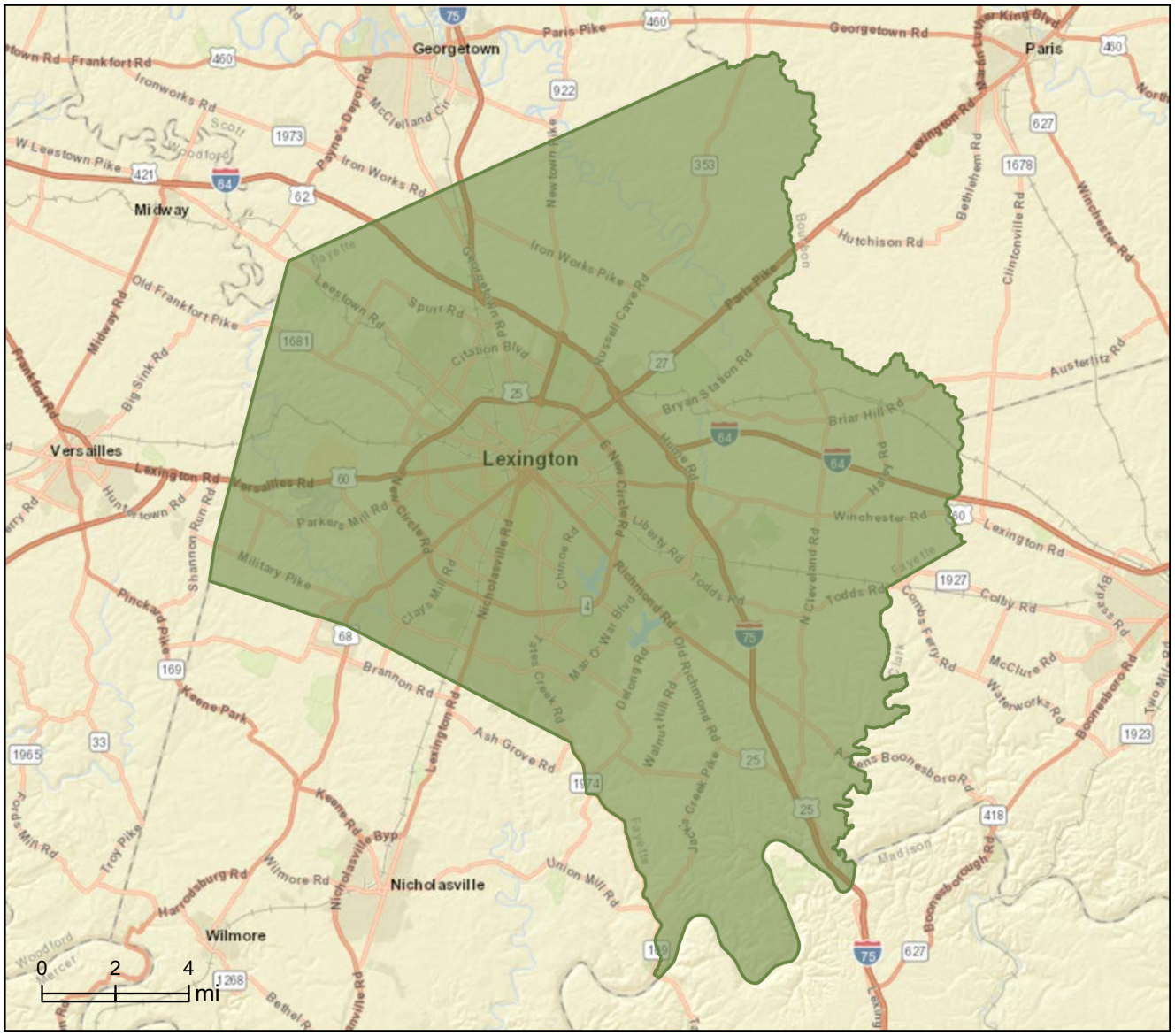
October 25, 2024

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Site Map

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri







October 25, 2024

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Key Facts

Lexington-Fayette Urban County, KY
Geography: Place

KEY FACTS

324,981
Population

35.8
Median Age

2.3
Average Household Size

$67,248
Median Household Income

EDUCATION

6.2%
No High School Diploma

18.8%
High School Graduate

25.3%
Some College/ Associate's Degree

49.8%
Bachelor's/Grad/ Prof Degree

BUSINESS

15,708
Total Businesses

267,929
Total Employees

EMPLOYMENT

68.6%
White Collar

16.1%
Blue Collar

15.2%
Services

4.7%
Unemployment Rate

INCOME

$67,248
Median Household Income

$43,435
Per Capita Income

$135,712
Median Net Worth

2024 Households by income (Esri)

The largest group: $50,000 - $74,999 (16.3%)
The smallest group: $25,000 - $34,999 (6.9%)

Indicator ▲	Value	Diff		
<$15,000	10.4%	0		
$15,000 - $24,999	7.9%	0		
$25,000 - $34,999	6.9%	0		
$35,000 - $49,999	12.4%	0		
$50,000 - $74,999	16.3%	0		
$75,000 - $99,999	10.4%	0		
$100,000 - $149,999	15.2%	0		
$150,000 - $199,999	9.5%	0		
$200,000+	11.0%	0		

Bars show deviation from Fayette County

Source: This infographic contains data provided by Esri (2024, 2029), Esri-Data Axle (2024). © 2024 Esri

Executive Summary

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

	Lexington-Fay...
Population	
2010 Population	295,803
2020 Population	322,570
2024 Population	324,981
2029 Population	327,854
2010-2020 Annual Rate	0.87%
2020-2024 Annual Rate	0.18%
2024-2029 Annual Rate	0.18%
2020 Male Population	48.3%
2020 Female Population	51.7%
2020 Median Age	35.2
2024 Male Population	49.0%
2024 Female Population	51.0%
2024 Median Age	35.8

In the identified area, the current year population is 324,981. In 2020, the Census count in the area was 322,570. The rate of change since 2020 was 0.18% annually. The five-year projection for the population in the area is 327,854 representing a change of 0.18% annually from 2024 to 2029. Currently, the population is 49.0% male and 51.0% female.

Median Age

The median age in this area is 35.8, compared to U.S. median age of 39.3.

Race and Ethnicity	
2024 White Alone	67.0%
2024 Black Alone	15.3%
2024 American Indian/Alaska Native Alone	0.3%
2024 Asian Alone	4.5%
2024 Pacific Islander Alone	0.0%
2024 Other Race	5.5%
2024 Two or More Races	7.3%
2024 Hispanic Origin (Any Race)	9.7%

Persons of Hispanic origin represent 9.7% of the population in the identified area compared to 19.6% of the U.S. population. Persons of Hispanic Origin may be of any race. The Diversity Index, which measures the probability that two people from the same area will be from different race/ethnic groups, is 60.2 in the identified area, compared to 72.5 for the U.S. as a whole.

Households	
2024 Wealth Index	86
2010 Households	123,043
2020 Households	134,535
2024 Households	136,900
2029 Households	139,115
2010-2020 Annual Rate	0.90%
2020-2024 Annual Rate	0.41%
2024-2029 Annual Rate	0.32%
2024 Average Household Size	2.29

The household count in this area has changed from 134,535 in 2020 to 136,900 in the current year, a change of 0.41% annually. The five-year projection of households is 139,115, a change of 0.32% annually from the current year total. Average household size is currently 2.29, compared to 2.30 in the year 2020. The number of families in the current year is 76,206 in the specified area.

Data Note: Income is expressed in current dollars. Housing Affordability Index and Percent of Income for Mortgage calculations are only available for areas with 50 or more owner-occupied housing units. The Gini index measures the extent to which the distribution of income or consumption among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.
Source: U.S. Census Bureau. Esri forecasts for 2024 and 2029. Esri converted Census 2010 into 2020 geography and Census 2020 data.

October 25, 2024

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	Lexington-Fay...
Mortgage Income	
2024 Percent of Income for Mortgage	29.7%
Median Household Income	
2024 Median Household Income	$67,248
2029 Median Household Income	$80,360
2024-2029 Annual Rate	3.63%
Average Household Income	
2024 Average Household Income	$102,744
2029 Average Household Income	$119,242
2024-2029 Annual Rate	3.02%
Per Capita Income	
2024 Per Capita Income	$43,435
2029 Per Capita Income	$50,749
2024-2029 Annual Rate	3.16%
GINI Index	
2024 Gini Index	43.4
Households by Income	

Current median household income is $67,248 in the area, compared to $79,068 for all U.S. households. Median household income is projected to be $80,360 in five years, compared to $91,442 all U.S. households.

Current average household income is $102,744 in this area, compared to $113,185 for all U.S. households. Average household income is projected to be $119,242 in five years, compared to $130,581 for all U.S. households.

Current per capita income is $43,435 in the area, compared to the U.S. per capita income of $43,829. The per capita income is projected to be $50,749 in five years, compared to $51,203 for all U.S. households.

Housing	
2024 Housing Affordability Index	83
2010 Total Housing Units	135,160
2010 Owner Occupied Housing Units	68,818
2010 Renter Occupied Housing Units	54,225
2010 Vacant Housing Units	12,117
2020 Total Housing Units	146,142
2020 Owner Occupied Housing Units	70,740
2020 Renter Occupied Housing Units	63,795
2020 Vacant Housing Units	11,607
2024 Total Housing Units	149,250
2024 Owner Occupied Housing Units	75,289
2024 Renter Occupied Housing Units	61,611
2024 Vacant Housing Units	12,350
2029 Total Housing Units	151,607
2029 Owner Occupied Housing Units	77,498
2029 Renter Occupied Housing Units	61,617
2029 Vacant Housing Units	12,492
Socioeconomic Status Index	
2024 Socioeconomic Status Index	51.0

Currently, 50.4% of the 149,250 housing units in the area are owner occupied; 41.3%, renter occupied; and 8.3% are vacant. Currently, in the U.S., 57.9% of the housing units in the area are owner occupied; 32.1% are renter occupied; and 10.0% are vacant. In 2020, there were 146,142 housing units in the area and 7.9% vacant housing units. The annual rate of change in housing units since 2020 is 0.50%. Median home value in the area is $318,531, compared to a median home value of $355,577 for the U.S. In five years, median value is projected to change by 2.20% annually to $355,171.

Data Note: Income is expressed in current dollars. Housing Affordability Index and Percent of Income for Mortgage calculations are only available for areas with 50 or more owner-occupied housing units. The Gini index measures the extent to which the distribution of income or consumption among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.
Source: U.S. Census Bureau. Esri forecasts for 2024 and 2029. Esri converted Census 2010 into 2020 geography and Census 2020 data.

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Community Profile

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

	Lexington-Fay...
Population Summary	
2010 Total Population	295,803
2020 Total Population	322,570
2020 Group Quarters	13,510
2024 Total Population	324,981
2024 Group Quarters	11,891
2029 Total Population	327,854
2024-2029 Annual Rate	0.18%
2024 Total Daytime Population	357,197
Workers	199,042
Residents	158,155
Household Summary	
2010 Households	123,043
2010 Average Household Size	2.30
2020 Total Households	134,535
2020 Average Household Size	2.30
2024 Households	136,900
2024 Average Household Size	2.29
2029 Households	139,115
2029 Average Household Size	2.27
2024-2029 Annual Rate	0.32%
2010 Families	69,661
2010 Average Family Size	2.94
2024 Families	76,206
2024 Average Family Size	2.95
2029 Families	76,851
2029 Average Family Size	2.94
2024-2029 Annual Rate	0.17%
Housing Unit Summary	
2000 Housing Units	116,167
Owner Occupied Housing Units	51.6%
Renter Occupied Housing Units	41.7%
Vacant Housing Units	6.8%
2010 Housing Units	135,160
Owner Occupied Housing Units	50.9%
Renter Occupied Housing Units	40.1%
Vacant Housing Units	9.0%
2020 Housing Units	146,142
Owner Occupied Housing Units	48.4%
Renter Occupied Housing Units	43.7%
Vacant Housing Units	7.9%
2024 Housing Units	149,250
Owner Occupied Housing Units	50.4%
Renter Occupied Housing Units	41.3%
Vacant Housing Units	8.3%
2029 Housing Units	151,607
Owner Occupied Housing Units	51.1%
Renter Occupied Housing Units	40.6%
Vacant Housing Units	8.2%

Data Note: Household population includes persons not residing in group quarters. Average Household Size is the household population divided by total households. Persons in families include the householder and persons related to the householder by birth, marriage, or adoption. Per Capita Income represents the income received by all persons aged 15 years and over divided by the total population.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

October 25, 2024

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	Lexington-Fay...
2024 Households by Income	
Household Income Base	136,900
<$15,000	10.4%
$15,000 - $24,999	7.9%
$25,000 - $34,999	6.9%
$35,000 - $49,999	12.4%
$50,000 - $74,999	16.3%
$75,000 - $99,999	10.4%
$100,000 - $149,999	15.2%
$150,000 - $199,999	9.5%
$200,000+	11.0%
Average Household Income	$102,744
2029 Households by Income	
Household Income Base	139,115
<$15,000	9.4%
$15,000 - $24,999	6.2%
$25,000 - $34,999	5.6%
$35,000 - $49,999	10.7%
$50,000 - $74,999	15.4%
$75,000 - $99,999	10.3%
$100,000 - $149,999	16.9%
$150,000 - $199,999	12.4%
$200,000+	13.1%
Average Household Income	$119,242
2024 Owner Occupied Housing Units by Value	
Total	75,276
<$50,000	2.3%
$50,000 - $99,999	2.1%
$100,000 - $149,999	4.9%
$150,000 - $199,999	8.6%
$200,000 - $249,999	15.8%
$250,000 - $299,999	11.8%
$300,000 - $399,999	23.8%
$400,000 - $499,999	13.2%
$500,000 - $749,999	11.4%
$750,000 - $999,999	3.3%
$1,000,000 - $1,499,999	1.5%
$1,500,000 - $1,999,999	0.4%
$2,000,000 +	0.8%
Average Home Value	$378,927
2029 Owner Occupied Housing Units by Value	
Total	77,485
<$50,000	1.3%
$50,000 - $99,999	0.9%
$100,000 - $149,999	2.1%
$150,000 - $199,999	5.2%
$200,000 - $249,999	13.2%
$250,000 - $299,999	11.9%
$300,000 - $399,999	27.6%
$400,000 - $499,999	16.7%
$500,000 - $749,999	14.1%
$750,000 - $999,999	3.5%
$1,000,000 - $1,499,999	1.6%
$1,500,000 - $1,999,999	0.6%
$2,000,000 +	1.2%
Average Home Value	$422,314

Data Note: Income represents the preceding year, expressed in current dollars. Household income includes wage and salary earnings, interest dividends, net rents, pensions, SSI and welfare payments, child support, and alimony.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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	Lexington-Fay...
Median Household Income	
2024	$67,248
2029	$80,360
Median Home Value	
2024	$318,531
2029	$355,171
Per Capita Income	
2024	$43,435
2029	$50,749
Median Age	
2010	33.8
2020	35.2
2024	35.8
2029	37.2
2020 Population by Age	
Total	322,570
0 - 4	5.7%
5 - 9	5.9%
10 - 14	6.0%
15 - 24	16.4%
25 - 34	15.6%
35 - 44	13.3%
45 - 54	11.5%
55 - 64	11.3%
65 - 74	8.7%
75 - 84	4.0%
85 +	1.6%
18 +	78.9%
2024 Population by Age	
Total	324,981
0 - 4	5.7%
5 - 9	5.7%
10 - 14	5.6%
15 - 24	16.2%
25 - 34	15.6%
35 - 44	13.8%
45 - 54	11.6%
55 - 64	10.6%
65 - 74	8.9%
75 - 84	4.6%
85 +	1.6%
18 +	79.7%
2029 Population by Age	
Total	327,854
0 - 4	5.5%
5 - 9	5.3%
10 - 14	5.6%
15 - 24	15.9%
25 - 34	14.4%
35 - 44	14.1%
45 - 54	12.0%
55 - 64	10.2%
65 - 74	9.4%
75 - 84	5.7%
85 +	1.9%
18 +	80.3%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

October 25, 2024

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	Lexington-Fay...
2020 Population by Sex	
Males	155,876
Females	166,694
2024 Population by Sex	
Males	159,359
Females	165,622
2029 Population by Sex	
Males	159,843
Females	168,011
2010 Population by Race/Ethnicity	
Total	295,803
White Alone	75.7%
Black Alone	14.5%
American Indian Alone	0.3%
Asian Alone	3.2%
Pacific Islander Alone	0.0%
Some Other Race Alone	3.7%
Two or More Races	2.5%
Hispanic Origin	6.9%
Diversity Index	47.9
2020 Population by Race/Ethnicity	
Total	322,570
White Alone	68.3%
Black Alone	14.9%
American Indian Alone	0.3%
Asian Alone	4.2%
Pacific Islander Alone	0.0%
Some Other Race Alone	5.2%
Two or More Races	7.1%
Hispanic Origin	9.2%
Diversity Index	58.6
2024 Population by Race/Ethnicity	
Total	324,981
White Alone	67.0%
Black Alone	15.3%
American Indian Alone	0.3%
Asian Alone	4.5%
Pacific Islander Alone	0.0%
Some Other Race Alone	5.5%
Two or More Races	7.3%
Hispanic Origin	9.7%
Diversity Index	60.2
2029 Population by Race/Ethnicity	
Total	327,854
White Alone	65.5%
Black Alone	15.6%
American Indian Alone	0.3%
Asian Alone	4.9%
Pacific Islander Alone	0.1%
Some Other Race Alone	5.8%
Two or More Races	7.8%
Hispanic Origin	10.4%
Diversity Index	62.1

Data Note: Persons of Hispanic Origin may be of any race. The Diversity Index measures the probability that two people from the same area will be from different race/ethnic groups.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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	Lexington-Fay...
2020 Population by Relationship and Household Type	
Total	322,570
In Households	95.8%
Householder	41.7%
Opposite-Sex Spouse	16.0%
Same-Sex Spouse	0.3%
Opposite-Sex Unmarried Partner	2.9%
Same-Sex Unmarried Partner	0.3%
Biological Child	23.6%
Adopted Child	0.7%
Stepchild	0.9%
Grandchild	1.6%
Brother or Sister	1.0%
Parent	0.9%
Parent-in-law	0.2%
Son-in-law or Daughter-in-law	0.2%
Other Relatives	1.0%
Foster Child	0.1%
Other Nonrelatives	4.3%
In Group Quarters	4.2%
Institutionalized	1.2%
Noninstitutionalized	3.0%
2024 Population 25+ by Educational Attainment	
Total	216,955
Less than 9th Grade	2.4%
9th - 12th Grade, No Diploma	3.8%
High School Graduate	15.2%
GED/Alternative Credential	3.5%
Some College, No Degree	17.0%
Associate Degree	8.3%
Bachelor's Degree	28.2%
Graduate/Professional Degree	21.6%
2024 Population 15+ by Marital Status	
Total	269,553
Never Married	38.1%
Married	46.3%
Widowed	4.7%
Divorced	10.9%
2024 Civilian Population 16+ in Labor Force	
Civilian Population 16+	176,727
Population 16+ Employed	95.3%
Population 16+ Unemployment rate	4.7%
Population 16-24 Employed	15.8%
Population 16-24 Unemployment rate	11.2%
Population 25-54 Employed	65.4%
Population 25-54 Unemployment rate	3.3%
Population 55-64 Employed	13.0%
Population 55-64 Unemployment rate	3.8%
Population 65+ Employed	5.9%
Population 65+ Unemployment rate	2.3%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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	Lexington-Fay...
2024 Employed Population 16+ by Industry	
Total	168,463
Agriculture/Mining	1.3%
Construction	4.6%
Manufacturing	9.8%
Wholesale Trade	1.8%
Retail Trade	11.2%
Transportation/Utilities	4.7%
Information	1.3%
Finance/Insurance/Real Estate	4.8%
Services	57.0%
Public Administration	3.3%
2024 Employed Population 16+ by Occupation	
Total	168,463
White Collar	68.6%
Management/Business/Financial	18.3%
Professional	31.5%
Sales	8.7%
Administrative Support	10.1%
Services	15.2%
Blue Collar	16.1%
Farming/Forestry/Fishing	0.5%
Construction/Extraction	2.9%
Installation/Maintenance/Repair	1.7%
Production	5.0%
Transportation/Material Moving	6.1%
2020 Households by Type	
Total	134,535
Married Couple Households	39.1%
With Own Children <18	15.8%
Without Own Children <18	23.3%
Cohabitating Couple Households	7.6%
With Own Children <18	2.0%
Without Own Children <18	5.7%
Male Householder, No Spouse/Partner	21.5%
Living Alone	15.1%
65 Years and over	3.1%
With Own Children <18	1.5%
Without Own Children <18, With Relatives	2.2%
No Relatives Present	2.7%
Female Householder, No Spouse/Partner	31.8%
Living Alone	18.6%
65 Years and over	7.2%
With Own Children <18	5.7%
Without Own Children <18, With Relatives	5.4%
No Relatives Present	2.2%
2020 Households by Size	
Total	134,535
1 Person Household	33.6%
2 Person Household	33.3%
3 Person Household	14.6%
4 Person Household	11.2%
5 Person Household	4.5%
6 Person Household	1.8%
7 + Person Household	0.9%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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	Lexington-Fay...
2020 Households by Tenure and Mortgage Status	
Total	134,535
Owner Occupied	52.6%
Owned with a Mortgage/Loan	37.7%
Owned Free and Clear	14.9%
Renter Occupied	47.4%
2024 Affordability, Mortgage and Wealth	
Housing Affordability Index	83
Percent of Income for Mortgage	29.7%
Wealth Index	86
2020 Housing Units By Urban/ Rural Status	
Total	146,142
Urban Housing Units	97.2%
Rural Housing Units	2.8%
2020 Population By Urban/ Rural Status	
Total	322,570
Urban Population	97.1%
Rural Population	2.9%

Data Note: Households with children include any households with people under age 18, related or not. Multigenerational households are families with 3 or more parent-child relationships. Unmarried partner households are usually classified as nonfamily households unless there is another member of the household related to the householder. Multigenerational and unmarried partner households are reported only to the tract level. Esri estimated block group data, which is used to estimate polygons or non-standard geography.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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	Lexington-Fay...
Top 3 Tapestry Segments	
1.	Bright Young Professionals
2.	Young and Restless (11B)
3.	Up and Coming Families (7A)
2024 Consumer Spending	
Apparel & Services: Total $	$311,911,412
Average Spent	$2,278.39
Spending Potential Index	96
Education: Total $	$223,045,840
Average Spent	$1,629.26
Spending Potential Index	94
Entertainment/Recreation: Total $	$506,757,971
Average Spent	$3,701.67
Spending Potential Index	90
Food at Home: Total $	$923,984,269
Average Spent	$6,749.34
Spending Potential Index	92
Food Away from Home: Total $	$505,757,540
Average Spent	$3,694.36
Spending Potential Index	95
Health Care: Total $	$944,835,899
Average Spent	$6,901.65
Spending Potential Index	90
HH Furnishings & Equipment: Total $	$398,359,878
Average Spent	$2,909.86
Spending Potential Index	92
Personal Care Products & Services: Total $	$127,071,706
Average Spent	$928.21
Spending Potential Index	93
Shelter: Total $	$3,344,490,334
Average Spent	$24,430.17
Spending Potential Index	92
Support Payments/Cash Contributions/Gifts in Kind: Total $	$421,797,395
Average Spent	$3,081.06
Spending Potential Index	88
Travel: Total $	$369,661,119
Average Spent	$2,700.23
Spending Potential Index	89
Vehicle Maintenance & Repairs: Total $	$190,290,368
Average Spent	$1,390.00
Spending Potential Index	94

Data Note: Consumer spending shows the amount spent on a variety of goods and services by households that reside in the area. Expenditures are shown by broad budget categories that are not mutually exclusive. Consumer spending does not equal business revenue. Total and Average Amount Spent Per Household represent annual figures. The Spending Potential Index represents the amount spent in the area relative to a national average of 100.
Source: Consumer Spending data are derived from the 2019 and 2020 Consumer Expenditure Surveys, Bureau of Labor Statistics. Esri.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2000 and 2010 decennial Census data converted by Esri into 2020 geography.

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Demographic and Income Comparison Profile

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

	Lexington-Fay...
Census 2020 Summary	
Population	322,570
Households	134,535
Average Household Size	2.30
2024 Summary	
Population	324,981
Households	136,900
Families	76,206
Average Household Size	2.29
Owner Occupied Housing Units	75,289
Renter Occupied Housing Units	61,611
Median Age	35.8
Median Household Income	$67,248
Average Household Income	$102,744
2029 Summary	
Population	327,854
Households	139,115
Families	76,851
Average Household Size	2.27
Owner Occupied Housing Units	77,498
Renter Occupied Housing Units	61,617
Median Age	37.2
Median Household Income	$80,360
Average Household Income	$119,242
Trends: 2024-2029 Annual Rate	
Population	0.18%
Households	0.32%
Families	0.17%
Owner Households	0.58%
Median Household Income	3.63%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 in 2020 geographies.

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	Lexington-Fay...	
2024 Households by Income	**Number**	**Percent**
<$15,000	14,252	10.4%
$15,000 - $24,999	10,802	7.9%
$25,000 - $34,999	9,485	6.9%
$35,000 - $49,999	16,910	12.4%
$50,000 - $74,999	22,369	16.3%
$75,000 - $99,999	14,218	10.4%
$100,000 - $149,999	20,865	15.2%
$150,000 - $199,999	12,945	9.5%
$200,000+	15,054	11.0%
Median Household Income	$67,248	
Average Household Income	$102,744	
Per Capita Income	$43,435	

2029 Households by Income	**Number**	**Percent**
<$15,000	13,040	9.4%
$15,000 - $24,999	8,654	6.2%
$25,000 - $34,999	7,784	5.6%
$35,000 - $49,999	14,943	10.7%
$50,000 - $74,999	21,427	15.4%
$75,000 - $99,999	14,265	10.3%
$100,000 - $149,999	23,496	16.9%
$150,000 - $199,999	17,254	12.4%
$200,000+	18,252	13.1%
Median Household Income	$80,360	
Average Household Income	$119,242	
Per Capita Income	$50,749	

Data Note: Income is expressed in current dollars.
Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 in 2020 geographies.

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Demographic and Income Comparison Profile

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

	Lexington-Fay...	
2020 Population by Age	**Number**	**Percent**
Age 0 - 4	18,525	5.7%
Age 5 - 9	19,035	5.9%
Age 10 - 14	19,361	6.0%
Age 15 - 19	23,449	7.3%
Age 20 - 24	29,596	9.2%
Age 25 - 34	50,221	15.6%
Age 35 - 44	43,033	13.3%
Age 45 - 54	36,996	11.5%
Age 55 - 64	36,331	11.3%
Age 65 - 74	27,916	8.7%
Age 75 - 84	12,984	4.0%
Age 85+	5,123	1.6%
2024 Population by Age	**Number**	**Percent**
Age 0 - 4	18,445	5.7%
Age 5 - 9	18,675	5.7%
Age 10 - 14	18,308	5.6%
Age 15 - 19	23,100	7.1%
Age 20 - 24	29,498	9.1%
Age 25 - 34	50,609	15.6%
Age 35 - 44	44,799	13.8%
Age 45 - 54	37,859	11.6%
Age 55 - 64	34,396	10.6%
Age 65 - 74	28,919	8.9%
Age 75 - 84	15,103	4.6%
Age 85+	5,270	1.6%
2029 Population by Age	**Number**	**Percent**
Age 0 - 4	18,086	5.5%
Age 5 - 9	17,467	5.3%
Age 10 - 14	18,304	5.6%
Age 15 - 19	22,899	7.0%
Age 20 - 24	29,168	8.9%
Age 25 - 34	47,308	14.4%
Age 35 - 44	46,134	14.1%
Age 45 - 54	39,462	12.0%
Age 55 - 64	33,291	10.2%
Age 65 - 74	30,694	9.4%
Age 75 - 84	18,816	5.7%
Age 85+	6,225	1.9%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 in 2020 geographies.

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	Lexington-Fay...	
2020 Race and Ethnicity	**Number**	**Percent**
White Alone	220,236	68.3%
Black Alone	48,076	14.9%
American Indian Alone	1,105	0.3%
Asian Alone	13,427	4.2%
Pacific Islander Alone	144	0.0%
Some Other Race Alone	16,732	5.2%
Two or More Races	22,850	7.1%
Hispanic Origin (Any Race)	29,750	9.2%

2024 Race and Ethnicity	**Number**	**Percent**
White Alone	217,898	67.0%
Black Alone	49,651	15.3%
American Indian Alone	1,054	0.3%
Asian Alone	14,555	4.5%
Pacific Islander Alone	150	0.0%
Some Other Race Alone	17,838	5.5%
Two or More Races	23,835	7.3%
Hispanic Origin (Any Race)	31,650	9.7%

2029 Race and Ethnicity	**Number**	**Percent**
White Alone	214,820	65.5%
Black Alone	51,093	15.6%
American Indian Alone	1,069	0.3%
Asian Alone	15,971	4.9%
Pacific Islander Alone	173	0.1%
Some Other Race Alone	19,168	5.8%
Two or More Races	25,560	7.8%
Hispanic Origin (Any Race)	34,087	10.4%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 in 2020 geographies.

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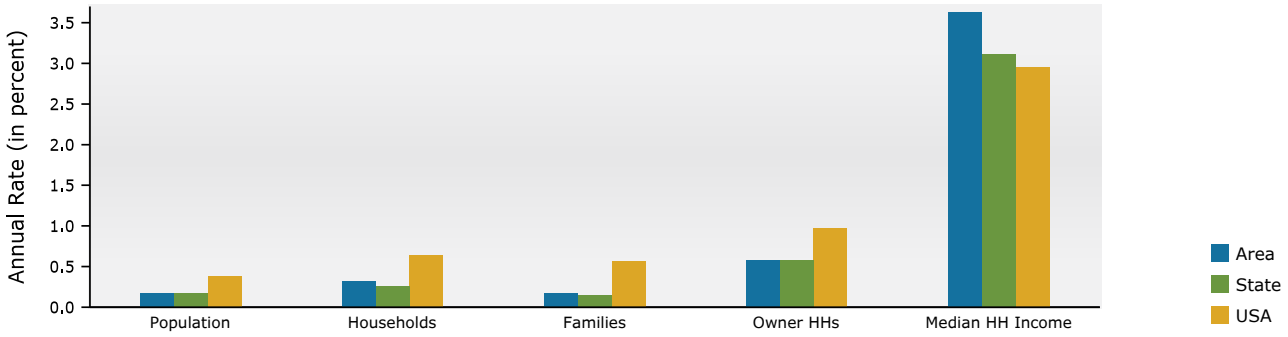
Demographic and Income Comparison Profile

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

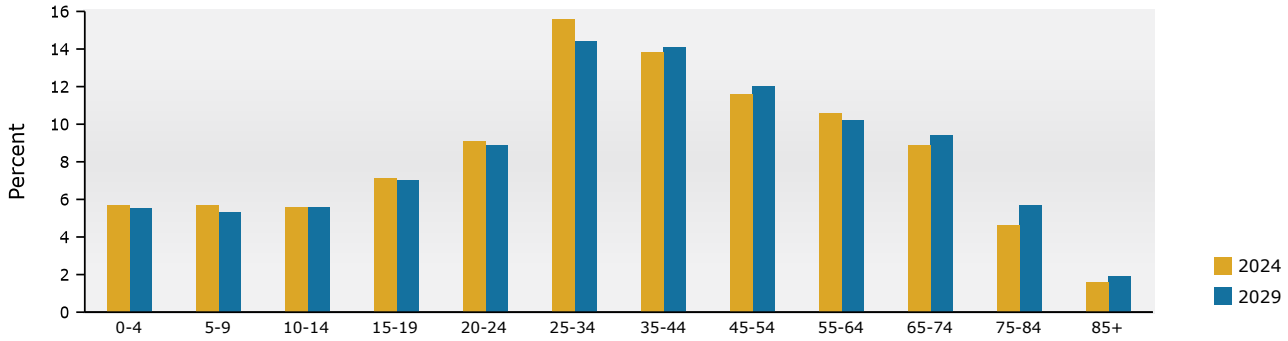
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Lexington-Fay...

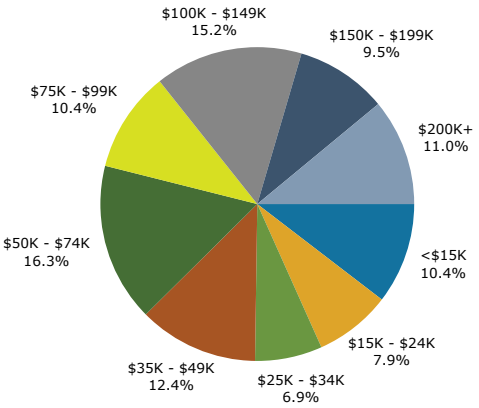
Trends 2024-2029



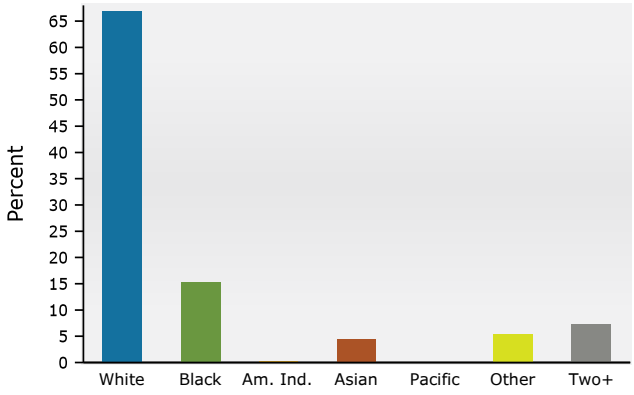
Population by Age



2024 Household Income



2024 Population by Race



Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 in 2020 geographies.

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Demographic and Income Profile

Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

Summary	Census 2010	Census 2020	2024	2029
Population	295,803	322,570	324,981	327,854
Households	123,043	134,535	136,900	139,115
Families	69,661	75,756	76,206	76,851
Average Household Size	2.30	2.30	2.29	2.27
Owner Occupied Housing Units	68,818	70,740	75,289	77,498
Renter Occupied Housing Units	54,225	63,795	61,611	61,617
Median Age	33.8	35.2	35.8	37.2

Trends: 2024-2029 Annual Rate	Area	State	National
Population	0.18%	0.17%	0.38%
Households	0.32%	0.26%	0.64%
Families	0.17%	0.15%	0.56%
Owner HHs	0.58%	0.58%	0.97%
Median Household Income	3.63%	3.11%	2.95%

	2024		2029	
Households by Income	Number	Percent	Number	Percent
<$15,000	14,252	10.4%	13,040	9.4%
$15,000 - $24,999	10,802	7.9%	8,654	6.2%
$25,000 - $34,999	9,485	6.9%	7,784	5.6%
$35,000 - $49,999	16,910	12.4%	14,943	10.7%
$50,000 - $74,999	22,369	16.3%	21,427	15.4%
$75,000 - $99,999	14,218	10.4%	14,265	10.3%
$100,000 - $149,999	20,865	15.2%	23,496	16.9%
$150,000 - $199,999	12,945	9.5%	17,254	12.4%
$200,000+	15,054	11.0%	18,252	13.1%
Median Household Income	$67,248		$80,360	
Average Household Income	$102,744		$119,242	
Per Capita Income	$43,435		$50,749	

	Census 2010		Census 2020		2024		2029	
Population by Age	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0 - 4	19,145	6.5%	18,525	5.7%	18,445	5.7%	18,086	5.5%
5 - 9	17,746	6.0%	19,035	5.9%	18,675	5.7%	17,467	5.3%
10 - 14	16,195	5.5%	19,361	6.0%	18,308	5.6%	18,304	5.6%
15 - 19	20,711	7.0%	23,449	7.3%	23,100	7.1%	22,899	7.0%
20 - 24	30,567	10.3%	29,596	9.2%	29,498	9.1%	29,168	8.9%
25 - 34	49,233	16.6%	50,221	15.6%	50,609	15.6%	47,308	14.4%
35 - 44	39,272	13.3%	43,033	13.3%	44,799	13.8%	46,134	14.1%
45 - 54	39,926	13.5%	36,996	11.5%	37,859	11.6%	39,462	12.0%
55 - 64	31,870	10.8%	36,331	11.3%	34,396	10.6%	33,291	10.2%
65 - 74	16,943	5.7%	27,916	8.7%	28,919	8.9%	30,694	9.4%
75 - 84	9,892	3.3%	12,984	4.0%	15,103	4.6%	18,816	5.7%
85+	4,303	1.5%	5,123	1.6%	5,270	1.6%	6,225	1.9%

	Census 2010		Census 2020		2024		2029	
Race and Ethnicity	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White Alone	223,999	75.7%	220,236	68.3%	217,898	67.0%	214,820	65.5%
Black Alone	42,972	14.5%	48,076	14.9%	49,651	15.3%	51,093	15.6%
American Indian Alone	755	0.3%	1,105	0.3%	1,054	0.3%	1,069	0.3%
Asian Alone	9,553	3.2%	13,427	4.2%	14,555	4.5%	15,971	4.9%
Pacific Islander Alone	141	0.0%	144	0.0%	150	0.0%	173	0.1%
Some Other Race Alone	10,949	3.7%	16,732	5.2%	17,838	5.5%	19,168	5.8%
Two or More Races	7,434	2.5%	22,850	7.1%	23,835	7.3%	25,560	7.8%
Hispanic Origin (Any Race)	20,474	6.9%	29,750	9.2%	31,650	9.7%	34,087	10.4%

Data Note: Income is expressed in current dollars.

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 decennial Census in 2020 geographies.

October 25, 2024

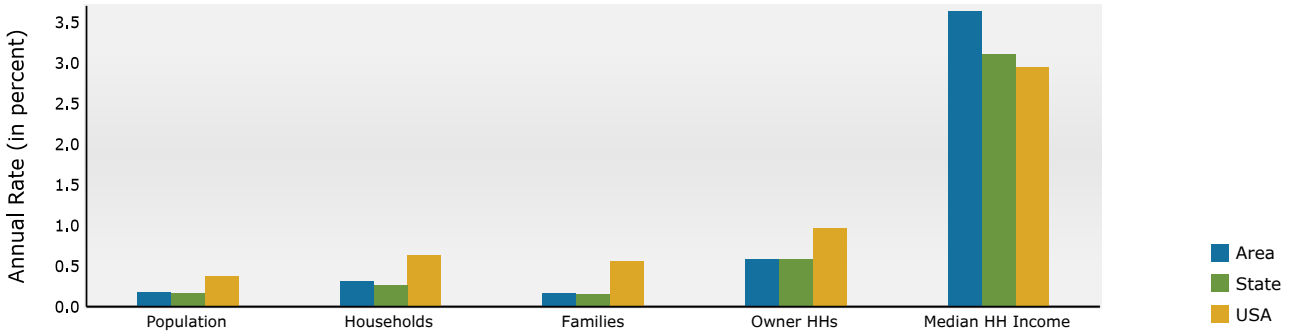
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Demographic and Income Profile

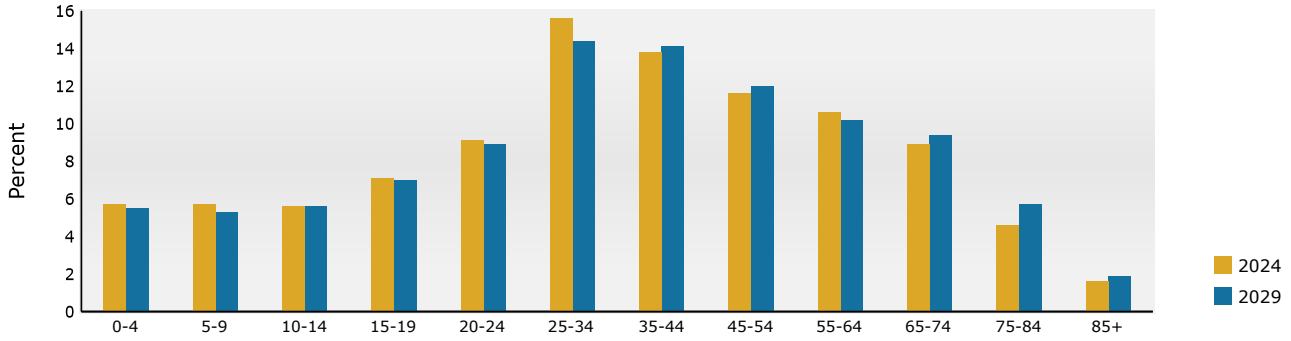
Lexington-Fayette Urban County, KY
Lexington-Fayette Urban County, KY (2146027)
Geography: Place

Prepared by Esri

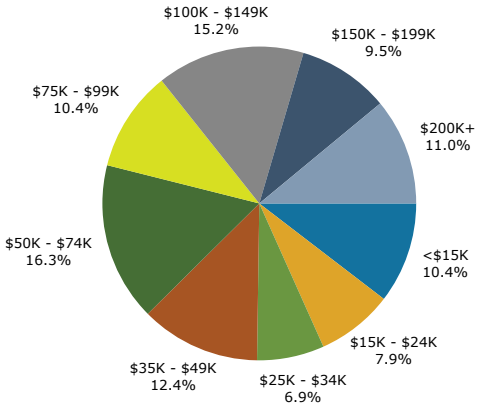
Trends 2024-2029



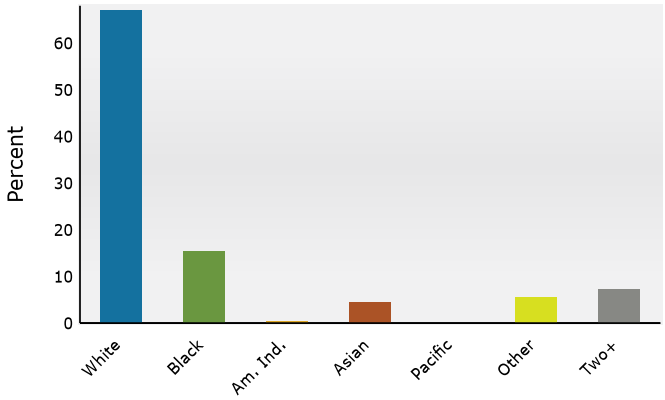
Population by Age



2024 Household Income



2024 Population by Race



2024 Percent Hispanic Origin:9.7%

Source: Esri forecasts for 2024 and 2029. U.S. Census Bureau 2020 decennial Census in 2020 geographies.

