VIRGINIA FIRE SERVICES BOARD

Live Fire Training Structure Meeting
Thursday, September 21, 2023
Conference Room C
Hampton Roads Convention Center
1610 Coliseum Drive Hampton, Virginia 23666
10:15 AM

Minutes

A regular meeting of the Live Fire Training Structure Committee meeting was held at the First Responder Virginia Conference. The meeting was called to order by Chair Bettie Reeves Nobles and a quorum was present.

COMMITTEE MEMBERS PRESENT

Bettie Reeves-Nobles, Committee Chair – General Public
James Calvert –Industry (SARA Title III/OSHA)
Jerome Williams - Certified Fire Service Instructor
JM Snell II –Board of Housing and Community Development
Billy Hanks – Local Fire Marshal
Dennis Linaburg – Virginia Chapter, IAAI

COMMITTEE MEMBERS ABSENT

Jess Rodzinka – Virginia Professional Fire Fighters

AGENCY MEMBERS PRESENT

Jamey Brads, Chief of Training and Operations
Theresa Hunter, Interim Assistant Chief of Administration
Will Merritt, Marketing and Communications Manager
Spencer Willett, Government Affairs Manager

GUESTS PRESENT

JD Orndorff	Eric Dahl	Alan Ambrose
Ben Ruppert	Ben Powell	
Jason Johnson	Rich Constantino	
Ray Conner	Deshaun Steele	

CHANGES IN THE AGENDA

PUBLIC COMMENTS

CONSENT AGENDA

Motion: To approve the minutes of the previous meeting (February 2023)
Motion: Calvert, **Second:** Snell
Discussion on the Motion: None

Vote: Unanimous
Action: Minutes approved

COMMENTS FROM THE COMMITTEE CHAIR
Committee Chair Bettie Reeves-Nobles welcomed all in attendance and thanked the committee for their work reviewing the applications that are on the agenda for the day.

UNFINISHED BUSINESS

a. Report from the Structures Group: New Live Fire Prototype

Alan Ambrose presented on updates to the prototype manual regarding a live fire structure utilizing containers or modular live fire training structures. This is referred to as prototype 4. The presentation outlined the history of the live fire prototype manual, annual inspections, and the current prototypes offered with relevant safety features such as thermal protection. He spoke about the issues with the prototype 4 modular building including setting the standard for vendors that might offer to use shipping container like structures. He spoke about WHP having a modular structure that does not use containers which was approved for Harrisonburg in 2019. He also spoke about Goochland County's drawings, which are mainly shop drawings, and how they reference a large variety of ISO 668 shipping containers that vary by size. This is also something that should be regulated for safety for container style structures. Prototype 4 should be broad enough in language to account for container like structures, while also limiting what exactly can be approved for safety related to NFPA 1402. Prototype 4 should meet the Virginia requirements, as well as relevant NFPA standards. He referenced the 2018 International Building Code and how containers have an acceptance criterion contained within it. This limits what can be used. Framework should be in place to make these structures acceptable. It is not worth the effort of the VFSB or VDFP to use the 2018 standard with the 2021 standard becoming the prevailing document for container structures. Conversations have been had with those who service these structures and the group has looked at container structures used for flashover simulators. These containers last around 5 years and have minimal protection but are liked by fire chiefs. TSG does not want prototype 4 to be treated the same way as these more temporary structures. TSG questions the protection of personnel around the outside of the container. Maintenance and the longevity of the prototype are concerns. TSG is expected to provide sample drawings and specifications in December. TSG will provide guidance to the localities currently approved for these types of structures in Goochland.

James Calvert stated he hears bias in the presentation from TSG regarding prototype 4. The requirement in Goochland was to meet NFPA 1402. The VFSB is interested if these prototypes meet the NFPA 1402 design criteria. He reiterated he felt there was bias in the presentation. Calvert wanted to know the criteria that needs to be designed too by these vendors for these types of structure. Ambrose apologized on the record and stated that there are specific challenges with this style and that he wanted to explain those concerns. He touched on feedback they received from other areas of the country where these props are dangerous if not maintained properly. Safety and protection are the main priority and that is where the presentation derived from.

Johnson spoke about how he and JM Snell II serve on the Board of Housing and Community Development. He asked if VDFP could require the group use the 2021 IBC code. Johnson asked if other states have been looked at and what those states are. Ambrose stated said few states have prototypes that look like Virginia and that Virginia is often the standard, but admitted a deep dive has not been completed. Johnson feels that VFSB is proactive and leads the country, but there also must be a consideration for safety. Reeves Nobles wanted to know about other states that use these types of structure. Ambrose spoke about the importance of getting out in front of safety and performance specifications not present in other states. He is unaware of localities that have specific requirements.

Reeves Nobles asked if the group provided a report on container structures or modular structures. Ambrose stated that this was a nomenclature difference, because modular is a broader term for containers and other pre-engineering buildings.

Johnson asked if they do not use VDFP funds, do they require VFSB approval. Hunter stated that state approval is not needed to build structures if the locality pays for them.

Jamey Brads stated it needs to meet NFPA 1402 and 1403 to be approved for training. The building needs to be certified by the VFSB to be used for certified training. It is difficult for VDFP to know where all training is conducted. However, certified training must be done in a certified structure. Calvert highlighted that it was based on NFPA standards, not necessary the grant prototype specifications. This is all based on safety requirements. Ambrose stated that an engineer must sign off according to NFPA 1402 already.

Jerome Williams stated that the containers were not dangerous, but in his experience, it was instructors or those utilizing the structure that may need additional training. Ambrose talked

about the learning curve that will exist for a new prototype. He did not disagree with this statement, but also stated there were dangers related to the prototype style.

Calvert stated he was not an advocate for any certain design but wants to make sure the work done for Goochland is carried on and that the structures are designed for safety.

Reeves Nobles wanted to clarify where the committee moves from here. Should TSG look at container style or modular style structures? Calvert thought the committee would get a set of specifications. He feels there must be data out there to build this specification. Ambrose stated that specifications had not been provided. Reeves-Nobles asked if this would be provided in December. This will include NFPA 1402, 1403, and IBC requirements.

NEW BUSINESS

a. City of Winchester Renovation Application

JD Orndorff from the City of Winchester spoke about their request. An engineering firm (SRG) did a review of the building for compliance. He spoke about the requested amount for the renovation. He stated they completed an inspection in 2021, but not 2022 because of the five year plan implemented by the board.

Calvert asked how they would characterize the damage in the structure. Orndorff explained that the probes in the system were too large, creating a delay when temperatures reach a certain point and should be shut down. He also stated it could be related to instructors using the facility and allowing the heat to buildup. He stated that localities are often not provided good training on this. Winchester will be training its personnel on the proper use of the building.

Calvert spoke about the NFPA 1403 compliance officer program and how this could be used to limit damage based off pre and post inspections. These inspections could be implemented to fix the issue across the Commonwealth.

Reeves Nobles asked what the full amount was. Orndorff stated it was $150,274.85 and the city has committed to assist with anything it can. Calvert clarified that three localities used the building, which was confirmed.

Motion: To approve the City of Winchester Renovation Application for the Full Board
Motion: Calvert, **Second:** Linaburg
Discussion on the Motion: None
Vote: Unanimous
Action: Renovation grant approved for the amount of $150,274.85 for the Full Board

b. Fluvanna County Extension Request

County Administrator Eric Dahl presented on the demographics and fire service in Fluvanna County. He explained that the county is requesting an extension and to change their request to a container like structure. They have used the $30,000 for design and the county has also put additional funds into the project. The current prototypes are not viable options for a rural locality like theirs. Fluvanna feels that a container structure would better service their volunteer firefighters. Fluvanna County examined Goochland's request and building, which is a Draeger product that meets NFPA 1402 standards. Fluvanna is trying to replicate Goochland's building, except Fluvanna's structure would be a Class A burn building. The building official has approved the initial drawings. Fluvanna asked if data existed showing that these structures only last for 5 years. The county believes this model (container style) is a good move for rural localities to provide live fire training. They are requesting a 2-year extension because they have seen the amount of time it takes for other localities and the 24-26 week delivery time that is expected.

Calvert asked Theresa Hunter if a 2-year extension effects accounting. Hunter stated that these extensions would only allocate money to the project, preventing it form being used by someone else and it would not affect the accounting. Reeves Nobles asked how many extensions they have had. Hunter stated 4 extensions amounting to 6 years. Reeves Nobles asked if they have received funds. Hunter stated they had received funds after submitting a building permit in March 2020 totaling $112,500.

Calvert spoke about the need for extensions because the costs came back too high. He stated that the VFSB have approved two of these structures for Richmond and Goochland. He asked if this request meets the needs of the jurisdiction. Chief of

Monticello Constantino stated that it will meet the needs of the locality and the departments. Calvert is interested if it meets NFPA 1402 and if it meets the financial needs of the locality. Calvert moved to approve the application. Chair Reeves Nobles asked for further discussion.

Reeves Nobles asked if an architecture and engineering firm had been utilized. Dahl stated they have worked with two firms, one for the civil work and one for the design. They have also submitted information to TSG. He cited challenges with prototype 1 and 2 construction and how the pandemic has increased the costs for buildings. Fluvanna feels handcuffed in the process. Dahl asked if they received $112,500 which Hunter confirmed and explained was issued without invoices because the locality had been issued a building permit.

Reeves Nobles is reluctant to grant an extension and approval because of the beta testing that is still ongoing with Goochland County and the City of Richmond. She wants to make sure that funds that are approved meet the specifications that TSG is working on for the VFSB.

Linaburg is hesitant to grant the approval, but he is also reluctant to holdup Fluvanna County in this process and start over again. Linaburg suggested a year extension. There are many companies that design these structures to appropriate safety specifications and the VFSB should not stop this. Reeves Nobles stated her intention was to have documentation to go by, suggesting the committee wait until TSG provides guidelines. She wants to make sure funds are used appropriately.

Dahl suggested that Fluvanna could be the Class A container structure beta test because Richmond and Goochland were both Class B.

Calvert stated NFPA 1402 should be the guidance. He did not recall using Richmond and Goochland as beta tests. He reemphasized how NFPA was the guidance.

Johnson suggested waiting until December to make sure a standard is set and that safety measures are in place. The report from TSG is needed. There is a need for

this prototype in rural areas and small jurisdictions that cannot fund larger, traditional burn buildings.

Willett provided comments from previous minutes, which did not state that Richmond and Goochland as beta tests. The minutes from the special meeting stated they would meet NFPA 1402 requirements pending specifications from TSG.

Calvert made a previous motion. Willett stated that without a second it would not be voted on.

Calvert made a motion to approve the extension request for 2 years and the conversion of the project to a container style structure if it meets NFPA 1402.

Reeves Nobles made an amendment for the extension to be for one year. This amendment was accepted by Calvert.

Motion: To approve the Fluvanna County Extension Request for 1 year and the project to meet NFPA 1402 Standards for a container style structure.
Motion: Calvert**, Second:** Linaburg
Discussion on the Motion: None
Vote: Unanimous
Action: Fluvanna County's request is approved for the Full Board

c. City of Hopewell Live Fire Structure Application

Chief Ruppert spoke about the history and makeup of the Hopewell Fire Department. He outlined their application for the Live Fire Structure. The burn building in Hopewell currently is no longer used but was a staple in the region for many years. None of the surrounding localities have their own burn buildings and are supportive of the city's request. He stated that the lack of a burn building has made live fire training difficult for the crews. Staffing challenges make it difficult to send crews outside the city for training. Site plans and a presentation was provided to the VFSB. The city has already allocated the matching portion of the grant. He spoke about how the city cannot afford a prototype 1 or 2 structure because of fiscal constraints. He further spoke about the training that is provided by the container style structure they are requesting. He highlighted that the vendor is working to get stamped plans by an

engineer that are approved by and architecture and engineering firm, rather than shop drawings.