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Housing Market Characteristics

Lexington-Fayette Urban County, KY
Geography: Place

$318,531 ↑
Median Home Value

32% higher than **Kentucky** which is **$217,318**

83
Housing Affordability Index

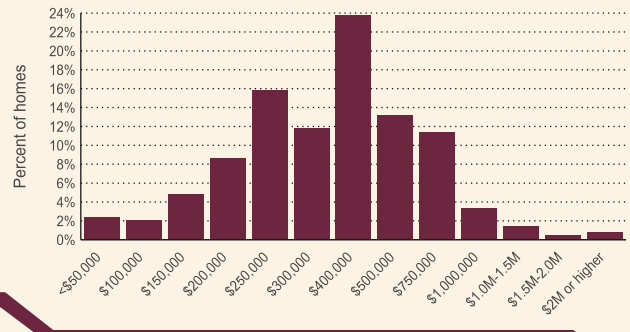
29.7%
Percent of Income for Mortgage

105
Percent of Income for Mortgage (Index)

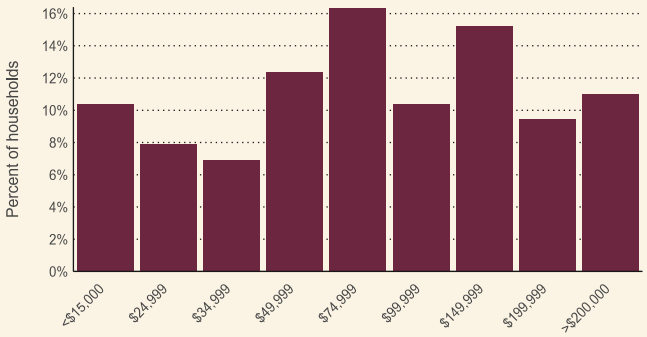
Age <18 **66,104** | Age 18-64 **209,585** | Age 65+ **49,292**

Total Pop	Pop Growth	Average HH Size	Median Net Worth
324,981	0.18%	2.29	$135,712

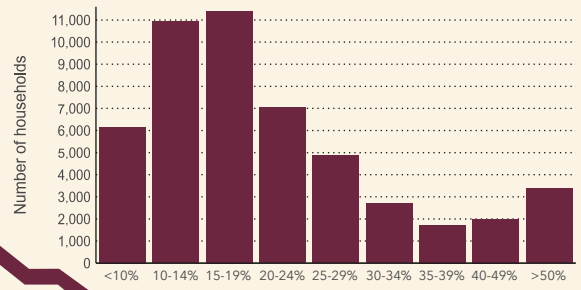
Home Value



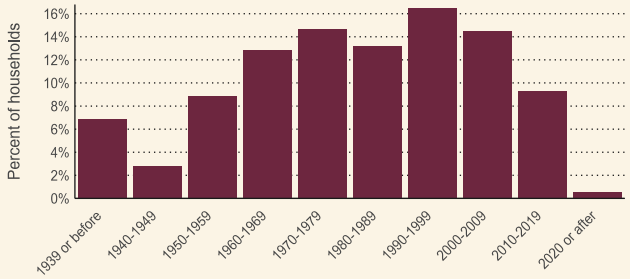
Household Income



Mortgage as % Salary



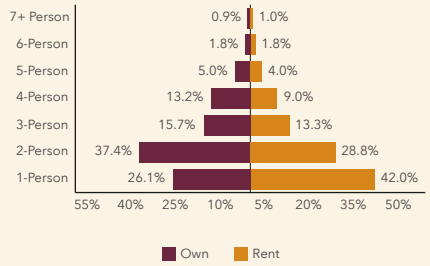
Year Property Built



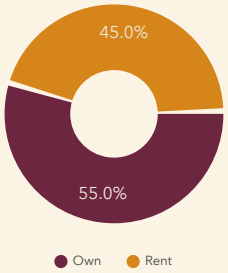
esri

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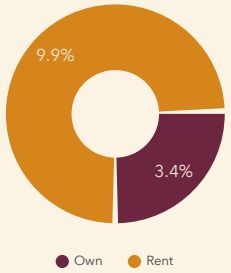
Census Housing by Size



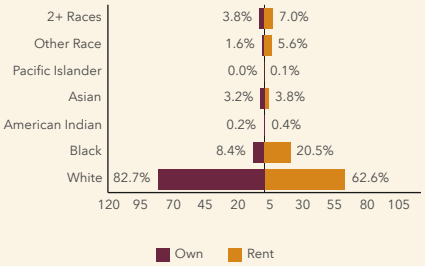
Home Ownership



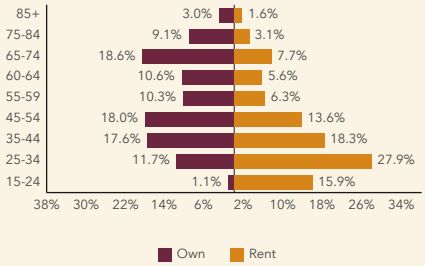
Hispanic Home Ownership



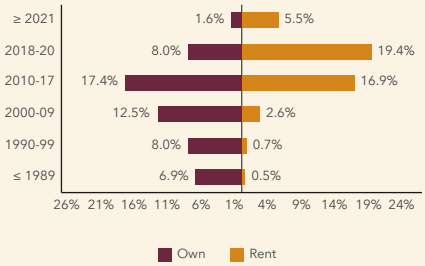
Housing by Race of Householder



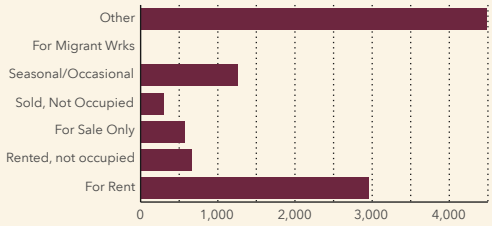
Housing by Age of Householder



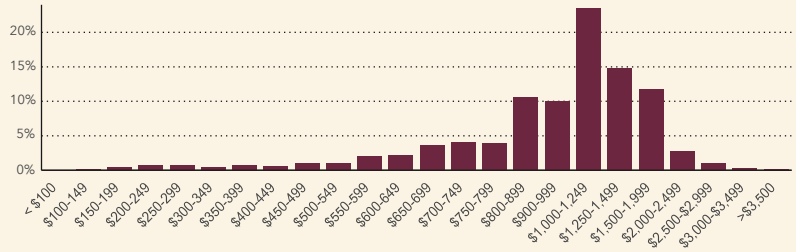
Year Householder Moved In



Vacant Housing Units (Total 10,241)



Gross Rent



esri

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APPENDIX C - PRELIMINARY SPACE PROGRAM

Table C.1: Preliminary Concept Space List - Training Center

PRELIMINARY CONCEPT SPACE LIST - TRAINING CENTER
LFUCG FIRE TRAINING CENTER
LEXINGTON, KENTUCKY
PROJECT NO. 24057

BRANDSTETTER CARROLL INC
ARCHITECTS · ENGINEERS · PLANNERS

July 15, 2024

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
"Dirty" Areas					
1.00	**Apparatus/Equipment**				
1.01	Vehicle Bays	Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props	4	1,600	6,400
1.02	POV Bays	Trench Drains / Bi-Fold Doors / Fans / Electric & Water / Plymovent / 80 x 20 / Anchors and Training Props	2	1,600	3,200
				Subtotal Net Square Footage	**9,600**
2.00	**Bay Support Areas**				
2.01	Gear Room	100 Gear Lockers / Exhaust / Fans / Floor Drains	1	500	500
2.02	Tool Room	Workbench / Floor Drains	1	200	200
2.03	Decon/Laundry	Shower / Sink / Floor Drains / Emergency Eye Wash/Shower	1	200	200
2.04	Gear Wash	2 Gear Washers / 2 Linear Drying Racks / Regular Washer and Dryer	1	200	200
2.05	Storage Rooms	Fire and EMS Storage / Access Control	2	300	600
2.06	SCBA	Workbench / Bottle Storage / SCBA Machine / 24-Hour Access / Access Control	1	180	180
2.07	SCBA Maintenance	Workbench / 100 Bottle Storage / SCBA Machine	1	250	250
2.08	Technical Rescue Training	Combined in Bay Spaces / Landing Area	1	100	100
2.09	Auditorium Storage	Table and Chair / Portable Stage Storage	1	200	200
2.10	General Storage Room	Shelving	1	200	200
2.11	Dirty Restroom	Sink / Water Closet / Hose Bib / Near Decon	1	75	75
				Subtotal Net Square Footage	**2,705**
3.00	**Classrooms/Labs**				
3.01	Small Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division / 30 Seats	1	800	800
3.02	Large Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division / 60 Seats	1	1,800	1,800
3.03	Classroom Storage Room	Shelving / Table and Chair / Training Props	2	200	400
				Subtotal Net Square Footage	**3,000**
				Total Net Square Footage of "Dirty" Areas	**15,305**
"Clean" Areas					
4.00	**Entry**				
4.01	Vestibule	ADA Accessible	1	70	70
4.02	Lobby	ADA Accessible / Displays / Historic Truck	1	800	800
4.03	Public Restroom	Water Closets/ Sinks/ Fountains/ ADA Accessible	2	300	600
				Subtotal Net Square Footage	**1,470**

Table C.1: Preliminary Concept Space List - Training Center (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
5.00	**Fire Training Areas**				
5.01	Auditorium	Air Walls for Dividing Space into multiple rooms / 400 People / A/V / Stage / Screens / Monitors / Projectors / Acoustical Panels / Shared with Bays	0	0	0
5.02	Small Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division	1	800	800
5.03	Large Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division	1	1,800	1,800
5.04	Classroom Storage Room	Shelving / Table and Chair / Training Props	2	200	400
				Subtotal Net Square Footage	**3,000**
6.00	**EMS Training Rooms**				
6.01	Breakout Rooms	A/V / Monitors/ Markerboards	9	360	3,240
6.02	Large Classroom	A/V / Monitors/ Markerboards / Air Walls for Division / 60 Seats	1	2,700	2,700
6.03	Medium Classroom	A/V / Monitors/ Markerboards / Air Walls for Division / 45 Seats	1	2,000	2,000
6.04	Classroom Storage Room	Shelving / Table and Chair / Training Props	3	100	300
6.05	Simulation Lab	Multi-Purpose / Access Controlled	1	625	625
6.06	Cadaver Lab	Climate Controlled / Lab Setup	1	625	625
6.07	Climate Controlled Storage	Climate Controlled / Access Control	1	300	300
6.08	Cold Storage Area	Access Control	1	300	300
				Subtotal Net Square Footage	**10,090**
7.00	**Administration Areas**				
7.01	Executive Officer	Desk/ File Cabinet / Book Case / Monitor	1	200	200
7.02	Training Officer Office	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.03	Admin. Specialist	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.04	Large Conference	Table and Chairs / Monitor / Marker board / 20 People	1	600	600
7.05	Small Conference	Table and Chairs / Monitor / Marker board / 6 People	1	200	200
7.06	Work/Copy/Mail Room	Mailboxes / Copier / Work Counter / Cabinets	1	90	90
7.07	Training Instructor Office	12 Workstations 8x6 / Monitors / Book Case	12	60	720
7.08	Future Office	Monitor	4	120	480
7.09	A/V Office	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.10	Video Production/ Multimedia	Soundproof/ Quiet Area / A/V Equipment / Graphic Preparation Area / Laptop Cart Storage	1	250	250
7.11	Records Storage	Lockable / Fire Proof / Access Control	1	200	200
7.12	Recruiting Offices	Desk/ File Cabinet / Book Case / Monitor	2	120	240
7.13	Background Investigators	3 Workstations 8x6 / Monitor / Book Case	3	60	180
7.14	Admin. Specialist	Desk/ File Cabinet / Book Case / Monitor	1	120	120
7.15	Record Storage	Lockable / Fire Proof / Access Control	1	600	600
7.16	Recruiting & Hiring Entry	Seating / Monitor	1	70	70
7.17	EMS Instructor Offices	Desk/ File Cabinet / Book Case / Monitor	4	120	480
7.18	Medical Director	Desk/ File Cabinet / Book Case / Monitor	1	200	200
7.19	Wellness Coordinator	Desk/ File Cabinet / Book Case / Monitor / Near Fitness	1	120	120
7.20	Wellness Office	6 Workstations 8x6 / Monitors / Book Case / Near Fitness	6	60	360
				Subtotal Net Square Footage	**5,470**

Table C.1: Preliminary Concept Space List - Training Center (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
8.00	**Staff Support Areas**				
8.01	Locker Room	120 1/2 Size 2x2 Metal Lockers/ Benches	1	400	400
8.02	Locker Room	15 Full Size 2x2 Metal Lockers / Benches	1	400	400
8.03	Gender Neutral Restroom	w/ Showers	19	90	1,710
8.04	Laundry	Laundry Equipment with Hookups / Venting / Shelving / Near Staff Locker Room	1	80	80
8.05	Custodial Closet	Mop Sink/ Shelving	1	36	36
8.06	Linen Closet	Shelving	2	20	40
8.07	Fitness	Exercise and Training Equipment / 24-Hour Access / Near Locker Rooms and Showers / Fans / Monitors	1	6,000	6,000
8.08	Kitchen	Commercial Kitchen & Appliances / Pantry / Near Cafeteria	1	600	600
8.09	Food Storage	Dry / Freezer / Coolers	1	200	200
8.10	Cafeteria	Seating for 60 people / Microwaves / 2 Reffrigerators	1	2,300	2,300
8.11	Bunk Rooms	12 Bunks / Night Stands / Monitors / Fans	12	50	600
8.12	Quarter Master Room	Shelving / Racks / Electronic Tracking / Access Control / 24-Hour Access / Exterior Access Point	1	600	600
8.13	Rehabilitation Area	Near Fitness Room / Limited Access / Monitors	1	3,000	3,000
				Subtotal Net Square Footage	**15,966**
9.00	**Physical Plant**				
9.01	Mechanical	Floor Drain / HVAC Equipment	1	500	500
9.02	Electrical	MDP/ Switchgear / Panels / Fire Alarm / Floor Drain	1	500	500
9.03	Water	Oil Water Separator / Water and Fire Entry / Water Heaters	1	150	150
9.04	MDF/Server Room	Separate HVAC / Facility Wi-Fi Spots / IP Phone System/ Fiber Entry / Grounding / Servers/ Floor Drain / Comm Equipment/ Cable Tray	1	300	300
9.05	Antennae Room	Floor Drain/ Antennae Equipment and Entry/ Grounding/ Station Alerting	1	80	80
9.06	I.T./IDF	Comm Equipment/ Cable Tray	1	80	80
				Subtotal Net Square Footage	**1,610**
				Total Net Square Footage of "Clean" Areas	**37,606**
				Total Net Square Footage	**52,911**

TOTAL NET BUILDING SQUARE FOOTAGE	**52,911**
CIRCULATION, WALLS, AND CORRIDORS GROSSING FACTOR OF 30%	**15,873**
TOTAL GROSS SQUARE FOOTAGE	**68,784**

Table C.1: Preliminary Concept Space List - Training Center (Continued)

	SPACE DESCRIPTION	NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
OUTDOOR AMENITIES					
1.00	**STAFF AMENITIES**				
1.01	Staff Parking	Secure Fencing / Gate / Loop Detectors / Access Control or Transmitters / Electric and Charging Stations / Electrical / Covered Parking for Trailers	20	350	7,000
1.02	Outdoor Courtyard	Secure / Adjacent to Breakroom / Gas Connections / Electrical / Tables and Chair and Umbrellas	1	1,500	1,500
1.03	Secondary Access to Site	Secure / Gate / Access Control	1		0
1.04	Training Ground with Props	Extraction, Rail Car, Tunnel, Drafting Pit, Tower, etc.	1		0
1.05	Bridge	Loading for Apparatus / Pedestrian Access	1		0
1.06	Apparatus Parking	Secure Fencing / Gate / Loop Detectors / Access Control or Transmitters / Electric and Charging Stations / Electrical / Near Bays	10	800	8,000
1.07	Driving Pad	Training Pad 250x200	1	50,000	50,000
				Subtotal Net Square Footage	**66,500**
2.00	**PUBLIC AMENITIES**				
2.01	Public Parking	ADA Compliant Stalls / Public Parking	200	350	70,000
2.02	Civic Space	Civic Space for Public / Threat Mitigation Tactics	1	1,000	1,000
				Subtotal Net Square Footage	**71,000**

Table C.2: Preliminary Concept Space List - CPAT & WPE Facility

PRELIMINARY CONCEPT SPACE LIST - CPAT & WPE FACILITY
LFUCG FIRE TRAINING CENTER
LEXINGTON, KENTUCKY
PROJECT NO. 24057

BRANDSTETTER CARROLL INC
ARCHITECTS · ENGINEERS · PLANNERS

July 15, 2024

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
WPE & CPAT BUILDING					
1.00	**Staff Areas**				
1.01	Open Area		1	3,000	3,000
3.02	Storage Closets	Shelving	2	80	160
				Subtotal Net Square Footage	**3,160**
2.00	**Administration Areas**				
2.01	Office	(3) Workstations	3	75	225
2.02	Work/Copy Room	Copier/ Work Counter	1	30	30
				Subtotal Net Square Footage	**255**
3.00	**Staff Support Areas**				
3.01	Locker Room	60 2x2x2 Metal Lockers/ Benches / Ventilation	1	500	500
3.02	Uni-Sex Restroom	w/ Shower	4	90	360
3.03	Laundry	Laundry Equipment with Hookups / Venting / Shelving	1	65	65
3.04	Custodial Closet	Mop Sink/ Shelving	1	36	36
3.05	Linen Closet	Shelving	2	25	50
				Subtotal Net Square Footage	**1,011**
4.00	**Physical Plant**				
4.01	Mechanical	Floor Drain / HVAC Equipment	1	200	200
4.02	Electrical	MDP/ Switchgear / Panels / Fire Alarm / Floor Drain	1	100	100
4.03	Water	Water and Fire Entry / Water Heaters	1	65	65
4.04	MDF/Server Room	Separate HVAC / Facility Wi-Fi Spots / IP Phone System/ Fiber Entry / Grounding / Servers/ Floor Drain / Comm Equipment/ Cable Tray	1	80	80
				Subtotal Net Square Footage	**445**
				Total Net Square Footage of Administration Areas	**4,871**
				Total Net Square Footage	**4,871**

TOTAL NET BUILDING SQUARE FOOTAGE	**4,871**
CIRCULATION, WALLS, AND CORRIDORS GROSSING FACTOR OF 15%	**731**
TOTAL GROSS SQUARE FOOTAGE	**5,602**

Table C.3: Preliminary Concept Space List - Outdoor Training Areas

PRELIMINARY CONCEPT SPACE LIST - OUTDOOR TRAINING AREAS
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC
ARCHITECTS · ENGINEERS · PLANNERS

March 15, 2019

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
Site Amenities					
1.00	**Vehicle Training**				
1.01	Emergency Vehicle Operations Course (EVOC)	Driver Training Course / Roadway Training Areas / Cul-de-Sac / Neighborhood Road with (2) Houses	1	100,000	100,000
1.02	Fire Props	Flammable Liquids and Gases / Fuel Distribution / Outdoor Gas-Fired Props / Fuel Spill Fire / Vehicle Fire / Dumpster Fire / LP Tank Fire / Gas Main Break Fire / Christmas Tree Fire / Industrial Fire / Extinguisher Training Area / Bleacher Area	10	800	8,000
1.03	Storage	Portable Equipment / Vehicles / Props	3	1,400	4,200
				Subtotal Net Square Footage	**112,200**
2.00	**Fire Fighter Training**				
2.01	Drill Tower	Existing On Site	0	0	0
2.02	Drafting Pit	Pump / Ladder / Hose Testing / Bleacher Area	1	1,500	1,500
2.03	Live Fire Training Structure	Existing House	1	2,500	2,500
2.04	Respiratory Protection Training Lab	Room in Existing Training Tower	0	0	0
2.05	Technical Rescue Area	High Angle / Collapse / Trench / Confined Space / Vehicle Extrication	1	10,000	10,000
2.06	Rail Incident Training		1	7,500	7,500
2.07	Fire Behavior Lab	Flashover Container / Bleacher Area	1	3,000	3,000
2.08	Rapid Intervention Crew (RIC)	Saving your Own Training Prop	1	5,000	5,000
				Subtotal Net Square Footage	**29,500**
3.00	**Site Support**				
3.01	Water Distribution	Hydrants / Hook-ups	4	100	400
3.02	Environmental Cleanup	Dumpsters	3	1,000	3,000
3.03	Water Filtration and Reclamation	NFPA Standard / Storage Tank / Connections	1	400	400
3.04	Parking	Daily and Event	300	325	97,500
				Subtotal Net Square Footage	**101,300**
				Total Net Square Footage of Site Amenities	**243,000**
Site Structures					
4.00	**Outdoor Classrooms**				
4.01	Outdoor Classrooms	Pavilion / Open Air Structure / Markerboards / A/V / Bleachers	3	500	1,500
4.02	Storage		1	100	100
4.03	Safety Monitoring and Control Areas	Various Areas around the Site	6	50	300
				Subtotal Net Square Footage	**1,900**

Table C.3: Preliminary Concept Space List - Outdoor Training Areas (Continued)

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)
5.00	**Restroom Facilities**				
5.01	Locker Room	Metal Lockers/ Benches	1	450	450
5.02	Restroom	w/ 6 Showers	1	500	500
5.03	Restroom	w/ 6 Showers	1	500	500
5.04	Uni-Sex Restroom	w/ Shower	1	90	90
				Subtotal Net Square Footage	**1,540**
6.00	**Hazardous Containment Areas**				
6.01	Decontamination Area	Showers / Sinks / Eye Wash	2	200	400
6.02	Hazardous Containment Room		2	400	800
6.03	Laundry / Turnout Gear Extractor		2	100	200
6.04	Uni-Sex Restroom		2	80	160
				Subtotal Net Square Footage	**1,560**
7.00	**Rehabilitation Areas**				
7.01	Rehabilitation Areas		2	400	800
				Subtotal Net Square Footage	**800**
				Total Net Square Footage of Site Structures	**5,800**

TOTAL NET BUILDING SQUARE FOOTAGE	**5,800**
CIRCULATION, WALLS, AND CORRIDORS GROSSING FACTOR OF 20%	**1,160**
TOTAL GROSS SQUARE FOOTAGE	**6,960**

APPENDIX D - CONCEPTS

Figure D.1: Option 01 Concept Site Plan



Figure D.2: Option 1 First Floor

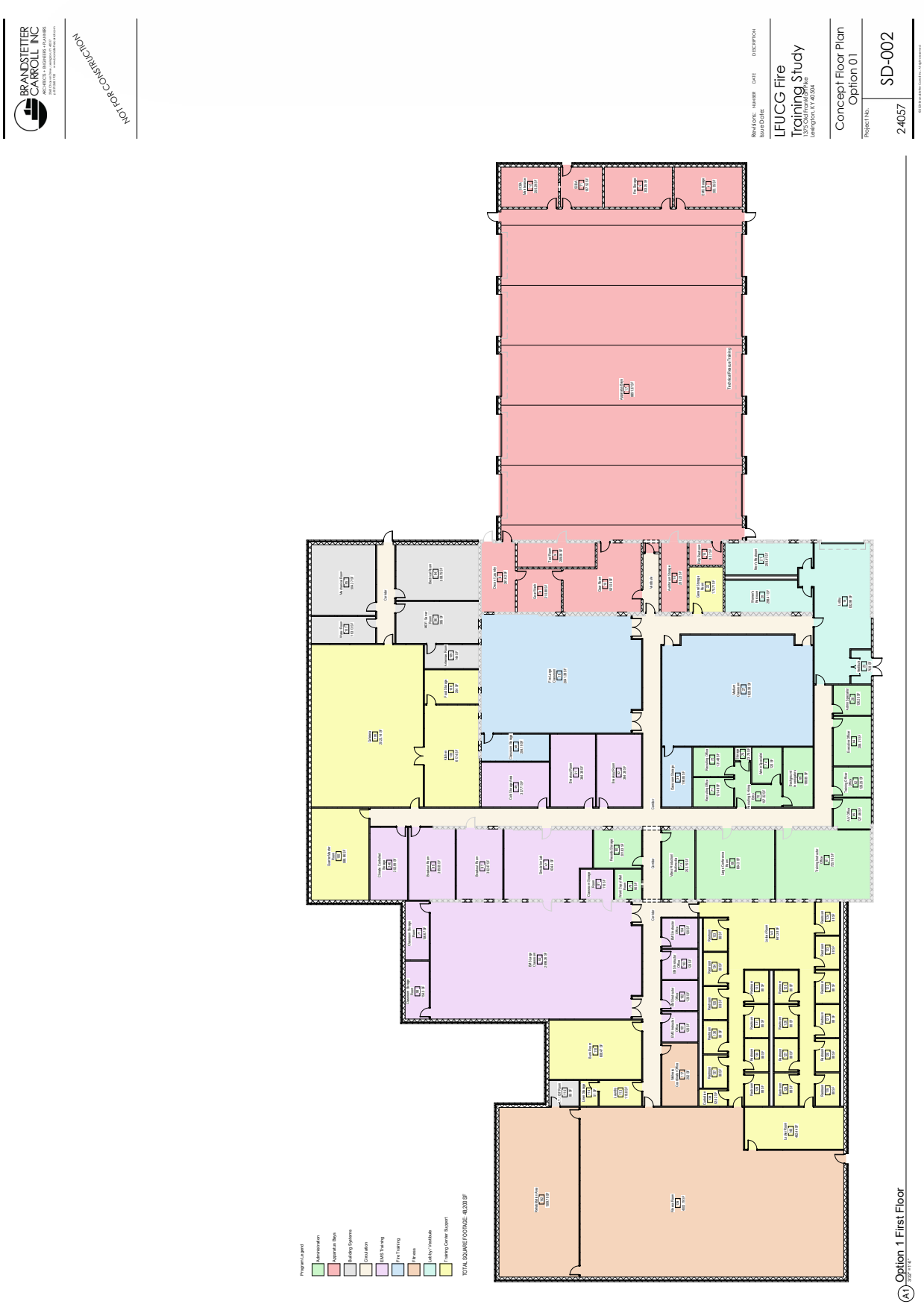


Figure D.3: Option 1 First Floor Hot Zones

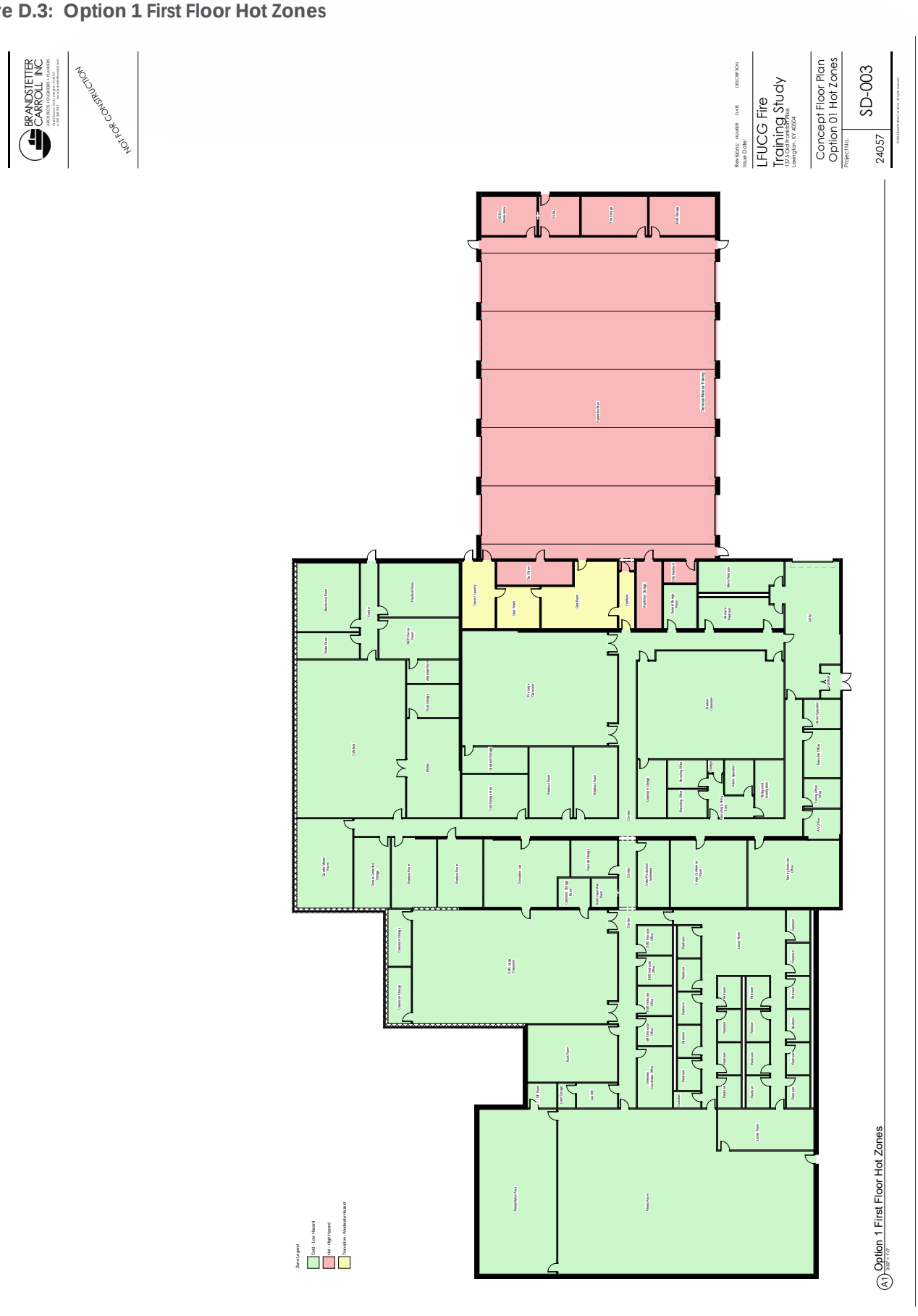


Figure D.4: Option 02 Site Plan

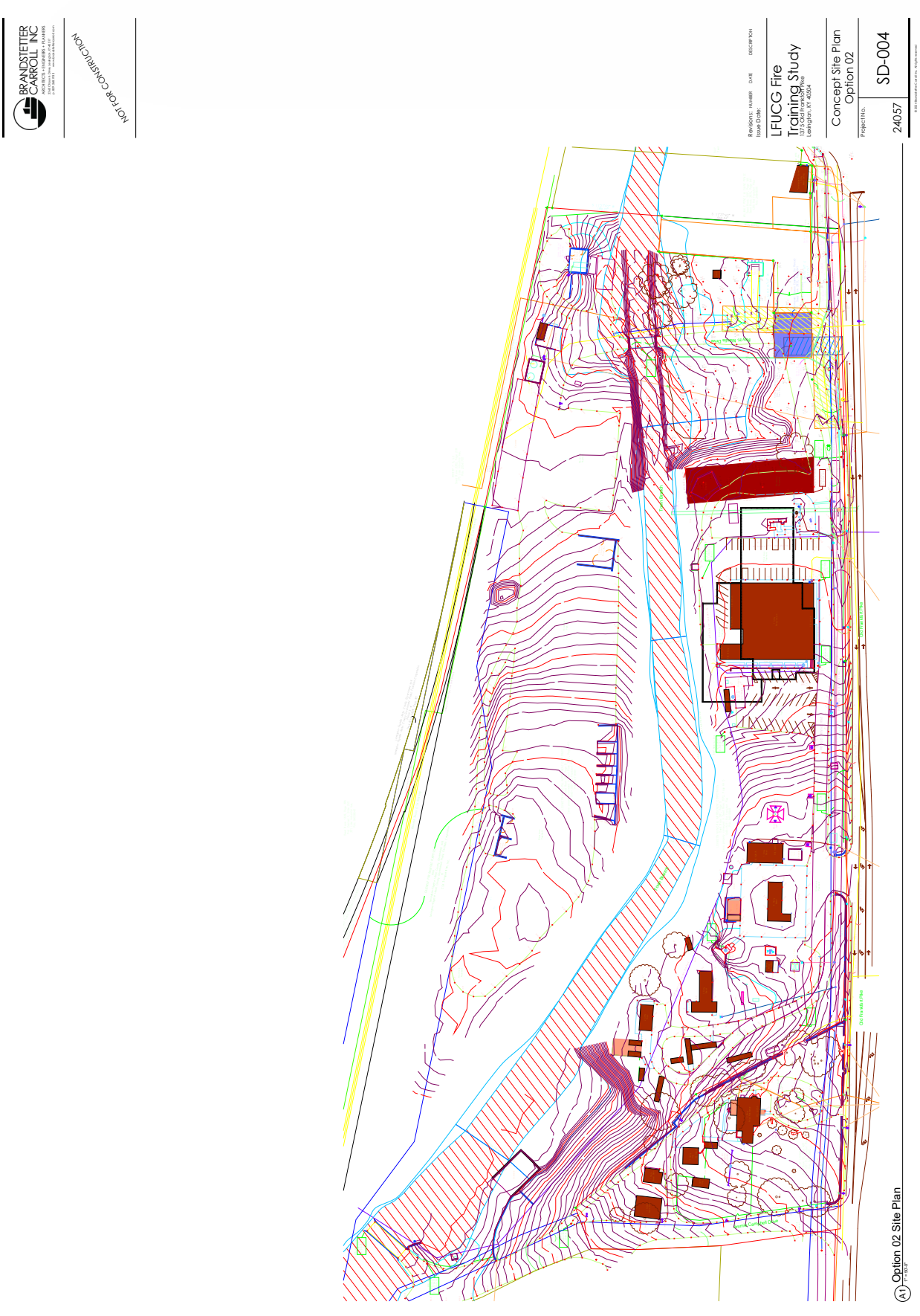


Figure D.5: Option 2 First Floor

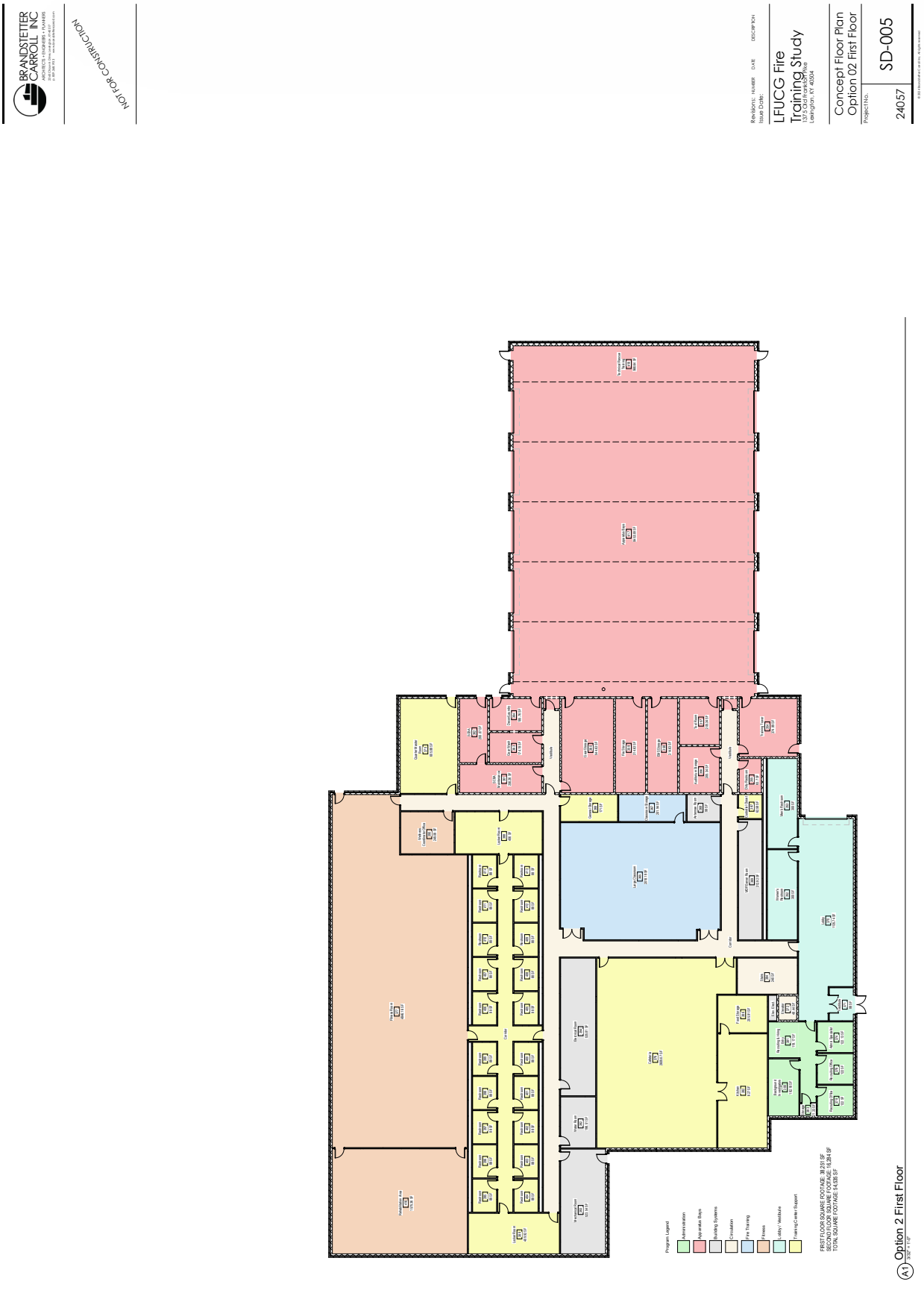
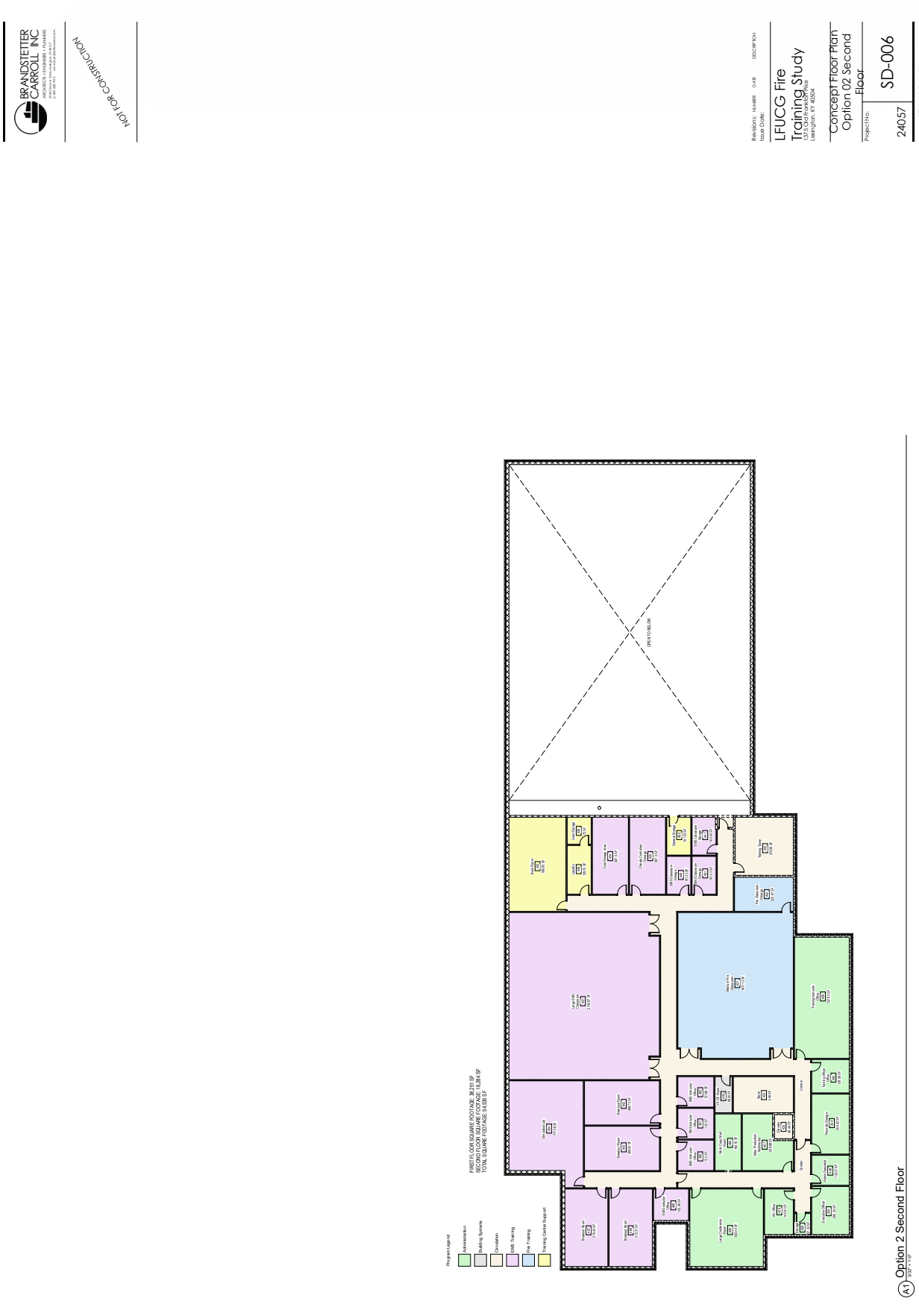
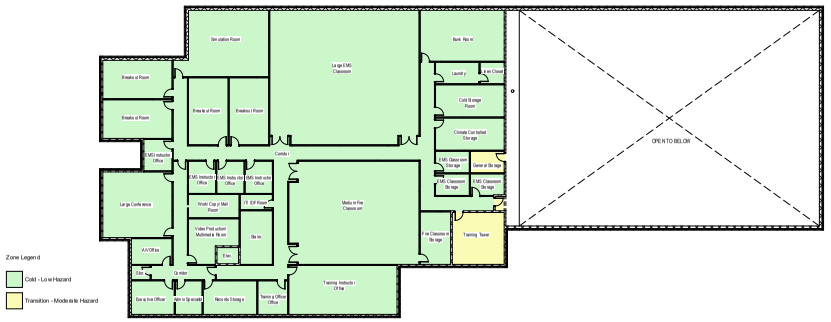
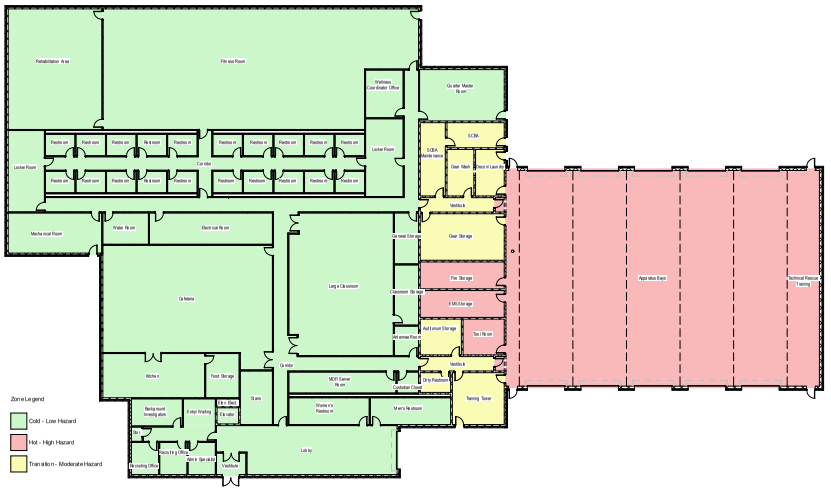


Figure D.6: Option 2 Second Floor





C1 Option 2 Second Floor Hot Zones
1/16" = 1'-0"



A1 Option 2 First Floor Hot Zones
1/16" = 1'-0"

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

NOT FOR CONSTRUCTION

Revisions: NUMBER DATE DESCRIPTION
Issue Date:

LFUCG Fire Training Study
137.5 Old Frankfort Pike
Lexington, KY 40504

Concept Floor Plan
Option 02 Hot Zones

Project No.
24057

SD-007

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Figure D.7: Option 2 First Floor Hot Zones

Figure D.8: Site Plan Concept Option 1 - Renovation & Addition



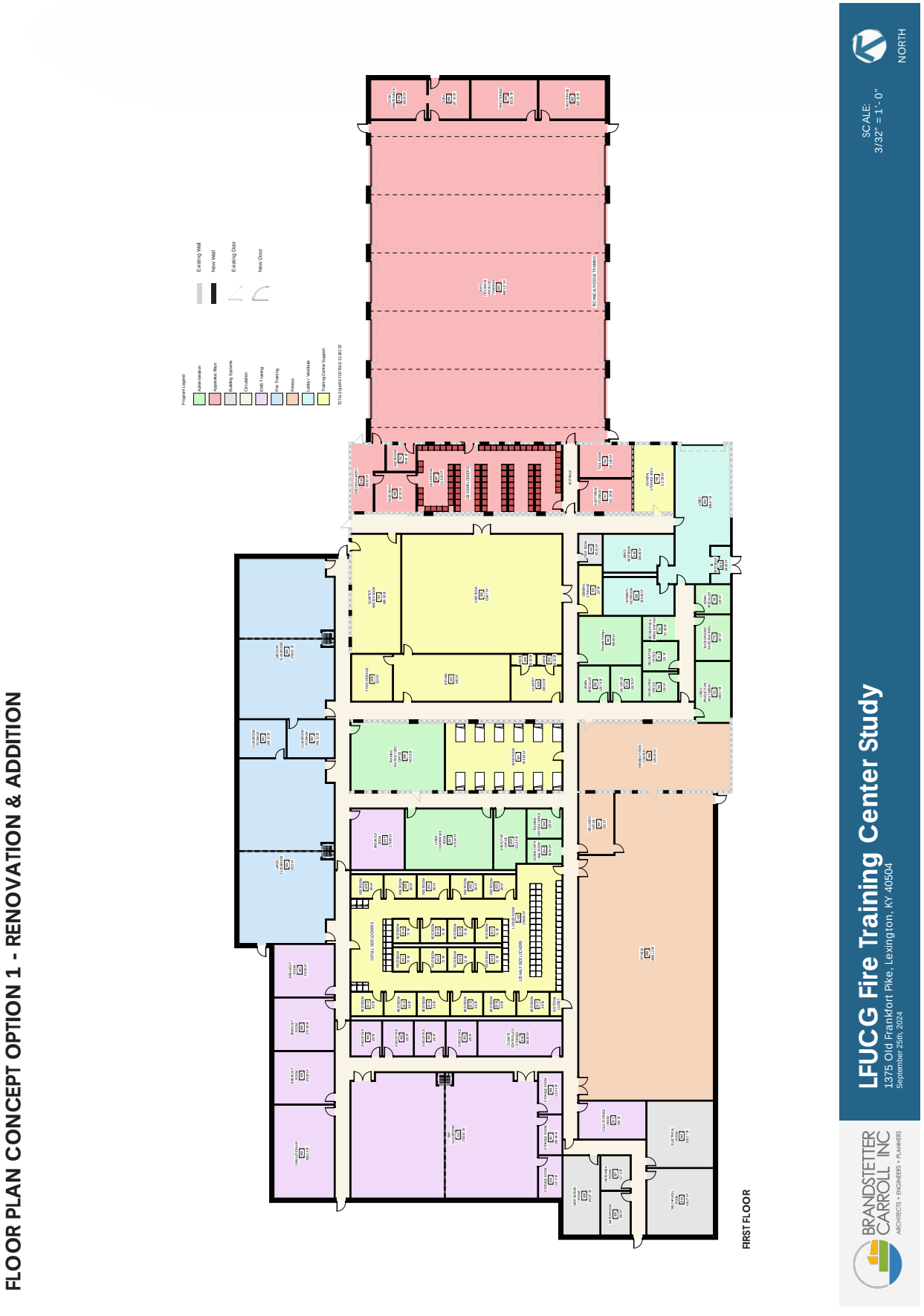

FLOOR PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION
FIRST FLOOR
LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
September 25th, 2024
SCALE:
3/32" = 1' - 0"
NORTH
BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

Figure D.10: Hot Zones Plan Concept Option 1 - Renovation & Addition

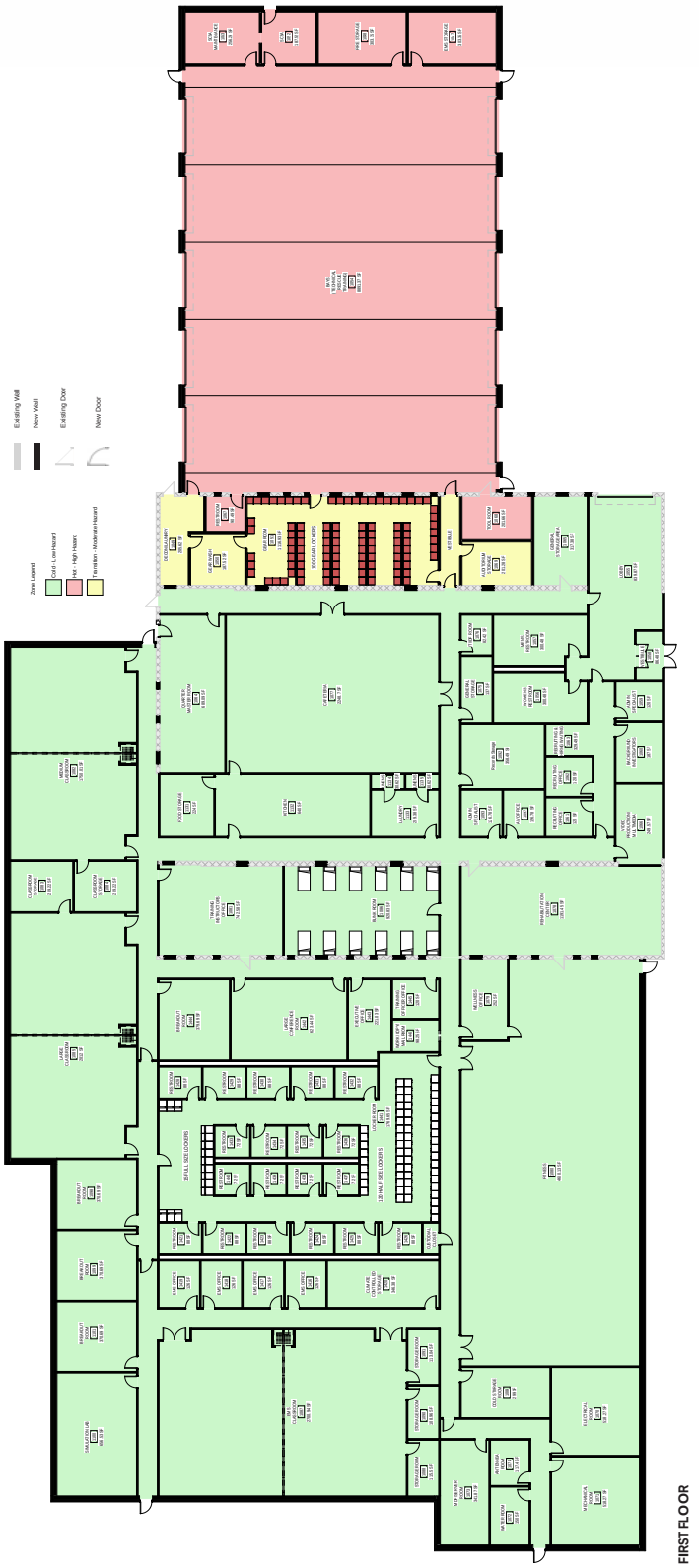
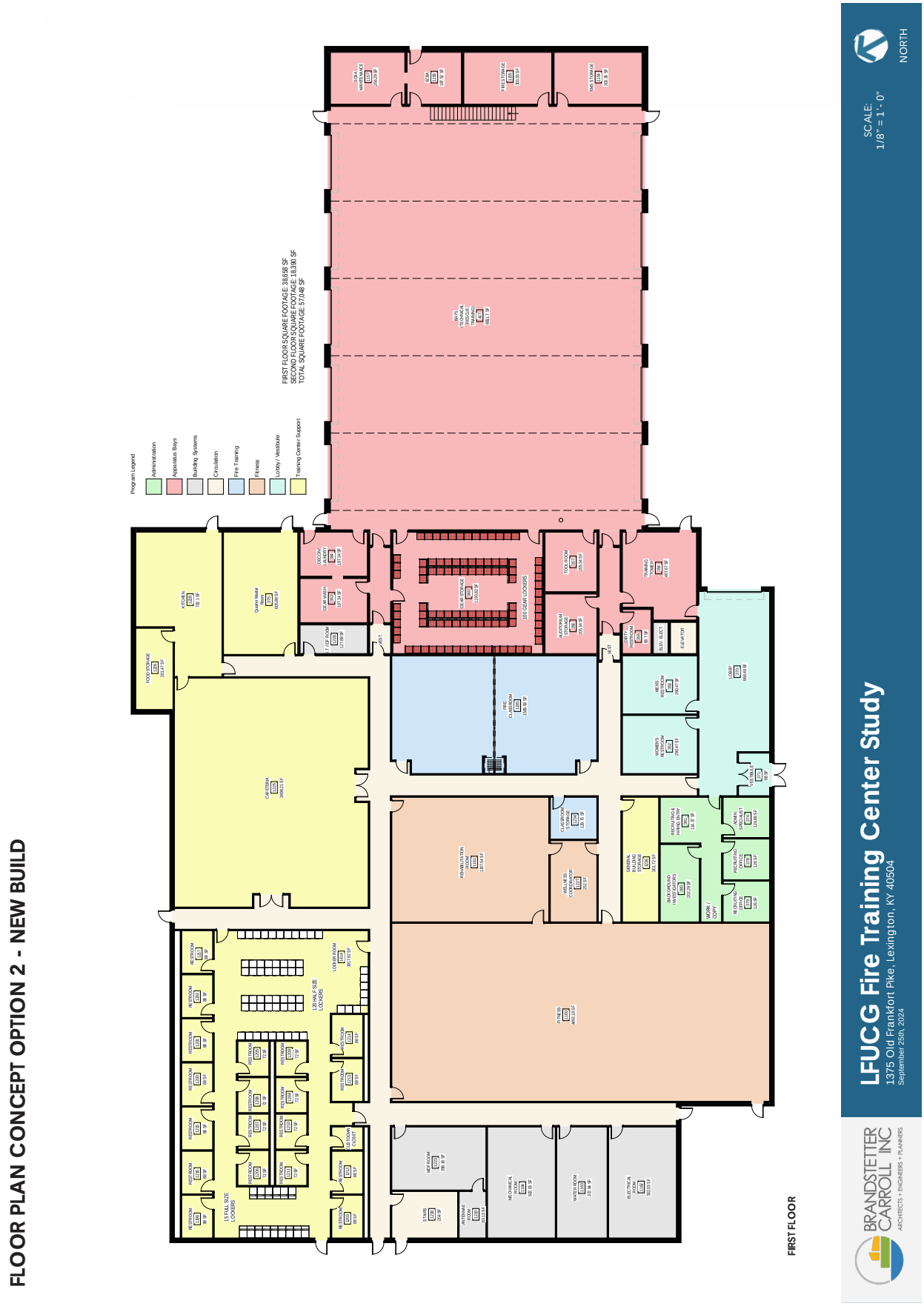


Figure D.11: Site Plan Concept Option 2 - New Build



Figure D.12: Floor Plan Concept Option 2, First Floor - New Build




FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD
SECOND FLOOR
Program Legend
Administration
Apparatus Bays
Building Systems
Circulation
EMS Training
Fire Training
Training Center Support
FIRST FLOOR SQUARE FOOTAGE: 38,251 SF
SECOND FLOOR SQUARE FOOTAGE: 16,284 SF
TOTAL SQUARE FOOTAGE: 54,535 SF
MEZZANINE
OPEN TO BELOW
FIREPOLE
ROOF BELOW (FUTURE EXPANSION)
LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
September 25th, 2024
SCALE:
1/8" = 1' - 0"
NORTH
BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

Figure D.14: Hot Zones Plan Concept Option 2 - New Build

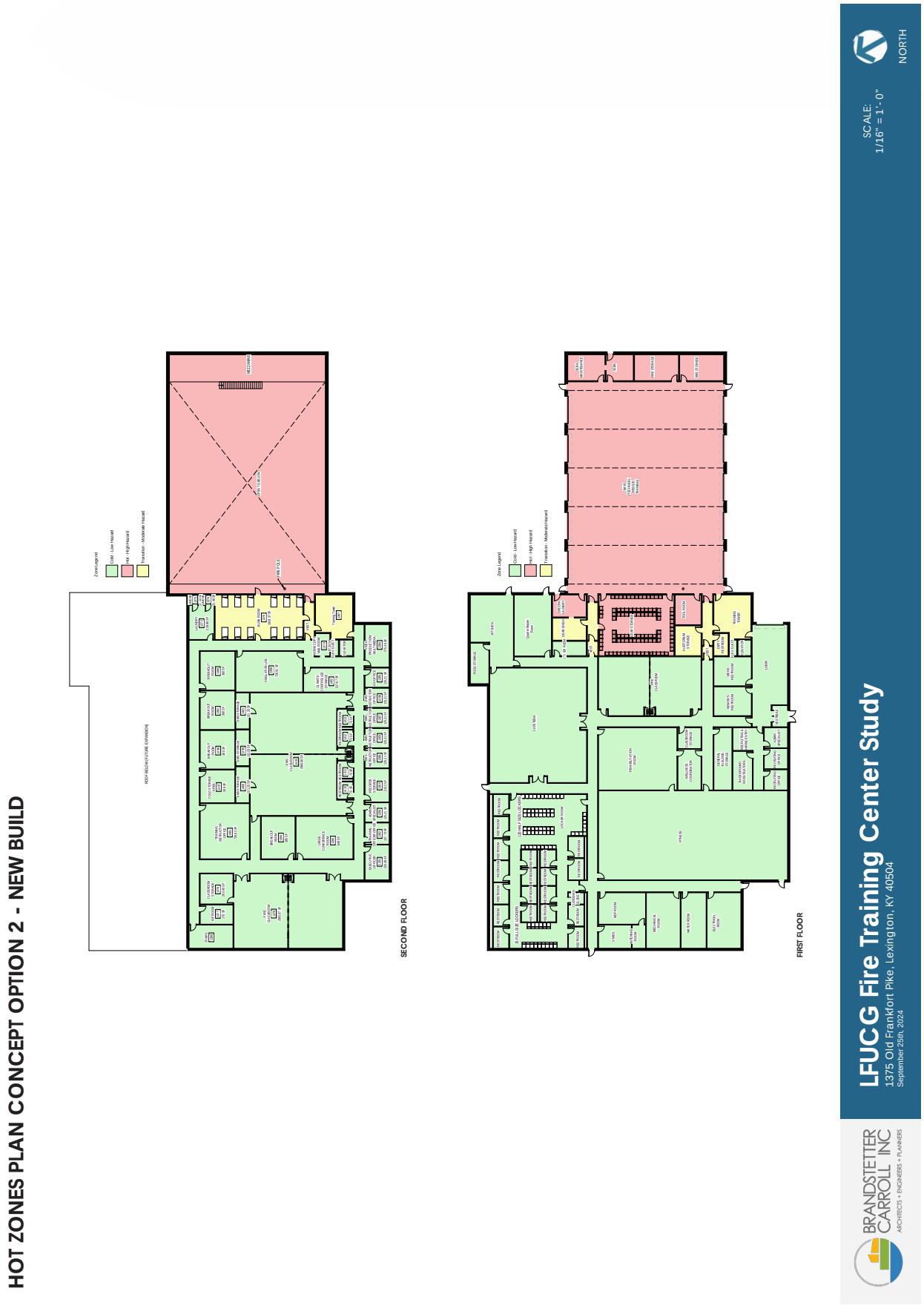
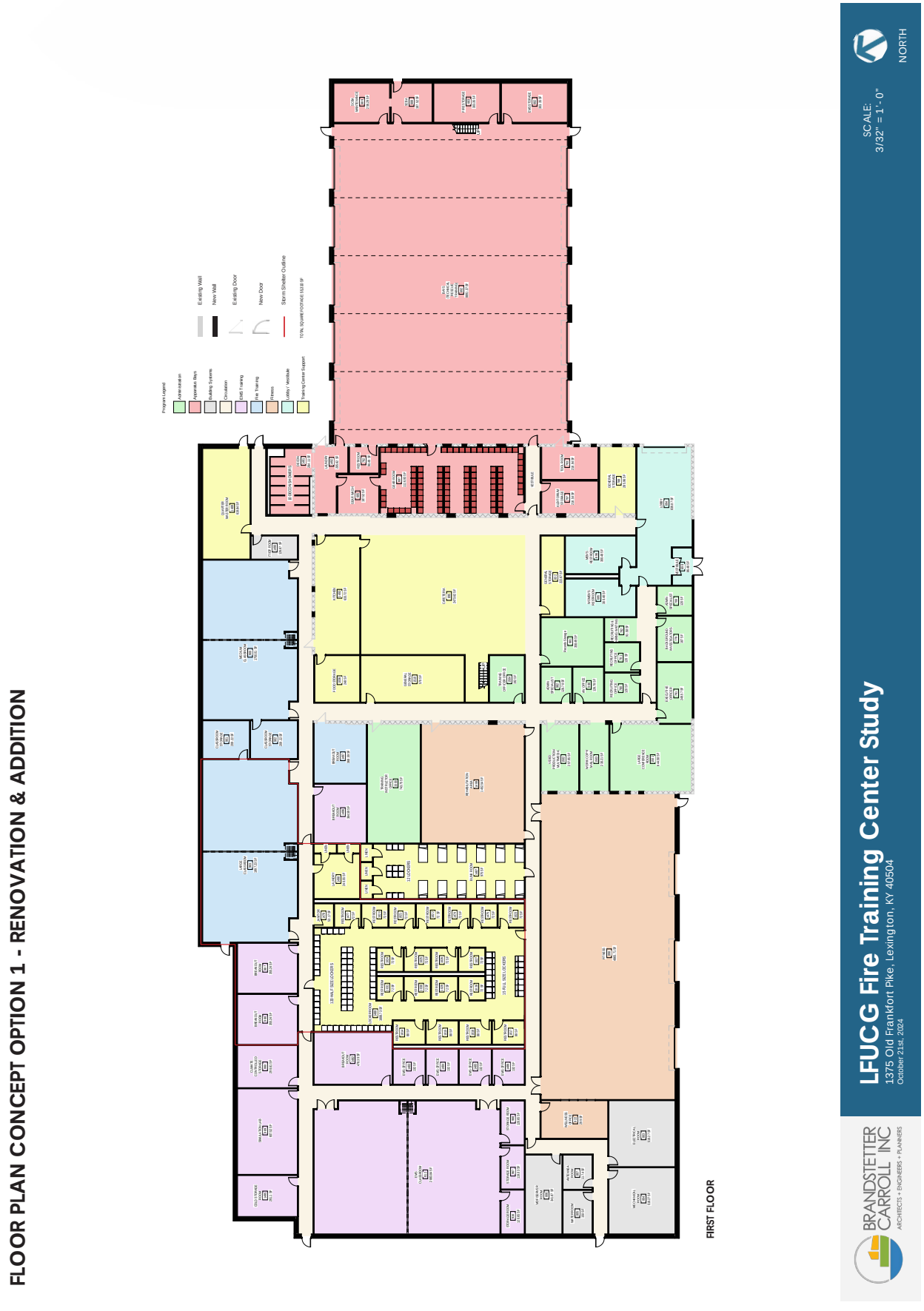


Figure D.15: Site Plan Concept Option 1 - Renovation & Addition



Figure D.16: Floor Plan Concept Option 1, First Floor - Renovation & Addition



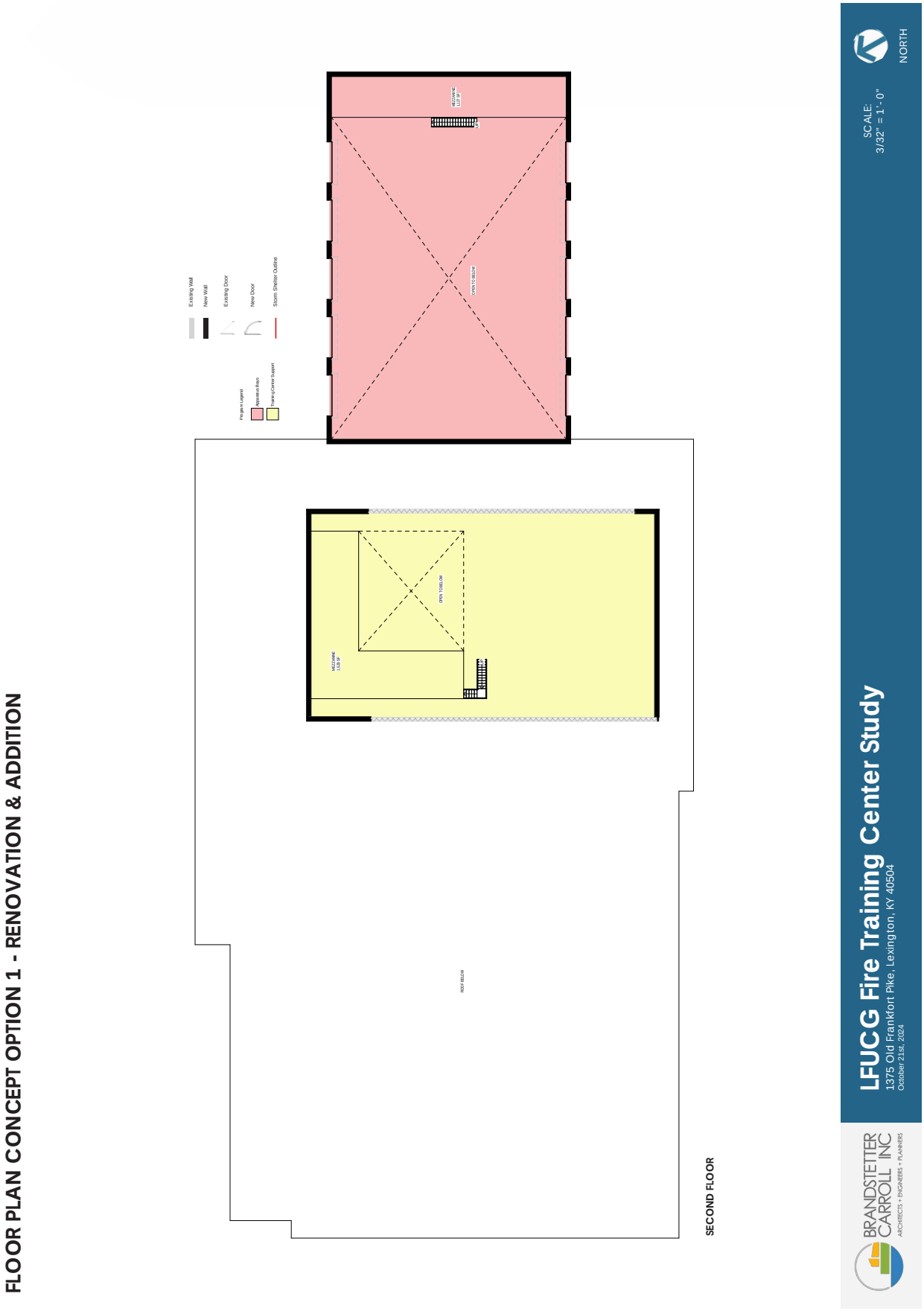

FLOOR PLAN CONCEPT OPTION 1 - RENOVATION & ADDITION
SECOND FLOOR
Existing Wall
New Wall
Existing Door
New Door
Storm Shelter Outline
Program Legend
Apparatus Bays
Training/Center Support
OPEN TO BELOW
ROOF BELOW
SCALE: 3/32" = 1' - 0"
NORTH
LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
October 21st, 2024
BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

Figure D.18: Hot Zones Plan Concept Option 1 - Renovation & Addition

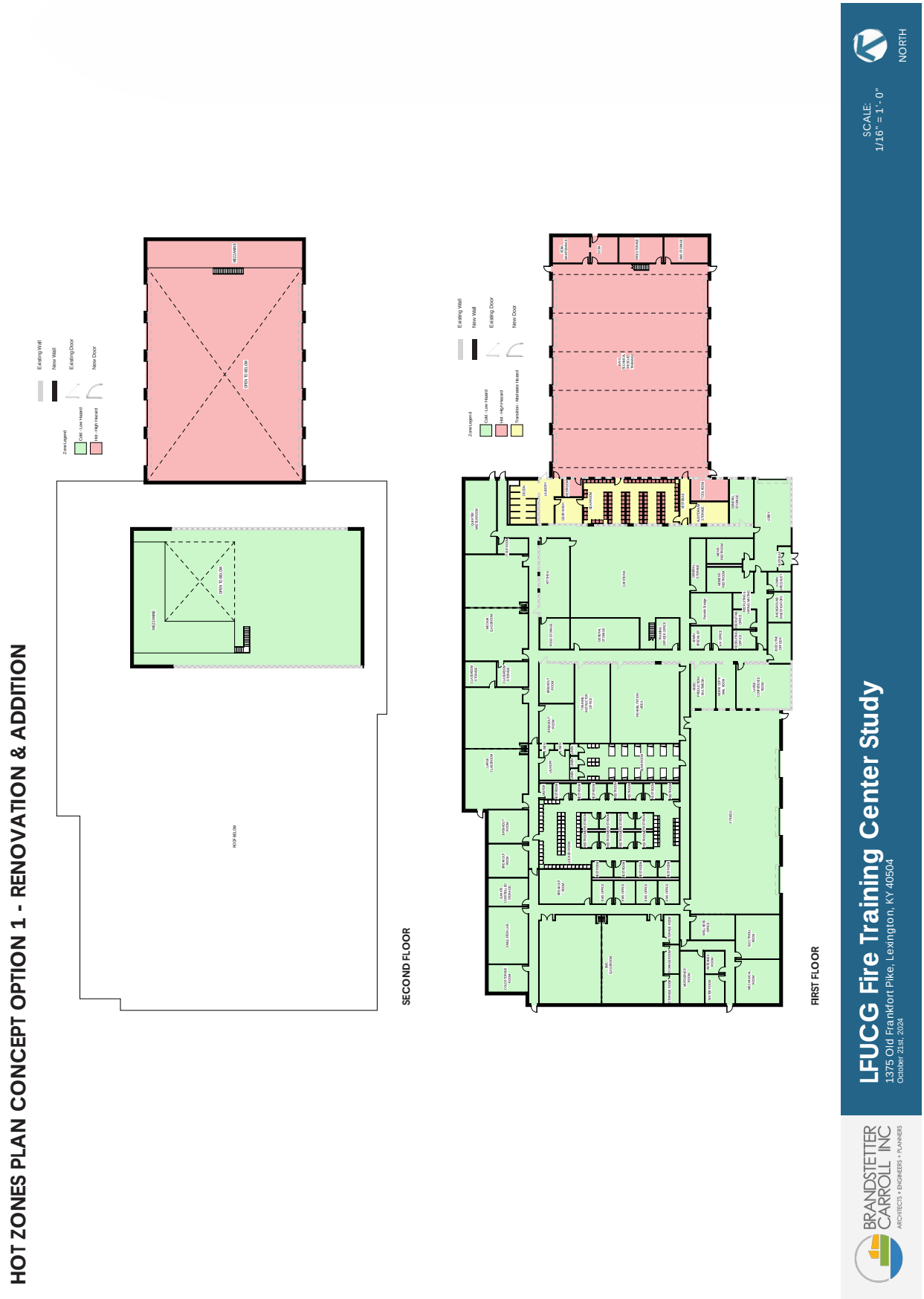
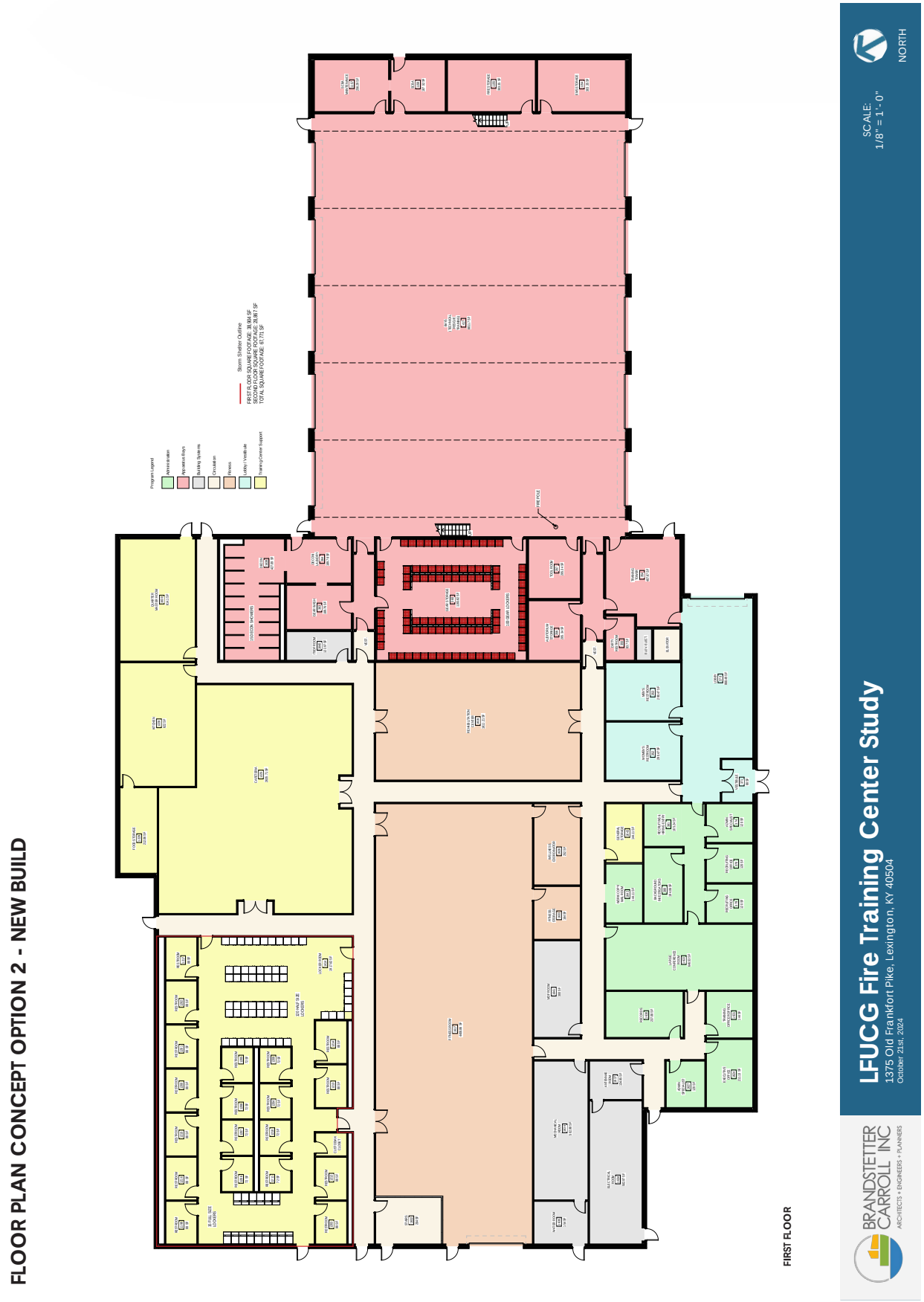


Figure D.19: Site Plan Concept Option 2 - New Build



Figure D.20: Floor Plan Concept Option 2, First Floor - New Build



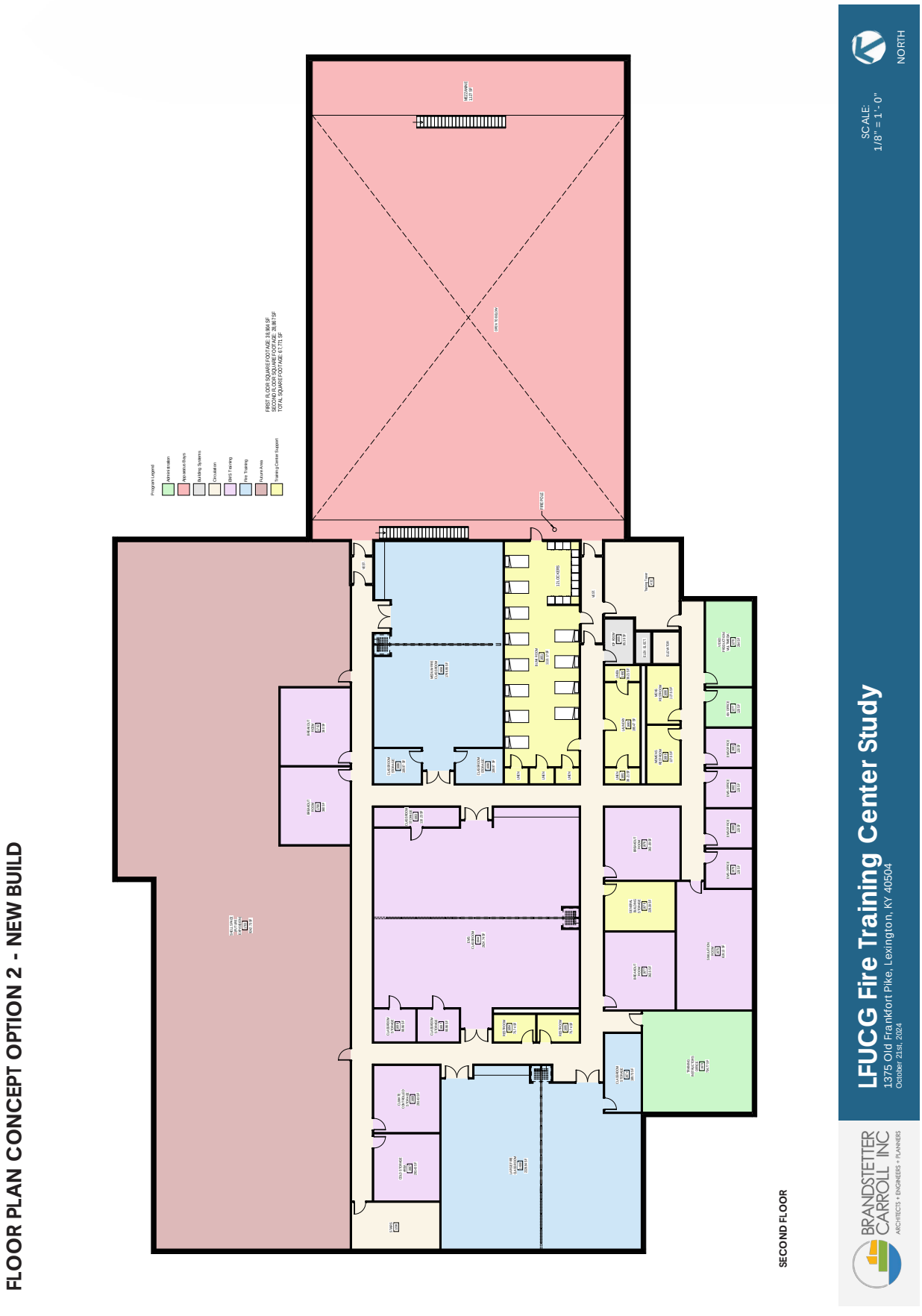

FLOOR PLAN CONCEPT OPTION 2 - NEW BUILD
SECOND FLOOR
LFUCG Fire Training Center Study
1375 Old Frankfort Pike, Lexington, KY 40504
October 21st, 2024
SCALE:
1/8" = 1' - 0"
NORTH
BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