Calvert asked if an environmental assessment has been completed. Ruppert explained that an environmental firm handles this for the whole site owned by the city. Calvert asked if it was a risk-based closure of the landfill. His worry is that without an environmental assessment, the VFSB may be approving funding for a site that will not be suitable for building. Hunter stated that VDFP does not review this once the money is allocated specifically related to environmental impact. This falls on the locality building the structure to meet the local requirements. Ruppert spoke about how the next step requires a site plan, which will include a third-party review, including storm water requirements, etc

Johnson asked for further explanation on the architecture and engineering firm to stamp the plans. Ruppert explained that their vendor, Draeger, is working with a Virginia firm to get plans reviewed and stamped. This had not occurred at this point. Reeves Nobles asked if the city had an architecture and engineering firm. Ruppert stated they would have a firm if approved.

Motion: To approve the City of Hopewell Live Fire Structure Application if it meets NFPA 1402 until prototype 4 is complete.
Motion: Linaburg**, Second:** Calvert
Discussion on the Motion: Willett clarified if the approval rests on the NFPA 1402 guidelines. Reeves Nobles stated this was the case. Hunter asked if the projects were being exempt from the new standards that may come out in December. Reeves Nobles stated that the NFPA 1402 guidelines would be used.
Vote: Unanimous
Action: Grant approved for the Full Board

d. Halifax County Live Fire Structure Application
Emergency Services Coordinator Jason Johnson presented on the application. He provided history on their former burn building built in the late 1990s. Damage was done to the building during a time when there was a change in leadership at the county level, resulting in little oversight of those using the structure. Policies have been modified to prevent this in the future. Each fire department in the county will have a custodian who will be in charge of making sure policies are followed during

burns. He spoke about building a new burn building making more sense for their taxpayers in the long term and how the county is ready to provide the remainder of the balance that is not paid by the grant. They would like to host regional schools and provide a building for the 200 firefighters that reside in the county, with Halifax being one of the largest counties in the state.

Reeves Nobles asked how old the current building is. Jason Johnson stated it was completed in 1998. This building is out of commission. Reeves Nobles also asked where it would be built, which Jason Johnson stated was provided in the packet. It would be located beside or on the site of the current burn structure.

Calvert wanted reassurance that this structure will not be damaged like the former structure. He asked if the custodian position was a term from NFPA 1403. Jason Johnson stated it was not directly pulled from NFPA 1403 but is very similar. Jason Johnson assured the committee that the building would be taken care of.

Motion: To approve the Halifax County Live Fire Structure Application
Motion: Calvert**, Second:** Linaburg
Discussion on the Motion: None
Vote: Unanimous
Action: Grant approved for the Full Board

Brads offered that if vendors can provide training on the operation and upkeep of these types of structures, that the committee should look at requiring this training or annual training aids from the vendors or contractors. This training should be done initially and over time to make sure personnel know how to use these burn buildings. NFPA 1403 touches more on training, while NFPA 1402 does touch on maintaining the structure. This may be something to be examined further down the road to make sure assets are protected.

ADJOURNMENT
Board Clerk
Spencer R. Willett

Update on Prototype 4 – Modular Live Fire Training Structure

September 21, 2023

The Structures Group, Inc.

Update on Prototype 4 – Modular Live Fire Training Structure

Today's Discussion Will Cover:

- Standardization of Grant Program
- Current VDFP Prototypes
- Ongoing Maintenance Issues of Existing Live Fire Training Structures
- Grant Process for New Live Fire Training Structures
- Need for VDFP Prototype 4
- VDFP Prototype 4 Design Requirements
- VDFP Prototype 4 Design Considerations
- TSG Project Deliverables

Update on Prototype 4 – Modular Live Fire Training Structure

Standardization of Grant Program

Development of Minimum Guidelines and Permanent Prototypes (2006 – 2011)

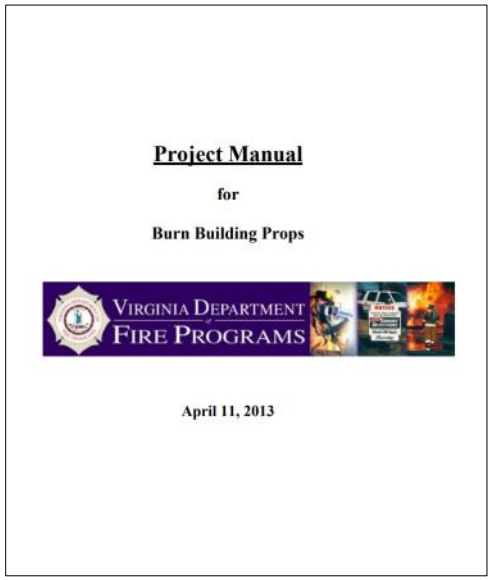
- Maintenance costs exceeding annual budgets
- Live fire training structures varying from one (1) story CMU bunker structure in Lee County to three (3) story CMU/structural steel structure with four (4) story training tower (Taj Mahal) in Virginia Beach
- Unequitable distribution of maintenance funds
- Localities being solicited by vendors
- Interest of localities not represented by an A/E firm
- Minimum requirements to meet Firefighter 1 and 2
- 20-year minimum design life for new live fire training structure

Update on Prototype 4 – Modular Live Fire Training Structure

Current VDFP Prototypes

Results of Standardization for Grant Program in 2011

- Sample project manual with guideline specifications
- Summary of Burn Building Prop Grant Program
  - Program criteria consisting of forty-two (42) items
- Sample construction drawings with guideline specifications
- Development of Prototypes 1, 2, and 3
  - Class “A” Fuel
  - Class “B” Fuel

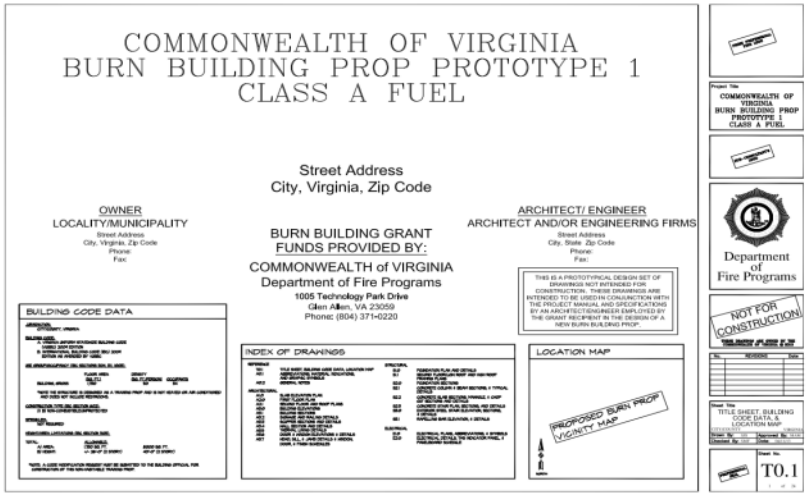

Project Manual

for

Burn Building Props

VIRGINIA DEPARTMENT FIRE PROGRAMS

April 11, 2013


COMMONWEALTH OF VIRGINIA
BURN BUILDING PROP PROTOTYPE 1
CLASS A FUEL

Street Address
City, Virginia, Zip Code

OWNER
LOCALITY/MUNICIPALITY

BURN BUILDING GRANT
FUNDS PROVIDED BY:
COMMONWEALTH of VIRGINIA
Department of Fire Programs
1005 Technology Park Drive
Glen Allen, VA 23059
Phone: (804) 371-0220

ARCHITECT/ ENGINEER
ARCHITECT AND/OR ENGINEERING FIRMS

BUILDING CODE DATA

INDEX OF DRAWINGS

LOCATION MAP

PROPOSED BURN PROP VICINITY MAP

Department of Fire Programs

NOT FOR CONSTRUCTION

T0.1

Update on Prototype 4 – Modular Live Fire Training Structure

Current VDFP Prototypes

VDFP Prototype 3 - Mobile Burn Building

- Specifications provided to VDFP September 2009
- Class “B” fuel
- Twenty-eight (28) minimum requirements
  - 100psf live load
  - Two (2) stories with two (2) 100sf burn rooms
- Owned and operated by VDFP
  - Confidence in maintenance/upkeep
  - Confidence in training environment
- Locality responsible for stable training pad

Update on Prototype 4 – Modular Live Fire Training Structure

Ongoing Maintenance Issues of Existing Live Fire Training Structures

Locality Responsibility to Maintain Structure

- **Annual Reviews**
  - **Historically poor performance but getting better**
- **Five (5) year Structural Review**
- **Maintenance Concerns**
  - **Structural stability**
  - **Impingement**
  - **Means of egress**
  - **TMS**

Spotsylvania (2017)

Greensville County (2023)

Update on Prototype 4 – Modular Live Fire Training Structure

Grant Process for New Live Fire Training Structures

Grant Application Process for New Structures

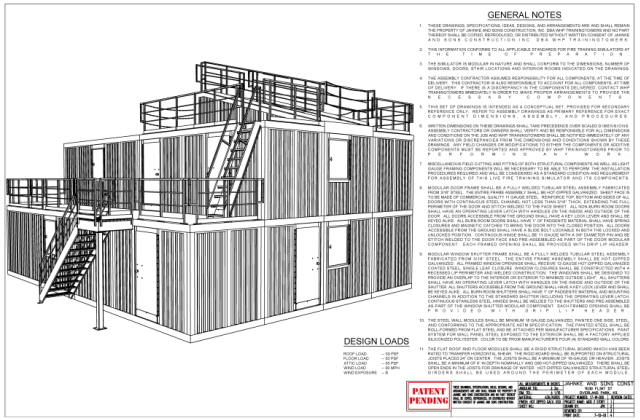
- Design of live fire training structure must meet minimum guidelines
  - Size
  - Operation
  - Inspection/Testing
- Localities shall ***employ an A/E to design*** live fire training structures
  - A/E represents locality in meeting design requirements, protecting their fiduciary interest
- Construction documents shall be:
  - Solicited to multiple bidders by locality in accordance with state procurement regulations
  - Provided to VDFP for review to construct according to grant
  - Submitted to AHJ for building permit