Figure D.22: Hot Zones Plan Concept Option 2 - New Build

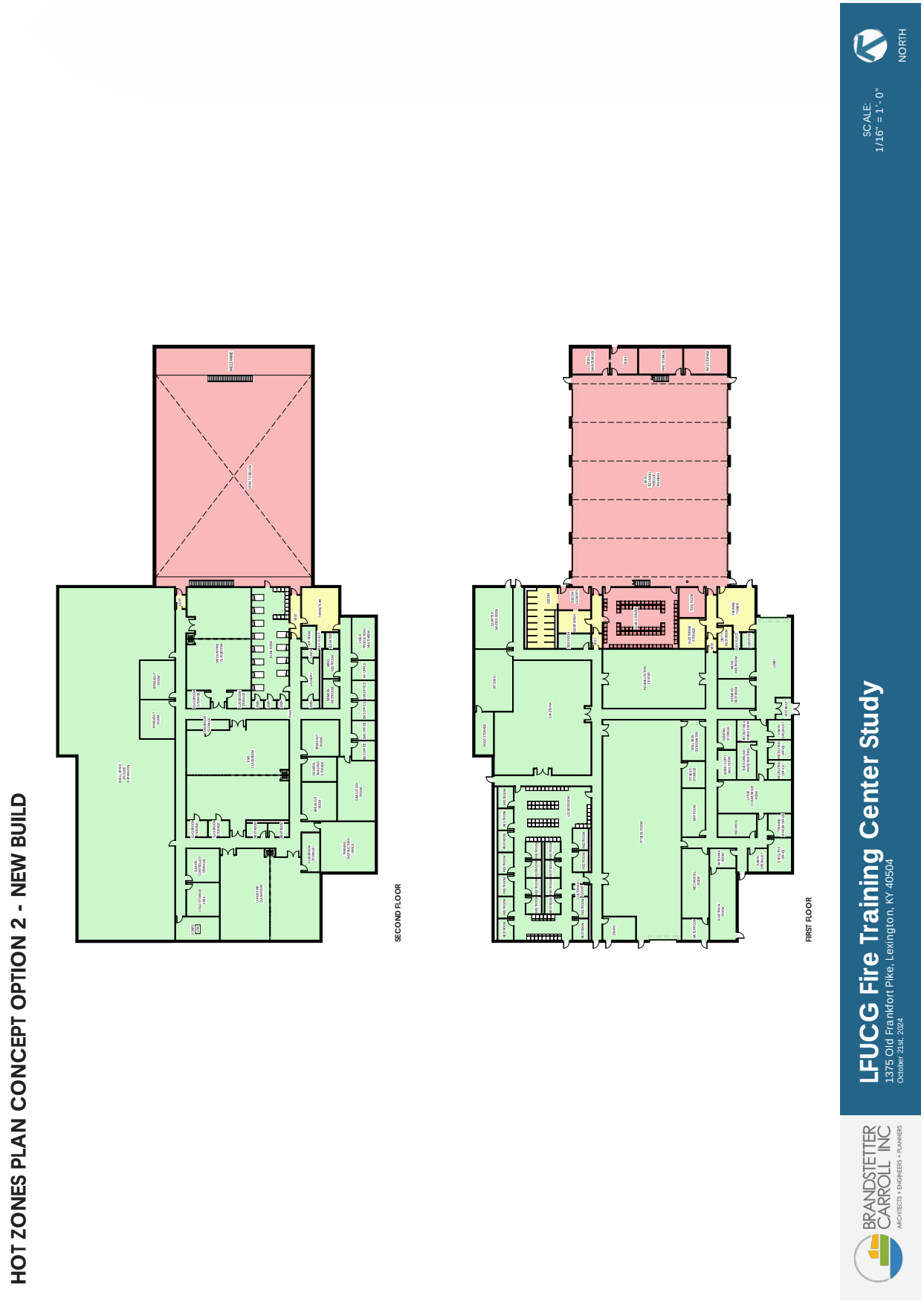


Figure D.23: Fire Training Center Site Improvement Plan



Figure D.24: Site Plan Concept Option 3 - New Build



Figure D.25: Site Plan Concept Option 1 - Renovation & Addition - Phasing Plan

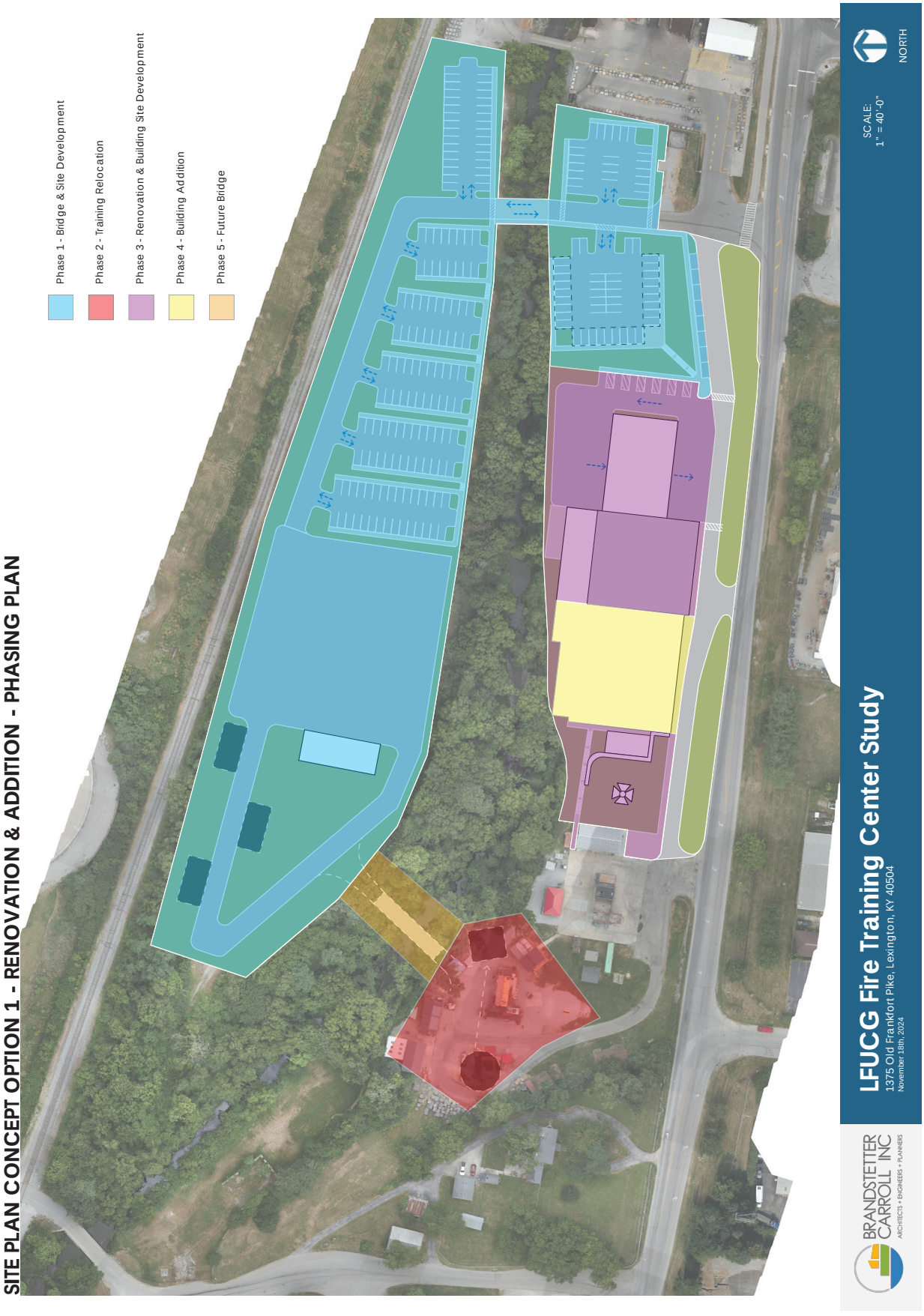
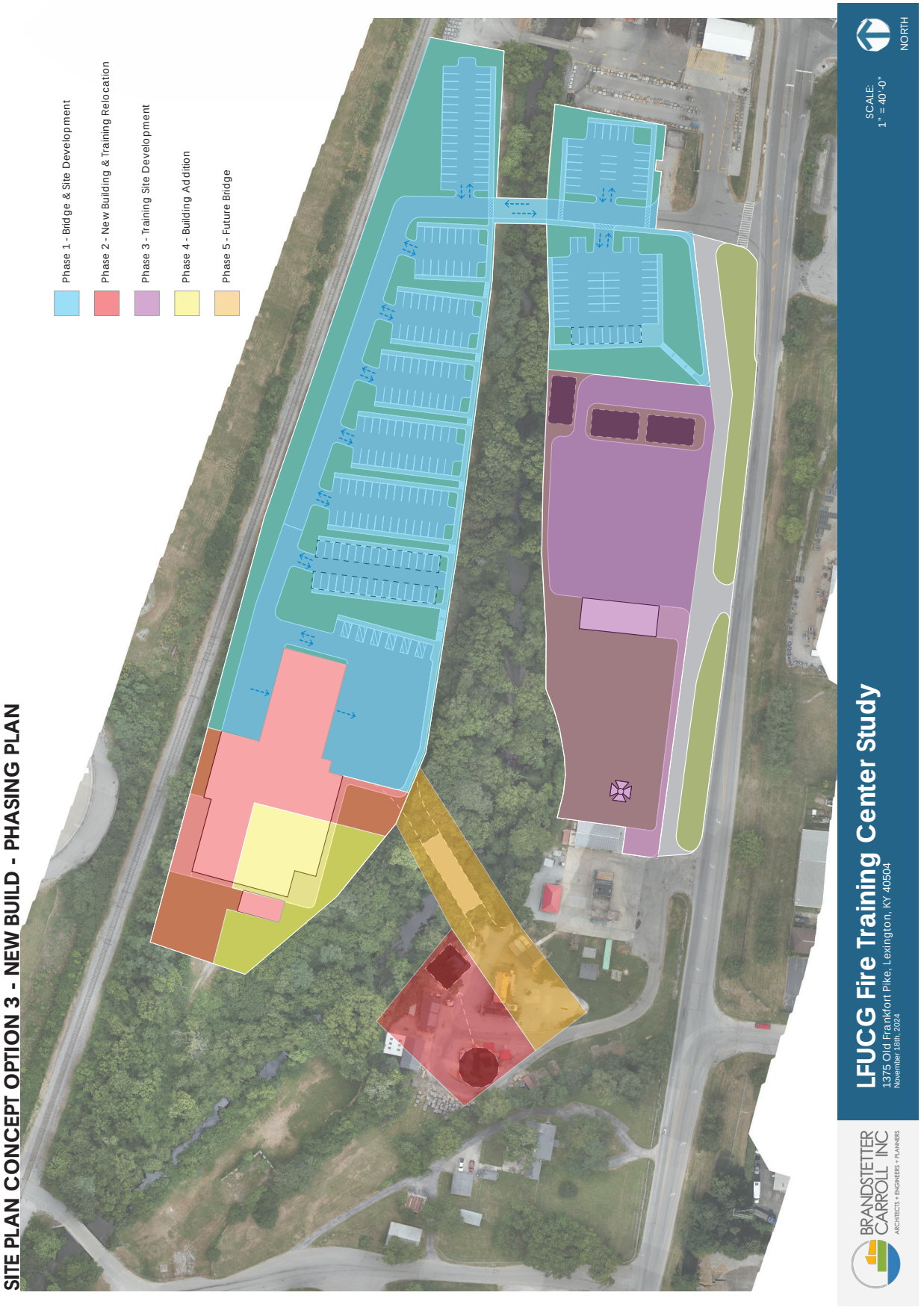


Figure D.26: Floor Plan Concept Option 1 - Renovation & Addition - Phasing Plan



Figure D.27: Site Plan Concept Option 3 - Phasing Plan



APPENDIX E - OPINION OF COSTS

Table E.1: LFUCG Fire Training Center Study Site Plan Concept Option

DATE: October 14, 2024

SUMMARY:	TOTAL COST $
EXTERIOR IMPROVEMENTS	3,158,965
SITE UTILITIES	354,800
TOTAL DIRECT COST	**3,513,765**
GENERAL REQUIREMENTS (10%)	351,377
G.C.'S FEE (4%)	154,606
DESIGN CONTINGENCY (10%)	401,975
ESCALATION (6%) - 2 Years	530,607
TOTAL ESTIMATED COST	**$4,952,329**

DIVISION 32 EXTERIOR IMPROVEMENTS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
321213	**ASPHALT PAVING**				
321213/010	Asphalt paving, heavy duty	2,300	SY	44.00	101,200
321213/010	Asphalt paving, apparatus	3,700	SY	44.00	162,800
321213/020	Asphalt paving	12,000	SY	36.00	432,000
					696,000
321313	**CONCRETE PAVING**				
321313/010	HD Concrete paving	58,630	SF	18.00	1,055,340
321313/020	Courtyard	1,500	SF	24.00	36,000
321313/030	Civic space	1,400	SF	30.00	42,000
					1,133,340
323100	**SITE IMPROVEMENTS**				
323100/010	Monumental sign base	1	EA	3,500.00	3,500
323100/020	Covered parking	4,400	SF	40.00	176,000
323100/030	Two lane bridge with pedestrian access	1,400	SF	750.00	1,050,000
					1,229,500
329000	**LANDSCAPING**				
329000/010	Trees	20	EA	950.00	19,000
329000/020	Shrubs	75	EA	175.00	13,125
329000/030	Landscaped beds	4,500	SF	8.00	36,000
329000/040	Seeding	4,000	SY	8.00	32,000
					100,125
	EXTERIOR IMPROVEMENTS TOTAL				**$3,158,965**

DIVISION 33 SITE UTILITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
334000	**SITE UTILITIES**				
334000/010	Domestic water & fire water	300	LF	75.00	22,500
334000/020	Fire hydrant	1	EA	2,300.00	2,300
334000/030	Water hook ups	3	EA	2,100.00	6,300
					31,100
334100	**STORMWATER**				
334100/010	Storm drains	2,100	LF	45.00	94,500
334100/020	Headwalls	6	EA	2,900.00	17,400
334100/030	Catch basin	8	EA	2,100.00	16,800
					128,700
337000	**SITE ELECTRICAL**				
337000/010	Underground electric	150	LF	350.00	52,500
337000/020	Pole lightings	20	EA	4,500.00	90,000
337000/030	Bollard lights	15	EA	3,500.00	52,500
					195,000
	UTILITIES TOTAL				**$354,800**

Table E.2: LFUCG Fire Training Center Study New Facility

GROSS SQ. FT. 58,330 sf **DATE:** October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
EXISTING CONDITIONS	3.29	191,640
SUBSTRUCTURE	23.99	1,399,450
SUPERSTRUCTURE	45.50	2,654,250
EXTERIOR ENCLOSURE	56.54	3,298,000
ROOFING	21.06	1,228,330
STAIRS AND CONVEYING	2.13	124,500
INTERIOR CONSTRUCTION	97.02	5,659,150
FIRE PROTECTION	7.50	437,475
PLUMBING	13.78	803,648
HVAC	56.49	3,294,950
ELECTRICAL	45.00	2,624,850
COMMUNICATIONS	6.00	349,980
SECURITY	10.00	583,300
TOTAL DIRECT COST	**$388.30**	**22,649,523**
GENERAL REQUIREMENTS (8%)		1,811,962
G.C.'S FEE (5%)		1,223,074
DESIGN CONTINGENCY (15%)		3,852,684
ESCALATION (6%) - 2 Years		3,544,469
TOTAL ESTIMATED COST	**$567.29**	**$33,090,000**

NOTES:

Excludes

Emergency generator & UPS

Bi-fold doors

SUBSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	38,550	SF	18.00	693,900
033000/020	Concrete grade beams	955	LF	200.00	191,000
033000/030	Concrete footings	20	EA	2,900.00	58,000
033000/040	Elevator pits	1	EA	15,000.00	15,000
					957,900
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	38,550	SF	11.00	424,050
316300/020	Mobilization	1	LS	17,500.00	17,500
					441,550
	SUBSTRUCTURE TOTAL				**$1,399,450**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete suspended slabs	29,500	SF	15.00	442,500
					442,500
051000	**STRUCTURAL METAL FRAMING**				
051000/010	Structural steel framing	120	TONS	8,400.00	1,008,000
051000/020	Floor and roof joists	80	TONS	8,200.00	656,000
051000/030	Floor deck	29,500	SF	8.50	250,750
051000/040	Roof deck	9,000	SF	8.00	72,000
051000/050	Miscellaneous steel framing	25	TONS	9,000.00	225,000
					2,211,750
	SUPERSTRUCTURE TOTAL				**$2,654,250**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
042113	**BRICK MASONRY**				
042113/010	Facing brick	32,400	SF	70.00	2,268,000
042113/020	Brick details, sills, etc	1	LS	567,000.00	567,000
					2,835,000
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	17	EA	2,400.00	40,800
					40,800
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
084110	**STOREFRONT SYSTEMS**				
084110/010	Aluminum framed windows	3,500	SF	75.00	262,500
084110/020	Aluminum storefront	300	SF	75.00	22,500
084110/030	Entrance doors, double	2	EA	6,600.00	13,200
					298,200
	EXTERIOR ENCLOSURE TOTAL				**$3,298,000**

ROOFING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
074113	**ROOFING**				
074113/010	Single ply memebrane roofing, including flashing, fascia and access	38,500	SF	30.00	1,155,000
074113/020	Caulking and sealants	58,330	SF	1.00	58,330
074113/030	Canopies	1	LS	15000.00	15,000
					1,228,330
	ROOFING TOTAL				**$1,228,330**

STAIRS AND CONVEYING SYSTEMS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
055100	**METAL STAIRS**				
055100/010	Metal pan stairs with metal railings	2	FLT	13,500.00	27,000
055100/020	Mezzanine stair	1	FLT	7,500.00	7,500
					34,500
142100	**ELEVATORS**				
142100/010	Passenger elevator, 2 stop	1	EA	90,000.00	90,000
					90,000
	STAIRS AND CONVEYING SYSTEMS TOTAL				**$124,500**

INTERIOR CONSTRUCTION

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
099000	**INTERIOR CONSTRUCTION**				
099000/010	Aministration	3,635	SF	80.00	290,800
099000/020	Apparatus Bay	14,600	SF	110.00	1,606,000
099000/030	Building Systems	2,315	SF	50.00	115,750
099000/040	Circulation	8,190	SF	40.00	327,600
099000/050	Fire Training	4,210	SF	70.00	294,700
099000/060	Fitness	6,190	SF	60.00	371,400
099000/070	Lobby	1,685	SF	120.00	202,200
099000/080	Training support	10,485	SF	140.00	1,467,900
099000/090	EMS training	7,020	SF	140.00	982,800
					5,659,150
	INTERIOR CONSTRUCTION TOTAL				**$5,659,150**

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**STORM DRAINAGE**				
221400/010	Storm drainage system	58,330	SF	1.50	87,495
					87,495
221600	**GAS PIPING**				
221600/010	Pipe & fittings	58,330	SF	0.75	43,748
					43,748
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	58,330	SF	0.50	29,165
					29,165
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	58,330	SF	1.50	87,495
					87,495
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	31	EA	5,900.00	182,900
224000/020	Lavatories	32	EA	5,900.00	188,800
224000/030	Urinals	6	EA	5,900.00	35,400
224000/040	Shower	23	EA	2,415.00	55,545
224000/050	Emergency station	1	EA	2,300.00	2,300
224000/070	Kitchen sink, with grease trap	1	EA	19,000.00	19,000
224000/040	Sinks	6	EA	5,900.00	35,400
224000/050	Mop sinks	2	EA	5,900.00	11,800
224000/060	Washer box	3	EA	400.00	1,200
224000/060	Water coolers	3	EA	7,800.00	23,400
					555,745
	PLUMBING TOTAL				**$803,648**

MECHANICAL - HVAC

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
238220	**HVAC SYSTEM**				
238220/010	Training facility	46,630	SF	65.00	3,030,950
238220/020	Truck bays	11,700	SF	20.00	234,000
238220/030	Kitchen hood	1	EA	30,000.00	30,000
					3,294,950
	HVAC TOTAL				**$3,294,950**

Table E.3: LFUCG Fire Training Center Study Renovation & Addition

RENOVATION	16,000	sf
ADDITION	36,800	sf
GROSS SQ. FT.	52,800	sf

DATE: October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
EXISTING CONDITIONS	2.42	127,760
SUBSTRUCTURE	26.55	1,401,700
SUPERSTRUCTURE	44.50	2,349,400
EXTERIOR ENCLOSURE	49.14	2,594,400
ROOFING	31.28	1,651,800
INTERIOR CONSTRUCTION	97.44	5,144,750
FIRE PROTECTION	7.50	396,000
PLUMBING	11.65	615,185
HVAC	56.79	2,998,500
ELECTRICAL	45.00	2,376,000
COMMUNICATIONS	6.00	316,800
SECURITY	10.00	528,000
TOTAL DIRECT COST	**$388.26**	**20,500,295**
GENERAL REQUIREMENTS (8%)		1,640,024
G.C.'S FEE (5%)		1,107,016
DESIGN CONTINGENCY (15%)		3,487,100
ESCALATION (6%) - 2 Years		3,208,132
TOTAL ESTIMATED COST	**$567.23**	**$29,950,000**

NOTES:

Excludes

Emergency generator & UPS

Bi-fold doors

SUBSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	36,800	SF	18.00	662,400
033000/020	Concrete grade beams	1,220	LF	200.00	244,000
033000/030	Concrete footings	20	EA	2,900.00	58,000
033000/040	Elevator pits	1	EA	15,000.00	15,000
					979,400
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	36,800	SF	11.00	404,800
316300/020	Mobilization	1	LS	17,500.00	17,500
					422,300
	SUBSTRUCTURE TOTAL				**$1,401,700**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
051000	**STRUCTURAL METAL FRAMING**				
051000/010	Structural steel framing	150	TONS	8,400.00	1,260,000
051000/020	Floor and roof joists	75	TONS	8,200.00	615,000
051000/030	Roof deck	36,800	SF	8.00	294,400
051000/040	Miscellaneous steel framing	20	TONS	9,000.00	180,000
					2,349,400
	SUPERSTRUCTURE TOTAL				**$2,349,400**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
042113	**BRICK MASONRY**				
042113/010	Facing brick	24,600	SF	70.00	1,722,000
042113/020	Brick details, sills, etc	1	LS	431,000.00	431,000
					2,153,000
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	8	EA	2,400.00	19,200
					19,200
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
084110	**STOREFRONT SYSTEMS**				
084110/010	Aluminum framed windows	3,500	SF	75.00	262,500
084110/020	Aluminum storefront	300	SF	75.00	22,500
084110/030	Entrance doors, double	2	EA	6,600.00	13,200
					298,200
	EXTERIOR ENCLOSURE TOTAL				**$2,594,400**

ROOFING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
074113	**ROOFING**				
074113/010	Single ply memebrane roofing, including flashing, fascia and access	36,800	SF	30.00	1,104,000
074113/020	Replace roofing	16,000	SF	30.00	480,000
074113/030	Caulking and sealants	52,800	SF	1.00	52,800
074113/040	Canopies	1	LS	15,000.00	15,000
					1,651,800
	ROOFING TOTAL				**$1,651,800**

INTERIOR CONSTRUCTION

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
099000	**INTERIOR CONSTRUCTION**				
099000/010	Aministration	3,545	SF	80.00	283,600
099000/020	Apparatus Bay	12,820	SF	110.00	1,410,200
099000/030	Building Systems	1,830	SF	50.00	91,500
099000/040	Circulation	6,495	SF	40.00	259,800
099000/050	Fire Training	4,315	SF	70.00	302,050
099000/060	Fitness	6,275	SF	60.00	376,500
099000/070	Lobby	1,585	SF	120.00	190,200
099000/080	Training support	9,165	SF	140.00	1,283,100
099000/090	EMS training	6,770	SF	140.00	947,800
					5,144,750
	INTERIOR CONSTRUCTION TOTAL				**$5,144,750**

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**STORM DRAINAGE**				
221400/010	Storm drainage system	52,800	SF	1.50	79,200
					79,200
221600	**GAS PIPING**				
221600/010	Pipe & fittings	52,800	SF	0.75	39,600
					39,600
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	52,800	SF	0.50	26,400
					26,400
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	52,800	SF	1.50	79,200
					79,200
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	20	EA	5,900.00	118,000
224000/020	Lavatories	20	EA	5,900.00	118,000
224000/030	Urinals	6	EA	5,900.00	35,400
224000/040	Shower	19	EA	2,415.00	45,885
224000/050	Emergency station	1	EA	2,300.00	2,300
224000/070	Kitchen sink, with grease trap	1	EA	19,000.00	19,000
224000/040	Sinks	4	EA	5,900.00	23,600
224000/050	Mop sinks	2	EA	5,900.00	11,800
224000/060	Washer box	3	EA	400.00	1,200
224000/060	Water coolers	2	EA	7,800.00	15,600
					390,785
	PLUMBING TOTAL				**$615,185**

MECHANICAL - HVAC

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
238220	**HVAC SYSTEM**				
238220/010	Training facility	42,500	SF	65.00	2,762,500
238220/020	Truck bays	10,300	SF	20.00	206,000
238220/030	Kitchen hood	1	EA	30,000.00	30,000
					2,998,500
	HVAC TOTAL				**$2,998,500**

Table E.4: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Station 13

PRELIMINARY OPINION OF PROBABLE PROJECT COST - STATION 13
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

	Quantity	Unit	Cost	Total	Subtotal
Construction Cost - Architectural and Structural					**$2,810,600**
"Dirty" Areas	7,072	S.F.	$150	$1,060,800	
"Clean" Areas	8,749	S.F.	$200	$1,749,800	
Construction Cost - Building Systems					**$996,723**
Fire Protection Construction	15,821	S.F.	$4	$63,284	
Plumbing Construction	15,821	S.F.	$10	$158,210	
HVAC Construction	15,821	S.F.	$22	$348,062	
Electrical Construction	15,821	S.F.	$24	$379,704	
Safety and Security	15,821	S.F.	$3	$47,463	
Construction Cost - Site Development					**$280,000**
Earthwork (Demolition, Topsoil, Landscape, Erosion Control)	1	L.S.	$85,000	$85,000	
Pavements (Curbs, Concrete Walks, Asphalt, Concrete Pavement)	1	L.S.	$75,000	$75,000	
Site Amenities (Fence, Gates, Dumpster Area, Bollards)	1	L.S.	$10,000	$10,000	
Utilities (Electric, Phone, Cable, Water, Gas)	1	L.S.	$60,000	$60,000	
Storm Water Management (Headwalls, Piping, Basins, Manholes, Water Quality, Overflow Structures)	1	L.S.	$25,000	$25,000	
Sanitary Sewer (Piping, Manholes, Grease Trap, Cleanouts)	1	L.S.	$25,000	$25,000	
TOTAL CONSTRUCTION COST					**$4,087,323**
COST PER SQUARE FOOT (Rounded)					**$258.35**
Contingency and Soft Costs					**$486,113**
Furniture, Fixtures, & Equipment (FF&E) Cost (Estimate)	1	@	$200,000	$200,000	
Rock and Soil Contingency (% of Estimated Construction Cost)	1	@	2%	$81,746	
Construction Contingency (% of Estimated Construction Cost)	1	@	5%	$204,366	
Owner Costs and Architect/Engineering					**$417,859**
Plan Review Fees (Estimate & May Be Waived)	1	L.S.	$5,000	$5,000	
Architect / Engineer Fees (% of Construction)	1	@	8%	$326,986	
Commissioning	1	@	1%	$40,873	
Administrative and Legal Fees	1	L.S.	$10,000	$10,000	
Special Inspections (Estimate)	1	L.S.	$35,000	$35,000	
TOTAL PROJECT COST					**$4,991,295**

	Quantity	Unit	Cost	Total	Subtotal
Operation and Maintenance Costs					
Preventative Maintenance	15,821	S.F.	$1.50	$23,732	
Supplies	15,821	S.F.	$0.50	$7,911	
Site Related Maintenance	2.50	acre	$2,500	$6,250	
Utilities	15,821	S.F.	$1	$15,821	
TOTAL OPERATION AND MAINTENANCE COST					**$53,713**

Notes

1. Contingency will be reduced as project development continues

Table E.5: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Training Center

PRELIMINARY OPINION OF PROBABLE PROJECT COST - TRAINING CENTER
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

	Quantity	Unit	Cost	Total	Subtotal
Construction Cost - Architectural and Structural					**$12,238,980**
"Dirty" Areas	13,585	S.F.	$225	$3,056,625	
"Clean" Areas	29,621	S.F.	$310	$9,182,355	
Construction Cost - Building Systems					**$2,721,978**
Fire Protection Construction	43,206	S.F.	$4	$172,824	
Plumbing Construction	43,206	S.F.	$10	$432,060	
HVAC Construction	43,206	S.F.	$22	$950,532	
Electrical Construction	43,206	S.F.	$24	$1,036,944	
Safety and Security	43,206	S.F.	$3	$129,618	
Construction Cost - Site Development					**$295,000**
Earthwork (Demolition, Topsoil, Landscape, Erosion Control)	1	L.S.	$85,000	$85,000	
Pavements (Curbs, Concrete Walks, Asphalt, Concrete Pavement)	1	L.S.	$65,000	$65,000	
Site Amenities (Fence, Gates, Dumpster Area, Material Bins, Wash Bay, Bollards)	1	L.S.	$10,000	$10,000	
Utilities (Electric, Phone, Cable, Water, Gas)	1	L.S.	$75,000	$75,000	
Storm Water Management (Headwalls, Piping, Basins, Manholes, Water Quality, Overflow Structures)	1	L.S.	$25,000	$25,000	
Sanitary Sewer (Piping, Manholes, Grease Trap, Cleanouts)	1	L.S.	$35,000	$35,000	
			TOTAL CONSTRUCTION COST		**$15,255,958**
			COST PER SQUARE FOOT (Rounded)		**$353.10**
Contingency and Soft Costs					**$1,367,917**
Furniture, Fixtures, & Equipment (FF&E) Cost (Estimate)	1	@	$300,000	$300,000	
Rock and Soil Contingency (% of Estimated Construction Cost)	1	@	2%	$305,119	
Construction Contingency (% of Estimated Construction Cost)	1	@	5%	$762,798	

	Quantity	Unit	Cost	Total	Subtotal
Owner Costs and Architect/Engineering					**$1,438,036**
Plan Review Fees (Estimate & May Be Waived)	1	L.S.	$5,000	$5,000	
Architect / Engineer Fees (% of Construction)	1	@	8%	$1,220,477	
Commissioning	1	@	1%	$152,560	
Administrative and Legal Fees	1	L.S.	$10,000	$10,000	
Special Inspections (Estimate)	1	L.S.	$50,000	$50,000	
				TOTAL PROJECT COST	**$18,061,911**

Notes
1. Contingency will be reduced as project development continues

Operation and Maintenance Costs					
Preventative Maintenance	43,206	S.F.	$1.50	$64,809	
Supplies	43,206	S.F.	$0.50	$21,603	
Site Related Maintenance	3.00	acre	$2,500	$7,500	
Utilities	43,206	S.F.	$1	$43,206	

Table E.6: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Training Center Renovation

PRELIMINARY OPINION OF PROBABLE PROJECT COST - TRAINING CENTER RENOVATION
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

	Quantity	Unit	Cost	Total	Subtotal
Construction Cost - Architectural and Structural					**$11,534,325**
"Dirty" Areas	13,585	S.F.	$225	$3,056,625	
"Clean" Areas	21,394	S.F.	$310	$6,632,140	
"Clean" Areas Renovation	8,227	S.F.	$180	$1,480,860	
Selective Demolition	7,294	S.F.	$50	$364,700	
Construction Cost - Building Systems					**$2,796,021**
Fire Protection Construction	34,979	S.F.	$4	$139,916	
Fire Protection Construction Renovation	8,227	S.F.	$5	$41,135	
Plumbing Construction	34,979	S.F.	$10	$349,790	
Plumbing Construction Renovation	8,227	S.F.	$12	$98,724	
HVAC Construction	34,979	S.F.	$22	$769,538	
HVAC Construction Renovation	8,227	S.F.	$24	$197,448	
Electrical Construction	34,979	S.F.	$24	$839,496	
Electrical Construction Renovation	8,227	S.F.	$26	$213,902	
Safety and Security	34,979	S.F.	$3	$104,937	
Safety and Security Renovation	8,227	S.F.	$5	$41,135	
Construction Cost - Site Development					**$295,000**
Earthwork (Demolition, Topsoil, Landscape, Erosion Control)	1	L.S.	$85,000	$85,000	
Pavements (Curbs, Concrete Walks, Asphalt, Concrete Pavement)	1	L.S.	$65,000	$65,000	
Site Amenities (Fence, Gates, Dumpster Area, Material Bins, Wash Bay, Bollards)	1	L.S.	$10,000	$10,000	
Utilities (Electric, Phone, Cable, Water, Gas)	1	L.S.	$75,000	$75,000	
Storm Water Management (Headwalls, Piping, Basins, Manholes, Water Quality, Overflow Structures)	1	L.S.	$25,000	$25,000	
Sanitary Sewer (Piping, Manholes, Grease Trap, Cleanouts)	1	L.S.	$35,000	$35,000	
			TOTAL CONSTRUCTION COST		**$14,625,346**
			COST PER SQUARE FOOT (Rounded)		**$338.50**

	Quantity	Unit	Cost	Total	Subtotal
Contingency and Soft Costs					**$2,055,042**
Furniture, Fixtures, & Equipment (FF&E) Cost (Estimate)	1	@	$300,000	$300,000	
Rock and Soil Contingency (% of Estimated Construction Cost)	1	@	2%	$292,507	
Construction Contingency (% of Estimated Construction Cost)	1	@	10%	$1,462,535	
Owner Costs and Architect/Engineering					**$1,381,281**
Plan Review Fees (Estimate & May Be Waived)	1	L.S.	$5,000	$5,000	
Architect / Engineer Fees (% of Construction)	1	@	8%	$1,170,028	
Commissioning	1	@	1%	$146,253	
Administrative and Legal Fees	1	L.S.	$10,000	$10,000	
Special Inspections (Estimate)	1	L.S.	$50,000	$50,000	
				TOTAL PROJECT COST	**$18,061,669**

Notes
1. Contingency will be reduced as project development continues

Operation and Maintenance Costs					
Preventative Maintenance	43,206	S.F.	$1.50	$64,809	
Supplies	43,206	S.F.	$0.50	$21,603	
Site Related Maintenance	3.00	acre	$2,500	$7,500	
Utilities	43,206	S.F.	$1	$43,206	
				TOTAL OPERATION AND MAINTENANCE COST	**$137,118**

Table E.7: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Maintenance Facility

PRELIMINARY OPINION OF PROBABLE PROJECT COST - MAINTENANCE FACILITY
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

	Quantity	Unit	Cost	Total	Subtotal
Construction Cost - Architectural and Structural					**$5,362,800**
Metal Building Structure	28,824	S.F.	$150	$4,323,600	
Office Structure	5,196	S.F.	$200	$1,039,200	
Construction Cost - Building Systems					**$1,871,100**
Fire Protection Construction	34,020	S.F.	$4	$136,080	
Plumbing Construction	34,020	S.F.	$10	$340,200	
HVAC Construction	34,020	S.F.	$18	$612,360	
Electrical Construction	34,020	S.F.	$20	$680,400	
Safety and Security	34,020	S.F.	$3	$102,060	
Construction Cost - Site Development					**$250,000**
Earthwork (Demolition, Topsoil, Landscape, Erosion Control)	1	L.S.	$75,000	$75,000	
Pavements (Curbs, Concrete Walks, Asphalt, Concrete Pavement)	1	L.S.	$50,000	$50,000	
Site Amenities (Fence, Gates, Dumpster Area, Wash Bay, Bollards)	1	L.S.	$25,000	$25,000	
Utilities (Electric, Phone, Cable, Water, Gas)	1	L.S.	$50,000	$50,000	
Storm Water Management (Headwalls, Piping, Basins, Manholes, Water Quality, Overflow Structures)	1	L.S.	$25,000	$25,000	
Sanitary Sewer (Piping, Manholes, Grease Trap, Cleanouts)	1	L.S.	$25,000	$25,000	
			TOTAL CONSTRUCTION COST		**$7,483,900**
			COST PER SQUARE FOOT (Rounded)		**$219.99**
Contingency and Soft Costs					**$548,873**
Furniture, Fixtures, & Equipment (FF&E) Cost (Estimate)	1	@	$25,000	$25,000	
Rock and Soil Contingency (% of Estimated Construction Cost)	1	@	2%	$149,678	
Construction Contingency (% of Estimated Construction Cost)	1	@	5%	$374,195	

	Quantity	Unit	Cost	Total	Subtotal
Owner Costs and Architect/Engineering					**$708,551**
Plan Review Fees (Estimate & May Be Waived)	1	L.S.	$5,000	$5,000	
Architect / Engineer Fees (% of Construction)	1	@	8%	$598,712	
Commissioning	1	@	1%	$74,839	
Administrative and Legal Fees	1	L.S.	$10,000	$10,000	
Special Inspections (Estimate)	1	L.S.	$20,000	$20,000	
				TOTAL PROJECT COST	**$8,741,324**

Notes

1. Contingency will be reduced as project development continues

Operation and Maintenance Costs					
Preventative Maintenance	34,020	S.F.	$1.50	$51,030	
Supplies	34,020	S.F.	$0.50	$17,010	
Site Related Maintenance	4.00	acre	$2,500	$10,000	
Utilities	34,020	S.F.	$1	$34,020	
				TOTAL OPERATION AND MAINTENANCE COSTS	**$112,060**

Table E.8: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Outdoor Training Areas

PRELIMINARY OPINION OF PROBABLE PROJECT COST - OUTDOOR TRAINING AREAS
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

	Quantity	Unit	Cost	Total	Subtotal
Construction Cost - Site Amenities					**$1,607,000**
Emergency Vehicle Operations Course	1	L.S.	$900,000	$900,000	
Storage Building	4,200	S.F.	$85	$357,000	
Drill Tower (Existing) - Minor Repairs (If Relocated, cost will be an additional $1,000,000)	1	L.S.	$20,000	$20,000	
Live Fire Training Structure (Existing House)	1	L.S.	$0	$0	
Live Fire Training Structure (Class A and B Areas)	1	L.S.	$25,000	$25,000	
Technical Rescue (Area)	1	L.S.	$10,000	$10,000	
Rail Incident Training (Relocate Existing Rail & Car)	1	L.S.	$75,000	$75,000	
Fire Behavior Lab (Area)	1	L.S.	$10,000	$10,000	
Rapid Intervention Crew (Area)	1	L.S.	$10,000	$10,000	
Drafting Pit (Underground Pit)	1	L.S.	$200,000	$200,000	
Construction Cost - Site Structures					**$666,500**
Outdoor Classrooms	1,900	S.F.	$85	$161,500	
Restroom Facilities	1,540	S.F.	$150	$231,000	
Rehabilitation Areas	800	S.F.	$50	$40,000	
Hazardous Containment Area	1,560	S.F.	$150	$234,000	
Construction Cost - Site Development					**$1,235,000**
Earthwork (Demolition, Topsoil, Landscape, Erosion Control)	1	L.S.	$275,000	$275,000	
Pavements (Curbs, Concrete Walks, Asphalt, Concrete Pavement)	1	L.S.	$350,000	$350,000	
Site Amenities (Fence, Gates, Dumpster Areas, Water Filtration and Reclamation, Bollards)	1	L.S.	$225,000	$225,000	
Utilities (Electric, Phone, Cable, Water, Water Distribution (Hydrants), Gas)	1	L.S.	$125,000	$125,000	
Storm Water Management (Headwalls, Piping, Basins, Manholes, Water Quality, Overflow Structures)	1	L.S.	$235,000	$235,000	
Sanitary Sewer (Piping, Manholes, Grease Trap, Cleanouts)	1	L.S.	$25,000	$25,000	
			TOTAL CONSTRUCTION COST		**$3,508,500**
			COST PER SQUARE FOOT (Rounded)		**$350.85**

		Quantity	Unit	Cost	Total	Subtotal
Contingency and Soft Costs						**$570,595**
	Furniture, Fixtures, & Equipment (FF&E) Cost (Estimate)	1	@	$150,000	$150,000	
	Abatement Allowance	1	@	$75,000	$75,000	
	Bridge Repair Allowance	1	@	$100,000	$100,000	
	Rock and Soil Contingency (% of Estimated Construction Cost)	1	@	2%	$70,170	
	Construction Contingency (% of Estimated Construction Cost)	1	@	5%	$175,425	
Owner Costs and Architect/Engineering						**$415,680**
	Architect / Engineer Fees (% of Construction)	1	@	8%	$280,680	
	Phase 2 Geotechnical Engineering Fees (Estimate)	1	L.S.	$25,000	$25,000	
	Administrative Legal Fees	1	L.S.	$10,000	$10,000	
	Plan Review Fees (Estimate & May Be Waived)	1	L.S.	$15,000	$15,000	
	Special Inspections (Estimate)	1	L.S.	$85,000	$85,000	
					TOTAL PROJECT COST	**$4,494,775**

Notes

1. Contingency will be reduced as project development continues
2. Bridge Repair Allowance was given to Consultant Team by City per Structural Assessment Report

Operation and Maintenance Costs						
	Preventative Maintenance	10,000	S.F.	$0.95	$9,500	
	Supplies	10,000	S.F.	$0.50	$5,000	
	Site Related Maintenance	10.50	acre	$2,500	$26,250	
	Utilities	10,000	S.F.	$0.75	$7,500	
					TOTAL OPERATION AND MAINTENANCE COST	**$48,250**

Table E.9: LFUCG Fire Training Center Study Preliminary Opinion of Probable Cost - Components

PRELIMINARY OPINION OF PROBABLE PROJECT COST - COMPONENTS
LFUCG FIRE TRAINING CENTER / STATION 13
LEXINGTON, KENTUCKY
PROJECT NO. 18158 / 39-2018

BRANDSTETTER CARROLL INC

March 27, 2019

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)	COST
Fire Station 13						
1.00	**Dirty Areas**					
1.01	Apparatus Bay	Trench Drains / Bi-Fold Doors / Fans	1	1,400	1,400	$280,000
2.00	**Clean Areas**					
2.01	Office	Desk/File Cabinet/ Book Case	1	150	150	$30,000
Training Center						
1.00	**Dirty Areas**					
1.01	Apparatus Bay	Trench Drains / Bi-Fold Doors / Fans	1	1,400	1,400	$350,000
1.02	Small Classrooms	A/V / Monitors/ Markerboards	1	800	800	$200,000
1.03	Large Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division	1	1,500	1,500	$375,000
1.04	Small Labs	A/V / Monitors/ Markerboards	1	300	300	$75,000
1.05	Large Labs	A/V / Monitors/ Markerboards / Air Walls for Division	1	750	750	$187,500
1.06	Natatorium	Includes Filter Room / Chemical Storage / Storage / Pool	1	5,960	5,960	$1,490,000
2.00	**Clean Areas**					
2.01	Office	Desk/File Cabinet/ Book Case	1	200	200	$50,000
2.02	Auditorium	Air Walls for Dividing Space into multiple rooms / 400 People / A/V / Stage / Screens / Monitors / Projectors / Acoustical Panels	1	8,000	8,000	$2,000,000
2.03	Small Classrooms	A/V / Monitors/ Markerboards	1	850	850	$212,500
2.04	Large Classrooms	A/V / Monitors/ Markerboards / Air Walls for Division	1	1,500	1,500	$375,000
Maintenance Facility						
1.00	**Maintenance Areas**					
1.01	Apparatus Bay	Trench Drains / Bi-Fold Doors / Fans	1	1,400	1,400	$350,000
2.00	**Administration Areas**					
2.01	Training Room	Tables and Chairs	1	500	500	$125,000
2.02	Office	Desk/ File Cabinet	1	200	200	$50,000

SPACE DESCRIPTION		NOTES	QTY	PROGRAM NET (EACH)	PROGRAM NET (TOTAL)	COST
Outdoor Training						
1.00	**Site Amenities**					
1.01	Drafting Pit	Pump / Ladder / Hose Testing / Bleacher Area	1	1,500	1,500	$200,000
1.02	Live Fire Training Structure	Class A & B	1	2,500	2,500	$25,000
1.03	Storage Building	Portable Equipment / Vehicles / Props	1	1,400	1,400	$119,000
2.00	**Site Structures**					
2.01	Outdoor Classrooms		1	650	650	$55,250
2.02	Restroom Facilities	w/ 6 Showers	1	500	500	$75,000
2.03	Uni-Sex Restroom	w/ Shower	1	90	90	$13,500
2.04	Storage		1	100	100	$8,500
2.05	Safety Monitoring and Control Areas	Various Areas around the Site	1	50	50	$4,250
2.06	Rehabilitation Areas		1	400	400	$20,000
2.07	Decontamination Area	Showers / Sinks / Eye Wash	1	200	200	$30,000
2.08	Hazardous Containment Room		1	400	400	$60,000
2.09	Laundry / Turnout Gear Extractor		1	100	100	$15,000

Table E.10: LFUCG Fire Training Center Study New Facility

GROSS SQ. FT. 68,730 sf **DATE:** October 20, 2024

SUMMARY:	COST/SF $/SF	TOTAL COST $
SUBSTRUCTURE	20.36	1,399,450
SUPERSTRUCTURE	68.71	4,722,250
EXTERIOR ENCLOSURE	47.98	3,298,000
ROOFING	18.02	1,238,730
STAIRS AND CONVEYING	1.81	124,500
INTERIOR CONSTRUCTION	86.94	5,975,150
FIRE PROTECTION	7.50	515,475
PLUMBING	12.34	847,848
HVAC	50.72	3,485,950
ELECTRICAL	54.47	3,743,800
COMMUNICATIONS	6.00	412,380
SECURITY	10.00	687,300
EXTERIOR IMPROVEMENTS	117.72	8,090,825
SITE UTILITIES	10.31	708,800
TOTAL DIRECT COST	**$512.88**	**35,250,458**
GENERAL REQUIREMENTS (8%)		2,820,037
G.C.'S FEE (5%)		1,903,525
DESIGN CONTINGENCY (15%)		5,996,103
PHASING (5%)		2,298,506
TOTAL ESTIMATED COST	**$702.31**	**$48,270,000**

SUBSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete slab on grade	38,550	SF	18.00	693,900
033000/020	Concrete grade beams	955	LF	200.00	191,000
033000/030	Concrete footings	20	EA	2,900.00	58,000
033000/040	Elevator pits	1	EA	15,000.00	15,000
					957,900
316300	**PILES AND CAISSONS**				
316300/010	Auger cast piles	38,550	SF	11.00	424,050
316300/020	Mobilization	1	LS	17,500.00	17,500
					441,550
	SUBSTRUCTURE TOTAL				**$1,399,450**

SUPERSTRUCTURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
033000	**CONCRETE WORK**				
033000/010	Concrete suspended slabs	29,500	SF	15.00	442,500
033000/020	Concrete storm structure	4,200	SF	35.00	147,000
					589,500
051000	**STRUCTURAL METAL FRAMING**				
051000/010	Structural steel framing	275	TONS	8,400.00	2,310,000
051000/020	Floor and roof joists	120	TONS	8,200.00	984,000
051000/030	Floor deck	29,500	SF	8.50	250,750
051000/040	Roof deck	28,500	SF	8.00	228,000
051000/050	Miscellaneous steel framing	40	TONS	9,000.00	360,000
					4,132,750
	SUPERSTRUCTURE TOTAL				**$4,722,250**

EXTERIOR ENCLOSURE

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
042113	**BRICK MASONRY**				
042113/010	Facing brick	32,400	SF	70.00	2,268,000
042113/020	Brick details, sills, etc	1	LS	567,000.00	567,000
					2,835,000
081113	**HOLLOW METAL DOORS AND FRAMES**				
081110/010	Metal doors	17	EA	2,400.00	40,800
					40,800
083300	**SPECIAL DOORS**				
083300/010	Overhead doors, 14' x 14' (No Glass)	10	EA	12,400.00	124,000
					124,000
084110	**STOREFRONT SYSTEMS**				
084110/010	Aluminum framed windows	3,500	SF	75.00	262,500
084110/020	Aluminum storefront	300	SF	75.00	22,500
084110/030	Entrance doors, double	2	EA	6,600.00	13,200
					298,200
	EXTERIOR ENCLOSURE TOTAL				**$3,298,000**

ROOFING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
074113	**ROOFING**				
074113/010	Single ply memebrane roofing, including flashing, fascia and access	38,500	SF	30.00	1,155,000
074113/020	Caulking and sealants	68,730	SF	1.00	68,730
074113/030	Canopies	1	LS	15000.00	15,000
					1,238,730
	ROOFING TOTAL				**$1,238,730**

STAIRS AND CONVEYING SYSTEMS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
055100	**METAL STAIRS**				
055100/010	Metal pan stairs with metal railings	2	FLT	13,500.00	27,000
055100/020	Mezzanine stair	1	FLT	7,500.00	7,500
					34,500
142100	**ELEVATORS**				
142100/010	Passenger elevator, 2 stop	1	EA	90,000.00	90,000
					90,000
	STAIRS AND CONVEYING SYSTEMS TOTAL				**$124,500**

INTERIOR CONSTRUCTION

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
099000	**INTERIOR CONSTRUCTION**				
099000/010	Aministration	3,635	SF	80.00	290,800
099000/020	Apparatus Bay	14,600	SF	110.00	1,606,000
099000/030	Building Systems	2,315	SF	50.00	115,750
099000/040	Circulation	8,190	SF	40.00	327,600
099000/050	Fire Training	4,210	SF	70.00	294,700
099000/060	Fitness	6,190	SF	60.00	371,400
099000/070	Lobby	1,685	SF	120.00	202,200
099000/080	Training support	10,635	SF	140.00	1,488,900
099000/090	EMS training	7,770	SF	140.00	1,087,800
099000/100	Shell space	9,500	SF	20.00	190,000
					5,975,150
	INTERIOR CONSTRUCTION TOTAL				**$5,975,150**

MECHANICAL - PLUMBING

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
221400	**STORM DRAINAGE**				
221400/010	Storm drainage system	68,730	SF	1.50	103,095
					103,095
221600	**GAS PIPING**				
221600/010	Pipe & fittings	68,730	SF	0.75	51,548
					51,548
221400	**COMPRESSED AIR**				
221400/010	Pipe & fittings, air compressor, & hose reels	68,730	SF	0.50	34,365
					34,365
223000	**PLUMBING EQUIPMENT**				
223000/010	Water heater, pumps, backflow, etc	68,730	SF	1.50	103,095
					103,095
224000	**PLUMBING FIXTURES & PIPING**				
224000/010	Water Closet	31	EA	5,900.00	182,900
224000/020	Lavatories	32	EA	5,900.00	188,800
224000/030	Urinals	6	EA	5,900.00	35,400
224000/040	Shower	23	EA	2,415.00	55,545
224000/050	Emergency station	1	EA	2,300.00	2,300
224000/070	Kitchen sink, with grease trap	1	EA	19,000.00	19,000
224000/040	Sinks	6	EA	5,900.00	35,400
224000/050	Mop sinks	2	EA	5,900.00	11,800
224000/060	Washer box	3	EA	400.00	1,200
224000/060	Water coolers	3	EA	7,800.00	23,400
					555,745
	PLUMBING TOTAL				**$847,848**

MECHANICAL - HVAC

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
238220	**HVAC SYSTEM**				
238220/010	Training facility	47,330	SF	65.00	3,076,450
238220/020	Truck bays	11,700	SF	20.00	234,000
238220/030	Shell space	9,700	SF	15.00	145,500
238220/040	Kitchen hood	1	EA	30,000.00	30,000
					3,485,950
	HVAC TOTAL				**$3,485,950**

DIVISION 32 EXTERIOR IMPROVEMENTS

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
321213	**ASPHALT PAVING**				
321213/010	Asphalt paving, heavy duty	2,300	SY	44.00	101,200
321213/020	Asphalt paving	12,000	SY	36.00	432,000
					533,200
321313	**CONCRETE PAVING**				
321313/010	Courtyard	1,500	SF	24.00	36,000
321313/020	Civic space	1,400	SF	30.00	42,000
					78,000
323100	**SITE IMPROVEMENTS**				
323100/010	Monumental sign base	1	EA	3,500.00	3,500
323100/020	Covered parking	4,400	SF	40.00	176,000
323100/030	Two lane bridge with pedestrian access	9,600	SF	750.00	7,200,000
					7,379,500
329000	**LANDSCAPING**				
329000/010	Trees	20	EA	950.00	19,000
329000/020	Shrubs	75	EA	175.00	13,125
329000/030	Landscaped beds	4,500	SF	8.00	36,000
329000/040	Seeding	4,000	SY	8.00	32,000
					100,125
	EXTERIOR IMPROVEMENTS TOTAL				**$8,090,825**

DIVISION 33 SITE UTILITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
334000	**SITE UTILITIES**				
334000/010	Domestic water & fire water	1,300	LF	75.00	97,500
334000/020	Gas	650	LF	65.00	42,250
334000/030	Sanitary	650	LF	95.00	61,750
334000/040	Fire hydrant	1	EA	2,300.00	2,300
334000/030	Water hook ups	3	EA	2,100.00	6,300
					210,100
334100	**STORMWATER**				
334100/010	Storm drains	2,100	LF	45.00	94,500
334100/020	Headwalls	6	EA	2,900.00	17,400
334100/030	Catch basin	8	EA	2,100.00	16,800
					128,700
337000	**SITE ELECTRICAL**				
337000/010	Underground electric	650	LF	350.00	227,500
337000/020	Pole lightings	20	EA	4,500.00	90,000
337000/030	Bollard lights	15	EA	3,500.00	52,500
					370,000
	UTILITIES TOTAL				**$708,800**

APPENDIX F - MISCELLANEOUS INFORMATION

Figure F.1: LFUCG Fire Training Center Study Topography Survey with Aerial Photo Overlay

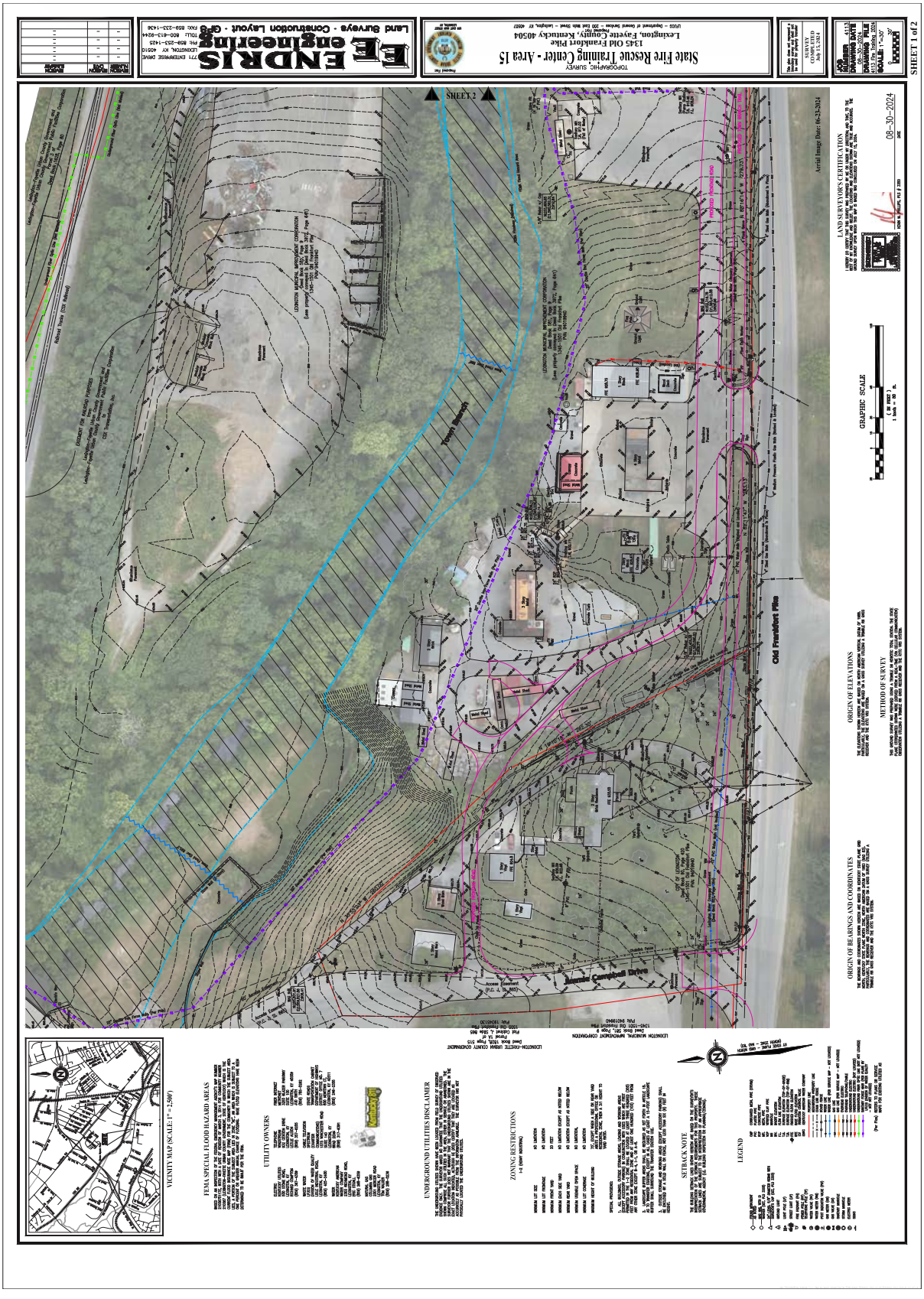
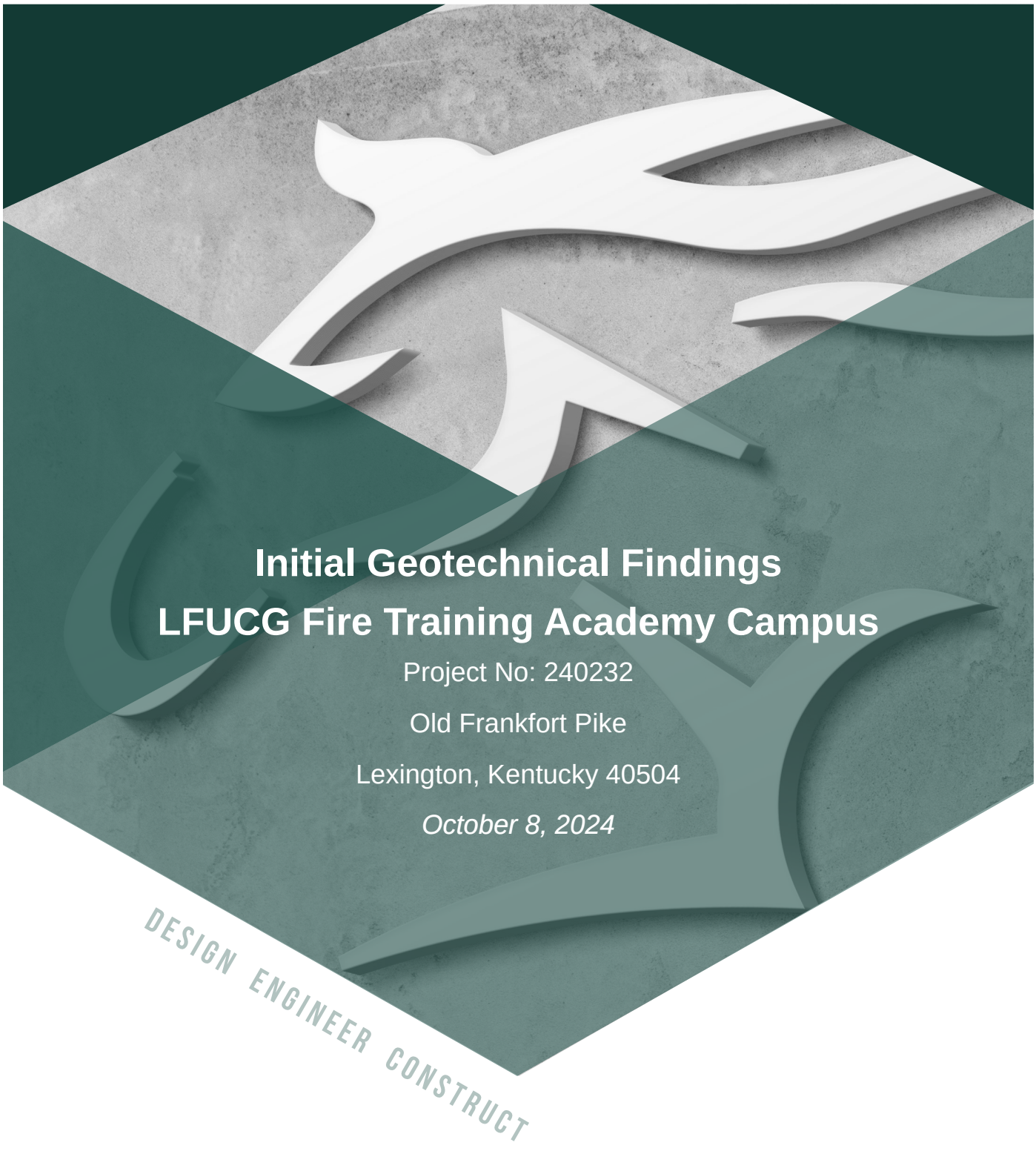


Figure F.2: LFUCG Fire Training Center Study Topography Survey with Aerial Photo Overlay



Figure F.3: LFUCG Fire Training Center Study Initial Geotechnical Findings



October 8, 2024

Mr. Josh Ives
LFUCG Capital Project Manager
200 East Main Street
Lexington, Kentucky 40507

Initial Geotechnical Findings - LFUCG Fire Training Academy Campus

Dear Mr. Ives,

Thoroughbred is in the process of providing a geotechnical evaluation for future expansion at the Lexington Fayette Urban County (LFUCG) Fire Training Academy. This letter is intended to help provide initial findings following completion of our geotechnical field exploration efforts. We have not completed all of our scope of services but wanted to provide you with the information we have to date. Please read over this brief letter and let us know if you have any questions. We anticipate our geotechnical evaluation will be completed in a few weeks.

Project information was provided by Josh Ives via email on August 14, 2024. We understand the project will consist of either a new two-story building or two-story building addition. A site survey completed by Endris Engineering in 2019 which indicated proposed boring locations. A provided concept plan indicated 21 boring locations across the site.

Kentucky 811 call before you dig was contacted prior to mobilizing to the site. Marked sanitary, gas, and water lines were observed onsite. Overhead electric lines were also observed onsite.

Geotechnical exploration consisted of geotechnical drilling. Drilling was conducted at 21 locations shown on page 4. Glass pieces, brick pieces, rock fragments, and other construction material from non-engineered fill was encountered in several borings onsite. Boring B-21 encountered trash bags, bricks, and material constant with landfill material. Conversations with fire academy management indicated the site was a previous landfill and dump site and contained a superfund site.

While water was not encountered in borings during geotechnical drilling, water was however encountered in thirteen borings 24 hours after drilling.

Pavements across the site contained fatigue cracks, potholes, and raveling. Utility trenches were also observed in several locations. Pavements around these trenches were observed to have settled and contain severe cracking. Asphalt thicknesses were found to range from 3 to 6 inches. Base stone was only encountered in four of the thirteen borings conducted in pavement and ranged from 2 to 6 inches thick.

At this time, the following are observations about the site conditions and preliminary recommendations.

1. Non-Engineered Fill - The majority of material encountered during geotechnical drilling was not natural material and had been placed at some point. This material contained glass, brick, and rock boulders that are consistent with dumped material. This material does not meet the definition of structural fill and can lead
2. Environmental Concerns - Conversations with the fire training academy staff indicated the site was a previous landfill and dump site. This included construction debris from a downtown building that was demolished in the 70s or 80s. Trash bags were encountered in boring B-21 during drilling. Academy staff also indicated an old fuel containment area existed onsite that was utilized for fire training and had been capped. Environmental covenants are anticipated to for portions of the site which may effect development potential. An environmental consultant should be consulted in regards to the development/remediated potential for the site area.
3. Differential Settlement - Given the non-engineered fill onsite, rock boulders, and debris encountered during drilling, differential settlement will occur for foundations that bear on this material. Cracks will form in slabs, masonry, and interior walls. The current fire training building was observed to contain cracks in masonry and misaligning doors.
4. Fatigued Pavements - Pavements across the site were found to contain fatigue cracks. Alligator cracking, potholes, raveling, and rutting were observed onsite. Pavements over utility trenches onsite contained severe cracking and excessive settlement. Thirteen borings were conducted in pavements which found asphalt to range from 3 to 6 inches. Only four of the pavement borings contained base stone beneath asphalt. The existing pavement sections do not appear to be adequate for traffic loads occurring onsite. Recommendations for heavy duty pavements will be provided in the final report. Improper backfill around utility lines has likely caused the excessive cracking near them. Cracks can allow water to infiltrate subgrade and further degrade the pavement from freezing and thawing conditions.
5. Deep Foundations - At this time, we anticipate deep foundations will be required for this site to extend through fill material to competent bedrock as existing materials are not anticipated to provide sufficient bearing or be within settlement tolerances. Future geotechnical efforts are likely to include rock core samples to provide more accurate bedrock design criteria for deep foundations as well as test pits to further evaluate the construction debris.
6. Utility Lines - Marked water, gas, and sanitary sewer lines were observed onsite. Contractors and designers should account for these utility lines. If this lines are infringed, fines and additional cost for repairs could occur. Relocation of these utility lines from building areas may be required.
7. Groundwater - Thirteen borings were found to contain water 24 hours after drilling. Soils did not appeared to be saturated during drilling, which suggested perched groundwater infiltrated these borings after drilling. Groundwater can cause metal in foundation elements to become corrosive and frictional resistance of soils to decrease causing lower bearing capacities.
8. Existing Building Structure - During our onsite visit, we observed that the existing building appears to have some settlement issues in which doors do not properly align or close properly. It is anticipated that the buildings was constructed on the fill material encountered on both sides of the building. If additions are constructed on this material, it is anticipated that settlement will be experienced similar to the existing building which maybe outside the tolerance of the structure.

Closing

You should know that our efforts are still ongoing. Laboratory testing of soil samples obtained from the site are underway. This document does not meet nor is intended to be used as a geotechnical evaluation. Statements and engineering recommendations are only for preliminary discussions and shall not be used as design recommendations. Until the final geotechnical evaluation is completed, if you have any questions associated with the project, our services, or information provided in this brief letter, please let us know.

Thank you for having Thoroughbred as a part of this project.

Sincerely,

Thoroughbred

Matthew Hurley, PE
Geotechnical Engineer

Jordan Haney, PE
Principal Engineer



Boring Location Plan
Scale: 1" = 150'

General Drilling Information

Drilling Company:	Colt Exploration, LLC
Drill Rig Make:	Geoprobe
Drill Rig Model:	3126GT
Hammer Type:	Automatic
Hammer Weight:	140 lbs
Hammer Drop Height:	30 inches
Auger Size:	2-1/4" I.D. Hollow-Stem Auger
Core Size:	N/A
Drilling Method:	Auger
Project Manager:	Jordan Haney, P.E.
Driller:	Steve Helstowski
Helper:	Keith Lowe
Logged By:	Nathan Kidd
Date(s) Drilled:	September 9, 2024
Days Completed In:	One (1)

Note: Boring locations and elevations were surveyed by Thoroughbred Engineering.

LEGEND

B-1 INDICATES BORING LOCATIONS

0 150 300
SCALE: 1" = 150'

Boring Data Table					
Boring	Boring Elevation (FT-MSL)	Depth of Refusal (FT)	Elevation of Refusal (FT-MSL)	Water Elevation at Time of Exploration (FT-MSL)	Water Elevation 24 Hours After Exploration (FT-MSL)
B-1*	913.4	23	890.4	NE	X
B-2*	911.7	16.5	895.2	NE	X
B-3*	915.3	16.5	898.8	NE	X
B-4*	913.1	16.5	896.6	NE	X
B-5*	910.1	5.5	904.6	NE	X
B-6	910.1	6.5	903.6	NE	X
B-7	909.0	13.5	895.5	NE	901.7
B-8	908.3	13.8	894.5	NE	900.5
B-9	908.2	13.4	894.8	NE	X
B-10	908.4	12.3	896.1	NE	X
B-11	899.8	3.8	896	NE	899
B-12	899.2	3.6	895.6	NE	898.2
B-13	899.5	3.3	896.2	NE	897.8
B-14	896.3	7	889.3	NE	893.3
B-15	896.0	9.2	886.8	NE	893.7
B-16	901.2	7	894.2	NE	900
B-17	905.2	7	898.2	NE	902.2
B-18	906.7	11.6	895.1	NE	898.7
B-19	914.0	6.5	907.5	NE	909.2
B-20*	915.1	15	900.1	NE	913.1
B-21	921.4	13	908.4	NE	919.7

* Boring was terminated prior to refusal.
NE: Not Encountered

Preliminary Geotechnical Evaluation

LFUCG Fire Training Academy Campus

1375 Old Frankfort Pike

Fayette County, Lexington, Kentucky 40504



Vicinity Map
(n.t.s.)

For

Lexington Fayette Urban County Government (LFUCG)

200 East Main Street

Lexington, Kentucky 40507

1409 N. FORBES RD. LEXINGTON, KY 40511
(859) 786-0393
CIVIL DESIGN, LAND SURVEYING,
ARCHITECTURAL, STRUCTURAL ENGINEERING,
BD SPECIAL INSPECTIONS, MATERIAL TESTING,
ENVIRONMENTAL CONSULTING

THOROUGHBRED
DESIGN | ENGINEER | CONSTRUCT

Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.:	Prepared By:
2402252	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE
1	Form 46	3.1.24

STATE OF KENTUCKY
JORDAN P. HANES
LICENSED PROFESSIONAL ENGINEER

Cover Sheet

G - 0

Figure F.4: LFUCG Fire Training Center Study Preliminary Geotechnical Evaluation

Executive Summary

This Preliminary Geotechnical Evaluation was completed in general accordance with the 2018 Kentucky Building Code (KBC) and Thoroughbred Proposal No. 002063. This executive summary is meant to provide you with a brief overview and should not be the sole communication between us. You should review this entire Preliminary Geotechnical Evaluation as a whole and provide us with any questions you may have.

Project information was provided by Josh Ives via email on August 14, 2024. We understand the project will consist of either a new two-story building or two-story building addition at the Lexington Fayette Urban County (LFUCG) Fire Training Academy located at 1375 Old Frankfort Pike in Lexington, Kentucky. A site survey completed by Endris Engineering in 2019 which indicated proposed boring locations. A boring location plan was providing in the Request for Proposal and indicated 21 boring locations.

Geotechnical analysis began with a review of published soil data, geology info, and water data for this site. We specifically reviewed information from the United States Department of Agricultural (USDA), the Kentucky Geological Survey (KGS), Kentucky Department of Environmental Protection (KYDEP), Federal Emergency Management Agency (FEMA), and historical aerial photographs from Google Earth.

Kentucky 811 was contacted prior to exploration to mark public utility lines onsite. Marked gas, water, and sanitary sewer lines were observed onsite. Overhead electric lines also exist onsite.

Geotechnical exploration consisted of geotechnical drilling at the 21 locations indicated on the boring location plan provided to us. Asphalt was encountered in thirteen borings at the ground surface and ranged from 3 to 6 inches thick. Only four borings contained base stone which ranged from 2 to 6 inches thick. Topsoil was encountered in six borings and ranged from 3 to 7 inches thick.

Non-structural fill was encountered across the site. This fill contained brick and glass pieces along with trash bags and consistency associated with dumped material and former landfills. Six borings encountered possible shot rock/construction debris material prior to refusal. Geotechnical drilling encountered refusal in seventeen borings ranging from 3.3 to 16.5 feet below the current grade. One boring extended 23 feet without encountering refusal. Several of these refusal depths occurred likely due to shot rock or dumped debris that our equipment could not auger through.

Natural moisture contents across all borings were found to range from 1.7% to 33.8%.

Questionable soil and site conditions were identified during exploration, laboratory testing, and engineering analysis. These conditions must be understood prior to final designs and the start of construction. Additional conditions, not mentioned in this list, may arise during construction that may impact this project. Questionable soil and site conditions for this project are:

1. Non-Structural Fill
2. Possible Environmental Hazards
3. Fatigued Pavements
4. Utility Lines
5. Existing Building Structure

A further description of these conditions and issues are listed in this report.

The site presents some significant challenges for development. At this stage, our scope of recommendations is limited given building information and site plans are not known. Additionally, coordination with an Environmental Engineer as it pertains to the previous managed environmental site and the landfill extents onsite. Additionally it is recommended that consulting the Kentucky Division of Waste Management before proceeding with any development plans. The exact location of landfill material and the possibility of environmental contaminants onsite can affect how this property is developed.

Deep foundations are recommend for this site given non-structural fill encountered across the site. Additional investigation should be completed once site and building location and information is known. Additional investigation should likely include a geophysical study (per KBC Section 1803.5.13), environmental sampling, test pits, and additional soil borings including rock coring in order to fully understand the site and to provide final geotechnical and environmental recommendations.

We recommend you review our evaluation in its entirety and contact us if you have any questions with our recommendations. Thoroughbred can provide the additional investigation services outlined

Questionable Soil & Site Conditions

KBC 1803.5.3

Our efforts provided the following questionable soil and site conditions for the project. These may not be all of the issues that affect the project, construction or performance of the project. However, designers, contractors, and owners should review each of these items carefully, fully understand them, and make preparations as a result.

Item	Response
Non-Structural Fill	Borings across the site encountered fill material that does not meet requirements for structural fill. This fill material contained bricks, glass, and trash bags in some areas. Building on fill material of this nature will cause increased settlement in foundations leading to increased stress in concrete and metal foundation elements. Once these stresses develop, cracks and possible failures will occur.
Possible Environmental Hazards	Conversations with the fire training academy staff suggested portions of the property were part of an old landfill. Staff also suggested demolition debris and possible environmental contaminants exist onsite including a managed superfund site. Review of historical site photograph was limit to 1993 for the scope of this geotechnical evaluation, in which a determination could not be made on a previous landfill location onsite. Additionally, coordination with an Environmental Engineer as it pertains to the previous managed environmental site and the landfill extents onsite. Additionally it is recommended that consulting the Kentucky Division of Waste Management before proceeding with any development plans. The exact location of landfill material and the possibility of environmental contaminants onsite can affect how this property is developed. Constructing on old dump sites or landfills can require additional permitting and environmental testing of soils. Methane can also exist in these sites, creating the possibility of explosions to occur during excavations. Significant cost can occur from developing on landfills along with enhanced design efforts from consultants.
Fatigued Pavements	Pavements across the site were found to contain fatigue cracks. Alligator cracking, potholes, raveling, and rutting were observed onsite. Pavements over utility trenches onsite contained severe cracking and excessive settlement. Thirteen borings were conducted in pavements which found asphalt to range from 3 to 6 inches. Only four of the pavement borings contained base stone beneath asphalt. The existing pavement sections do not appear to be adequate for traffic loads occurring onsite. Cracks can allow water to infiltrate subgrade and further degrade the pavement from freezing and thawing conditions. Tripping hazards can also form from fatigued pavements.
Utility Lines	Marked water, gas, and sanitary sewer lines were observed at multiple areas onsite. Additional private lines may exist. Contractors and designers should account for these utility lines. If this lines are infringed, fines and additional cost for repairs could occur. Relocation of these utility lines from building areas may be required.
Existing Building Structure	During our onsite visit, we observed the existing building appears to have some settlement issues in which doors do not properly align or close properly. These issues are typical with constructing on fill that doesn't meet structural fill requirements. If future developments are constructed on this material, it is anticipated that settlement will be experienced similar to the existing building which may be outside the tolerance of the structure. Given the observed buildings condition, new structures should not be attached or supported by the existing structure. New foundation systems should be independent of the existing structures onsite.

General Information

KBC Section 1801 & 1803

This Thoroughbred Preliminary Geotechnical Evaluation was completed in general accordance with our Scope of Services and Chapter 18 of the 2018 Kentucky Building Code (KBC). Specifically, we conducted our efforts in general accordance with Sections 1803.2 and are reporting per Section 1803.6 of the KBC.

Investigation Requested By

Item	Response
Client Name	Lexington Fayette Urban County Government (LFUCG)
Client Contact	Josh Ives, AIA
Address	200 East Main Street
City/State/Zip	Lexington, Kentucky 40507
Phone Number	859.258.3930
Email	jives@lexingtonky.gov
Project Name	LFUCG Fire Training Academy Campus

Thoroughbred Geotechnical Team

Item	Individual
Registered Design Professional	Mr. Jordan Haney, PE | KY License 35057
Qualified Rep Onsite	Mr. Nathan Kidd, SI
Report Preparer	Mr. Matthew Hurley, PE
Driller	Mr. Steve Helstowski
Assistant Driller	Mr. Dereck Akal

Project Information

Project information was provided by Josh Ives via email on August 14, 2024. We understand the project will consist of either a new two-story building or two-story building addition at the Lexington Fayette Urban County (LFUCG) Fire Training Academy located at 1375 Old Frankfort Pike in Lexington, Kentucky. A site survey completed by Endris Engineering in 2019 which indicated proposed boring locations. A boring location plan was providing in the Request for Proposal and indicated 21 boring locations.

Proposed Construction Notes

Item	Response
Building	Not specified at this time.
Foundation Type	Unknown at this time. Recommendations can be provided once final site plans are determined. Deep foundations will likely be required based on quantity and quality of fill material encountered onsite.
Loading Information	Not specified at this time.
Settlement Tolerances	Not specified at this time.
Retaining Walls	Not anticipated at this time.
Pavements	Likely depending on future construction plans.

Site Description

Item	Response
Address	1375 Old Frankfort Pike
City/County/State/Zip	Fayette County, Lexington, Kentucky 40504
Acreage	9.2 Acres +/-
Existing Structures	A large one-story fire facility and smaller sheds exist on the southern portion of the site. Multiple brick structures exist on the northern portion of the site.
Terrain	The portion of site located south of creek is relatively flat. The portion of the site located north of the creek slopes upwards towards the west.
Observations	
Surrounding Observations	A two-lane road exists along the southern edge of the site. A one-lane road exists along the eastern edge of the site.
Site Elevation Range (FT-MSL)*	896.0 to 915.3

*Elevations were obtained from surveying boring locations.

Scope of Recommendations

Recommendations for this evaluation apply to the following items:

Item	Yes	No	Note
Building Foundation	X		General recommendations until site plans are finalized.
Slab On Grade			
Interior		X	
Exterior		X	
Site	X		
Dams, Retention Areas, Etc		X	
Exterior Pavements			
Concrete		X	
Asphalt		X	
Dumpster Pad		X	
Retaining Wall		X	

Investigated Conditions

The following conditions were encountered during our site visit(s) and exploration:

Item	Response
Site Visit Date(s)	September 18th, 19th, and 20th, 2024
Exploration Date(s)	September 18th and 19th
Weather at Exploration	Sunny Upper 80's
Ground Cover	Asphalt and grass
Trees at Site	Mature trees were observed on the edges of the Town Branch Creek.
Surface Water	Town Branch Creek runs through the center of the property. No additional surface water was observed onsite.
Previous Development	A building exists on the southern portion of the site with multiple paved parking lots and paved access roads. The northern portion of the site is paved with an access roads.
Site Utilities Observed	Kentucky 811 was contacted to mark public utility lines prior to exploration. Marked gas, water, and sanitary sewer lines were observed onsite. Overhead electric lines also exist onsite. Additional private utility lines are likely to exist onsite. Contractors should verify the location of all utility lines prior to construction.
Previous Site Grading	The site is known to be the location of the old lexington landfill. Additionally, a majority of the site has experienced fill material placement based on soils encountered and historical google earth images.
Site Drainage	The portion of the site located south of the creek drains towards the southern perimeter. The portion of the site north of the creek drains towards the creek.
Pavements	Cracked asphalt pavements were observed at several locations across the site.

Basis of Investigation

Our investigation was completed with the following activities:

Item	Yes	No	Note
Observation, Knowledge & Experience	X		
Site Visit	X		
Borings with Sampling	21		
Borings without Sampling		X	
Standard Penetration Test (SPT)	66		Completed in General Accordance with ASTM D 1586
Rock Coring		X	Completed in General Accordance with ASTM D 2113
Test Pits		X	
Ground Penetrating Radar (GPR)		X	Frequency at 250MHz
Electric Resistivity Imaging (ERI)		X	Lippman 4-point light 10W
Spectral Analysis of Surface Waves (SASW)		X	

Laboratory Testing

Item	Yes	No	Note
Atterberg Limit	4		ASTM D 4318
Natural Moisture Content	63		ASTM D 2216
Standard Proctor	1		ASTM D 698
Expansive Index	1		ASTM D 4829
California Bearing Ratio (CBR)		X	ASTM D 1883
Finer than No. 200	4		ASTM D 1140
Unconfined Compressive	1		ASTM D 2166
Rock Unconfined Compressive		X	ASTM D 7012
Consolidation		X	ASTM D 2435

Additional Research and Information

Item	Yes	No	Note
Historic Review by			
Aerial Photograph	X		
Conversations with Individuals having past knowledge of the site	X		
Geological Review from KY Geological Survey	X		
Soils Review from U.S. Depart. of Agriculture	X		
Slope Stability Analysis		X	Not anticipated for this site.
Settlement Analysis			
General		X	
Specific		X	Not Requested
Liquefaction Analysis		X	Not Requested
Expansiveness Analysis	X		
Other		X	

Equipment Used During the Exploration

Item	Yes	No	Note
Displacement Borings		X	
Wash Borings		X	
Auger Borings	X		
Rotary Drilling		X	
Precussion Drilling		X	
Continuous Sampling		X	
GPR Equipment		X	US Radar QSC Plus
ERI Equipment		X	Lippman 4-point Light 10W
GNSS Reciever	X		Trimble R8
Drill Equipment	X		
Auto Hammer	X		
Split Barrel Sampler	X		
2 1/4 Inch HS Auger	X		Hollow Flight Auger
3 1/4 Inch HS Auger		X	Hollow Flight Auger
4 1/4 Inch SF Auger		X	Solid Flight Auger
Other		X	

Definition

Electric Resistivity Imaging

ERI is a geophysical technique for imaging sub-surface structures from electrical resistivity measurements made at the surface, or by electrodes in one or more boreholes. ERI measures the transient response and aims to determine the subsurface chargeability properties and identifies changes or irregularities in materials. The table below provides resistivity values of common rocks and soil materials in our area. With that said, variations in resistance may occur for unknown reasons.

Typical Resistivity of Materials	
Material	**Typical Resistivity (ohm-m)**
Alluvium	10 to 800
Sand	60 to 1,000
Clay	1 to 100
Groundwater (Fresh)	10 to 100
Sandstone	8 to 4x 10^3
Shale	20 to 2x10^3
Limestone	50 to 4x10^3
Granite	5,000 to 1,000,000

Reference: Frischknecht FC. Electrical methods in geophysical prospecting. Pergamon Press Inc., Oxford; 1996.

Standard Penetration Testing (SPT)

During the drilling process, we may complete Standard Penetration Testing at various intervals in our to measure the subsurface resistance of the underlaying soils. We also use SPT testing to obtain soil samples for visual observation, laboratory testing, etc. If SPT testing is included in our scope of services and outlined in these documents, the testing was completed in general accordance with ASTM D1586, Standard Test Method for Standard Penetration Testing.

SPT testing includes driving a split barrel sampler to obtain a representative disturbed soil sample. The sampler is generally driven into the subsurface material in three (3) six (6) inch intervals. The last two intervals are added together in order to obtain a resistance value, or N-Value. The sampling is typically performed at 5-feet depth intervals, however smaller sampling depths may occur. The hammer contains a 140 pound mass that is dropped over a distance of 30 inches. Our SPT testing is completed using an automatic hammer which typically applies a more consistent energy level. SPT N-Values are also used to determine the consistency of fine grain soil samples and relative density of course grained soil samples.

SPT N-Value (Uncorrected)	Consistency	Unconfined Compressive Strength (KSF)
<2	Very Soft	<0.5
2-4	Soft	0.5-1.0
4-8	Medium	1.0-2.0
8-16	Stiff	2.0-4.0
16-32	Very Stiff	4.0-8.0
>32	Hard	>8.0

SPT N-Value (Uncorrected)	Relative Density of Sands and Gravels	Phi Angle (°)
0-4	Very Loose	18-28
5-10	Loose	28-30
11-24	Medium	30-36
25-50	Dense	36-41
>50	Very Dense	41

USDA Defined Drainage Classes

"Drainage class (natural)" refers to the frequency and duration of wet periods in conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual" as follows.

Excessively drained. Water is removed very rapidly.
Somewhat excessively drained. Water is removed from the soil rapidly.
Well drained. Water is removed from the soil readily but not rapidly.
Moderately well drained. Water is removed from the soil somewhat slowly during some periods of the year.
Somewhat poorly drained. Water is removed slowly so that the soil is wet at a shallow depth for significant periods during the growing season.
Poorly drained. Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods.
Very poorly drained. Water is removed from the soil so slowly that free water remains at or very near the ground surface during much of the growing season.

Expansive Soils

Expansive soils are defined by the 2018 Kentucky Building Code in section 1803.5.3 as soils meeting all four (4) of the following provisions:

1. Plasticity Index (PI) of 15 percent or greater, determined in accordance with ASTM D4318.
2. More than 10 percent of the soil particles passing a No. 200 sieve, determined in accordance with ASTM D422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D422.
4. Expansion Index greater than 20, determined in accordance with ASTM D4829.

Rock Coring

During the drilling process, we may obtain rock core samples from various areas in order to determine the underlying rock's consistency. If rock coring is included in our scope of services and outlined in these documents, the coring was completed in general accordance with ASTM D2113, Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigations.

Rock core samples are also used to determine the Rock Quality Designation (RQD), which correlates to the Rock Mass Quality. RQD is a rough measure of the degree of jointing or fracture in a rock mass, measured as a percentage of the drill core in lengths of 10 cm (approximately 4 inches) or more. RQD values are used to describe the in situ rock mass quality by the following classification:

RQD (%)	Rock Mass Quality
<25	Very Poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

Plan Limitations

Our services have been completed in accordance with our authorized scope of work and in accordance with generally accepted practice in the fields of geotechnical and foundation engineering. This warranty is in lieu of all other warranties either expressed or implied.

Our conclusions and recommendations are based on the data revealed by this investigation. We are not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated, nor are the recommendations presented in this report intended for direct use as construction specifications.

This report is intended for use with regard to the specific project discussed herein and any changes in loads, structures, or locations should be brought to our attention so that we may determine how they may affect our conclusions. An attempt has been made to provide for normal contingencies but the possibility remains that unexpected conditions may be encountered during construction. If this should occur, or if additional or contradictory data are revealed in the future, we should be notified so that modifications to this report can be made, if necessary. If we do not review the relevant construction documents and witness the relevant construction operations, then we cannot be responsible for any problems which may arise, from the misunderstanding or misinterpretation of this report or failure to comply with our recommendations.

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is solely responsible for site safety. This information is provided only as a service, and under no circumstances should Thoroughbred be assumed responsible for construction site safety.

ERI is limited to the material which the current is traveling through and user interpretation of those signals. As a result, misinterpretations can occur. The interpretations included in our services are not guarantees of the actual conditions. We provide ERI information solely as an aid to our final recommendations.

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SITE INSPECTION, BIDDING

THOROUGHBRED
DESIGN | ENGINEER | CONSTRUCT

Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.	Prepared By
240232	MAH
Date	Reviewed By
10.31.2024	JPH

NO.	REVISION	DATE

COMMONWEALTH OF KENTUCKY
JORDAN P. HANEY
35057
LICENSED PROFESSIONAL ENGINEER

General Information

G - 1

Site Research Information

Soils Data Review by U.S. Department of Agriculture

The USDA provides soil information specific to the type of construction planned for your project. We visited the USDA Soil Survey Database for additional information about the site soils. It should be noted, the project site is mainly urban land covered in concrete. There is currently no USDA Site Soil Survey data for this site due to its urban development.

USDA Database project types observed:

Item	Yes	No	Note
Area of Interest (AOI)	11.9 Acres +/-		
Soil Unit Map	X		
Corrosion of Concrete	X		
Corrosion of Steel	X		
Small Commercial Buildings	X		
Dwellings with Basements	X		
Local Roads and Streets	X		
Shallow Excavations	X		

USDA Soil Unit Map & Data

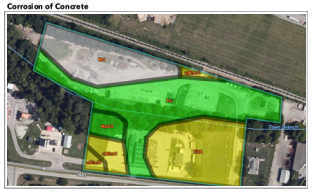
Our research on the USDA database was for the Area of Interest (AOI) shown above. Soil types at the site are noted as follows by the USDA:



Map Unit Symbol	Unit Name	Acres in AOI	Percentage of AOI
Hu	Huntington Silt Loam	4.9	40.8%
ElkB	Elk Silt Loam	3.1	26.2%
Md	Made Land	2.6	21.6%
uMlmC	Maury-Bluegrass Silt Loam	0.7	5.9%
MpD2	McAfee Silty Clay Loam	0.5	3.8%
uBlmB	Bluegrass-Maury Silt Loam	0.2	1.7%

Map Unit Symbol	Slope %	Hydraulic Soils Group	Runoff Class	Natural Drainage Class
Hu	0 to 4	B	Low	Well Drained
ElkB	2 to 6	B	Low	Well Drained
Md	N/A	N/A	N/A	N/A
uMlmC	6 to 12	C/B	Medium	Well Drained
MpD2	12 to 20	C	Medium	Well Drained
uBlmB	2 to 6	B/C	Low	Well Drained

Corrosion of Concrete



Corrosion of Steel

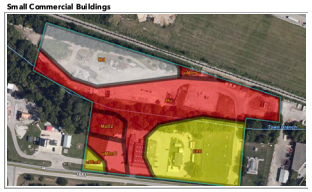


Map Unit Symbol	Corrosion of Concrete	Corrosion of Steel
Hu	Low	Moderate
ElkB	Moderate	Moderate
Md	N/A	N/A
uMlmC	Moderate	High
MpD2	Low	High
uBlmB	Moderate	Moderate

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer. The risk of corrosion is expressed as "low," "moderate," or "high."

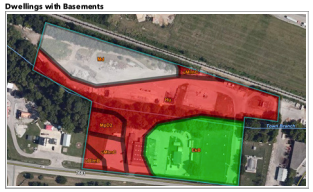
Small Commercial Buildings



Map Unit Symbol	Small Commercial Buildings	Rating Reasons
Hu	Very Limited	Flooding, Depth to Hard Bedrock, Depth to Saturated Zone, Shrink-Swell
ElkB	Somewhat Limited	Slope, Depth to Thin Cemented Pan, Depth to Saturated Zone, Depth to Thick Cemented Pan
Md	Not Rated	Made Land over Silty Materials
uMlmC	Very Limited	Shrink-Swell, Slope, Depth to Hard Bedrock
MpD2	Very Limited	Slope, Shrink-Swell, Depth to Hard Bedrock
uBlmB	Somewhat Limited	Slope, Shrink-Swell, Depth to Hard Bedrock, Slope

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Dwellings with Basements



Map Unit Symbol	Dwellings with Basements	Rating Reasons
Hu	Very Limited	Flooding, Depth to Hard Bedrock, Depth to Saturated Zone
ElkB	Not Limited	
Md	Not Rated	Made Land over Silty Materials
uMlmC	Very Limited	Shrink-Swell, Slope, Depth to Hard Bedrock
MpD2	Very Limited	Depth to Hard Bedrock, Slope, Shrink-Swell
uBlmB	Very Limited	Shrink-Swell, Depth to Hard Bedrock, Depth to Saturated Zone

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local Roads and Streets



Map Unit Symbol	Local Roads and Streets	Rating Reasons
Hu	Very Limited	Frost Action, Flooding, Low Strength, Depth to Hard Bedrock, Soluble Bedrock, Shrink-Swell, Depth to Saturated Zone
ElkB	Very Limited	Frost Action, Low Strength, Depth to Thin Cemented Pan, Depth to Thick Cemented Pan, Depth to Saturated Zone
Md	Not Rated	Made Land over Silty Materials
uMlmC	Very Limited	Shrink-Swell, Low Strength, Frost Action, Slope, Soluble Bedrock, Depth to Hard Bedrock
MpD2	Very Limited	Slope, Low Strength, Shrink-Swell, Depth to Hard Bedrock, Soluble Bedrock
uBlmB	Very Limited	Frost Action, Low Strength, Soluble Bedrock, Shrink-Swell, Depth to Hard Bedrock

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding

Shallow Excavations



Map Unit Symbol	Shallow Excavations	Rating Reasons
Hu	Somewhat Limited	Flooding, Dusty, Unstable Excavation Walls
ElkB	Somewhat Limited	Dusty, Unstable Excavation Walls, Flooding
Md	Not Rated	Made Land over Silty Materials
uMlmC	Somewhat Limited	Too Clayey, Unstable Excavation Walls, Dusty, Slope, Depth to Hard Bedrock
MpD2	Very Limited	Depth to Hard Bedrock, Slope, Too Clayey, Dusty, Unstable Excavation Walls
uBlmB	Somewhat Limited	Dusty, Unstable Excavation Walls, Too Clayey, Depth to Hard Bedrock

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected

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DESIGN | ENGINEER | CONSTRUCT

Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.:	Prepared By
240232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO	REVISION	DATE

STATE OF KENTUCKY
JORDAN P. HAMILTON
35057
LICENSED PROFESSIONAL ENGINEER

Research Information

G - 2

Rock Strata

We visited the Kentucky Geological Survey's (KGS) mapping information database for information about rock strata. The KGS was established in 1838 and has investigated mineral, energy and water resources, and geologic hazards in Kentucky for more than 150 years. As the official geologic research organization for the Commonwealth of Kentucky, KGS is focused on research in earth resources and processes, public service, and the dissemination of our data, knowledge, and experience to stakeholders in industry, government, educational institutions, and the general public. The KGS is to increase knowledge and understanding of the mineral, energy, and water resources, geologic hazards, and geology of Kentucky for the benefit of the Commonwealth of Kentucky.

Our review of the KGS information is noted below:

Item	Geological Unit #1	Geological Unit #2	Geological Unit #3	Geological Unit #4
County	Fayette	Fayette	Fayette	Fayette
Formation	Lower Part of Lexington Limestone	Brannon Member	Alluvium	Tanglewood Limestone Member No.1
Symbol	Olr	Olb	Qal	Olt1
24K Quadrangle Map	Lexington West	Lexington West	Lexington West	Lexington West
Primary Lithology	Limestone and Shale	Limestone and Shale	Clay, Silt, and Gravel	Limestone
Karst Potential	Intense	Intense	Intense	Intense
Age	Middle Ordovician	Middle Ordovician	Quaternary	Middle Ordovician

Lower Part of Lexington Limestone

Cane Run Bed: Limestone, light-gray to light-brownish-gray, microgranular, argillaceous; in part silty; dense limestone nodules and boulders in convolute beds, locally. Chert as nodules and thin beds in upper few feet diagnostic lithologic feature. Top of unit is chert marker bed. Unit interfingers with and grades into lower part of Tanglewood Limestone Member.

Grier Limestone Member: Limestone, medium- to medium-dark-gray, fine- to medium-grained, fossiliferous; a few very thin shale layers in upper few feet. Contains siliceous Rhynchotrema, Hebertella, Zygospira, as well as strophomenid brachiopods (McFarlan, 1943, p. 17), trilobite fragments, and bryozoan fragments. Stromatoporoids (S marker horizon) locally near base of unit. Interfingers with and grades into lower part of Tanglewood Limestone Member.

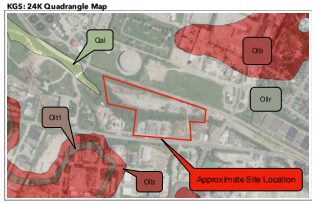
Limestone and shale: Limestone, medium- to medium-dark-gray, fine- to medium-grained, fossiliferous, in nodular beds. Shale, medium-dark-gray; interbedded with limestone; comprises about 30 percent of unit. Rhynchotrema, Hebertella, Zygospira, strophomenid brachiopod and trilobite fragments common (McFarlan, 1943, p. 17). Interfingers with and grades into lower part of Tanglewood Limestone Member.

Brannon Member Limestone and shale: Limestone, light-gray to light-brownish-gray, microgranular, argillaceous; in part silty with thin beds of medium-dark-gray shale; interbeds of clastic limestone locally present; convolute bedding and flow rolls are common in thicker beds, as along New Circle Road at Frankfort Pike, and along railroad cut beneath Virginia Street overpass; chert occurs as thin beds and as nodules; thin beds of swelling bentonite locally occur near base; springs occur at top, but are more common near contact with underlying bioclastic and granular phosphatic limestones. Weathers to a yellowish clayey soil containing abundant porcellaneous chert and siltstone fragments. Unit thins and pinches out northeastward.

Alluvium Clay, silt, and gravel; locally contain abundant chert and dense argillaceous limestone fragments, generally unfossiliferous. Clay and silt, yellowish-brown to dark-gray where humic. Gravel, dark-reddish-brown where composed of reworked residual limonite nodules and granules, to dark-gray where composed of fragments of limestone reworked from local formations. Generally 10 feet thick along larger streams, but locally as thick as 20 feet. Generally less than 5 feet thick along smaller tributaries; not mapped along smaller valleys owing to map scale. Alluvium less than 5 feet thick covers bedrock benches along Cane Run giving erroneous impression of low alluvial fill terraces.

Tanglewood Limestone Member No. 1 Limestone, medium-gray to medium-brownish-gray, fine- to medium-grained, slightly phosphatic; thin shale partings throughout, bioclastic; crossbedded in part; some beds are very coarse grained, bioclastic, and contain numerous skewed brachiopod and trilobite fragments. Contains Cyclonema (McFarlan, 1943, p. 20) in part of unit stratigraphically higher than lower part of the Millersburg Member. Stromatoporoids occur in two layers about 50 and 75 feet below the top. The lower part of the Tanglewood Limestone Member interfingers between two layers of the Brannon Limestone Member where the Brannon pinches out, as along the New Circle Road at Frankfort Pike, and locally extends below the Brannon Member and the Cane Run Bed of the Grier Limestone Member. Bioclastic limestone beneath lower unit of the Millersburg Member forms a light-colored band near top of Blue Grass Quarry northeast of Greendale, and in cuts for Interstate Highway 175 beneath Georgetown Road. Stromatoporoids are well exposed in these localities.

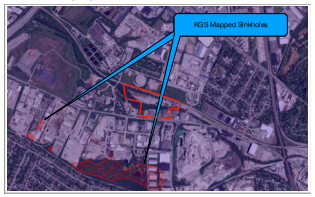
KGS: 24K Quadrangle Map



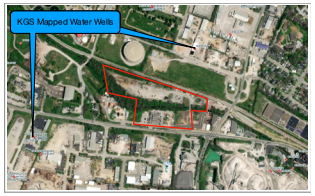
We reviewed the mapping by KGS and noted the below activity.

Item	Yes	No	Closest Approx. Distance to Site
Karst Activity in Area	X		KGS indicated mapped activity within 1 mile.
Obvious Karst Activity Onsite		X	No activity was visible onsite.
Gas and Oil Wells	X		KGS indicated multiple mapped gas wells within 2 miles of the site.
Mining Activities	X		KGS indicated a mapped limestone within 1 mile of the site.
Water Wells and Springs	X		KGS indicated multiple mapped water wells within 1 mile of the site.

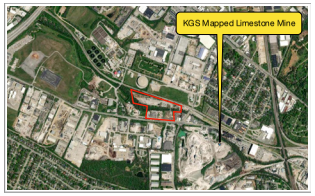
KGS: Karst Activity Map



KGS: Water Wells



KGS: Mining and Gas Wells



Water

Groundwater - KBC 1803.5.4 & 1805

Thoroughbred made efforts to observe the groundwater table during exploration and then about 24 hours later. Water was not encountered during drilling nor 24 hours after drilling.

Boring	Boring Elevation (FT-MSL)	Depth of Refusal (FT)	Elevation of Refusal (FT-MSL)	Water Elevation at Time of Exploration (FT-MSL)	24 Hour Water Elevation (FT-MSL)
B-1*+	913.4	23.0	890.4	NE	-
B-2*+	915.3	16.5	898.8	NE	-
B-3*+	911.7	16.5	895.2	NE	-
B-4+	913.1	16.5	896.6	NE	-
B-5+	910.1	5.5	904.6	NE	-
B-6+	910.1	6.5	903.6	NE	-
B-7	909.0	13.5	895.5	NE	NE
B-8	909.3	13.8	895.5	NE	NE
B-9	908.2	13.4	894.8	NE	NE
B-10	908.4	12.3	896.1	NE	NE
B-11	899.8	3.8	896	NE	NE
B-12	899.2	3.6	895.6	NE	NE
B-13	899.5	3.3	896.2	NE	NE
B-14	896.2	7.0	889.2	NE	NE
B-15	896.0	9.2	886.8	NE	NE
B-16	901.2	7.0	894.2	NE	NE
B-17	905.2	7.0	898.2	NE	NE
B-18	906.7	11.6	895.1	NE	NE
B-19	914.0	6.5	907.5	NE	NE
B-20*	915.1	15	900.1	NE	NE
B-21	921.4	13.0	908.4	NE	NE

*Boring was terminated prior to achieving auger refusal.
+ Borings were backfilled at the time of drilling due to being within the parking lot being utilized by the fire training facility for safety reasons
NE: Not Encountered

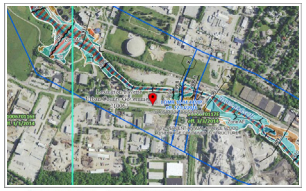
Notes:

1. Contractors should anticipate water seepage into excavations given natural moisture contents great than optimum values.
2. Contractors will likely need to install a sump pump to remove water from excavations.
3. Contractors should be prepared to de-water during construction.
4. Groundwater mitigation recommendations are listed below.

Federal Emergency Management Agency (FEMA) Data

Review of information from FEMA's National Flood Hazard Viewer was analyzed for this site. The site was found to be in an area with a Letter of Map Revision (LOMR).

Flood Hazard Areas Information	
Item	Result
Flood Hazard	**Floodway, Special Flood Hazard Areas, Area of Minimal Flood Hazard**
Panel ID	21006J0117E
Effective Date	3/3/2014, Map Revision 12/14/2016
Date Observed	10/28/2024





1409 N. FORBES RD. LEXINGTON, KY 40511
(859) 785-0383
CIVIL DESIGN, LAND SURVEYING,
ARCHITECTURAL, GEOTECHNICAL ENGINEERING,
IBC SPECIAL INSPECTIONS, MATERIAL TESTING,
& PROJECT MANAGEMENT

THOROUGHBRED
DESIGN | ENGINEER | CONSTRUCT

Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.:	Prepared By:
240 232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

STATE OF KENTUCKY
JORDAN P. HANEY
LICENSED PROFESSIONAL ENGINEER

Water & Research Information

G - 3

Historic Photography

We reviewed several available google earth aerial photographs dating from April 1993 to the present date. The portion of the property south of Town Branch Creek has experienced little visible changes since April 1993. The portion of property north of Town Branch Creek has experienced fill and grading based on google earth images. This grading and fill appears to have been on going since April 2002.

Photograph 1: April 1993



Photograph 5: April 2017



Photograph 2: April 2002



Photograph 6: February 2020



Photograph 3: September 2010



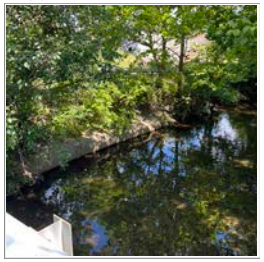
Photograph 4: September 2014



Site Photographs

During our visits to the site, photographs of possible issues were taken. Photograph 7 shows Town Branch Creek which runs through the center of the site. Erosion control efforts will be required to protect Town Branch Creek from sediment. Pavements surrounding the existing fire training center were found to be raveling, cracking, and contain utility trenches. Photographs 8 - 11 shows the current pavement conditions onsite, which suggest pavements are not sufficient to withstand current traffic loading. The portion of the location north of Town Branch Creek was found to contain trash bags in a few borings as shown in Photographs 12 and 13. Borings conducted near the existing training center were found to contain brick pieces and glass as shown in Photographs 14 and 15. Trash bags, bricks, and glass suggest uncontrolled fill exist across the site which have high potential for uncontrolled settlement. Structural fill material should also be free from the materials encountered in Photographs 12 - 15.

Photograph 7: Town Branch Creek



Photograph 10: Utility trench and fatigued pavements on west side of training center.



Photograph 13: Trash bags encountered on north side of Town Branch Creek.



Photograph 8: Raveling pavements on east side of training center.



Photograph 11: Pavement alligator cracking on west side of training center.



Photograph 14: Fill material encountered near training center.



Photograph 9: Utility trenches on east side of training center.



Photograph 12: Soil and trash bags encountered on north side of Town Branch Creek.



Photograph 15: Brick and glass pieces encountered near training center.



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STRUCTURAL ENGINEERING

THOROUGHBRED
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Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.:	Prepared By:
2-40232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

STATE OF KENTUCKY
JORDAN P. HARRIS
LICENSED PROFESSIONAL ENGINEER

Historical & Site Photographs

G - 4

LEXINGTON

Laboratory & Soils Summary

Summary of Subsurface Material Information

Item	Response		
Asphalt Thickness Range (in)	0	to	6
Base Stone Thickness Range (in)	0	to	6
Soil/Fill Thickness Range Across Borings (ft)*	3.3	to	23+
Range of Consistency from SPT (Clays and Silts)	Very Soft	to	Hard
Range of Consistency from SPT (Sands and Gravels)	Very Loose	to	Very Dense
Was Fill Material Encountered?	Yes		
Were rocks greater than 12 inches encountered?	Possibly		

*Fill material was encountered in all borings except B-11 through B-13. The deepest boring extended to 23 feet without encountering refusal. Some refusals were likely due to shot rock not bedrock.

General Description of Soil Strata Encountered

Thoroughbred explored the site with geotechnical drilling. Based upon those efforts and the results from laboratory testing, varying types of fill material was encountered ranging from clays and silts to sands and possible shot rock. We have described the encountered soils onsite in the following general terms:

Asphalt Pavement: Asphalt was encountered in thirteen borings at the ground surface and ranged from 3 to 6 inches thick.

Base Stone: Out of the thirteen borings that contained asphalt pavement, only four borings contained base stone beneath the asphalt. This base stone ranged from 2 to 6 inches thick.

Topsoil: Six borings encountered a layer of topsoil at the ground surface which ranged from 3 to 7 inches thick.

Fill Strata 1: The borings conducted on the southern side of Town Branch Creek contained varying types of fill material with brick and glass pieces. Shot rock was also encountered in several borings in this area.

Fill Strata 2: The borings conducted on the northern side of Town Branch Creek contained darker black to brown fill material in several borings. B-20 and B-21 encountered trash bags and garbage in borings. Shot rock was also encountered on the northern section of the site.

Strata 3: Boring B-3 did encountered a layer of orange brown sandy lean clay (CL) which is thought to be natural ground.

Drilling refusal was encountered in 17 of the 21 borings. Refusal in some borings is likely due to shot rock that was encountered in several borings across the site.

Soil Classification

During the course of our work, we selected representative soil samples for laboratory testing. Laboratory testing reports are included in this plan set. We classified the samples per the Unified Soil Classification System (USCS) and were found to be as follows.

Classification	Yes	No	Note
Well Graded Gravel (GW)		X	
Poorly Graded Gravel (GP)		X	
Silty Gravel (GM)		X	
Clayey Gravel (GC)		X	
Well-Graded Sands (SW)		X	
Poorly-Graded Sands (SP)		X	
Silty Sands (SM)	X		
Clayey Sands (SC)		X	
Inorganic Silts (ML)		X	
Low Plasticity Clay (CL)	X		
Organic Silts, Organic Low Plasticity Clays (OL)		X	
Inorganic Silts, Elastic (MH)		X	
High Plasticity Clay (CH)		X	
Organic Clay, Organic Silt (OH)		X	
Peat, Highly Organic (PT)		X	

Laboratory Test Ranges			
Test	Low	High	Note
Plasticity Index (%)	NP	27	4 test run
Natural Moisture Content (%)	1.7	33.8	63 test run
% Finer than No. 200	21.7	72.6	4 test run
Optimum Moisture Content (%)	22.3		1 test run
Maximum Dry Density (PCF)	99.5		1 test run
Expansion Index	17, Very Low		1 test run
Unconfined Compressive Strength (PSF)	5,754		1 test run

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1409 North Forbes Road, Suite 110
Lexington, Kentucky 40511

Project Name: LFUCG Fire Training Academy Campus — Project Number: 240232
Project Location: 1375 Old Frankfort Pike, Lexington, Fayette Co., KY — Date: 10/22/2024

Laboratory Summary Report

Lab ID	Location ID	Depth (FT)	Sample Type	Natural Moisture Content (%)	Plasticity Index (%)	% Fines Than No. 200	USCS Classification	Maximum Dry Density (pcf)	Optimum Moisture Content	CBR at 0.100" (%)	Expansion Index (EI 50)	Potential Expansion	Unconfined Compressive Strength (psf)
1	B-1	0.5-2.0	SS	4.9%									
2	B-1	5.0-6.5	SS	27.2%									
3	B-1	10.0-11.5	SS	10.8%									
4	B-1	15.0-16.5	SS	26.2%									
5	B-1	20.0-21.5	SS	30.7%									
6	B-1	21.5-23.0	SS	27.4%									
7													
8	B-2	0.5-2.0	SS	34.6%									
9	B-2	5.0-6.5	SS	25.2%									
10	B-2	15.0-16.5	SS	33.1%									
11													
12	B-3	0.5-2.0	SS	14.6%									
13	B-3	10.0-11.5	SS	11.8%									
14	B-3	15.0-16.5	SS	25.7%	22	72.6%	CL						
15													
16	B-4	0.5-2.0	SS	9.4%									
17	B-4	5.0-6.5	SS	32.6%									
18	B-4	10.0-11.5	SS	14.6%									
19	B-4	20.0-21.5	SS	25.9%									
20													
21	B-5	1.0-2.5	SS	10.8%									
22	B-5	4.0-5.0	GRAB	6.1%									
23													
24	B-6	1.0-2.5	SS	8.2%									
25													
26	B-7	0.0-1.5	SS	17.5%									
27	B-7	1.5-3.0	SS	18.4%									
28	B-7	5.0-6.5	SS	24.0%									
29													
30	B-8	0.0-1.5	SS	10.0%									
31	B-8	1.5-3.0	SS	16.3%									
32	B-8	5.0-6.5	SS	16.5%									
33	B-8	10.0-11.5	SS	17.8%									
34													
35	B-9	0.7-2.2	SS	21.2%									
36	B-9	5.0-6.5	SS	1.8%									
37	B-9	10.0-11.5	SS	18.4%									
38													
39	B-10	0.0-1.5	SS	13.5%									
40	B-10	2.0-3.5	SS	21.0%									
41	B-10	5.0-6.5	SS	18.8%									
42													
43	B-11	0.0-1.5	SS	17.5%									
44	B-11	1.5-3.0	SS	19.7%									
45													
46	B-11A	2.0-4.0	SS	18.5%	20	72.6%	CL						5,754
47													
48	B-12	0.0-1.5	SS	21.3%									
49	B-12	1.5-3.0	SS	29.2%									
50													
51	B-13	0.0-1.5	SS	28.2%									
52	B-13	1.5-2.7	SS	33.8%									
53													
54	B-14	0.0-1.5	SS	7.0%									
55	B-14	1.5-2.7	SS	11.9%									
56													
57	B-15	0.0-1.5	SS	2.8%									
58	B-15	1.5-3.0	SS	1.7%									
59													
60	B-16	0.0-1.5	SS	15.2%									
61	B-16	1.5-3.0	SS	4.0%									
62	B-16	5.0-6.5	SS	8.8%									

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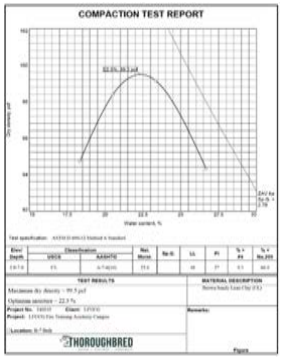
1409 North Forbes Road, Suite 110
Lexington, Kentucky 40511

Project Name: LFUCG Fire Training Academy Campus — Project Number: 240232
Project Location: 1375 Old Frankfort Pike, Lexington, Fayette Co., KY — Date: 10/22/2024

Laboratory Summary Report

Lab ID	Location ID	Depth (FT)	Sample Type	Natural Moisture Content (%)	Plasticity Index (%)	% Fines Than No. 200	USCS Classification	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	CBR at 0.100" (%)	Expansion Index (EI 50)	Potential Expansion	Unconfined Compressive Strength (psf)
63	B-17	0.5-2.0	SS	9.0%									
64	B-17	2.0-3.5	SS	15.4%									
65													
66	B-18	0.5-2.0	SS	4.9%									
67	B-18	2.0-3.5	SS	11.9%									
68	B-18	5.0-6.5	SS	27.0%									
69	B-18	10.0-11.5	SS	32.9%									
70													
71	B-19	0.5-2.0	SS	6.2%									
72	B-19	2.0-3.0	GRAB	51.7%									
73	B-19	3.0-4.5	SS	11.4%									
74	B-19	5.0-6.5	SS	10.9%									
75													
76	B-19A	2.0-4.0	UD	21.0%	NP	21.7%	SM						Not Enough Intact Sample
77													
78	B-20	0.5-2.0	SS	33.8%									
79	B-20	2.0-3.5	SS	33.9%									
80													
81	B-21	0.5-2.0	SS	11.9%									
82	B-21	2.0-3.5	SS	33.1%									
83	B-21	5.0-6.5	SS	24.7%									
84													
85	B-7 Bulk	2.0-7.0	BULK	22.6%	27	66.0%	CL	99.5	22.3%		17	Very Low	

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method A Standard

Elev/ Depth	Classification USCS	Classification AASHTO	Nat. Moist.	Sp.G.	LL	PI	% < #4	% < No.200
0.0 ft	CL	A-7-6(20)	22.6		48	27	0.5	66.0

TEST RESULTS
Maximum dry density = 99.7 pcf
Optimum moisture = 22.3 %
Project No. 240232 Client: LFUCG
Project: LFUCG Fire Training Academy Campus
Location: B-7 Bulk

MATERIAL DESCRIPTION
Brown Sandy Lean Clay (CL)

Remarks:

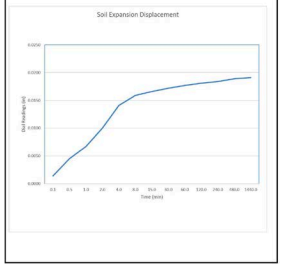
THOROUGHBRED

Figure

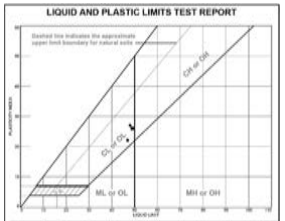
Standard Test Method for Expansion Index of Soils

ASTM D4829-11

Lab ID	Location ID	Depth (FT)	Sample Type	Pre-Test Moisture Content (%)	Post-Test Moisture Content (%)	Dry Density (pcf)	Percent of Optimum Compaction (%)	Expansion Index (EI 50)	Potential Expansion
1	B-7 Bulk	2.0-7.0	Bulk	12.3%	32.7%	90.2	89.7%	17	Very Low



LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Brown Sandy Lean Clay (CL) with Sand	47	21	22	90.3	72.6	CL
Brown Lean Clay (CL) with Sand	43	21	22	90.1	70.8	CL
Dark Gray Sand (SM) with Gravel	32	NP	NP	82.9	21.7	SM
Brown Sandy Lean Clay (CL)	48	21	27	76.4	66.0	CL

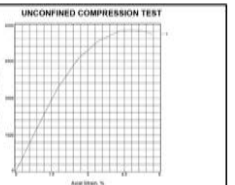
Project No. 240232 Client: LFUCG
Project: LFUCG Fire Training Academy Campus
Source of Sample: B-1 Depth: 15
Source of Sample: B-13 Depth: 2
Source of Sample: B-19 Depth: 2
Location: B-7 Bulk Depth: 2.0-7.0

Remarks:

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Figure

UNCONFINED COMPRESSION TEST



Sample No.	1
Unconfined strength, psf	5,754
Undrained shear strength, psf	2877
Failure strain, %	4.9
Strain rate, in/min	0.030
Water content, %	18.5
Wet density, pcf	129.8
Dry density, pcf	109.6
Saturation, %	93.8
Void ratio	0.5370
Specimen diameter, in	2.87
Specimen height, in	5.73
Height/diameter ratio	1.99

Description: Brown Lean Clay (CL) with Sand
LL = 48 PL = 21 PI = 27 Assumed GS= 2.7 Type: Shelby Tube (3.00)

Project No.: 240232 Client: LFUCG
Date Sampled: 9/19/24
Remarks:

Project: LFUCG Fire Training Academy Campus
Source of Sample: B-13A Depth: 2

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Figure

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Preliminary Geotechnical Evaluation

LFUCG Fire Training Academy Campus

Old Frankfort Pike

Lexington, Kentucky 40504

Project No.:	Prepared By:
240 232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

JORDAN P. HANEY
25507
LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY

Laboratory & Soil Summary

G - 5

Excavation, Grading, and Fill

KBC 1803.5.7 through 10 & 1804

Overview

At this stage of development, site plans have not been determined nor structure types. Excavations, grading, and fill may occur onsite but the extent of these are unknown at this time. At a minimum, excavations for foundations and utility lines are anticipated at this site.

Possible fill material was encountered in multiple borings. This fill material contained brick pieces and glass with some borings containing trash bags and construction debris consistent with landfills.

At this time, the following are recommended for excavation, grading and/or fill for this site. Note these recommendations will change once final site plans are determined.

1. Demolition activities are anticipated and should be preformed with the future structure in mind. Preliminary recommendations for demolition is provided below.
2. Sheet flowing of surface water in parking areas should not be allowed.
3. Any ponding water onsite should be drained and not allow to pond in building areas.
4. Complete a final geotechnical evaluation which will include more project specific recommendations for excavation, grading, and fill once site plans and building structures are determined.

Demolition Activities

At this time, the scope of our investigations is preliminary. We anticipate demolition actives involving removing pavements or existing structures onsite may occur. If these activities do occur, debris from these activities shall be completely removed from all areas planned for development. Private utility lines onsite shall be removed or fully grouted prior to any construction. Monitoring by a geotechnical engineer or qualified individual shall be performed during all demolition activities.

The following are items that should be done once demolition has taken place.

1. All demolition activities should meet the future requirements of the proposed construction, specifically those outlined in this plan set, but not limited to the complete project documents.
2. The site should be graded to drain. Ponding water should not occur during or after the demolition contractors have left the site.
3. The top grade of the Demolition areas should be sealed and water not allowed to drain into the subgrade or open voids.
4. All debris should be removed and wasted off site.
5. Utility lines should be disconnected and removed from proposed structural areas. In the event they can not be removed, pipes should be fully grouted.
6. Retain Thoroughbred to be on-site during future demolition related activities to document the process and verify demolition efforts meet the future needs of the project.

Excavation

Excavations are anticipated, to some degree, for foundations and utility lines. Contractors should make all excavations in strict accordance with the requirements in the project documents and per the Occupational Safety and Health Administration (OSHA).

Excavation Near Foundations

At this stage of development, excavations near foundations are unknown. Excavations are not recommended near existing foundations given the instability and loose compaction of fill material. Excavations for new foundations would likely remove any lateral support for the existing structures. If excavations are required near foundations, underpinning is recommended. Any excavations for new foundation systems shall not remove lateral support from any foundation or roadway area without first underpinning or protecting against settlement or lateral torsion. If this does occur, the contractor should contact Thoroughbred prior to the start of construction.

Grading

The ground immediately adjacent to foundations shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048 mm) of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building. See Fill for additional recommendations.

As the upward slope meets the foundation wall, it is critical that grading be completed to help surface water flow away from the structure.

Seasonal Earthwork

Grading efforts, excavations, and subgrade compaction will greatly be impacted by the time of year earthwork operations occur with respects to seasonal weather patterns. For example, during periods (likely summer), contractors may be required to add water to fill material in order to achieve the required compaction moisture contents. In wetter periods (likely spring and winter), discing soils to help dry wet soils to achieve the required compaction moisture contents will be required.

If work is delayed for any time or if perception events are likely to occur, the contractor should seal off all exposed soil subgrades to water infiltration does not occur. Sealing off subgrades can be achieved with smooth drum rollers, rubbed tired vehicles, etc. Sealing off subgrades will also help reduce erosion with exposed soils.

Once areas are brought to grade, contractors should seal off all exposed soils prior to starting new areas of grading.

If preparations for seasonal earthwork efforts are not made or if exposed subgrade materials are not sealed off, the subgrade may become unstable and remediation efforts will be required at the contractors responsibilities.

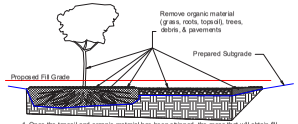
Placement of Backfill

Select backfill should be used against walls (i.e. foundation walls, retaining walls, etc.) and shall be backfilled with open graded stone similar to a KYTC #57 stone at least 5 feet from the walls. The stone should be compacted. Hydrostatic pressure should not be allowed to develop against the wall. The stone should be incased with filter fabric to not allow soil migration or to move into the stone and clog it. A impervious material (clay, concrete, etc) should be placed in the top, 1 foot above the stone to reduce water draining from the surface. The impervious material should be graded as noted in this report. Non structural areas or backfill areas not against walls having soil backfill should be free of organic material, construction debris, cobbles and boulders. The backfill shall be placed in lifts and compacted in a manner that does not damage the foundation or the waterproofing or damp proofing material.

Preparation of Subgrade

Prior to the placement of fill material, base stone, etc. for structures, the areas should be prepared in accordance with the project documents and items below:

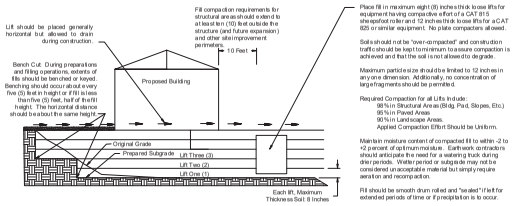
Specifications for the preparation of the site prior to placement of compacted fill material:



1. Once the topsoil and organic material has been stripped, the areas that will obtain fill material shall be scarified to a depth of 12 inches and compaction applied to obtain a density of 98 percent of the material's relative density.
2. Areas ready to receive new fill should be proofrolled with a heavily loaded dump truck or similar equipment having a weight of 60,000 pounds. Perform the proofrolling after a suitable period of dry weather to avoid degrading the subgrade.
3. Areas which pump, rut, or new during proofrolling may require undercutting, depending on the location of the area and the use of the area. You should anticipate undercutting to some level in wet areas or previously filled areas and trenches.

Preparation of Site Prior to Fill Placement Detail
Scale: N.T.S.

Specification for Compacted Fill Material



Place fill in maximum eight (8) inches thick loose lifts for equipment having compactive effort of a CAT 815 sheepsfoot roller and 12 inches thick loose lifts for a CAT 825 or similar equipment. No plate compactors allowed.

Soils should not be "over-compacted" and construction traffic should be kept to minimum to assure compaction is achieved and that the soil is not allowed to degrade.

Maximum particle size should be limited to 12 inches in any one dimension. Additionally, no concentration of large fragments should be permitted.

Required Compaction for all Lifts Include:
- 98 % in Structural Areas (Bldg, Pad, Slopes, Etc.)
- 95 % in Paved Areas
- 90 % in Landscape Areas.
- Applied Compaction Effort Should be Uniform.

Maintain moisture content of compacted fill to within -2 to +2 percent of optimum moisture. Earthwork contractors should anticipate the need for a watering truck during drier periods. Wetter period or subgrade may not be considered unacceptable material but simply require aeration and recompaction.

Fill should be smooth drum rolled and "sealed" if left for extended periods of time or if precipitation is to occur.

Recommended Satisfactory Structural Fill Soils:

- Soil Classification Groups CL or CH according to ASTM D 2487, or a combination of these groups.
- Free of debris, organic material and waste.
- Not be frozen or contain vegetation, and other deleterious matter.
- Offsite fill material should meet the following requirements
  - Dry Densities should be greater than 95 PCF.
  - Plasticity Index should be less than 30 percent.
  - Soils shall have a "Low" Expansive Index.

Quality Control:

1. Density tests should be taken at a rate of two (2) tests per 5,000 square feet.
2. Density testing shall be per test method ASTM D 6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
3. Thoroughbred Engineering should be retained to test and observe the process and verify design intent.

Recommendations for Typical Soil Fill Construction Detail
Scale: N.T.S.

Controlled Low-Strength Material (CLSM)

Controlled Low Strength Material (CLSM) is a mixture of cement, sand and water in a flowable form that is often used as backfill material specifically to fill undercut excavations, backfill around pipes or in areas where compaction equipment simply cannot maneuver.

Based upon our review of the project, CLSM may be required as backfill certain foundations. Below are recommended specifications for CLSM material:

CLSM shall meet the requirements of the project, the American Association of State Highway and Transportation Officials, AASHTO, the American Concrete Institute (ACI) latest standards and as noted below:

A self-leveling and self-compacting, cementitious material with an unconfined compressive strength of an excavatable type. This includes a minimum strength of 50 psi within 24 hours. The one-year strength shall not exceed 150 psi.

Sources and proportions of CLSM ingredients:

Prior to the start of CLSM placement, the CONTRACTOR shall submit a description of the proposed CLSM mixture design. Based on the application, the Thoroughbred Engineer may require the CONTRACTOR to submit appropriate laboratory or field test data documenting compliance to specified material and or performance properties.

CLSM shall be manufactured with materials conforming to the standards listed below. The Thoroughbred Engineer shall approve the use of all non-conforming materials. Approval shall be based on documentation that controlled low strength material mixtures manufactured with the non-conforming materials meet the specified plastic and hardened properties and are suited for the intended application.

Hydraulic Cement (AASHTO M 85 or M 240)
Fly Ash (AASHTO M 295)
Granulated Blast Furnace Slag (AASHTO M 302)
Fine Aggregate (AASHTO M 6)
Coarse Aggregate (AASHTO M 80)
Lightweight Aggregate (AASHTO M 195)
Water (AASHTO M 157)
Chemical Admixtures (AASHTO M 194)
Air Entrainment Admixtures (Approved by a Thoroughbred Engineer).
Foaming Admixture (ASTM C 869)

The flowable material shall have a minimum flow of 8 inches tested in accordance with ASTM D6103. Unit weight of the material shall not exceed 145 pounds per cubic foot. CLSM shall be proportioned by the ready mixed concrete supplier on the basis of field experience and/or laboratory trial mixtures to produce a cohesive and non-segregating mixture meeting the specified properties. The addition of water and admixtures on the job-site is permitted. The amount of water and admixture added shall be recorded. The CLSM mixture shall be mixed for a minimum of 30 revolutions after the addition of the water or admixture. Material shall not be placed on frozen ground. The ambient temperature shall be 35 deg F and rising at the time of placement. CLSM may be placed in confined space.

Foundations

At this stage of the project, site plans nor building types are known. Deep foundations are recommended based on the presence of non-structural fill across the site. This fill contained brick pieces, glass, and trash bags consistent with landfill material. Fill material of this nature does not meet requirements for structural fill and should not be used for supporting buildings especially of this risk category. Additional geotechnical exploration and evaluation should be completed once site & building locations have been set. The following is recommended to be completed as the project moves forward.

Next Steps:

1.) Coordination with an Environmental Engineer as it pertains to the previous managed environmental site and the landfill extents onsite. Additionally it is recommended that consulting the Kentucky Division of Waste Management before proceeding with any development plans. The exact location of landfill material and the possibility of environmental contaminants onsite can affect how this property is developed.

2.) Additional investigation should be completed once site and building location and information is known. Additional investigation should likely include a geophysical study (per KBC Section 1803.5.13), environmental sampling, test pits, and additional soil borings including rock coring in order to fully understand the site and to provide final geotechnical and environmental recommendations.

Pavements

At this stage of the project, site plans have not been provided. Based upon our team meeting on November 4th, 2024, we understand that a phased approach will likely occur on this project including site development ahead of the potential building addition or new building construction. It is anticipated that a passenger vehicle section and a heavy duty vehicle section will be utilized for the site improvements.

Subgrade Stabilization

The onsite soils are anticipated to have CBR values less than 3 and would benefit from being stabilized to a value greater than 4. Pavement thickness listed in this report are all based on a CBR value of at least 4.

Chemical Stabilization

Mixing chemical agents, such as lime, with the soils found at this site will increase the strength to suitable conditions for the pavement recommendations mentioned. Topsoil should be removed prior to mixing lime agents. Soil and lime agent should be mixed to a depth of no less than 12 inches once final subgrade elevations have been constructed. Milling and mixing equipment should make multiple passes through the subgrade to ensure mixing was done thorough.

Mechanical Stabilization

Soils at this site can be stabilized using coarse aggregates wrapped with a geotextile type fabric or use of a geogrid material. Options are presented below.