Update on Prototype 4 – Modular Live Fire Training Structure

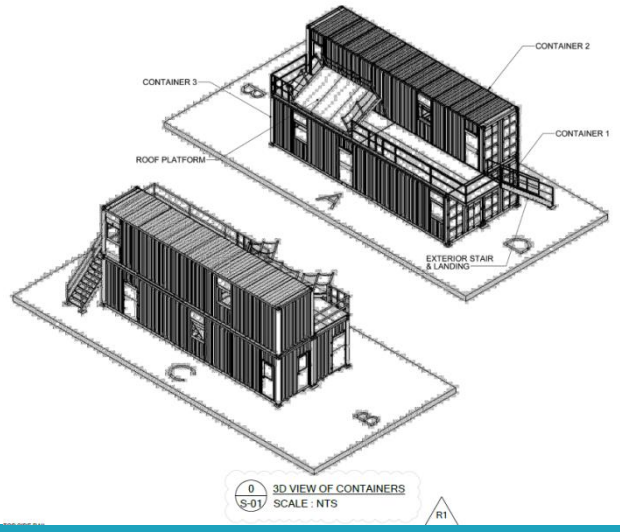
Need for VDFP Prototype 4

Several Localities Submitting Modular Style for Review

- Harrisonburg (2019)
  - MODx proprietary modular system



- Goochland (In Review)
  - ISO 668 Containers



ISO designation *	Common Name	External dimensions			Minimum internal dimensions **			Maximum Gross Mass
		Length	Height	Width	Length	Height	Width	
1EEE ***	45 foot high cube	45 ft / 13.716 m	9' 6" / 2.896 m	8 ft / 2.438 m	13.542 m / 44' 5.15"	2.655 m / 8' 8.5"	2.330 m / 7' 7.73"	36,000 kg **** / 79,370 lbs
1EE ***	45 foot standard		8' 6" / 2.591 m			2.350 m / 7' 8.5"		
1AAA	40 foot high cube	40 ft / 12.192 m	9' 6" / 2.896 m	8 ft / 2.438 m	11.998 m / 39' 4.375"	2.655 m / 8' 8.5"	2.330 m / 7' 7.73"	36,000 kg **** / 79,370 lbs
1AA	40 foot standard		8' 6" / 2.591 m			2.350 m / 7' 8.5"		
1A	40 foot		8 ft / 2.438 m			2.197 m / 7' 2.5"		
1BBB	30 foot high cube	29' 11.25" / 9.125 m	9' 6" / 2.896 m	8 ft / 2.438 m	8.931 m / 29' 3.6"	2.655 m / 8' 8.5"	2.330 m / 7' 7.73"	36,000 kg **** / 79,370 lbs
1BB	30 foot standard		8' 6" / 2.591 m			2.350 m / 7' 8.5"		
1B	30 foot		8 ft / 2.438 m			2.197 m / 7' 2.5"		
1CCC	20 foot High Cube	19' 10.5" / 6.058 m	9' 6" / 2.896 m		5.867 m / 19' 3"	2.655 m / 8' 8.5"		
1CC	20 foot standard		8' 6" / 2.591 m			2.350 m / 7' 8.5"		
1C	20 foot		8 ft / 2.438 m			2.197 m / 7' 2.5"		
1D	10 foot	9' 9.75" / 2.991 m	8 ft / 2.438 m		2.802 m / 9' 2.3"	2.197 m / 7' 2.5"		10,160 kg / 22,400 lbs
1E *****	6⅔ foot	6' 5.5" / 1.968 m	8 ft / 2.438 m	8 ft / 2.438 m	1.778 m / 5' 10"	2.197 m / 7' 2.5"	2.330 m / 7' 7.73"	7,110 kg / 15,700 lbs
1F *****	5 foot	4' 9.5" / 1.460 m	8 ft / 2.438 m		1.270 m / 4' 2"			5,080 kg / 11,200 lbs

Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Requirements

2019 Edition of NFPA 1402

- Addresses design and construction of training structures and props
- Chapters 6 provides design/construction requirements
  - Section 6.1.1- Training structures shall meet the design/construction requirements of the AHJ
  - Section 6.1.2- Training structures shall be anchored to ensure stability
  - Section 6.1.5- Stairs shall meet the requirements of the building code
  - Section 6.1.6- Guardrails and handrails shall be provided at locations required by the building code
  - Section 6.1.8- Floors and roofs of training structures shall be designed to support dead loads plus minimum 50psf live load
  - Section 6.1.9.1- If floors slope to interior or exterior drains, the floor shall be designed to support the weight of maximum quantity of water that could accumulate if the drains clog

Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Requirements

2019 Edition of NFPA 1402

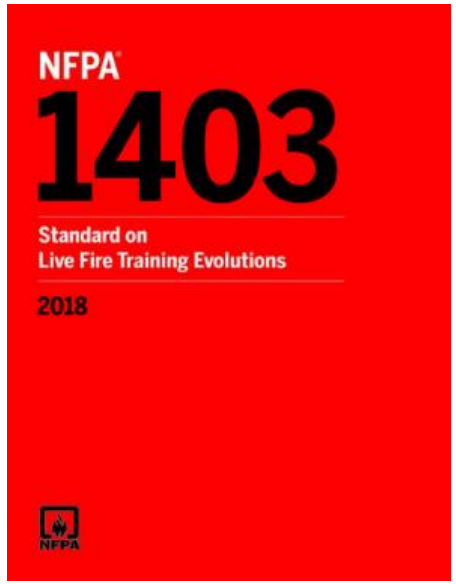
- Chapters 7 provides additional design/construction requirements specific to live fire training structures
  - Section 7.1.1- Live fire training structures shall meet the requirements of Chapters 6 and 7
  - Section 7.1.2- Structural components in burn rooms … shall be constructed of noncombustible materials
  - Section 7.1.3 Live fire training structures shall be designed by a licensed design professional
  - Section 7.1.4- All components in burn room exposed to flame impingement shall be designed for such exposure
  - Section 7.1.4.1- Load-bearing structural elements exposed to temperatures exceeding 350°F shall be protected with thermal lining
  - Section 7.1.5- Burn rooms shall have two doors that exit or a door and a window
  - Section 7.1.8- Doors and window shutters must resist binding and operate from both sides during live fire training

Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Requirements

2018 Edition of NFPA 1403

- Addresses operation and training within live fire training structures
- Also addresses maintenance and inspections of live fire training structures immediately prior to and post training
  - Chapter 6 – Gas (Class “B”)
  - Chapter 7 – Non-Gas (Class “A”)

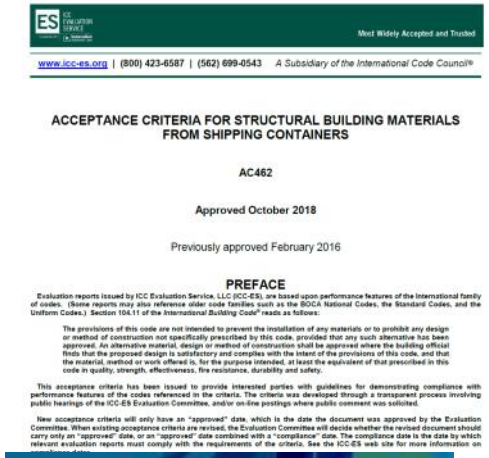


Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Requirements

2018 Edition of IBC

- 2018 Edition of IBC allowed use of shipping containers as structural building materials through the ICC Evaluation Service.
- The ICC Evaluation Service titled “Acceptance Criteria for Structural Building Materials From Shipping Containers AC462”. This document required:
  - Manufacturer to be identified
  - Certified for compliance with the Rules for Certification of Cargo Containers and the International Convention for Safe Containers for use as shipping containers
  - Copies of the specifications and drawings are to be submitted
- The ICC Evaluation Report requires the submittal of these documents, plans, and calculations to the Authority Having Jurisdiction (AHJ) for the final structure to be constructed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ACCEPTANCE CRITERIA FOR STRUCTURAL BUILDING MATERIALS FROM SHIPPING CONTAINERS

AC462

Approved October 2018

Previously approved February 2016

PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes. (Some reports may also reference older code families such as the BOCA National Codes, the Standard Codes, and the Uniform Codes.) Section 104.11 of the International Building Code® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

This acceptance criteria has been issued to provide interested parties with guidelines for demonstrating compliance with performance features of the codes referenced in the criteria. The criteria was developed through a transparent process involving public hearings of the ICC-ES Evaluation Committee, and/or on-line postings where public comment was solicited.

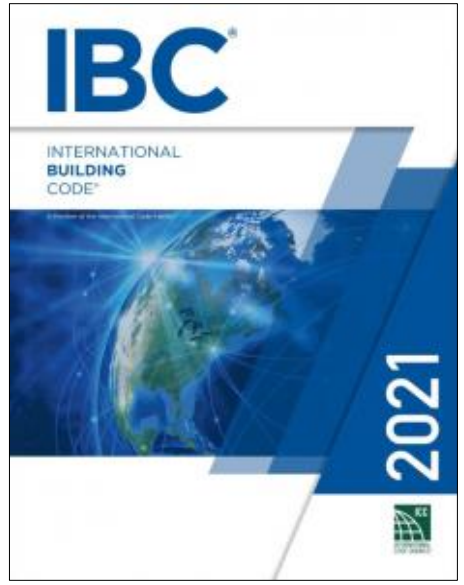
New acceptance criteria will only have an "approved" date, which is the date the document was approved by the Evaluation Committee. When existing acceptance criteria are revised, the Evaluation Committee will decide whether the revised document should carry only an "approved" date, or an "approved" date combined with a "compliance" date. The compliance date is the date by which relevant evaluation reports must comply with the requirements of the criteria. See the ICC-ES web site for more information on

Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Requirements

2021 Edition of IBC

- **The 2021 Edition of the IBC**
  - Has not been adopted by the Commonwealth of Virginia
  - Anticipated adoption is early 2024
- **New Section 3115, Intermodal Shipping Containers**
  - Shipping Container Information per ISO 6346
    1) Manufacturer's name
    2) Date Manufactured
    3) Safety Approval Number
    4) Identification Number
    5) Maximum operating gross weight
    6) Allowable stacking load
    7) Transverse racking test force
    8) Valid maintenance examination date
  - Structural design in accordance with Chapter 16
  - Permanent anchorage to foundation for permanent buildings



Update on Prototype 4 – Modular Live Fire Training Structure

VDFP Prototype 4 Design Considerations

Evolving New Technology and Methodology Resulting in Unique Structures

- Anchorage and connection of containers/boxes
  - Wind and Seismic loading
- Expansion of steel from potential temperature ΔT = 750°F
  - For 8’-0” width: Expansion = .47”
  - For 40’-0” length: Expansion = 2.34”
- Exposed steel
  - Weather
  - Conducting heat
- Meeting Firefighter 1 and Firefighter 2 training requirements
- Providing 20-year minimum design life for new live fire training structure
- Maintenance by locality

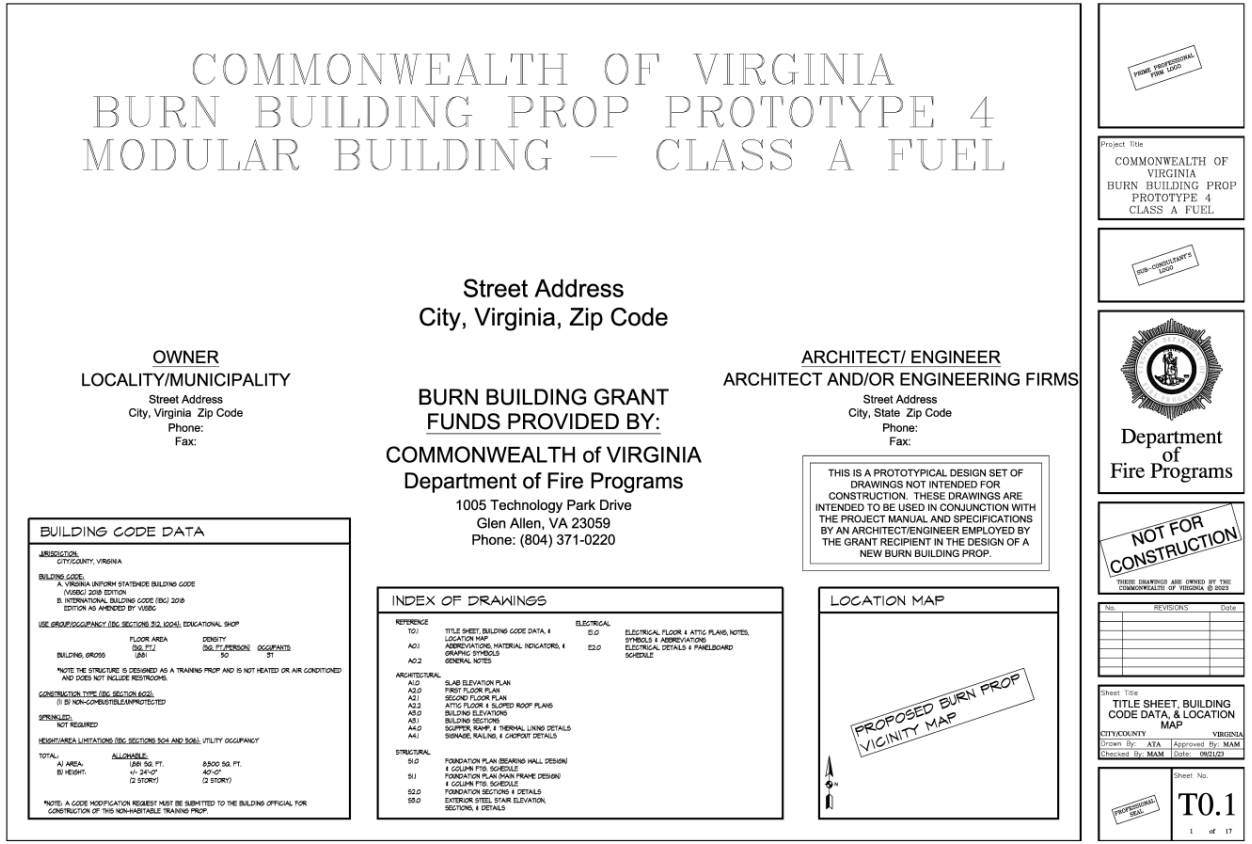
Update on Prototype 4 – Modular Live Fire Training Structure