1.) KY No. 2 coarse aggregates with a thickness of 24 inches should be used. The course aggregates should be wrapped in a geotextile fabric meeting the requirements of a KYTC Class 2 Geotextile.

2.) Use of Tensar HX-165 geogrid, or equivalent, at the base stone/subgrade interface. Additional base stone may also be required.

If Geogrids or geotextile are used, the rolls shall be installed so that the roll length runs parallel to the direction of the drive path. Overlap for both a geogrid or geotextile shall be at least 1 foot in both directions. Plastic ties shall be used at overlaps. Traverse ties shall be placed 4 to 5 feet apart with longitudinal ties placed at 10 to 15 feet apart.

Undercut and Replace Stabilization

Soils onsite can also be undercut and more suitable materials can be brought in to provide a better performing subgrade. Undercut depths will depend on the subsurface soil conditions in each area. Undercuts are anticipated to be a minimum of 24 inches and backfilled with soils having a CBR value of at least 4.0.

Base Stone Construction

1. Prior to the placement of base stone,
   a. Areas should be prepared as noted in this report.
   b. A Thoroughbred Engineer or Special Inspector should observe the subgrade and proofroll prior to base stone placement. A Thoroughbred Engineer should be contacted if areas appear unstable. Soft areas should be anticipated, additional stabilization may be required.
2. The Densely Graded Aggregates (DGA) should be placed and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition. DGA Shall:
   a. Be thoroughly mixed at placement.
   b. Be placed in a maximum of 4 inch lifts and compacted.
   c. Be compacted to 84% of its solid volume density.
   d. Should have a moisture content at the time of placement of 3% to 7%.
3. Density testing should be completed on each lift of the DGA and at a rate of 1 test per every 25 square feet.

Asphalt Pavements



Typical Light Duty Asphalt Pavement Detail
Scale: N.T.S.



Typical Heavy Duty Asphalt Pavement Detail
Scale: N.T.S.

Construction Notes

1. Proofroll the pavement area prior to the earthwork operations beginning. Proofrolling shall also be completed prior to the placement of the Dense Graded Aggregate base.
2. Proofrolling shall be completed with a tri-axle dump truck exceeding 60,000 pounds in weight.
3. Proofrolling should be observed by a Thoroughbred Engineer. Removal of soft areas should be anticipated.
4. The dense graded aggregate (DGA) should be placed and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition.
5. The asphalt should be mixed, placed, and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition.
6. It is common practice to place the base stone and binder course prior to completion of construction without placing the surface course. It should be noted that repeated passes of heavily loaded construction traffic on the binder course will likely decrease the service life of your pavement.
7. If Geogrids are used, install Geogrid so that the roll length runs parallel to the roads direction. Overlap Geogrid at minimum 1 foot, in both directions. Use plastic ties at overlaps. Place traverse tie 4 to 5 feet apart and longitudinal ties at 10 to 15 feet apart.

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ENVIRONMENTAL ENGINEERING

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Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504

Project No.:	Prepared By
240232	MAH
Date:	Reviewed By:
10.31.2024	JPH

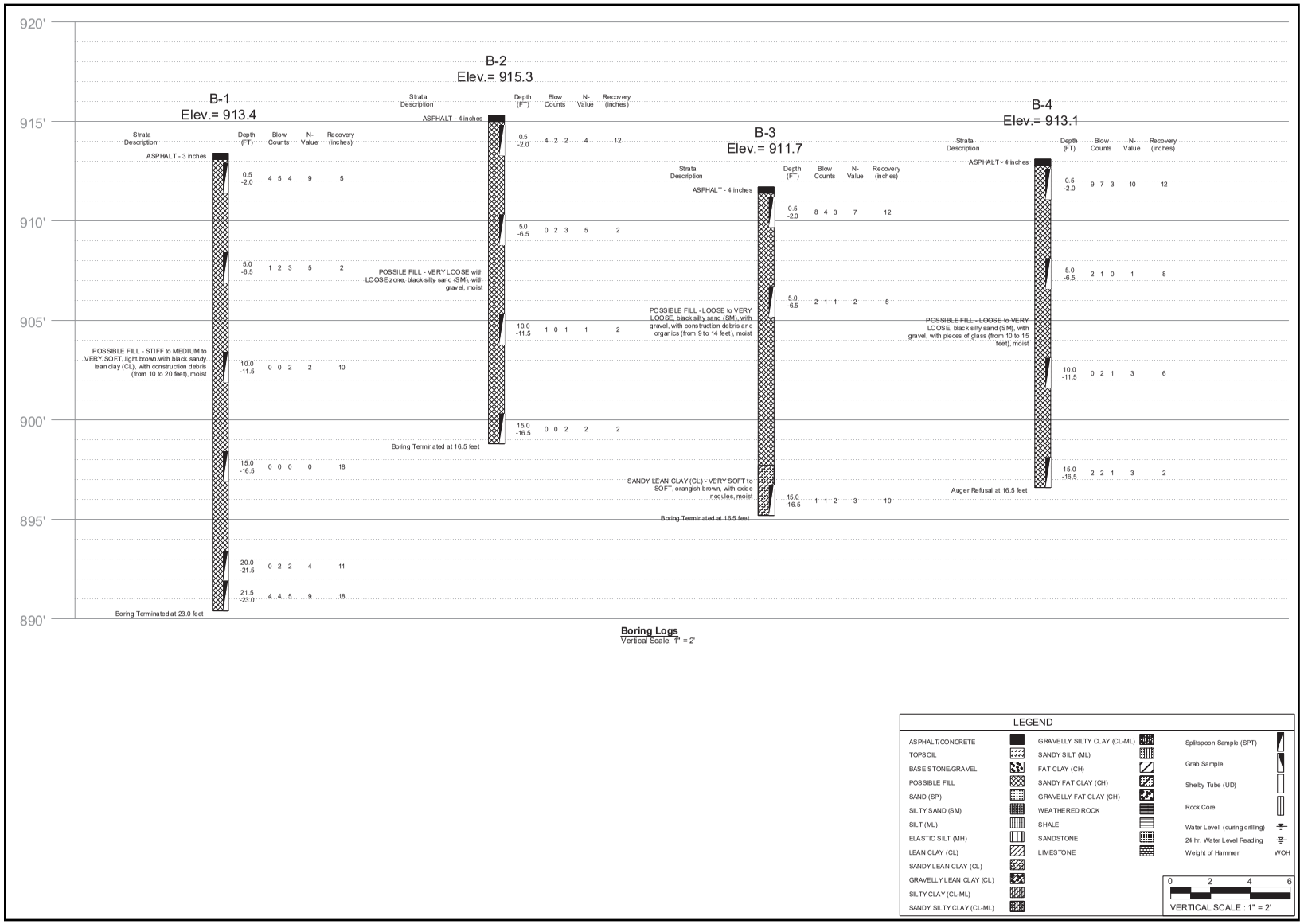
NO.	REVISION	DATE
1	Pavements	11.7.24



Excavations & Foundations

G - 6

Preliminary Geotechnical Evaluation
LFUCG Fire Training Academy Campus
Old Frankfort Pike
Lexington, Kentucky 40504
Aerial Location Map
G - 7
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(859) 785-0383
General Drilling Information
Boring Location Plan
Scale: 1" = 30'
LEGEND
B-1 INDICATES BORING LOCATIONS
B-1
Elev. 913.4'
B-2
Elev. 915.3'
B-3
Elev. 911.7'
B-4
Elev. 913.1'
B-5
Elev. 910.1'
B-6
Elev. 910.1'
B-7
Elev. 909.0'
B-8
Elev. 908.3'
B-9
Elev. 908.2'
B-10
Elev. 908.4'
B-11
Elev. 899.8'
B-12
Elev. 899.2'
B-13
Elev. 899.5'
B-14
Elev. 896.3'
B-15
Elev. 896.0'
B-16
Elev. 901.2'
B-17
Elev. 905.2'
B-18
Elev. 906.7'
B-19
Elev. 914.0'
B-19A
Elev. 913.7'
B-20
Elev. 915.1'
B-21
Elev. 921.4'



Boring Logs
Vertical Scale: 1" = 2'

LEGEND

ASPHALT/CONCRETE	GRAVELLY SILTY CLAY (CL-ML)	Splitspoon Sample (SPT)	
TOPSOIL	SANDY SILT (ML)	Grab Sample	
BASE STONE/GRAVEL	FAT CLAY (CH)	Shelby Tube (UD)	
POSSIBLE FILL	SANDY FAT CLAY (CH)	Rock Core	
SAND (SP)	GRAVELLY FAT CLAY (CH)	Water Level (during drilling)	
SILTY SAND (SM)	WEATHERED ROCK	24 hr. Water Level Reading	
SILT (ML)	SHALE	Weight of Hammer	WOH
ELASTIC SILT (MH)	SANDSTONE		
LEAN CLAY (CL)	LIMESTONE		
SANDY LEAN CLAY (CL)			
GRAVELLY LEAN CLAY (CL)			
SILTY CLAY (CL-ML)			
SANDY SILTY CLAY (CL-ML)			

0 2 4 6
VERTICAL SCALE : 1" = 2'

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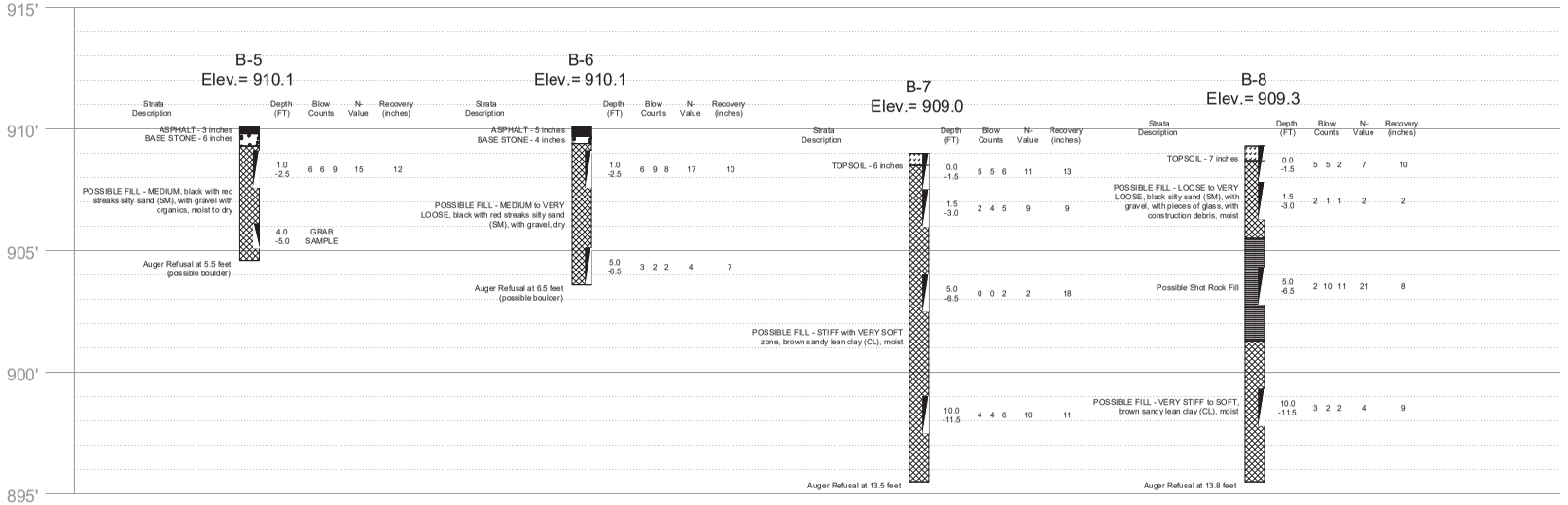
Project No.:	Prepared By
240232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO	REVISION	DATE

JORDAN A. HAMILTON
LICENSED
PROFESSIONAL ENGINEER

Boring Logs

G - 8



Boring Logs
Vertical Scale: 1" = 2'

LEGEND

ASPHALT/CONCRETE	GRAVELLY SILTY CLAY (CL-ML)	Splitspoon Sample (SPT)
TOPSOIL	SANDY SILT (ML)	Grab Sample
BASE STONE/GRAVEL	FAT CLAY (CH)	Shelby Tube (UD)
POSSIBLE FILL	SANDY FAT CLAY (CH)	Rock Core
SAND (SP)	GRAVELLY FAT CLAY (CH)	Water Level (during drilling)
SILTY SAND (SM)	WEATHERED ROCK	24 hr. Water Level Reading
SILT (ML)	SHALE	Weight of Hammer WOH
ELASTIC SILT (MH)	SANDSTONE	
LEAN CLAY (CL)	LIMESTONE	
SANDY LEAN CLAY (CL)		
GRAVELLY LEAN CLAY (CL)		
SILTY CLAY (CL-ML)		
SANDY SILTY CLAY (CL-ML)		

0 2 4 6
VERTICAL SCALE : 1" = 2'

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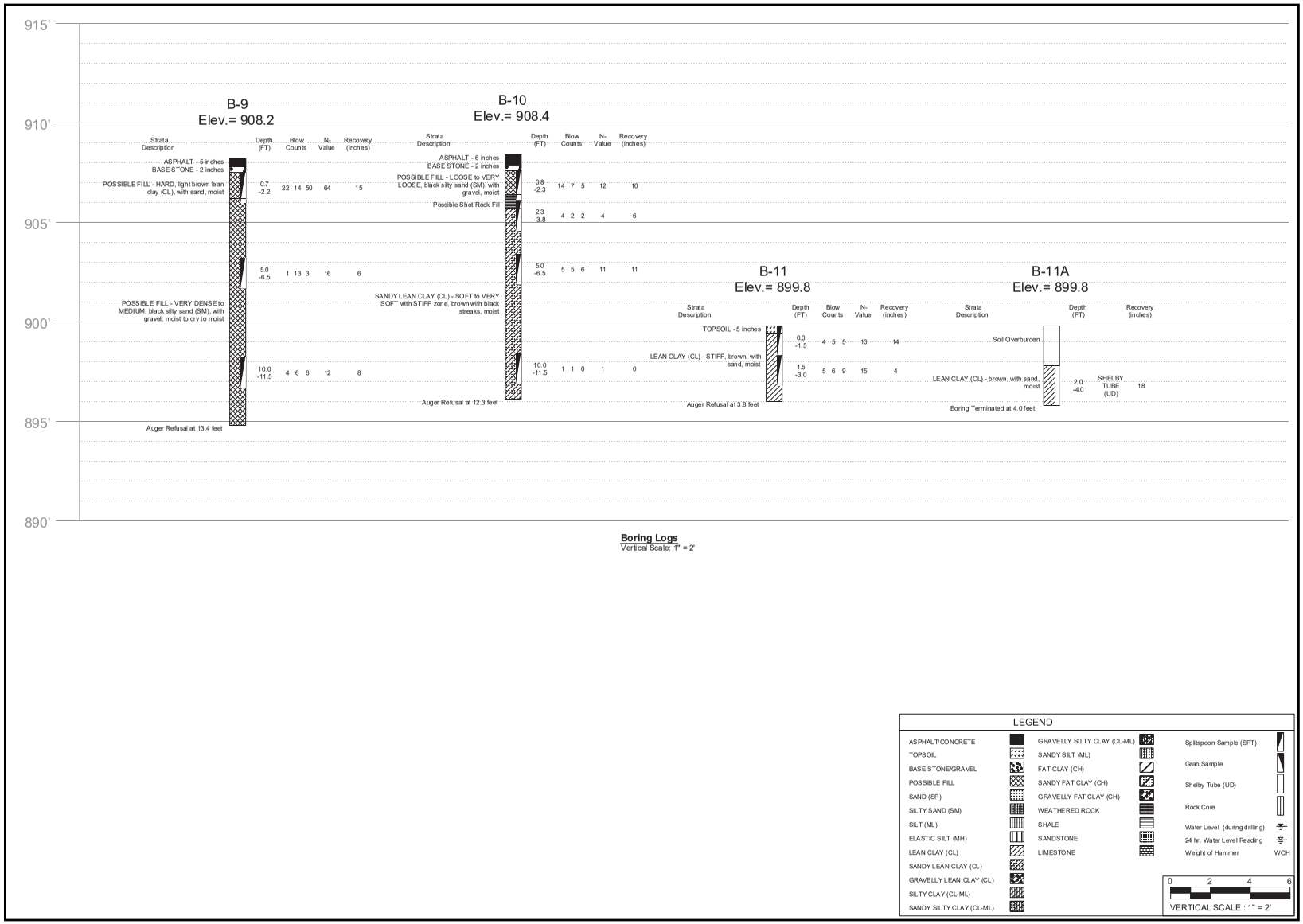
Project No.:	Prepared By:
240232	MKH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

STATE OF KENTUCKY
JORDAN P. HANEY
36567
LICENSED PROFESSIONAL ENGINEER

Boring Logs

G - 9



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DRONE PHOTOGRAMMETRY

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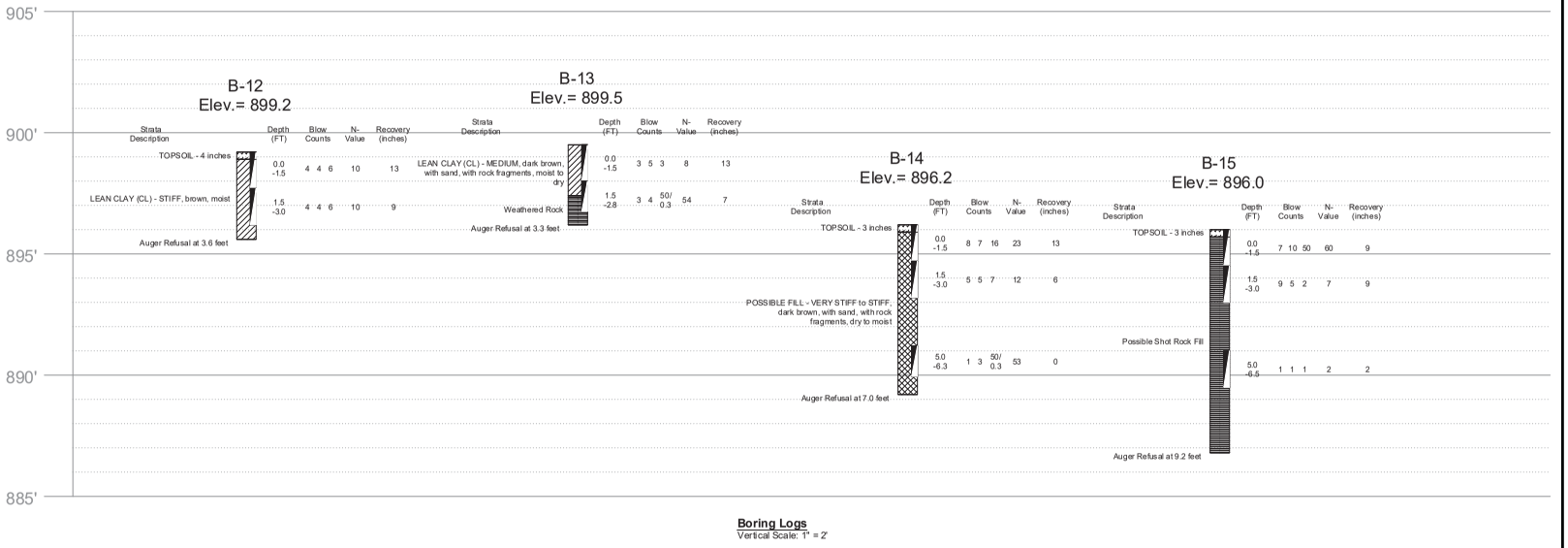
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240232	MAH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

STATE OF KENTUCKY
JORDAN HAWS
30291
LICENSED
PROFESSIONAL ENGINEER

Boring Logs

G - 10



Boring Logs
Vertical Scale: 1" = 2'

LEGEND

ASPHALT/CONCRETE	GRAVELLY SILTY CLAY (CL-ML)	Splitspoon Sample (SPT)	
TOPSOIL	SANDY SILT (ML)	Grab Sample	
BASE STONE/GRAVEL	FAT CLAY (CH)	Shelby Tube (UD)	
POSSIBLE FILL	SANDY FAT CLAY (CH)	Rock Core	
SAND (SP)	GRAVELLY FAT CLAY (CH)	Water Level (during drilling)	
SILTY SAND (SM)	WEATHERED ROCK	24 hr. Water Level Reading	
SILT (ML)	SHALE	Weight of Hammer	WOH
ELASTIC SILT (MH)	SANDSTONE		
LEAN CLAY (CL)	LIMESTONE		
SANDY LEAN CLAY (CL)			
GRAVELLY LEAN CLAY (CL)			
SILTY CLAY (CL-ML)			
SANDY SILTY CLAY (CL-ML)			

0 2 4 6
VERTICAL SCALE : 1" = 2'

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SPECIAL INSPECTIONS, MATERIAL TESTING,
BIM SERVICES

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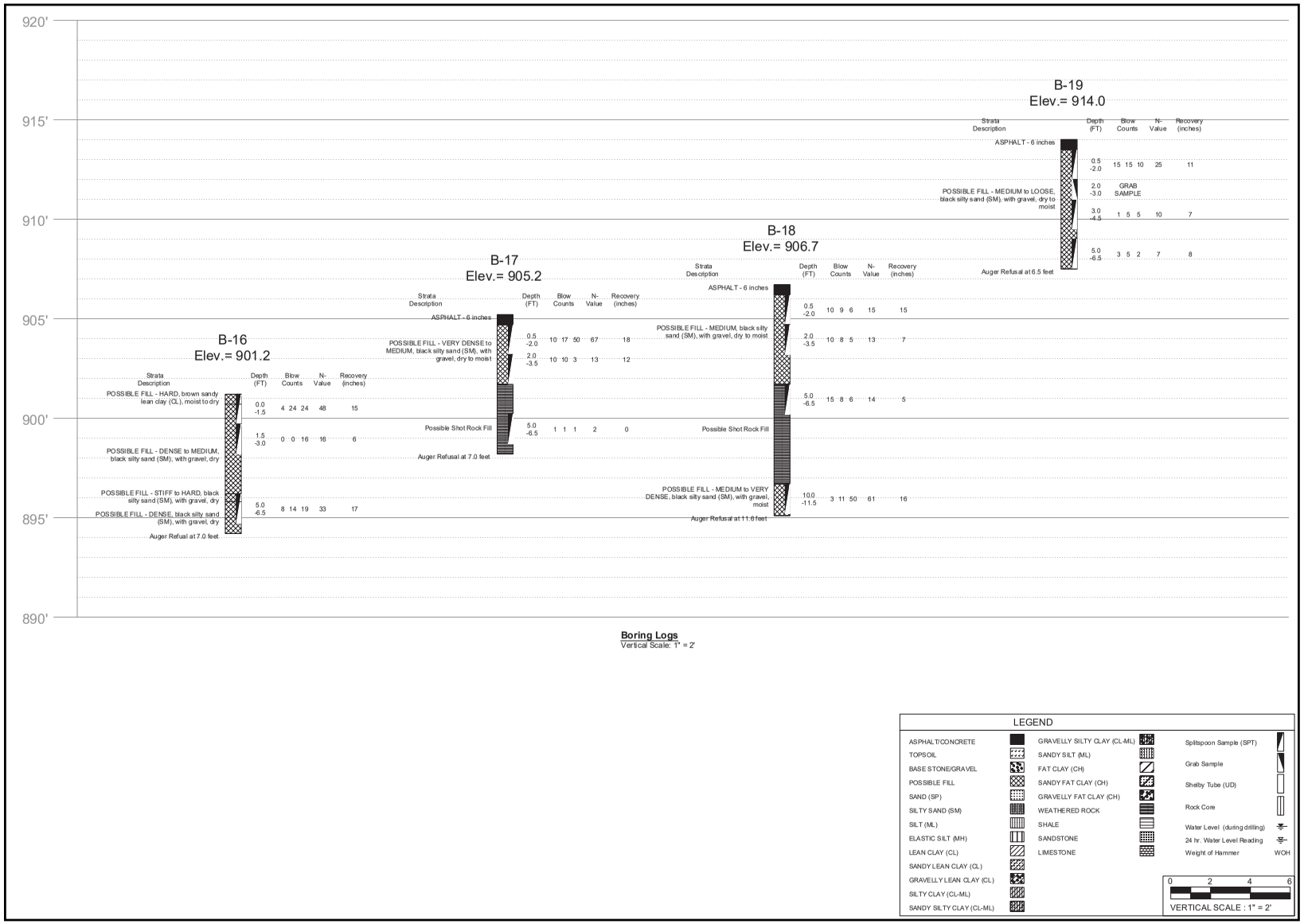
Project No.	Prepared By
240232	MKH
Date	Reviewed By
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STATE OF KENTUCKY
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29447
LICENSED PROFESSIONAL ENGINEER

Boring Logs

G - 11



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SITE INSPECTION, MATERIAL TESTING

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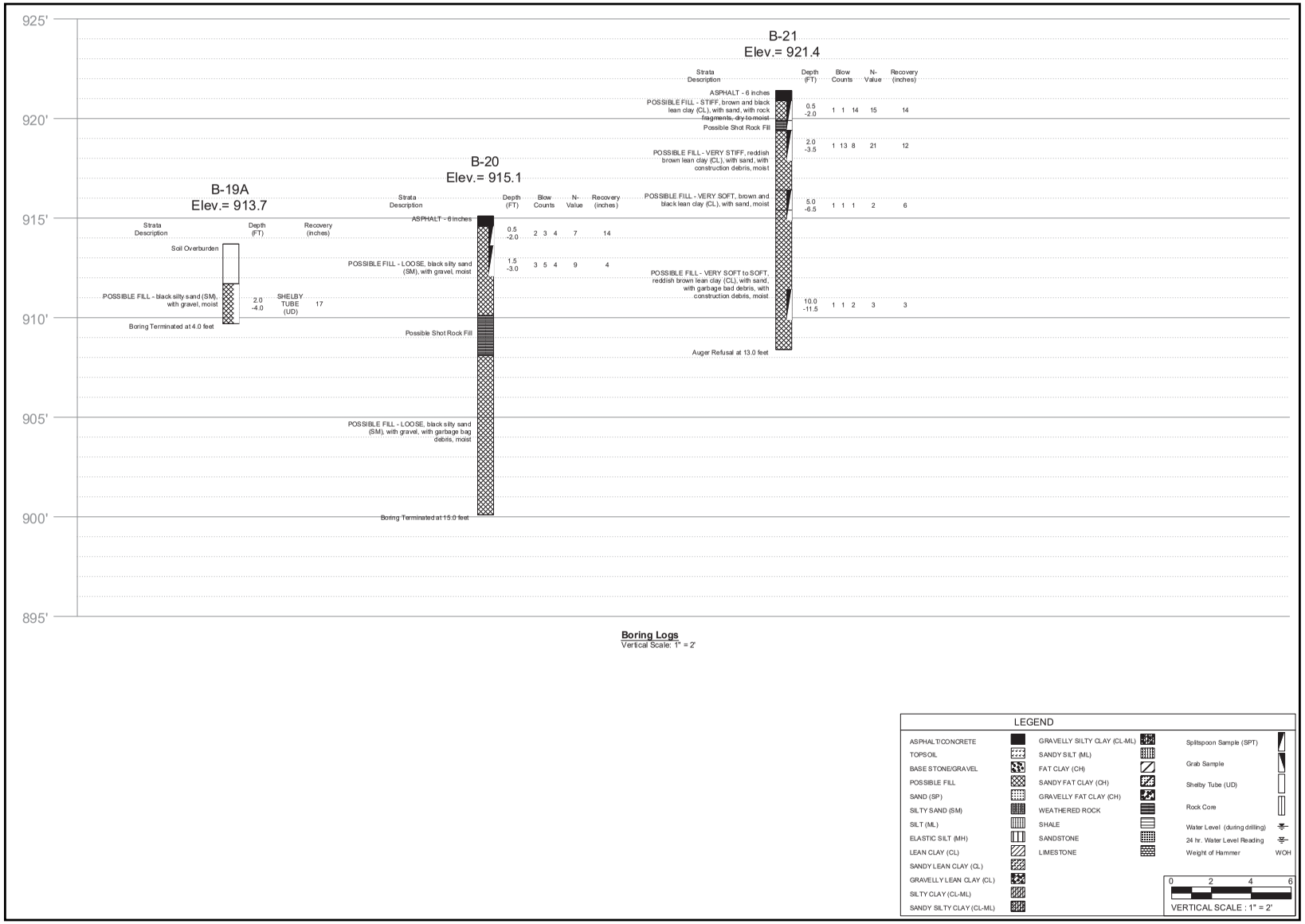
Project No.:	Prepared By
240232	MKH
Date:	Reviewed By:
10.31.2024	JPH

NO.	REVISION	DATE

JORDAN P. HANCTOT
LICENSED
PROFESSIONAL ENGINEER

Boring Logs

G - 12



Boring Logs
Vertical Scale: 1" = 2'

LEGEND

ASPHALT/CONCRETE	GRAVELLY SILTY CLAY (CL-ML)	Splitspoon Sample (SPT)	
TOPSOIL	SANDY SILT (ML)	Grab Sample	
BASE STONE/GRAVEL	FAT CLAY (CH)	Shelby Tube (UD)	
POSSIBLE FILL	SANDY FAT CLAY (CH)	Rock Core	
SAND (SP)	GRAVELLY FAT CLAY (CH)	Water Level (during drilling)	
SILTY SAND (SM)	WEATHERED ROCK	24 hr. Water Level Reading	
SILT (ML)	SHALE	Weight of Hammer	WOH
ELASTIC SILT (MH)	SANDSTONE		
LEAN CLAY (CL)	LIMESTONE		
SANDY LEAN CLAY (CL)			
GRAVELLY LEAN CLAY (CL)			
SILTY CLAY (CL-ML)			
SANDY SILTY CLAY (CL-ML)			

0 2 4 6
VERTICAL SCALE : 1" = 2'

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Date	Reviewed By
10.31.2024	JPH

NO.	REVISION	DATE

JORDAN P. HANEY
10.31.24

Boring Logs

G - 13

Figure F.5: Lexington Fire Department 2024 Organizational Structure

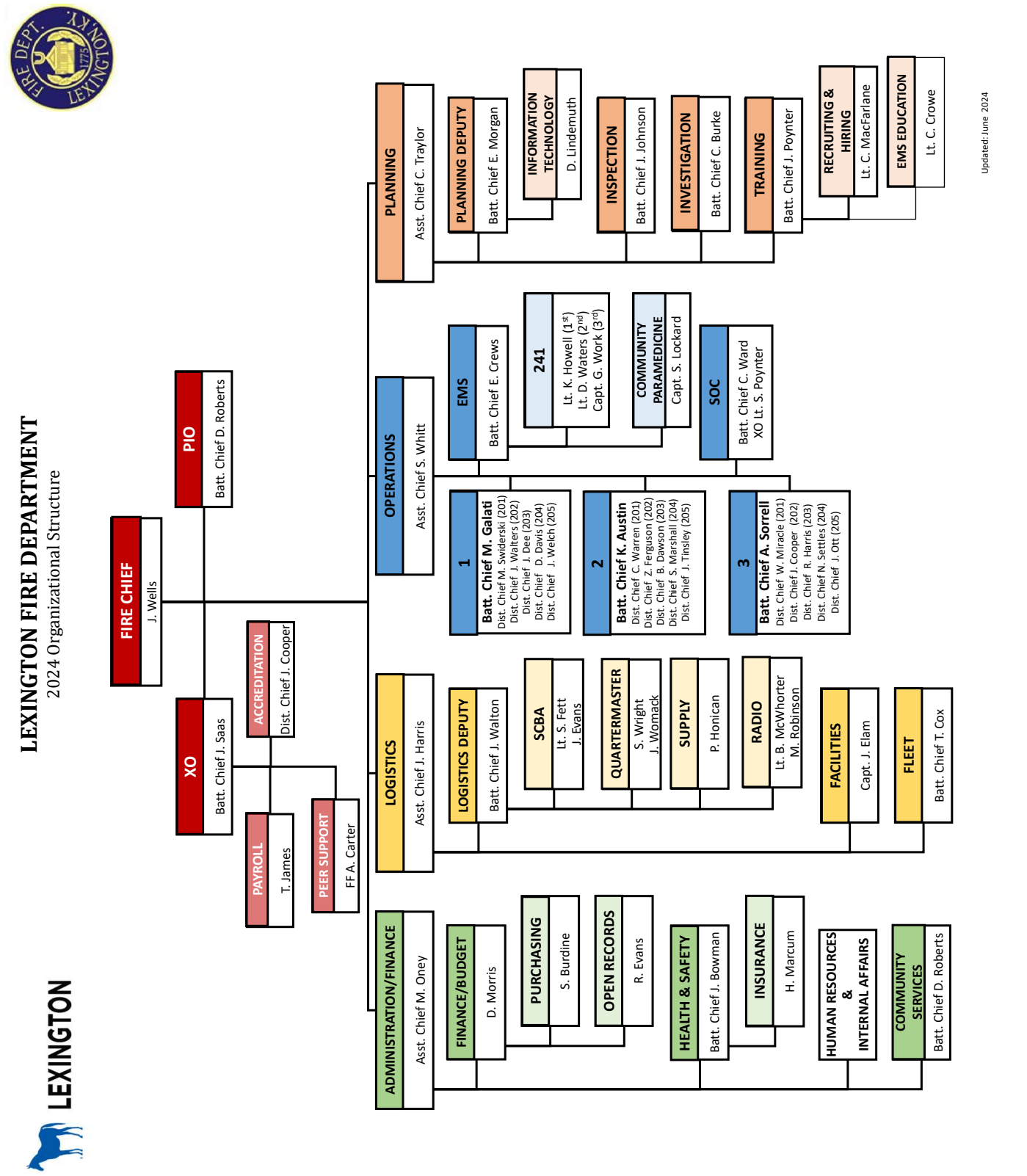
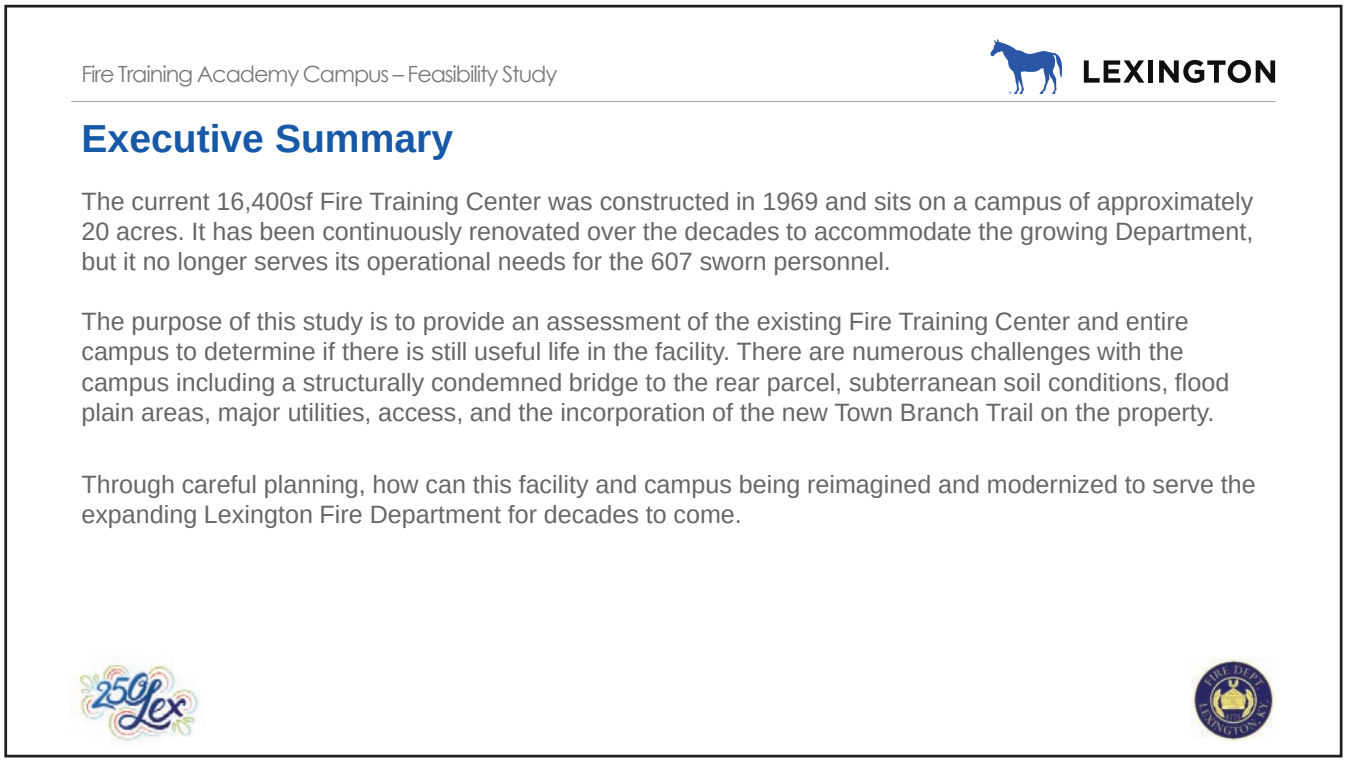


Figure F.6: Lexington Fire Department Fire Training Academy Campus Presentation



1



2

Project Team

Architect: Brandstetter Carroll, Inc.
Eric Chambers, AIA / Charlie Schneider, PE / Jay Quillen / Jonathan Chesser

Structural Engineer: Poage Engineers & Associates
Chris Kelly, PE

MEP Engineer: Paladin Engineers
David Stapleton

Surveyor: Endris Engineering
Kevin Phillips, PLS

Cost Estimator: Robert Pass & Associates
Robert Pass

Geotechnical Engineer: Thoroughbred Engineers
Jordan Haney, PE

Lexington Fire Department:
Chief Jason Wells / Asst. Chief Joey Harris / Batt. Chief Shane Poynter / LFD Leadership

---

LFUCG Capital Project Management:
Josh Ives, AIA

3

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Project Site



Approximately 20 acres of campus area

4

Project Site



Focus Area of Major Redvelopment

5

LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
EXISTING FACILITY ASSESSMENT

6

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Existing Facility Assessment Summary



7

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Existing Facility Assessment Summary

High Level Overview:

- **Site:** fatigued pavement, no ADA parking, very limited parking, flood plain, non-structural fill, topo, etc.
- **Utilities:** undersized for future capacity, HVAC equipment about half-life, LED lighting, generator
- **Structure:** somewhat sound, sits on non-structural fill, cracking, settling, limitations on renovation, not flexible space
- **Roof**: is in fair condition, ballasted system, gutters need addressed, skylights faded, generator location
- **Façade**: mostly single width CMU or pre-cast with no insulation, windows single-pane uninsulated
- **Classrooms:** directly off vehicle bay, no storage, way undersized, no sound rating, not enough, old technology
- **Admin Suite**: very undersized, no storage, no conference areas, no sound rating, no control of lobby
- **Storage:** little to no storage, no dedicated storage for each division, needs for storing technology, equipment, etc.
- **Bunk Room:** not code compliant, built as mezzanine, no fire separation, exhaust from bays, too small, no storage
- **Restrooms**: are very limited, not ADA compliant, older finishes, don't meet public or staff capacity needs
- **Lobby:** no vestibule, open to public, no reception or secured entrance, uninsulated, display area
- **Apparatus Bay**: no vehicle extraction system, no 2-hour separation to the living/office areas, no floor drains, cracking concrete, only 1 entry/exit overhead door, gear lockers in bay no storage, too small

8

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Existing Facility Assessment Summary





9

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Existing Facility Assessment Summary



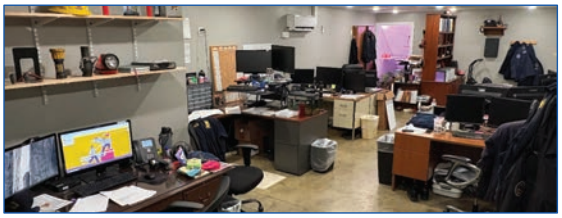




10

Existing Facility Assessment Summary







11

Existing Site Assessment Summary

Site Survey: (Consultant – Endris Engineering)

- Clarified the land swap boundaries with Landscaper's Corner & Access to Roy H Mardis Drive
- Documented & Resolved the Easements with KY American Water & Columbia Gas
- Documented the EPA Covenant Area and Flood Plain Areas (10/50/100 Year Areas - FEMA)
- Documented the Town Branch Trail and Placement on the Fire Training Academy Campus
- All major utilities, trees, topography, outbuildings, roadways, Town Branch, etc.