Project Deliverables

Project Manual for VDFP Prototype 4

- **Sample Construction Drawings**
  - **Class “A” and Class “B” Fuels**
- **Sample Specifications**

Provide to VDFP by December, 2023



COMMONWEALTH OF VIRGINIA
BURN BUILDING PROP PROTOTYPE 4
MODULAR BUILDING – CLASS A FUEL

Street Address
City, Virginia, Zip Code

OWNER
LOCALITY/MUNICIPALITY
Street Address
City, Virginia Zip Code
Phone:
Fax:

BURN BUILDING GRANT
FUNDS PROVIDED BY:
COMMONWEALTH of VIRGINIA
Department of Fire Programs
1005 Technology Park Drive
Glen Allen, VA 23059
Phone: (804) 371-0220

ARCHITECT/ ENGINEER
ARCHITECT AND/OR ENGINEERING FIRMS
Street Address
City, State Zip Code
Phone:
Fax:

THIS IS A PROTOTYPICAL DESIGN SET OF DRAWINGS NOT INTENDED FOR CONSTRUCTION. THESE DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE PROJECT MANUAL AND SPECIFICATIONS BY AN ARCHITECT/ENGINEER EMPLOYED BY THE GRANT RECIPIENT IN THE DESIGN OF A NEW BURN BUILDING PROP.

BUILDING CODE DATA

INDEX OF DRAWINGS

LOCATION MAP
PROPOSED BURN PROP
VICINITY MAP

Department of Fire Programs

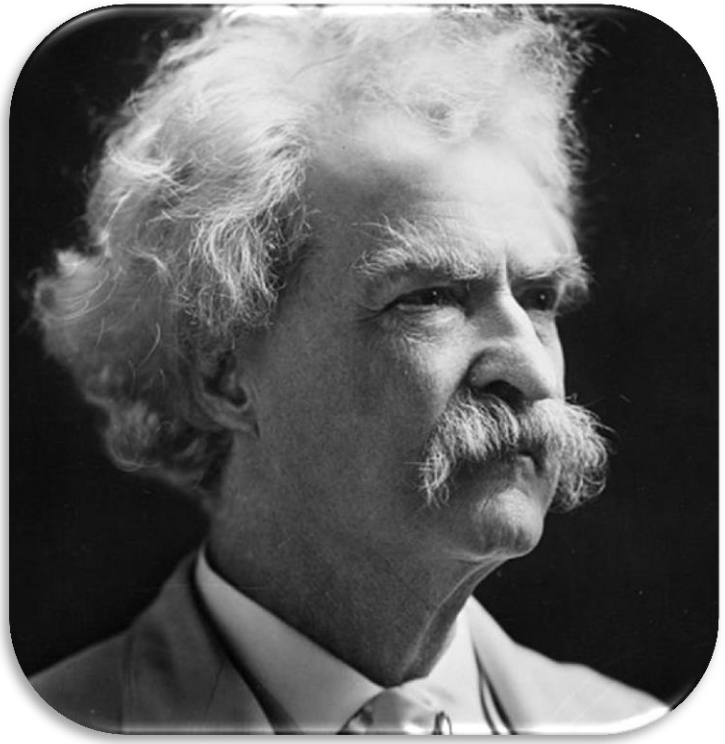
NOT FOR CONSTRUCTION

Project Title
COMMONWEALTH OF VIRGINIA BURN BUILDING PROP PROTOTYPE 4 CLASS A FUEL

Sheet Title
TITLE SHEET, BUILDING CODE DATA, & LOCATION MAP

Sheet No.
T0.1

Update on Prototype 4 – Modular Live Fire Training Structure



"History doesn't repeat itself, but it often rhymes."

- Samuel Clemens
(Mark Twain)

ANY QUESTIONS?

FLUVANNA COUNTY
LIVE FIRE TRAINING STRUCTURE REQUEST

Eric Dahl, Fluvanna County Administrator

September 21, 2023

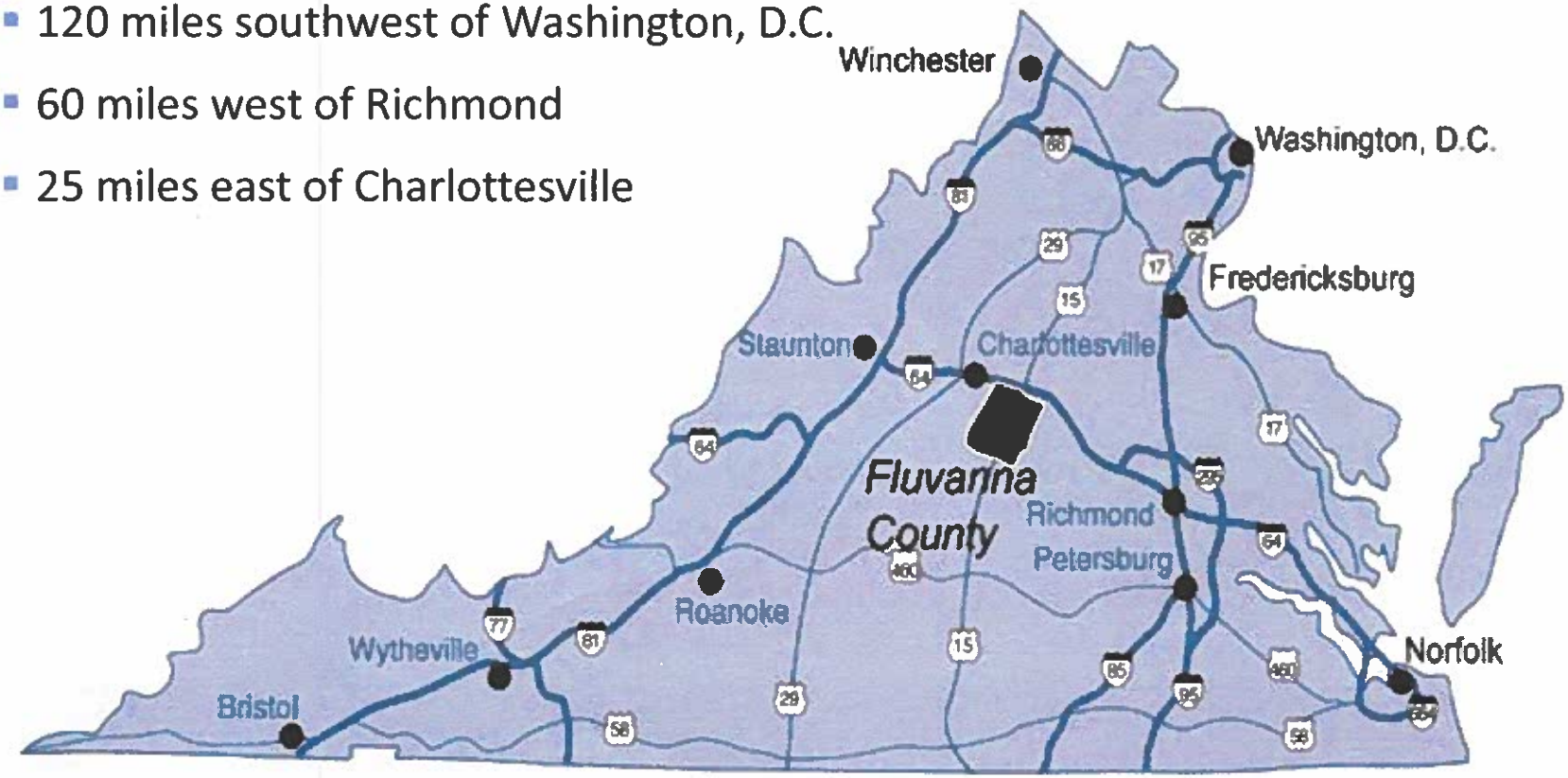
Presenter Introductions

- **Ben Powell – Project Manager**
- **1968-1973: Volunteer with both Harrisonburg Fire Co. 1; Harrisonburg Rescue Squad**
- **1973-2004: Charlottesville Fire Department**
- **1973-1998: Adjunct Fire Instructor-Virginia Fire Programs**
- **2004-2009: Virginia State Fire Marshal Office**
- **2009: Retired**
- **1995-2023: Member of the Palmyra Vol. Fire Department (Fluvanna County)**

- **Chief Richie Constantino**
- **1972: Started with the Elmsford, New York Fire Department located in Westchester County (adjacent to New York City)**
- **1982: Became Chief of Department**
- **1994: Westchester County Deputy Fire Coordinator in command of the Arson Task Force to conduct origin and cause investigations for the 58 fire departments and 45 police departments in the County (second job)**
- **2001: Retired, relocated to Lake Monticello, Virginia and joined Lake Monticello Fire Department**
- **Assistant Chief for 8 years and Chief of Department for 10 years**

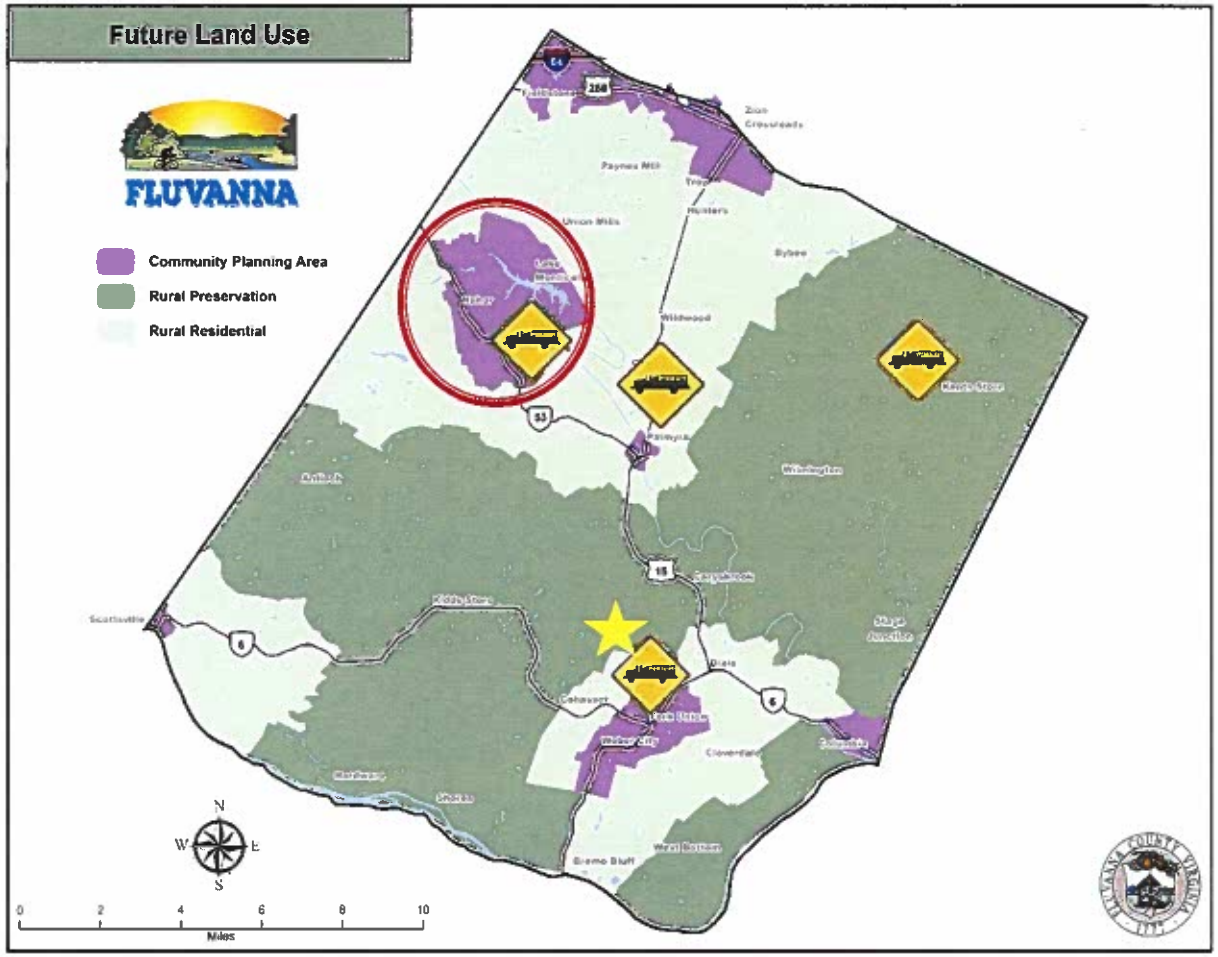
COUNTY OVERVIEW

- **Fluvanna County is centrally located in Virginia**
  - 120 miles southwest of Washington, D.C.
  - 60 miles west of Richmond
  - 25 miles east of Charlottesville



COUNTY OVERVIEW (cont.)

- **Current population estimate - ~27,843**
- **Land area of 282 square miles**
- **The County is mostly rural;**
  - ~60% of the population lives outside the red circle
  - ~40% of the population lives inside and around the Lake Monticello community inside the red circle
- **The northern part of Fluvanna is seeing more commercial development**



FLUVANNA COUNTY FIRE AND RESCUE SYSTEM

- **VOLUNTEER PROVIDERS**
- **Lake Monticello Volunteer Fire and Rescue Squad**
  - Lake Monticello Fire Company
  - Lake Monticello Rescue Squad
  - Lake Monticello Water Rescue Team
- **Fluvanna County Volunteer Fire Department**
  - Fork Union Fire Company
  - Kents Store Fire Company
  - Palmyra Fire Company
- ***Fluvanna County has all volunteer firefighters.***

- **FLUVANNA COUNTY DEPARTMENT OF EMERGENCY SERVICES**
  - Fluvanna County Department of Emergency Services began providing EMS services the month in July 2023 and was fully implemented on September 16, 2023

VIRGINIA FIRE SERVICES BOARD REQUEST

- **REQUEST #1**
- **Fluvanna County respectfully requests consideration for approval of the use of a container type structure for our live fire training structure grant that was awarded in August 2017.**

- **REQUEST #2**
- **Fluvanna County requests a "No Cost Extension" through November 15, 2025 to adequately complete our project.**

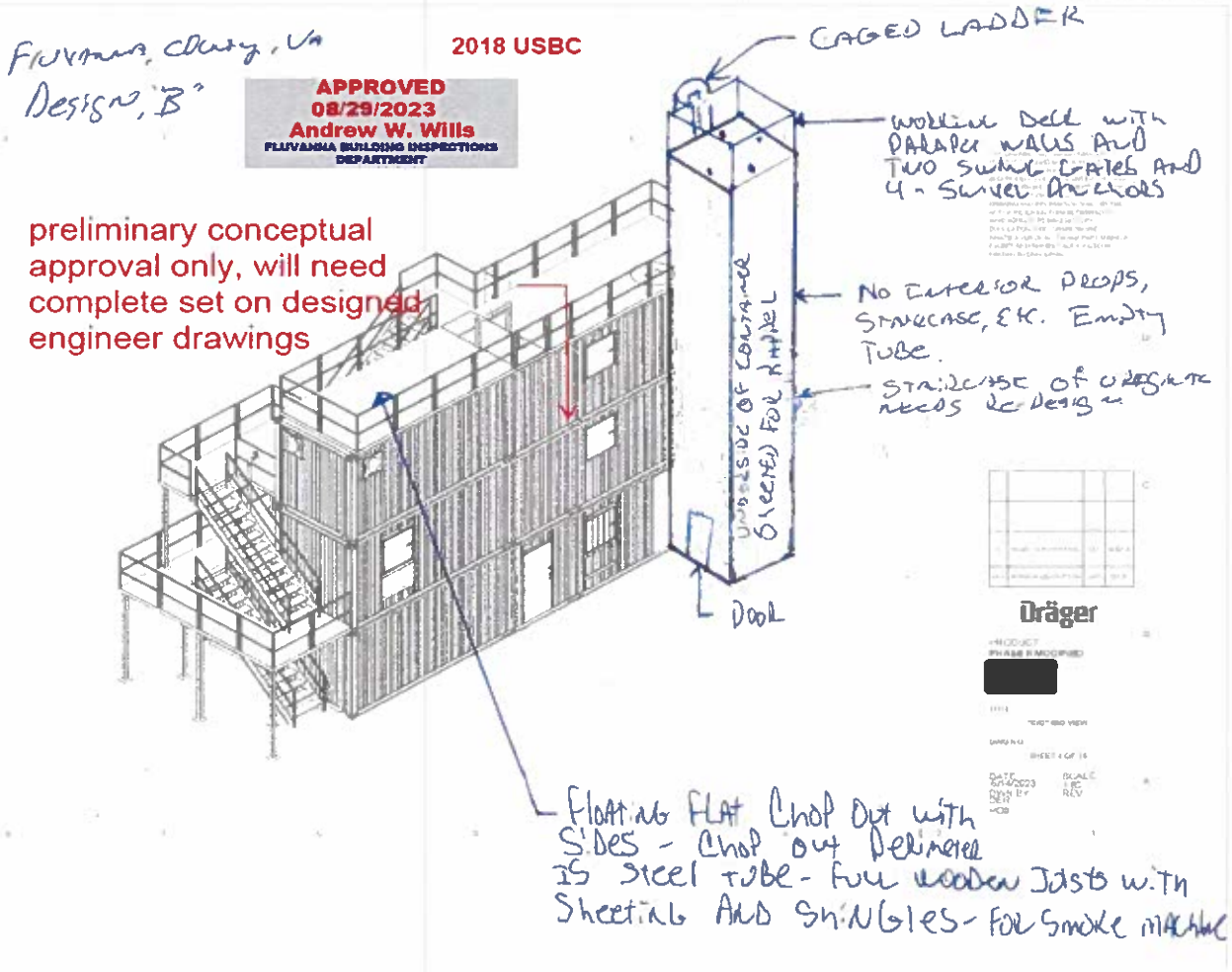
HISTORY

- **August 2017: Fluvanna County was awarded the Live Fire Training Structure Grant**
- **June 2018 – November 2022: Issued numerous Solicitations; RFP for Design/Build, two Invitation For Bids and redesigns to try and save costs.**
  - Minimum $1M project costs
- **April 2023 – Draeger made a presentation to our Live Fire Training Building Committee for a container type fire training structure.**
- **With the challenges we have encountered to build a Prototype 2 – Class A in a cost effective manner and knowing two other localities have received approval from the Fire Services Board for a container style structure, it is important to bring this request forward to serve the training needs of our volunteer firefighters and therefore serving our community.**

WHY A DRAEGER PROTOTYPE 4 – CLASS A?

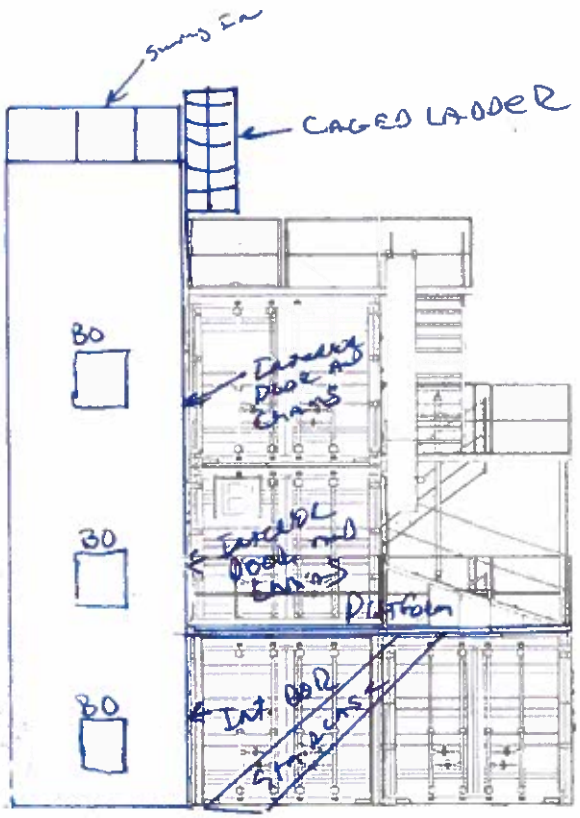
- There are similarities to a Prototype 2 – Class A
- Draeger designs their buildings to meet NFPA 1402, Standard on Facilities for Fire Training and Associated Props
- Draeger helped write the standard and are one of the leading manufacturers of fire training buildings using that standard.
- Draeger is on a Sourcewell cooperative contract, meaning quicker turnaround on the procurement process.
- 24-26 week delivery time, after receipt of approved drawings.
- Fluvanna County will be a value added partner to VDFP to be able to provide Prototype 4 – Class A data.

CONCEPTUAL DESIGN - PROTOTYPE IV - CLASS A



- **This is the recommended structure configuration from the Fluvanna Live Fire Training Building Committee.**
- **The structure includes 4-horizontal containers with 1-vertical container and props.**

CONCEPTUAL DESIGN - PROTOTYPE IV - CLASS A (cont.)



Fluvanna County, VA.
Design "B"

- **The Draeger package includes the containers, props, equipment, training, engineering, shipping, Temperature Monitoring System, installation and set-up.**
- **We also have additional estimates for a contingency fund, Site Work, Special Inspections, Construction Administration and Utilities.**

PROPOSED LOCATION – ADJACENT TO FORK UNION FIRE COMPANY

- Green Arrow – Fork Union Fire Company
- Yellow Star – Proposed Live Fire Training Structure site

VIRGINIA FIRE SERVICES BOARD REQUEST

- **REQUEST #1**
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Questions or Comments?