Geotechnical Exploration: (Consultant – Thoroughbred Engineers)

- Performed (21) Borings on Campus (front and rear parcel near building and in parking areas)
- Asphalt paving fatigue issues (ranged from 3"-6" thick) – majority did not have stone subbase
- Non-structural fill found across site (old building material debris, trash bags, large conc chunks)
- Recommendations of Deep Foundations (higher foundation costs to get down to solid bedrock)
- Test Pits to Confirm Fill Material / Existing Facility on Fill – New Construction Differential Settlement

12

LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
FACILITY PROGRAMMING

13

FACILITY PROGRAMMING

SPACE DESCRIPTIONS	SUBTOTAL
"DIRTY AREAS" (apparatus bays, gear decon, laundry, tool room, SCBA, classrooms, etc.)	14,910 SF
"CLEAN AREAS" (lobby, locker room, classrooms, admin offices, wellness, Fire/EMS, etc.)	24,870 SF
"PHYSICAL PLANT" (mechanical, electrical, plumbing, IT server, antennae, MDF/IDF)	1,610 SF
"CIRCULATION FACTOR" (circulation, corridors, walls, etc. grossing factor of 20%)	8,160 SF
TOTAL GROSS SQUARE FOOTAGE OF FACILITY	**49,550 SF**

The final program was thoroughly vetted by the LFD leadership to determine the current and future needs of the Department

14

LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
RENOVATION & ADDITION

ERIC CHAMBERS, BCI ARCHITECTS

15

Option 1 – Renovation & Addition



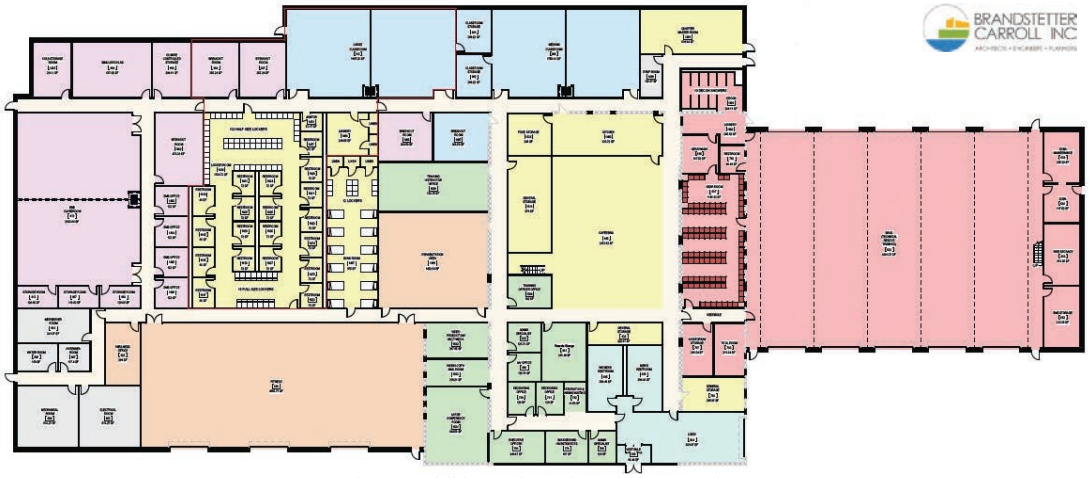
Parking: 20 Staff / 200 General Driving Pad: 200'x200' Bridge: 2 lane & Pedestrian

16

Fire Training Academy Campus – Feasibility Study

LEXINGTON

Option 1 – Renovation & Addition



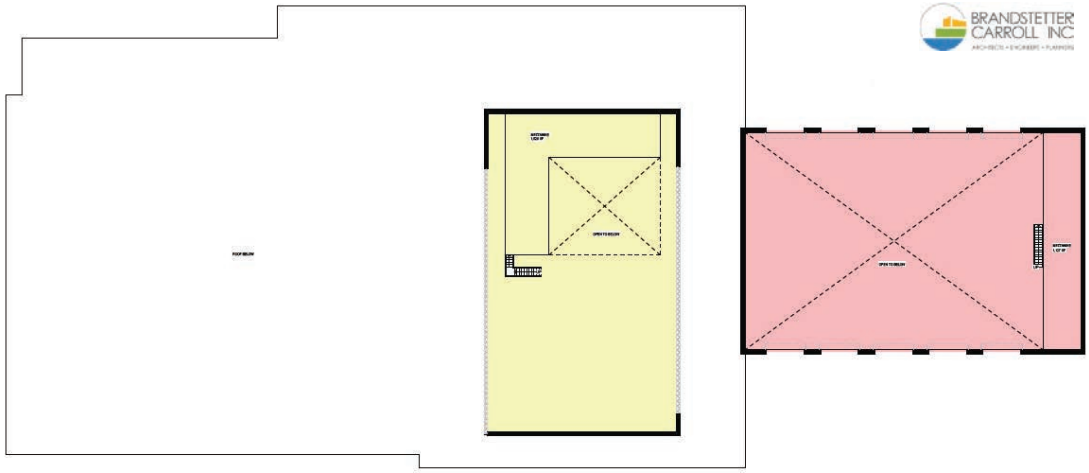
Renovation & Addition: First Floor Concept Plan

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

Option 1 – Renovation & Addition



Renovation & Addition: Second Floor Mezzanine Concept Plan

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LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
NEW CONSTRUCTION

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Option 2 – New Construction



Parking: 20 Staff / 200 General Driving Pad: 200'x200' Bridge: 2 lane & Pedestrian

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

Option 2 – New Construction

BRANDSTETTER CARROLL INC



New Construction: First Floor Concept Plan

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

Option 2 – New Construction

BRANDSTETTER CARROLL INC



New Construction: Second Floor Concept Plan

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LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
PHASE 1 – SITE DEVELOPMENT

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Phase 1 – Site Development



Parking: 20 Staff / 200 General Driving Pad: 200'x200' Bridge: 2 lane & Pedestrian

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LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
FACILITY USAGE

BATTALION CHIEF, SHANE POYNTER

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

Facility & Campus Use

Personnel Assigned:
16 total (11 Training, 2 EMS, 2 Recruiting & Hiring & 1 Admin Specialist)

Recruit Classes Annually:
2 Recruit Classes, 1 Paramedic Class and 1 Company Officer Academy
(45 per Recruit Class (90 Total) / 36 per Paramedic Class / 15 per Company Officers)

Entire Fire Department:
All 607 Sworn Members Attend Fire & EMS Training Annually at Academy per ISO Requirement

Backup Fire Station & Public Safety Operations Center:
Serves as a Backup Fire Station or Public Safety Operations Center if others Compromised

Community Emergency Response Team:
2 Per Year with 15-20 Per Class (30-40 Annually)

Citizens Fire Academy:
2 Per Year with 30 Per Class (60 Annually)

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Facility & Campus Use

Training Opportunities Hosted:

Lexington Police Department (Training Structures & Props for Classes)
Kentucky State Fire School (Annually)
Army National Guard Training (2 – 3 Times A Year)
CSEPP Training Exercise / Columbia Gas Employee Training / Car Seat Installation Classes
LFUCG Div. of Emergency Management Training / KY Emergency Management Training
Bluegrass Emergency Response Team Training

Other Events Hosted:

Recruit Class Graduation (300) / LFD Command Staff Meeting (50) / LFD Hiring Process (100) / LFD Promotional Process (100) / LFUCG Council Field Day (30) / Paramedic Graduation (100) / American Red Cross Event (75) / Metro Credit Union Event (75) / LFD Christmas Party (200) / Leadership Lexington Event (30) / CFA Graduation (75)

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

LEXINGTON FIRE DEPARTMENT
FIRE TRAINING ACADEMY CAMPUS
PROJECT BUDGETS

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Option 1 – Renovation & Addition

DESCRIPTION	AREA	COST / SF	TOTAL COST
RENOVATION & ADDITION (GROSS AREA IN 2024)	54,000 SF	$638	$34,452,000
CONSTRUCTION ESCALATION @ 3% PER YEAR (2026)		6%	$2,067,120
CONSTRUCTION SUBTOTAL			**$36,519,120**
SOFT COSTS (A/E DESIGN FEES, F.F.&E, INSPECTIONS)		15%	$5,477,868
LFD PORTABLE CLASSROOMS & TRAINING OFFICES		ANNUAL	$117,780
TOTAL PROJECT COSTS BUDGET			**$42,114,768**

*The cost estimates were prepared by BCI Architect's third-party estimator, Robert Pass, of Robert Pass & Associates.

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Fire Training Academy Campus – Feasibility Study

LEXINGTON

Option 2 – New Construction

DESCRIPTION	AREA	COST / SF	TOTAL COST
RENOVATION & ADDITION (GROSS AREA IN 2024)	61,000 SF	$603	$36,783,000
CONSTRUCTION ESCALATION @ 3% PER YEAR (2026)		6%	$2,206,980
CONSTRUCTION SUBTOTAL			**$38,989,980**
SOFT COSTS (A/E DESIGN FEES, F.F.&E, INSPECTIONS)		15%	$5,848,497
LFD PORTABLE CLASSROOMS & TRAINING OFFICES		ANNUAL	$117,780
TOTAL PROJECT COSTS BUDGET			**$44,956,257**

*The cost estimates were prepared by BCI Architect's third-party estimator, Robert Pass, of Robert Pass & Associates.

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Phase 1 – Site Development

DESCRIPTION	AREA	COST / SF	TOTAL COST
EXTERIOR IMPROVEMENTS & UTILITIES (2024)			$3,513,765
CONSTRUCTION ESCALATION @ 3% PER YEAR (2026)		6%	$210,825
CONSTRUCTION SUBTOTAL			**$3,724,590**
SOFT COSTS (A/E DESIGN FEES, F.F.&E, INSPECTIONS)		15%	$558,688
TOTAL PROJECT COSTS BUDGET			**$4,283,278**

*The cost estimates were prepared by BCI Architect's third-party estimator, Robert Pass, of Robert Pass & Associates.

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Project Budget Overview

Option 1 – Renovation & Addition

Total Project Costs: $42M

Option 2 – New Construction

Total Project Costs: $45M (Recommendation by Design Consultant, LFD, and CPM)

**With $4M utilized in Phase 1, Total Project Cost becomes $41M*

Phase 1 – Site Development

Total Project Costs: $4.3M

**$3.5M from 2024 Fund Balance + $650,000 Prof Services = $4,150,000 Available*

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LEXINGTON

Feasibility Study Overview

Clear Plan Forward
Have our site and a path forward for a new facility and campus redevelopment

Phase 1 Site Development
Moving forward to show commitment to this site and physical progress

Documented Need
The study results confirm the critical need of additional facility space and site development

Plan for Continuous Operation
LFD has procured proposals for (3) portable classroom units to remain functional during project

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Questions?

LEXINGTON

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Option 3 – New Construction on Rear Parcel



Parking: 20 Staff / 200 General Driving Pad: 200'x200' Bridge: 2 lane & Pedestrian

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APPENDIX G - CONFERENCE MEMORANDUMS

Figure G.1: LFUCG Fire Training Facility and Space Needs Analysis Kickoff Meeting Agenda

BRANDSTETTER CARROLL INC
ARCHITECTS . ENGINEERS . PLANNERS

LFUCG Fire Training Facility and Space Needs Analysis Kickoff Meeting

Agenda

June 12, 2024

Item 1 Introductions & Housekeeping
- *Name*
- *Organization and Role on Project*
- *Communication Protocols*
- *Existing Plans and Previous Studies*

Item 2 Vision, Goals, and Objectives
- *What is the vision for Fire?*
- *What are the goals and objectives of the Study?*
- *What are the major dislikes and likes of existing training buildings?*

Item 3 Project Scope
- *Analyze Existing Building*
- *Stakeholder Interviews*
- *Programming*
- *Renovation/Expansion vs New Build*
- *Future Needs*

Item 4 Site Options
- *Existing Property*
- *Existing Survey and GIS or Utility Data for properties*

Item 5 Project Schedule
- *Review Schedule for 180 days.*

Item 6 Next Meeting, Interviews, and Facility Analysis

Figure G.2: LFUCG Fire Training Facility and Space Needs Analysis Kickoff Meeting

CONFERENCE MEMORANDUM (KICKOFF MEETING)
LFUCG FIRE TRAINING STUDY
LEXINGTON, KENTUCKY
PROJECT NO. 24057

Present: **Josh Ives, LFUCG CPM**
Chief Jason Wells, Lexington Fire Department
Chad Traylor, Lexington Fire Department
Joey Harris, Lexington Fire Department
Steven Buxton, Lexington Fire Department
Shane Poynter, Lexington Fire Department
J. Scott Whitt, Lexington Fire Department
Dave Stapleton, Paladin Engineers
Chris Kelly, Poage Engineers
Eric Chambers, Brandstetter Carroll Inc.
Jay Quillen, Brandstetter Carroll Inc.
Jonathan Chesser, Brandstetter Carroll Inc.

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

June 12, 2024

This meeting was held as a kickoff meeting for the project. Mr. Chambers distributed the agenda and project approach. The agenda and sign-in sheets are attached for reference.

1. The group did introductions.
2. Mr. Ives discussed the previous feasibility study for the Fire Training Center done by BCI and how new circumstances will make this study differ from the original.
3. Mr. Chambers asked if there were any other drawings or studies that have been done for the facility. Mr. Ives stated he sent Mr. Chambers the plans for an additional building on the site carried out by another company.
4. Mr. Chambers asked the group who in the Lexington Fire Department should be the point of contact for the project. Chief Harris will be the point of contact with Chief Poynter being the point of contact on site. Mr. Ives noted wanting to be copied on any correspondence that takes place and that the point of contact for the city will be Ms. Sarah Donaldson. It was later noted that Captain Elam will be the point of contact for the Fire Department's facilities maintenance needs.
5. Mr. Chambers requested the group to discuss the success, vision, goals, and objectives for the project, and the likes and dislikes or positives and negatives of the existing building and location, and the following items were noted for each:

   Project Success:

   A. Creating a training center that can sustain growth and future needs
   B. Creating a facility that reflects the accredited institution that is the Lexington Fire Department
   C. Creating a facility that assists in the recruitment and retention of the department

   Vision:

   A. Increased size to 25,000 square feet – 30,000 square feet (currently have 16,000 square feet)
   B. Improved apparatus storage and layout
   C. Moving excess apparatus from other stations to the current site to alleviate the space needs of other stations
   D. A training facility with flexibility in mind
   E. Keeping the current training tower as is
   F. A facility that is used by all in the Lexington Fire Organization
   G. A facility that helps not only the department, but organizations in the region
   H. Double stacking bays with pull through capabilities
   I. An architecturally pleasant building
   J. An operatable fire station to assist other stations
   K. Properly separated spaces for the health and safety of the firefighters

Goals & Objectives:

A. Review Existing MEP and structural infrastructure
B. Optimize parking on the site
C. Receive an updated survey
D. Determine the best course of action with how the site interacts with the new town branch trail passing by the training center
E. Identify the ideal site
F. Identify the best option that gives the department the most for their money
G. Access the site across the creek

Likes/Positives of Existing Fire Training Center and Site Location:

A. The tradition of the building within the department
B. The location is positive because of the type of training that undergoes here

Dislikes/Negatives of Existing Fire Training Center and Site Location:

A. Limited access to the bay
B. Inability to change classroom sizes
C. Inadequate restrooms
D. Inadequate removal of fumes and waste

6. The next item was Project Scope. During the discussion the following items were noted:
   A. BCI will create schematic site plans and floor plans to assist the department in determining what the best course of action is for the site.
   B. Paladin will investigate the MEP systems in the existing building and will assist BCI in what work is suggested in the report
   C. Poage Engineers will investigate the structural components of the existing building as well as the bridge located on the site. They will also assist with the structural work of the schematic plans to assist the third-party cost estimator in making an accurate estimate.
   D. A geotechnical survey will be conducted by the city to determine the condition of the current site.
7. The next item on the agenda was Site Review. During the discussion the following items were noted:
   A. There is an EPA concern towards the back of the site by the creek, Mr. Ives will work with the city's environmental team to determine if any action is necessary.
   B. The city will acquire an updated survey and geotechnical investigation and will work with Poage on the number of borings for the geotechnical investigation. The survey will be updated by Endris Engineering.
   C. The site also has a flood plain component that will need to be considered.
   D. Mr. Ives stated the new Town Branch Trail will flow next to the training site and will have to be considered in the new schematic site plans. Mr. Ives will work to get the CAD files for the new trail and will send them to BCI.
8. The next item on the agenda was Project Schedule and the following items were noted:
   A. Mr. Chambers noted a 180-day schedule to complete the study.
   B. Mr. Chambers noted that while the schedule appears to progress linearly, the actual process may happen organically at some points.
   C. Mr. Chambers requested the group determine who will be interviewed about the training academy and annex building.
   D. The group approved of the schedule.
9. Mr. Chambers will work with the design team to determine dates to start the review of the existing building. Mr. Chambers will send these possible dates to the group to determine the best day this should take place. Mr. Chambers will also interview department leaders and other staff to determine the program for the buildings.

10. The meeting concluded. Mr. Chambers and Mr. Ives will be in touch with the group once interviews are scheduled.

If you should disagree with any information contained herein, please kindly notify our office in writing within 10 days of receipt of this memorandum.

Jonathan Chesser 06/12/2024
Jonathan Chesser, Associate AIA
Assistant Project Manager

Cc: Josh Ives, Dave Stapleton, Charlie Schneider, Joey Harris, Chris Kelly, Jay Quillen, Shane Poynter, Eric Chambers, File

Figure G.3: LFUCG Fire Training Facility and Space Needs Analysis - July 10, 2024 Conference Memorandum

CONFERENCE MEMORANDUM
LFUCG FIRE TRAINING STUDY
LEXINGTON, KENTUCKY
PROJECT NO. 24057

Present: **Josh Ives, LFUCG CPM**
Michael Kelly-Waller, Lexington Fire Department
Joey Harris, Lexington Fire Department
Kevin Deweese, Lexington Fire Department
Shane Poynter, Lexington Fire Department
Gerald Evans, Lexington Fire Department
Dave Stapleton, Paladin Engineers
Eric Chambers, Brandstetter Carroll Inc.
Jay Quillen, Brandstetter Carroll Inc.
Jonathan Chesser, Brandstetter Carroll Inc.

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

July 10, 2024

This meeting was held to discuss the program for the Fire Training Center and the Annex building.

1. Mr. Chambers passed out the program sheets from the previous study for the Fire Training Center done by BCI to help the group think about what program the new buildings need.
2. Mr. Chambers noted most of the analysis of the existing building was completed last week during the investigation.
3. Mr. Chambers requested the group to discuss the desired program for the Fire Training Center and the following items were noted:
   - A. Bay Space:
     - i. 4 Double Stacked Bays, 80 ft long x 20 ft wide. The ability to drive-thru is preferred. Plymovent was requested for all bays with water, electricity, and drains like a typical station.
     - ii. Room for POV vehicles (3-4 pickup trucks).
     - iii. The roof system should have anchoring points for rappelling and rope training.
     - iv. The bays will also be used as a large auditorium space with a portable stage, tables, and chairs, so a storage area will be required.
   - B. Dirty Areas:
     - i. Gear Storage - 75 lockers min with room for growth, 100 lockers are preferred.
     - ii. Tool Room with a work bench.
     - iii. Decon/Laundry – Room for 2 extractors and 2 linear drying racks that would be 20 ft long. A regular washer and dryer were requested.
     - iv. SCBA Room - Cascade system and SCBA maintenance area for minor repairs. This will be separate from the Tool Area. Storage for 100 cylinders is needed and this room will require 24-hour access with an exterior access point.
     - v. Quartermaster Room for extra gear and equipment. The department is transitioning to use PS Tracks for their equipment and supplies. This room will require 24-hour access with an exterior access point.
     - vi. General Storage Room.
   - C. Fire Classrooms:
     - i. (2) 60-seat classrooms with dividing capabilities; room for tables and chairs.
     - ii. (2) 30-seat classrooms; room for tables and chairs.
     - iii. General Storage Room for tables and chairs.

D. EMS Classrooms:

i. (1-2) 45-60 seat classroom(s); these should be around 2700 sf.

ii. (9) breakout rooms; these rooms should be around 360 sf each.

iii. Simulation lab that is multipurpose; the lab should be around 25 ft x 25 ft. This room will be access controlled.

iv. (5) Offices: 4 for Instructors & 1 for the Medical Director; space integrated into the offices for records storage was requested.

v. Storage areas that are larger than 200 sf.

vi. A climate-controlled storage area that is larger than 200 sf with an additional 200 sf cold storage area. These rooms will be access controlled.

vii. A cadaver lab like what is present at BCTC.

viii. Around 7,485 sf total is required by the EMS Department.

E. Fire Administration:

i. Vestibule & lobby area; plenty of display space is needed for the Department's memorabilia with the possibility of displaying 1-2 historic trucks.

ii. (1) Training Office.

iii. (1) Admin specialist.

iv. (1) Executive Officer.

v. (1) AV Office; in a quiet area that could double as the media room; space for a laptop cart to be stored when not in use.

vi. (1) Training Instructors Office with 12 workstations that are 8 ft x 6 ft in size.

vii. (1) Conference room (20 seats, one large table).

viii. Future office space for growth opportunities.

ix. Recruiting & Hiring:

1. (2) Recruiting Offices
2. (1) Administrative Specialist Office
3. (1) Background investigators office with 3 workstations that are 8 ft x 6 ft in size.
4. Space for records storage that is secured.
5. A smaller entrance for the public, specifically going to the Recruiting & Hiring department.

F. Training Center Support Spaces:

i. A kitchen/small cafeteria; room to seat 40-50 people; a commercial kitchen for many people to work in; area to heat up lunches; 5 fridges – 2 for students, others in commercial kitchen.

ii. A bunk room with 12 bunks.

iii. Locker room with 120 half sized stacked lockers; 10-15 full restrooms with showers.

iv. Staff locker room with 15 full-sized lockers; 2-4 full restrooms with showers. An area off the locker room will house washers and dryers with space for growth.

G. Wellness Center:

i. A fitness area that is 6,000 sf is preferred for various fitness, testing, and training uses. This should have 24-hour access. If this is not doable, a 3,000 sf fitness area would be needed. If possible, access to the locker rooms & restrooms with showers is preferred.

ii. A WPE/CPAT Building is needed that can handle 30-60 people at a time; The building could be around 75 ft x 50 ft; access to the locker room & restrooms with showers is preferred.

iii. A rehabilitation area that is 2,000 sf – 3,000 sf; adjacent to the fitness room with limited access.

iv. (1) Shared Office for 6 people.

v. (1) Wellness Coordinator office with secure records storage.

H. Site:

i. 150-200 parking spots were requested.

ii. 8-10 designated spots for apparatus parking near the apparatus bays were requested.

iii. A driving pad would be preferred that is separate extrication from parking. The extrication, train derailment, and other training props should be relocated to the training grounds, if possible, to get it closer and in a better area for training.

iv. There is most likely a need to update the sewer, water, and fiber to the site.

v. The bridge will need to be replaced with the capability to have vehicles and apparatus access to the back area with a pedestrian component to get across the creek.

4. Mr. Chambers requested the group to discuss the desired program for the Fire Annex and the following items were noted:

   A. It was noted that the group included the program for the Fire Annex in the program for the Fire Training Center since it is preferred to have all the spaces in the same building.

5. Mr. Chambers will work to create a program sheet for the study and will send it out for the Fire Department to review.

6. The meeting concluded. Mr. Chambers will be in touch to schedule the next meeting at a later date.

If you should disagree with any information contained herein, please kindly notify our office in writing within 10 days of receipt of this memorandum.

Jonathan Chesser 07/10/2024
Jonathan Chesser, Associate AIA
Assistant Project Manager

Cc: Josh Ives, Dave Stapleton, Charlie Schneider, Joey Harris, Chris Kelly, Jay Quillen, Shane Poynter, Eric Chambers, File

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

ATTENDANCE

Project: LFUCG Fire Training Center Study Date: 7/10/24

Project No.: 24057 Time:

Name	Company	Phone / E-mail
Eric Chambers Jay Quillen Jonathan Chesser	BCI	echambers@bciaec.com jquillen@bciaec.com jchesser@bciaec.com
Dave Stapleton	Paladin	stapletond@paladin-inc.net
Shane Poynter	Lexington Fire	poynterj@lexingtonky.gov 859-351-9357
Michael Kelly-Walker	Lexington Fire	Kellywalk@Lexingtonky.gov 859 397 7735
Gearld Evans	Lex. Fire	EVANS9@lexingtonky.gov 859-231-5616
Josh Ives	LFUCG CAM	jives@lexingtonky.gov 859.258.3930
Kevin Deweese	Lexington Fire	deweesek@lexingtonky.gov 859 705 3429
Joey Harris	Lex Fire	harrisj@lexingtonky.gov 859 327-0554

Figure G.4: LFUCG Fire Training Facility and Space Needs Analysis - July 19, 2024 Conference Memorandum

CONFERENCE MEMORANDUM
LFUCG FIRE TRAINING STUDY
LEXINGTON, KENTUCKY
PROJECT NO. 24057

Present: **Josh Ives, LFUCG CPM**
Jason Wells, Chief, Lexington Fire Department
Joey Harris, Lexington Fire Department
Shane Poynter, Lexington Fire Department
Josh Elam, Lexington Fire Department
Chris Kelly, Poage Engineers
Mark Zoller, Paladin Engineering
Eric Chambers, Brandstetter Carroll Inc.
Charlie Schneider, Brandstetter Carroll Inc.
Jonathan Chesser, Brandstetter Carroll Inc.

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

July 19, 2024

This meeting was held to discuss the program for the Fire Training Center and the Annex building.

1. Mr. Chambers passed out the existing facility condition analysis completed by BCI, Poage, and Paladin.
2. Mr. Schneider reviewed the highlights from the site and civil facility analysis and the following items were noted:
   A. Mr. Schneider noted that with the Town Branch Trail coming to the site in the future, a lot of the observations and issues with the main entry to the site and border along Frankfort Pike will be eliminated.
   B. Mr. Ives noted that the parking area to the East of the Fire Training Center is under an EPA convenient and would have to be worked through if any changes were made in that area.
   C. Mr. Ives noted that the land across Town Branch Creek used to be a landfill, and that more information would need to be obtained from the geotechnical report to determine what areas could be an issue. Mr. Chambers questioned the status of the geotechnical report. Mr. Ives stated he sent out an RFP for Geotechnical Exploration Services and received three (3) proposals. He will review the three proposals and notify the group of which proposal will be selected.
   D. Mr. Ives also noted that the geotechnical report will check for karst on the site. This is important to determine because the building is considered a Level 4 building for the City of Lexington. Mr. Ives will share the findings of the geotechnical report with the group when it is completed.
   E. Mr. Schneider noted that the work on the Town Branch Trail includes a 60" reinforced concrete pipe (RCP) running from the trail towards Town Branch and suggested that it would make more sense for the pipe to run towards the flood plane to the right. Mr. Ives will review this suggestion and discuss it with the city engineers.
   F. Mr. Ives noted that on the plans for the Town Branch Trail the main entrance for the Fire Training Center is moved down from its original location. After a discussion with the city engineers, it is likely that the entrance will no longer be relocated. Mr. Ives will confirm this with the city engineers and will update the group so that it is reflected in the schematic plans.
   G. The group noticed the plans for the Town Branch Trail included a few new roads and the repaving of existing ones on the Fire Training Center's site. Mr. Ives will check with the city about the schedule of the trail's construction and pavement of roads as this will affect the operation of the training center.
3. Mr. Chesser reviewed the highlights from the architectural facility analysis and the following items were noted:
   A. Mr. Ives questioned when the last time the roof was redone. The Fire Department will investigate their records to determine when the roof was last updated.

B. Mr. Chesser noted the lack of plumbing fixtures required by the building code inside the training center. Mr. Chambers stated the design team will work on occupancy counts for the schematic plans to determine the proper number of fixtures required in the building.

C. Mr. Chambers noted that an ICC-500 rated Storm Shelter is now required for the training center and that because of the requirements the storm shelter might have to be an addition to the building. Brandstetter Carroll will investigate this in the schematic plans and discuss with the group to determine the best course of action.

4. Mr. Kelly reviewed the highlights from the structural facility analysis and the following items were noted:

   A. Mr. Kelly noted the overall structure of the building is in good condition. The end walls and interior CMU walls are the only structural walls in the building. This allows flexibility with the rest of the available space. The group was pleased to hear this information as it allows for more options in the schematic plans.

   B. Mr. Ives questioned if curbs could be built on the building's roofs. Mr. Kelly stated it should be no problem adding curbs to the lower roofs but would have to check the higher roof. Mr. Kelly will be in contact with Mr. Ives and the rest of the group about this request.

   C. Mr. Ives questioned the condition of the bridge crossing Town Branch Creek. Mr. Kelly stated that the bridge is in poor structural condition and would need to be replaced. Mr. Kelly also stated the abutments on the bridge could be reused but the height of the bridge will need to be determined based on the creek and flood plain requirements. Mr. Ives requested the Fire Department to determine what their heaviest piece of equipment is to determine the required loading of the bridge. Mr. Ives questioned how the estimating of a new bridge will be handled. Mr. Chambers stated Brandstetter Carroll and Poage will work with Robert Pass to create parameters for estimating the bridge to try to get the most accurate estimate. Mr. Ives approved of this plan.

5. Mr. Zoller reviewed the highlights from the MEP facility analysis and the following items were noted:

   A. Mr. Zoller noted the size of lines used for the plumbing in the building would need to be enlarged to accommodate any increased fixture count.

   B. Mr. Ives noted all new city buildings are to be put on an automation system for lights, security systems, etc. Mr. Zoller will add this automation system into the MEP plans.

   C. Mr. Zoller presented a few options for HVAC replacement for consideration based on current systems and equipment.

6. Mr. Chambers review the scope of work for the study, and the following items were noted:

   A. Mr. Chambers stated the design team will investigate two (2) options:

      i. An all-new facility with the existing structure being removed.

      ii. The existing structure being renovated and repurposed with an addition to the building.

   B. Mr. Chambers stated the first round of schematic plans will focus more on the adjacencies of rooms to determine how the Fire Department wants the building laid out.

   C. It was questioned if a new addition to the existing structure would be placed on the left or right side. Mr. Chambers stated that until a geotechnical report is obtained, it is unclear which side is a better option. For this first round of schematic plans there will be a floor plan showing an addition to each side of the existing structure. After a geotechnical report is received, one of the plans will be eliminated.

   D. Mr. Ives noted that if it's decided the existing structure will remain, the design team should investigate renovating the façade so that the existing building and addition have a cohesive appearance and to also investigate roof screening to hide the roof top air units.

7. Mr. Chambers asked the group if there were any comments on the revised program. The program was approved as revised and submitted. Brandstetter Carroll will start on the schematic floor and site plans.

8. The meeting concluded. Mr. Chambers asked the group to review the assessment and offer any feedback, comments or changes.

9. Mr. Chambers will be in touch with the group in about three (3) weeks once the initial schematic plans are completed.

If you should disagree with any information contained herein, please kindly notify our office in writing within 10 days of receipt of this memorandum.

Jonathan Chesser 08/19/2024
Jonathan Chesser, Associate AIA
Assistant Project Manager

Cc: Josh Ives, Dave Stapleton, Eric Chambers, File, Joey Harris, Mark Zoller, Charlie Schneider, Shane Poynter, Chris Kelly, Jay Quillen

Figure G.5: LFUCG Fire Training Facility and Space Needs Analysis - September 25, 2024 Conference Memorandum

CONFERENCE MEMORANDUM
LFUCG FIRE TRAINING STUDY
LEXINGTON, KENTUCKY
PROJECT NO. 24057

Present: **Josh Ives, LFUCG CPM**
Joey Harris, Lexington Fire Department
Shane Poynter, Lexington Fire Department
Eric Chambers, Brandstetter Carroll Inc.
Johnathan Chesser, Brandstetter Carroll Inc.
Jay Quillen, Brandstetter Carroll Inc.

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

September 25, 2024

This meeting was held to review and discuss the conceptual design options for the Fire Training Center. The following items were noted.

1. Mr. Ives advised the team that the Geotechnical field work has been completed and the report is underway. Expecting preliminary report towards the end of this week and final report in roughly seven to ten days.
2. Mr. Chesser reviewed the conceptual option #1 – a proposed renovation and expansion of the existing building.
   A. Option #1 Site item comments:
      i. Mr. Poynter asked if the grading related to the proposed public parking is proposed to be regraded to make the site flatter. Mr. Chambers advised that the focus for now will be on the adjacencies of programmatic items and the grading will be determined in a future phase once an option is selected.
      ii. Mr. Poynter noted that they currently use the site for training purposes where we are proposing new parking. The team discussed and agreed that the following training areas are to be relocated to the back site lot near the training driving pad, Extraction Training, Wild Fire Training, Urban Search and Rescue Training.
      iii. Mr. Harris and Mr. Ives noted that the east side of the site has a high-pressure gas utility, BCI will investigate this and update site plan for the proposed parking.
      iv. Mr. Ives noted that the new bridge needs to be sized for two-way traffic and include a pedestrian walkway.
      v. Mr. Poynter advised that the proposed apparatus parking will only need to accommodate a maximum of eight apparatus, some will be parked within the apparatus bays. The ones stored outside are typically parked along the curb line along the main access drive. Mr. Chambers asked if the proposed apparatus parking area could be used by public and staff for parking, dual purposed. The team decided to swap the proposed staff parking with the proposed apparatus parking.
      vi. Mr. Harris asked how many apparatus bays are proposed, Mr. Chesser advised that five bays are currently planned.
      vii. Mr. Chambers asked Mr. Ives if another bridge could be proposed to the west of the site to add more access to the back lot. Mr. Ives advised that this could be feasible and that another project nearby is adding a new bridge. BCI will update the conceptual plan to show this additional bridge.
   B. Option #1 Floor plan comments:
      i. Mr. Harris asked if any showers are proposed in the Decon area, Mr. Chambers advised that we will have an emergency shower and a few standard shower in the Decon area.
      ii. Mr. Poynter asked to have the proposed staff and recruit lockers switched for better adjacencies for staff and recruits.

pg. 1

iii. Mr. Chambers pointed out the boundary for the proposed storm shelter area. Mr. Ives notes for the team that all new police and fire projects are required by code to have storm shelters.

iv. Mr. Harris asked if the staff locker room can be adjacent to the bunk rooms. Mr. Chesser agreed and will update the plan accordingly.

v. Mr. Ives suggested to the team to look at removing the walls at the cafeteria room and open it up to the adjacent corridors.

vi. Mr. Ives noted to look at an option for vertical operable partitions.

vii. Mr. Harris noted concern with not enough restrooms and showers near the gear locker room. Mr. Chambers suggested to look at adding additional space off the proposed Decon area. The team discussed adjacencies to the fitness room. BCI will look to reconfigure the floor plan to provide showers and restrooms near the Decon area.

viii. Mr. Chambers asked about the intent and adjacencies needed for the Rehabilitation Center, Mr. Poynter noted that it does not need to be directly off the fitness room and will be used for physical therapy.

3. Mr. Chesser reviewed the conceptual option #2 – a proposed new 2-story building option.

   A. Option #2 Site item comments:

      i. The team discussed an option to add additional parking on the west side of the proposed building.

      ii. Mr. Ives noted to potentially look at shifting the building to the west to allow for more parking on the flatter areas of the site.

      iii. Team discussed how outside training agencies can access the building from the training area to the west. Outside agencies will need access to the locker room showers, recruits will need access to the Decon area. BCI to add walkway to the Decon area from the west side training area.

   B. Mr. Harris noted that the fire department is planning on a new building near the training tower for WBE (Work Performance Evaluation). Mr. Ives suggested the fire department review this as it could be combined within the proposed new building options.

   C. Option #2 First Floor plan comments:

      i. Mr. Chesser reviewed the plan and noted that additional restrooms and showers will be added near the Decon area, similar to comments on the option #1.

   D. Option #2 Second Floor plan comments:

      i. Mr. Ives asked if the fire department has any concern with the bunk rooms proposed on the second floor or do they prefer them on the first floor. Mr. Harris and Mr. Poynter will review and follow up with the team.

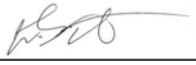
      ii. Mr. Chesser reviewed the proposed future expansion/shell space to the northwest of the second-floor plan. Mr. Ives noted that it maybe more economical to add the second-floor shell space for future expansion now as opposed to later. The team discussed this and agreed to show this as shell space.

      iii. Mr. Harris asked if the three offices on second floor can be relocated to the first floor along the exterior façade of the fitness center. BCI will update the concept accordingly.

4. Mr. Chambers noted he will leave the hard copy prints of the two options and asked that the fire department review these and provide any comments by end of the week. We will start updating the options next week.

5. Mr. Chambers noted that we will engage Robert Pass for a cost estimate after the next meeting to confirm the concepts are approved for estimating.
6. A final presentation meeting will be in November.
7. The meeting concluded. Mr. Chambers noted that the next meeting with the group will be in about three (3) weeks once the concept options are updated to setup another review meeting.

If you should disagree with any information contained herein, please kindly notify our office in writing within 10 days of receipt of this memorandum.



10/01/2024

Jay Quillen
Division Coordinator / Sr. Project Manager

Cc: Josh Ives
Dave Stapleton
Eric Chambers
File
Joey Harris
Mark Zoller
Charlie Schneider
Shane Poynter
Chris Kelly
Jonathan Chesser

Figure G.6: LFUCG Fire Training Facility and Space Needs Analysis - October 21, 2024 Conference Memorandum

CONFERENCE MEMORANDUM
LFUCG FIRE TRAINING STUDY
LEXINGTON, KENTUCKY
PROJECT NO. 24057

Present: **Josh Ives, LFUCG CPM**
Jason Wells, Lexington Fire Department
Joey Harris, Lexington Fire Department
Shane Poynter, Lexington Fire Department
Eric Chambers, Brandstetter Carroll Inc.
Charlie Schneider, Brandstetter Carroll Inc.
Jay Quillen, Brandstetter Caroll Inc.
Jonathan Chesser, Brandstetter Carroll Inc.

BRANDSTETTER CARROLL INC
ARCHITECTS + ENGINEERS + PLANNERS

October 21, 2024

This meeting was held to discuss updates to the concepts for the Fire Training Center.

1. Mr. Chambers noted there are three (3) cost estimates from Robert Pass for the project. One (1) for the site, one (1) for the renovation and expansion option, and one (1) for the new build option. Mr. Ives stated City Council wants to try to allocate funding for phase one construction on the site and then allocate money during the next fiscal year for the building.
2. Mr. Chambers explained that today's meeting will primarily focus on the updates to the two proposed options. The following items were noted:
   A. Option 1 – Renovation and Expansion option.
      i. Site plan:
         1. Chief Poynter questioned the size of the driving pad shown on the plan. Mr. Chambers stated it should be around 250ft x 200ft. Chief Poynter stated he would compare it to the department's current driving pad to see if it could be smaller and add more parking. Mr. Schneider stated parking could be added to the driving pad with typical striping. Chief Poynter approved of this suggestion.
         2. Mr. Schneider noted the bridge as designed is at a low elevation and is the reason the flood plain is so high in the surrounding areas. Mr. Schneider noted that if a new one could be proposed at a higher elevation, the floor plain could be remediated. Mr. Ives stated a lot of work would have to be done to make it work, but that the suggestion is worth considering.
      ii. First Floor plan:
         1. Chief Harris questioned if there was an option switching the locations of the kitchen and locker rooms based on previous discussions. Mr. Chambers stated no version shows the switch locations and that based on the previous meeting it was assumed the locker rooms should stay where they were and to add additional Decon lockers.
         2. There was discussion about mirroring the locker rooms with the bunk room or with the Rehabilitation area. It was noted that could be done but wasn't a priority at this time with the addition of the hallway leading back to the locker rooms. It was decided there needs to be doors to keep the public side from seeing folks going down that hallway. BCI will update the floor plan accordingly.
   B. Option 2 – New Building Plan 2 story option.
      i. Site plan:
         1. Mr. Schneider noted with option 2, the building is not cutting into the hill side as much which helps with the site's grading and the size of the retention wall.
      ii. First Floor plan:

1. Chief Poynter questioned if there would be an area outside the fitness for staff to workout outside. Mr. Chambers confirmed there would be an area outside for physical activity.

iii. Second Floor plan:

1. Mr. Ives questioned if is would be difficult to build the future shell space overtop the storm shelter on the first floor. Mr. Chambers stated it would not be difficult because it would be a new build and could be controlled.

2. Mr. Ives questioned if when the shell space is filled in sometime in the future, if there would be enough plumbing fixtures for the number of rooms on the second floor. Mr. Chambers stated there would be enough code wise, but probably not enough in terms of convenience. Mr. Ives stated if the department reached this issue, more restrooms could probably be added over top of the first-floor locker rooms. The group agreed with this idea.

C. Option 3 – New Building Plan 2 story option.

i. Site plan:

1. Mr. Schneider went through the site concept and explained that with all the site's issues, it would be beneficial to investigate moving the training center to the back lot. The site has issues with grading, constrictions, and relocation of the forced water main that would be under the new building location. This feeds the treatment plan further northwest.

2. Chief Poynter stated that moving the building would reduce the aesthetic of the site.

3. Chief Harris stated moving the building would limit access to the site and will require the department to rely on the single bridge on the site too much. Mr. Quillen stated in this option, a second bridge would become important to add to the project. It was also noted that utilities would be required to be brought to the rear of the site.

3. Mr. Chambers reviewed the Cost Estimates, and the following items were noted:

A. Site:

i. Mr. Ives requested adding the site estimate to the two (2) building options. BCI will add the site estimate into the other building estimates.

ii. Mr. Ives requested a cost estimate for site option 3 and for it to include the cost to bring utilities to the building.

B. Renovation & Addition:

i. Mr. Ives questioned if the storm shelter was built into the estimate. Mr. Chambers stated the storm shelter was covered in the estimate, but not specifically noted.

C. New Build:

i. Chief Harris questioned if soft cost for phasing and keeping the facility operational was added into the estimates. Mr. Chambers stated that phasing was not covered in the estimate and would be a soft cost.

ii. Mr. Ives stated that even with the new build option having a higher cost estimate, the department could defend the option because of the efficiency gained with a new building and the increased lifespan of the building.

4. Mr. Ives stated the next steps were to review internally how to best present the information to City Council.

A. The presentation will consist of a PowerPoint with approximately ten (10) slides. First presented will be the site work, then the needed building space.

B. Mr. Ives stated his intention to present to the Administration prior to Thanksgiving and that is was fine to have the report come after the presentation.

5. Chief Harris questioned if BCI would like information on what the department needs in a future support building for the cost estimate. Mr. Chambers stated it would help the cost estimate to know what the department needs. The following items were noted:
   A. A metal building with five (5) bays is requested.
   B. The building should have several restrooms for convenience.
   C. A gear storage area for 50 people would be preferred.
6. The meeting concluded. Mr. Ives noted that the next meeting with the group will be in the next few weeks and will be held virtually to discuss the presentation to City Council. Mr. Chambers stated he will discuss with Robert Pass adding to the cost estimate and BCI will update the plans and analysis of the building. BCI will also investigate some phasing options to present to the group.

If you should disagree with any information contained herein, please kindly notify our office in writing within 10 days of receipt of this memorandum.

Jonathan Chesser 10/21/2024
Jonathan Chesser, Associate AIA
Assistant Project Manager

Cc: Josh Ives, Dave Stapleton, Eric Chambers, File, Joey Harris, Mark Zoller, Charlie Schneider, Shane Poynter, Chris Kelly, Jay Quillen