HOPEWELL FIRE & EMS LIVE FIRE TRAINING STRUCTURE REQUEST

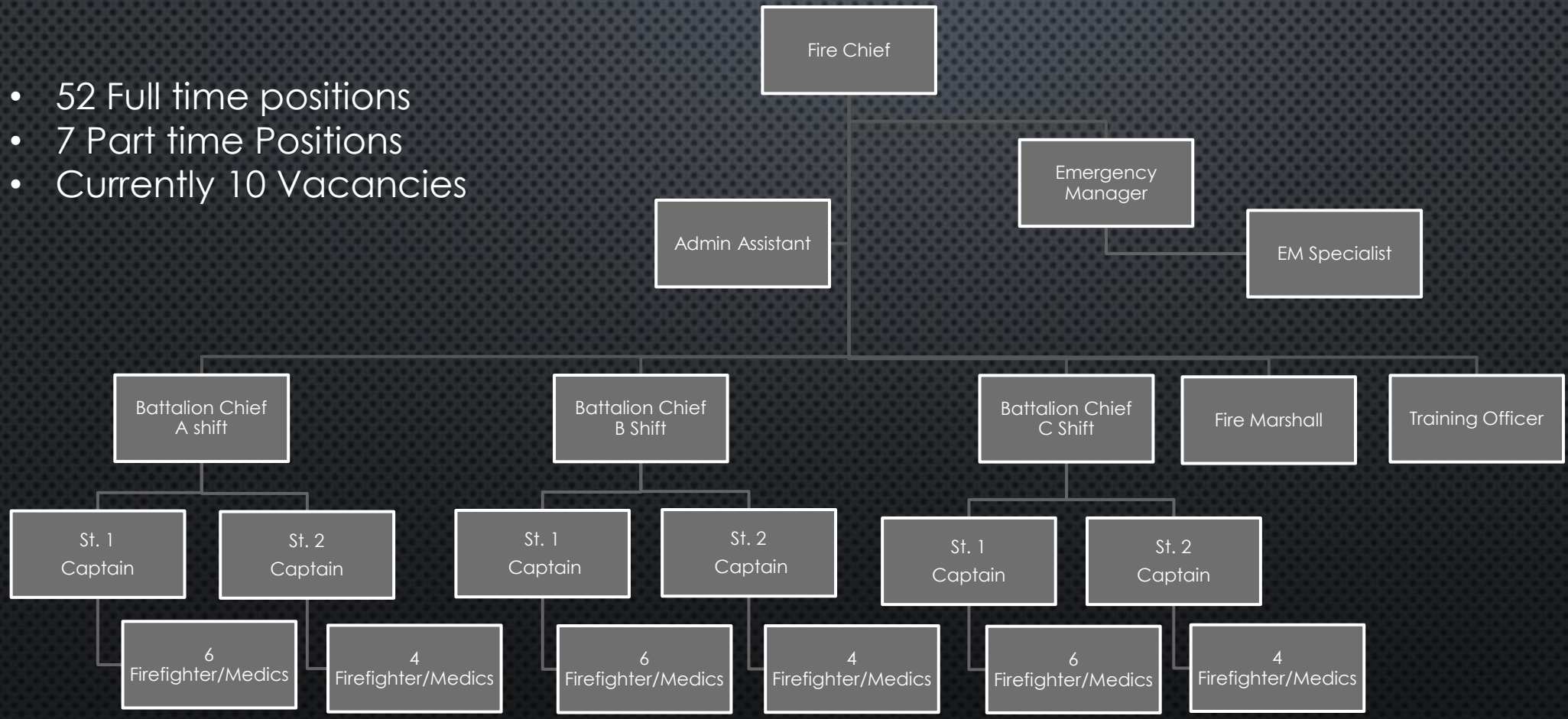
LIVE STRUCTURE COMMITTEE MEETING 9/21/2023

City of Hopewell

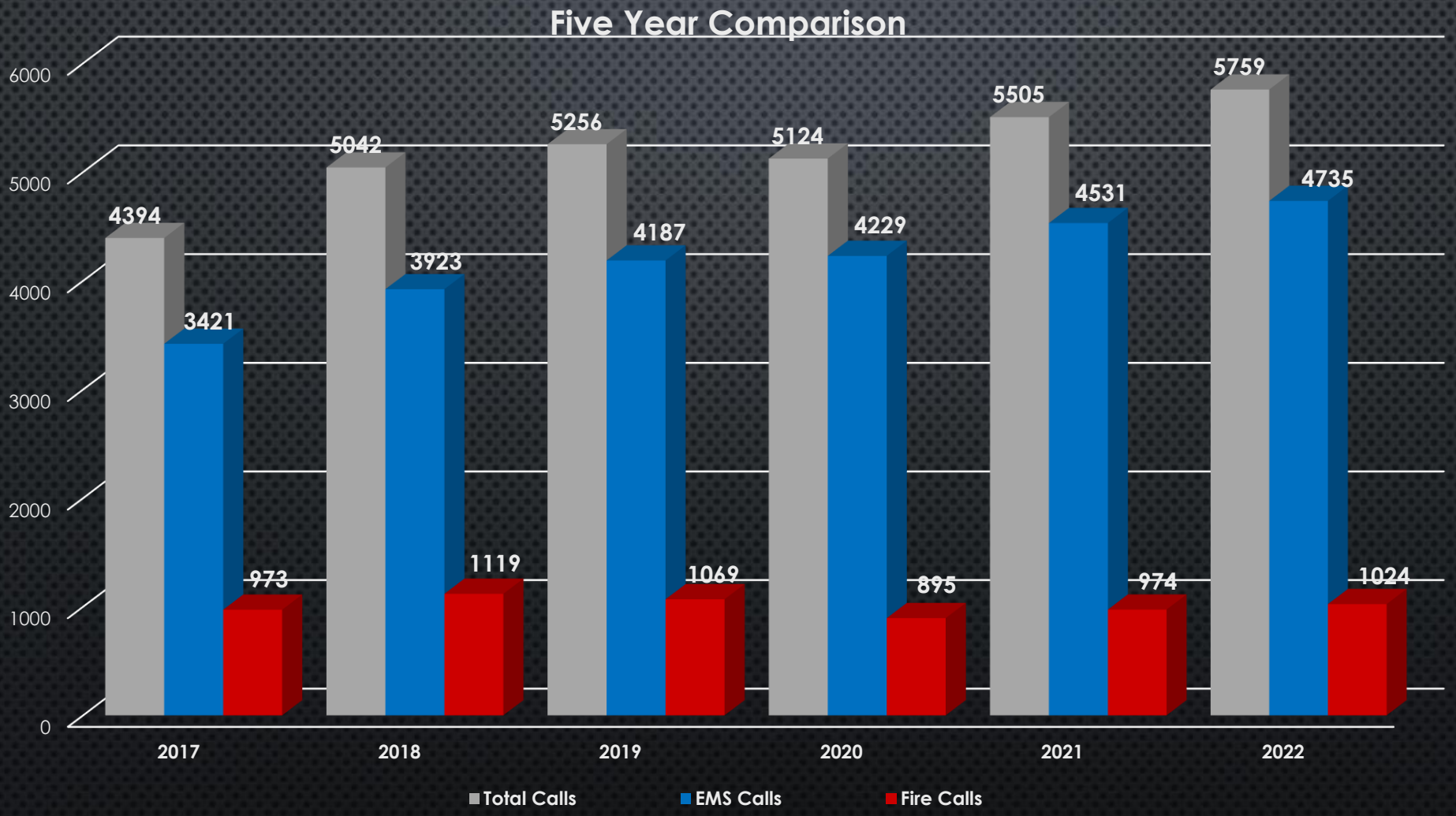
- Incorporated in 1916
- 11 Square Miles
- 23,000 People
- Paid Fire Department since 1916
- The City of Hopewell Burnt almost completely to the ground in December of 1915.

HOPEWELL FIRE & EMS ORGANIZATION

- 52 Full time positions
- 7 Part time Positions
- Currently 10 Vacancies

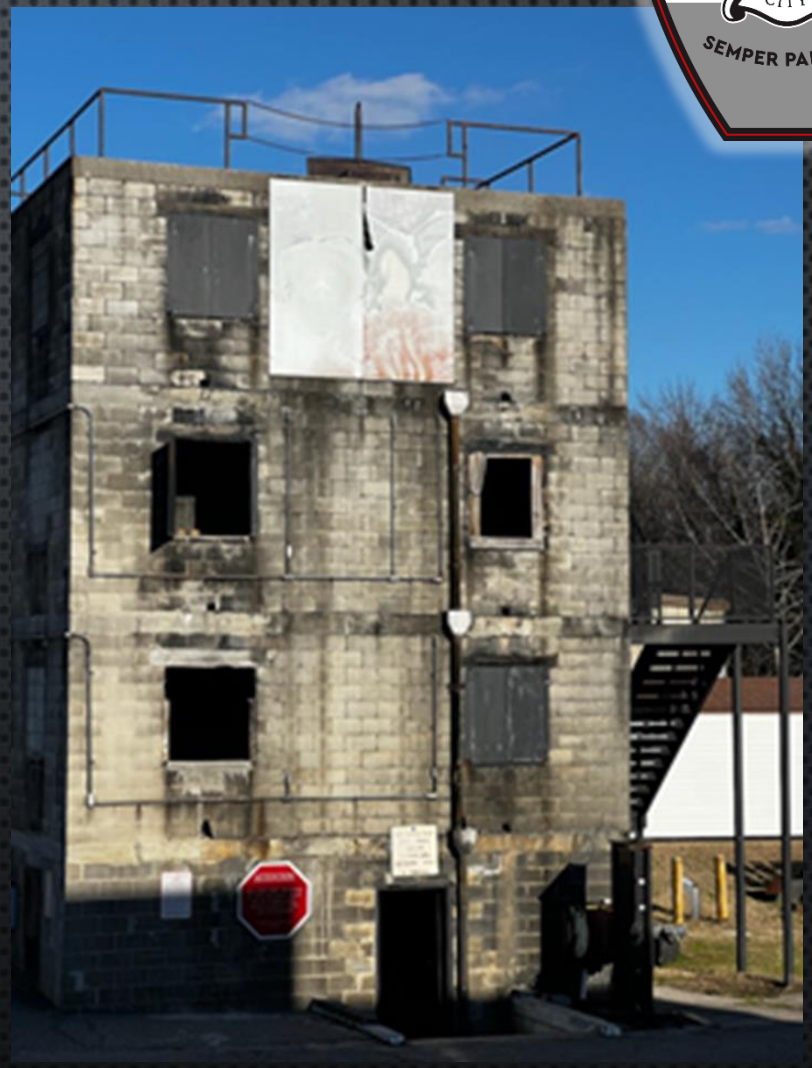


HOPEWELL FIRE & EMS CALLS FOR SERVICE



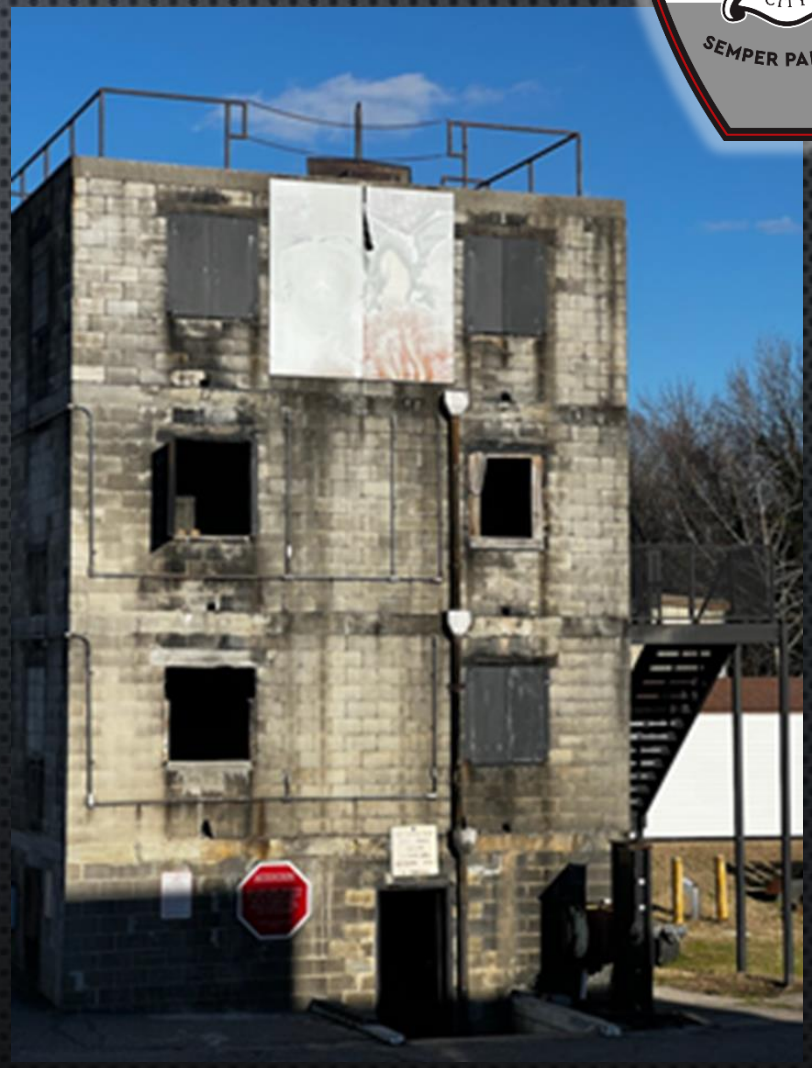
HOPEWELL FIRE & EMS PARTNERSHIPS

- Hopewell Maintains Mutual Aid agreements with all of its surrounding Cities/Counties
- We currently have agreements with the Cities of Colonial Heights, Petersburg, and the Counties of Prince George and Dinwiddie for Regional Technical Rescue and Hazmat teams.
- We are currently conducting a joint recruit school made up of 34 recruits from across all five jurisdictions.
- The Hopewell Burn building has been a staple for regional fire department training for over 40 years. Many regional recruit schools, as well as individual recruit schools and in-service training by all five jurisdictions, have been hosted at the Hopewell facility.



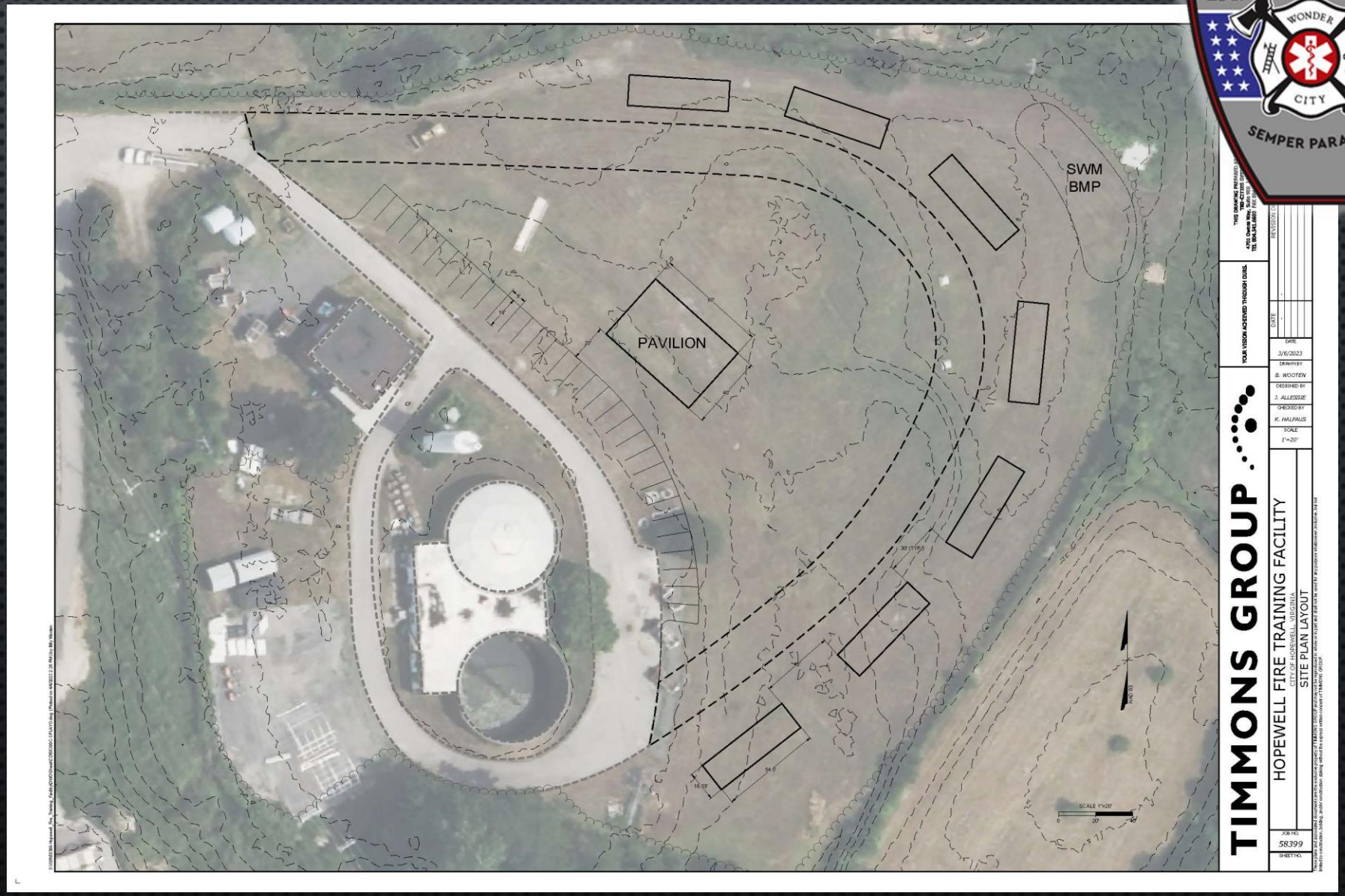
STATE OF CURRENT FACILITY

- Current facility has been condemned for live fire use
- None of the other Crater regional departments have a functional Burn building
- We have letters of support from all of our neighbors on this project.
- We have been unable to secure the VDFP burn trailer for in-service training.
- Extended travel times for other available burn buildings.
- Live Fire Training has been an iatrical part of What Hopewell Fire is for many years.



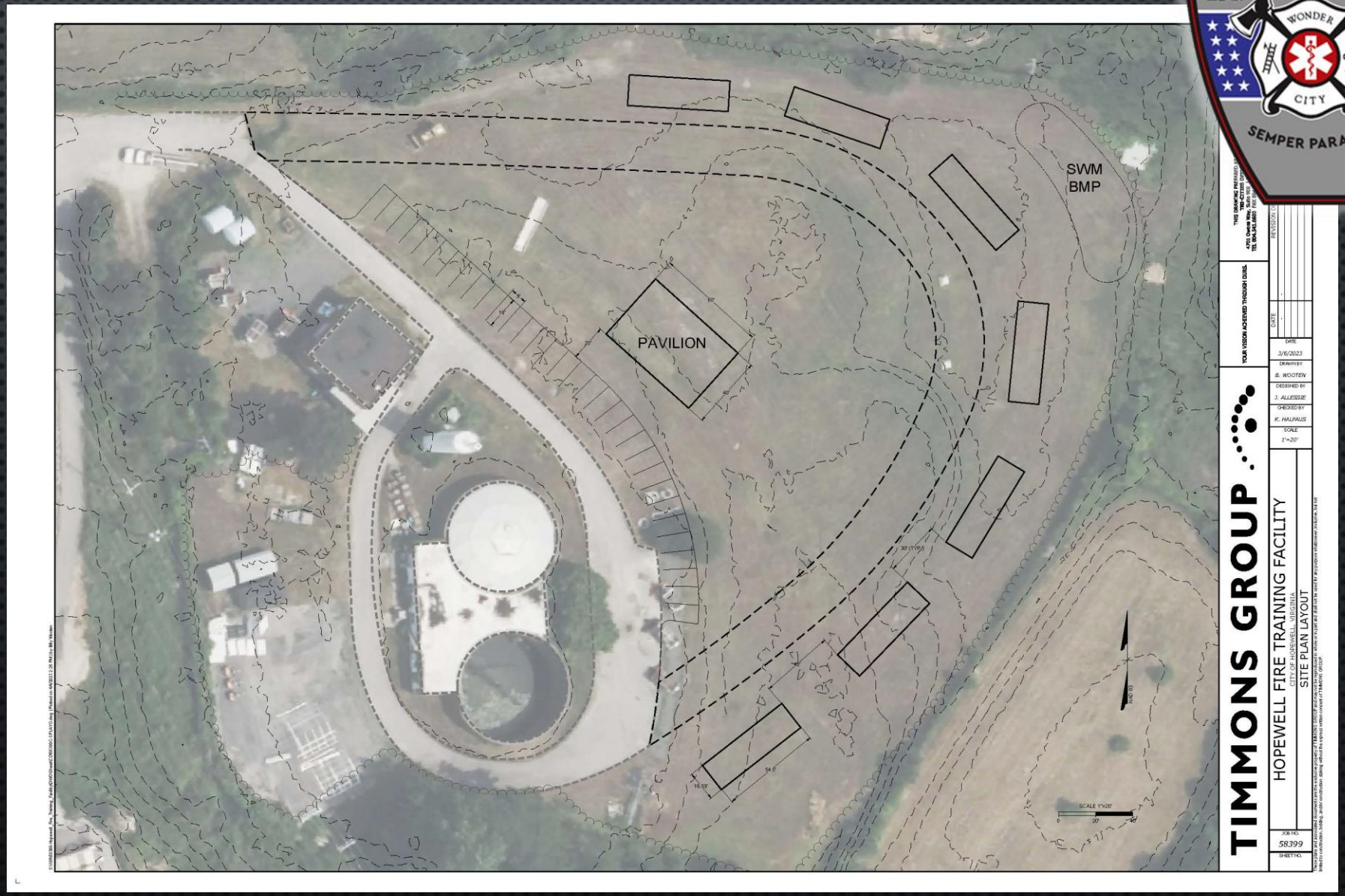
NEW TRAINING SITE

- We have secured the City's decommissioned Wastewater plant site for the new site training site.
- Timmons has completed the site layout.
- Municipal water source already on site.



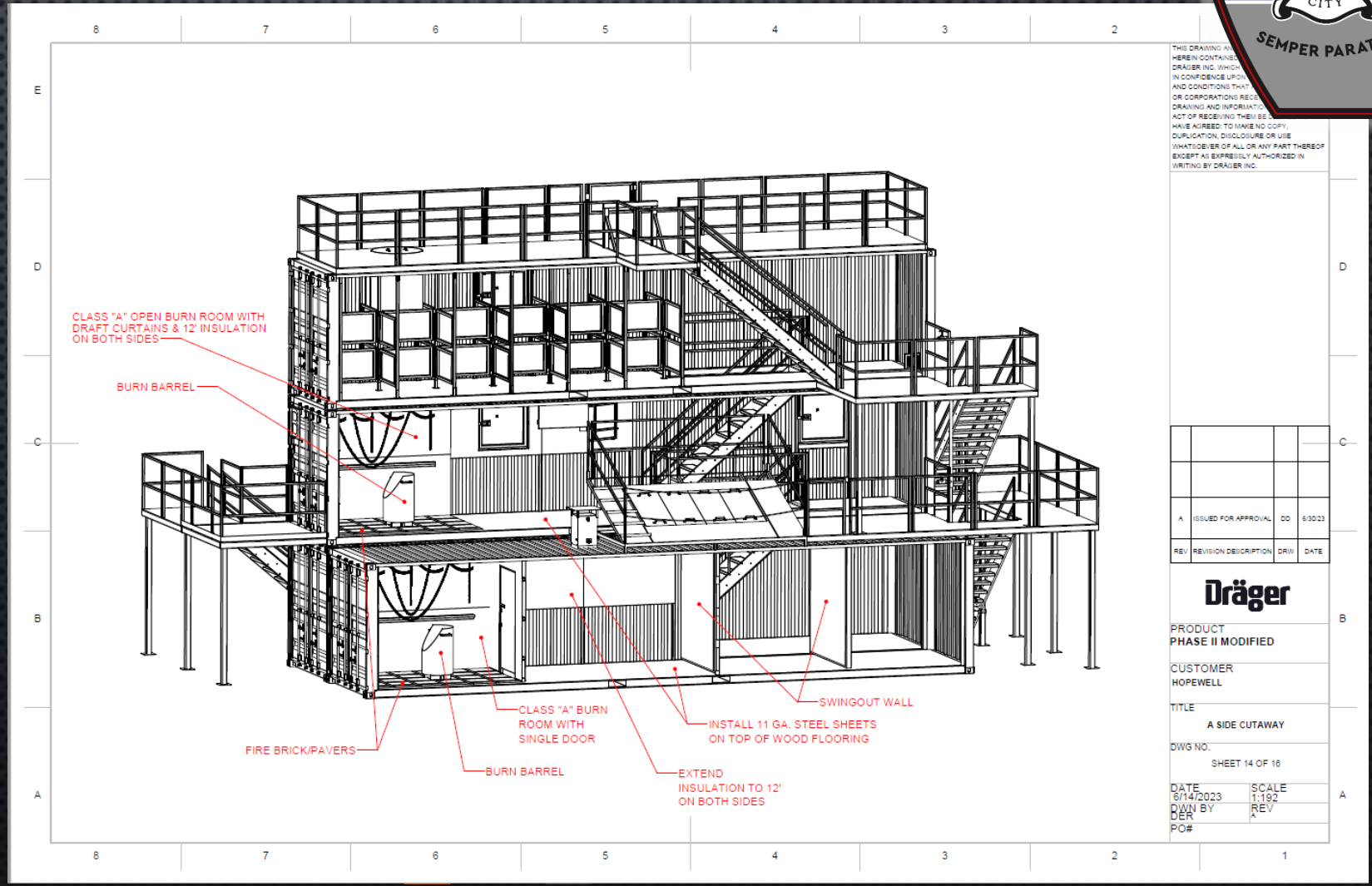
NEW TRAINING SITE

- Ample space for parking, future development of additional props, including industrial props to be provided by local industry.
- Space for a future classroom facility onsite.
- City Council approved the match required for this grant in the 2024 budget



PROPOSED SOLUTION

- Drager 5 container
- class A Burn Building
- 2 burn rooms, including 1 rollover simulator
- Roof prop
- Denver Drill Prop
- Confined Space Prop
- Maze Prop
- Moveable walls
- Standpipe connections
- Rappelling functionality
- NFPA 1402 Compliance
- Fully Engineered plans



QUESTIONS?

BENJAMIN RUPPERT
FIRE CHIEF, CITY OF HOPEWELL
BRUPPERT@HOPEWELLVA.GOV
804-541-2288

Proposed Fire Training Sites

The Light shaded around building is our current building which we would like to keep as a dry building for Law Enforcement and training new firefighters getting them used to dark and blackout conditions without the heat.

The Blue Shaded is the area we would like to build our new building. However not set in stone if the wish of the committee is to tear down the current building and we place our new one on that site than that is what we will do.

HALIFAX COUNTY FIRE TRAINING CENTER - Use Policy

1. PURPOSE:

The purpose of this policy is to ensure a uniform, safe, proper operation, and readiness of the Halifax Fire Training Center.

2. DEFINITIONS:

2.1 Halifax Fire Training Commission: the group of fire chiefs from the county of Halifax that have been given oversight of the fire training center.

2.2 Halifax Fire Training Center: the property located at 1016 Middle School Rd, South Boston, Virginia. From here on know as the "Center"

2.3 Custodian(s) of the Property: The person(s) appointed by the Halifax Fire Training Commission to review requests and approve or deny use of the Center by emergency agencies. This person(s) oversees maintenance, inspections and all facility records of use of the Center.

3. RULES PERTAINING TO THE BURN BUILDING USE:

3.1 DESIGNATED USERS

3.1.1 No Agency will be able to use the Halifax Burn Building without having a member, or members trained and approved by the custodian(s) of the Center or his/ her designee. The member or members approved to use the burn building must be present and must monitor the all evolution(s) being conducted by his/her agency.

3.2 LIVE FIRE TRAINING

3.2.1 In accordance with the agreement with the Virginia Fire Services Board and the Virginia Department of Fire Programs, all "Live Fire" training conducted at the Halifax Fire Training Center will be performed in accordance with the current edition of NFPA 1403 Standard for Conducting Live Fire Training.

3.2.2 The only fuel approved for the use in the Halifax Burn Building is wooden pallets and straw (Class "A" materials only). No pressure treated OR contaminated wood will be allowed.

3.2.3 THE USE OF CLASS B FUELS IS PROHIBITED IN THE HALIFAX BURN BUILDING.

3.2.4 Water is the only allowable extinguishing agent for use with the Burn Building. Water shall not at anytime be directed at the roof of the building or the thermal panels on the ceilings.

3.2.5 The Maximum allowable Temperature during any fire in the Burn building is 1200° F, exceeding that temperature will trigger an event that will be recorded and the audible alarm will sound.

3.2.6 The maximum amount of live fire evolutions allowed in one day is ten (10)

3.2.8 Live fire training shall occur in the burn rooms only! Burn rooms are the rooms with thermal panels on the ceilings. No fires are allowed in other rooms, on the stairs, landings or on the roof or truss area/attic space.

3.2.9 No training, under any circumstances, that includes tear gas, explosives, flash bangs, smoke bombs, or firearms (this rule includes the use of simunition) shall occur within or near the burn building.

3.2.10 No vehicles shall be allowed within 15 feet of the burn building as designated by the red flags around the building.

3.2.11 Forced entry shall only occur on designated doors or forcible entry props.

3.3 BUILDING DAMAGE:

3.3.1 Any damage discovered during the pre-training inspection will be documented with photographs and reported to the Custodian of the Center before training begins.

3.3.2 Any damage that occurs during training, shall be documented with photographs and reported to the Custodian of the Center before training resumes.

3.3.3 Any costs incurred from damages to the building while performing training that is not in compliance with this policy, will be the sole responsibility of the agency conducting the training at the time that the damage occurred. The facility will be repaired and a bill for the costs will be forwarded to the responsible agency.

3.4. SUPPLIES:

3.4.1 Each Agency is responsible for providing its own pallets and straw.

3.4.2 On occasion there may be pallets and straw stored on the property. These may be used if available, but must be replaced within one week of the training occurring.

3.4.3 Pallets and/or straw may only be left on the property in the pallet and straw storage shed and must be neatly stacked. Any pallets and straw left on the property will be available for use by other agencies.

3.5. CLEAN UP:

3.5.1 The building will be left in a clean and orderly manner. All coals and ashes will be completely extinguished and the building will be washed out completely. All debris left after the evolutions will be placed in the approved disposal container.

3.5.2 Any agency failing to clean out the building or properly dispose of debris will be called back out to the site by the custodian of the Center to do so properly.

3.5.3 Failure to clean the building properly, even after being called back to do so, could result in that agency having its privilege to use the facility suspended for a period of up to 12 months.

3.5.4 Any agency that has to be called back out to the site by the custodian of the property on

suspended for a period of not less than 12 months.

3.6. RECORD KEEPING:

3.6.1 Each agency conducting training in the burn building will be required to use the temperature monitor computer in the control building to record the events of the training evolutions.

3.6.2 The recordings of each training in the burn building will be reviewed and kept on file for a minimum of not less than 15 years.

3.6.3 The custodian of the Center or his/ her designee will make a pre and a post training visit to the site to ensure that the building has been left in good working order and secured properly.

4. USE OF CLASSROOMS AND ALL OTHER AREAS OF THE CENTER

4.1 Classrooms, restroom building and all other spaces of the training center will be kept neat and clean. All trash needs to be put in trash cans and trash cans need to be dumped at the end of each day.

4.2 Classrooms and restroom building will be swept and mopped at end of a training session or as required whichever come first.

4.3 Tables, counter tops and fixtures will be wiped down and cleaned at end of a training session or as required whichever come first.

4.4 Thermostats should be returned to designated temperature setting and all lights should be shut off at the end of each training session. (78 for AC in the Summer and 62 for Heat in Winter)

4.5 Turnout Gear is not allowed in the classrooms!

5. APPLICATION FOR USE:

5.1 Any agency wanting to use the Halifax Fire Training Center must complete an application for use of the Training Center.

5.2 Applications must be completed and submitted to the custodian of the Center or his/ her designee no less than five (5) business days in advance of the scheduled training.

Incomplete applications will not be considered.

5.3 Completed applications will be considered on a first come first served basis.

* Indicates required question

1. Email *

2. I have read and Understand the Use Policy. *

By agreeing to the use policy and filling out the use application I understand and agree to the Training center Policy: I also Understand that the neither the Halifax Fire Training Commission nor the County of Halifax, VA carries any personal liability insurance on anyone participating in any training at the training facility located at 1016 Middle School Rd, South Boston, Virginia. It is the responsibility of the individual organizations to provide liability and injury insurance for each of its members participating in any training at the Halifax Fire Training Center

Mark only one oval.

◯ I agree to the Training Facility use Policy *Skip to question 3*

Application For Use

Fill in all required questions

3. Organization Name: *

_____

4. Person Requesting Use: *

First Name, Last Name

_____

5. Person Requesting Use: (Email Address) *

_____

6. Person Requesting Use: (Phone Number) *

_____

7. Authorized Facility Operator: *

Individual that has been cleared by the Custodian of the center. First Name, Last Name

_____

8. Type of Training: *

(Select all that apply)

Check all that apply.

- [ ] Live Burn Training in the Burn Building
- [ ] Evolutions in the Burn Building (No Live Fire)
- [ ] Classroom Training (Classroom #1)
- [ ] Classroom Training (Classroom #2)
- [ ] Outdoor Training Evolutions
- [ ] Vehicle Extrication
- [ ] May Day Simulator
- [ ] Other: _____

9. Start Date *

_____

Example: January 7, 2019

10. Start Time *

_____

Example: 8:30 AM

11. End Date *

_____

Example: January 7, 2019

12. End Time *

_____

Example: 8:30 AM

13. State or Department Training *

Mark only one oval.

- ◯ State
- ◯ Department

14. County Affiliation *

Mark only one oval.

- ◯ Halifax County
- ◯ Other: _____

Insurance Information

Halifax Fire Training Center needs a PDF Copy of your Workers Compensation Coverage and Liability Insurance. Please have Halifax County listed as an insured and attache a Certificate of Insurance to this link.

15. Upload Proof of insurance - a Copy of your Certificate of Insurance coverage for liability Coverage and Workers Compensation *

Files submitted:

SRG INC.
ENGINEERING SOLUTIONS

311 Court Street
Danville, VA 24541
Cell: 434.429.3088
Office: 434.799.0800
Fax: 434.799.0801
www.srgus.net

Repair Proposal for Halifax/South Boston Burn Building

Steve Dishman
March 23, 2021

This estimate reflects the needed repairs based on the VDFP Report Supplied in December of 2017, our own onsite inspection and the current 1402 requirements. The division two burn room is very small it does not have two exits; it does have an opening larger than a doorway. The room changes will create a burn room size 144 Sq Ft. In addition, none of the burn room walls are lined. There are no interior doors on the division one burn room doorways. These items will be addressed as part of the repairs and upgrades once a structural inspection has been performed. Lining the burn rooms requires approximately 1200 Sq. Ft. of Padgenite. The proposal also covers exterior and critical surfaces that may be exposed to heat. An early phase structural inspection is required to assure structural integrity and repair feasibility.

The proposal as submitted would bring the building into compliance with the current revision of NFPA 1402 and VDFP Policy.

SRG INC.
ENGINEERING SOLUTIONS

To Steve Dishman
Date 3/23/2021

Estimate for Remedial Repairs and Upgrades

1	Remove organic growth around building and seal wall to slab gap		$ 327.50
2	Sand and Paint windows and doors with high temperature black paint		$ 1,212.50
3	Replace door sweeps 4 locations		$ 597.50
4	Replace VDFP signage with current requirements 6 locations		$ 3,864.00
5	Replace sensors and TMS, add alarms to exterior		$ 18,500.00
6	Repair delta side wall crack near door		$ 390.00
7	Cover expansion slots with SS plates		$ 520.00
8	Repair cracked concrete at corners of the steps with the railing		$ 780.00
9	General re-point mortar cracks at various locations		$ 520.00
10	Replace 5 wall sections interior non-load bearing according to current design detail		$ 17,900.00
11	Structural Inspection with written report		$ 5,500.00
12	Replace Burn Cribs x 3		$ 2,500.00
13	Add 3 Lined doors for burn rooms		$ 9,600.00
14	Fabricate and install new chop out frame and cover		$ 2,850.00
15	Add Heat Shields and exterior heat protection at windows and door		$ 8,700.00
16	Fully Line interior walls in burn rooms	Approx 1200 Sq Ft.	$ 91,800.00
		Total	$ 165,561.50