FORESTRY RESEARCH OPERATIONS CENTER

VIRGINIA TECH NON-CAPITAL CONSTRUCTION

140 INVENTIVE LANE
BLACKSBURG, VA 24061

ISSUED FOR CONSTRUCTION
10/23/2026

VIRGINIA TECH PROJECT CODE WO# 26-819490



SHEET NO.	SHEET NAME
GENERAL	
GI001	COVER SHEET
GI002	CODE REVIEW SHEET
GI003	LIFE SAFETY PLAN
STRUCTURAL	
S001	GENERAL NOTES
S002	STRUCTURAL LEGEND AND ABBREVIATIONS
S101	FOUNDATION PLAN AND ADDITIVE BID ITEM 1 FOUNDATION PLAN
S201	FOUNDATION SECTIONS AND DETAILS
ARCHITECTURAL	
A-001	ARCHITECTURAL LEGEND, NOTES & ABBREVIATIONS
AE101	FLOOR PLAN AND ROOF PLAN
AE102	REFLECTED CEILING PLAN
AE201	EXTERIOR ELEVATIONS
AE202	EXTERIOR ELEVATIONS, FINISH SCHEDULE & SIGNAGE DETAILS
AE301	BUILDING SECTIONS
AE302	DETAILS
AE401	ENLARGED PLUMBING PLAN
AE501	PARTITION TYPES AND DETAILS
AE601	DOOR SCHEDULE AND DETAILS
AE602	WINDOW DETAILS
AE701	CASEWORK ELEVATIONS, SECTIONS & DETAILS
PLUMBING	
P000	LEGENDS, ABBREVIATIONS & GENERAL NOTES
P101	FLOOR PLAN
P102	FLOOR PLAN
P501	DETAILS
P502	DETAILS
P601	RISERS
P701	SCHEDULES
MECHANICAL	
M000	LEGENDS, ABBREVIATIONS & GENERAL NOTES
M101	FLOOR PLAN
M501	DETAILS
M601	SCHEDULES
M801	CONTROLS
ELECTRICAL	
E000	LEGENDS, ABBREVIATIONS & GENERAL NOTES
E001	SITE PLAN - ELECTRICAL
E101	FLOOR PLAN - LIGHTING
E102	FLOOR PLAN - POWER
E103	FLOOR PLAN - SPECIAL SYSTEMS
E501	DETAILS
E502	DETAILS
E503	LIGHTNING PROTECTION PLAN
E601	FA RISER AND MATRIX
E701	SCHEDULES & RISERS

VICINITY MAP



SITE MAP



PROJECT TEAM

OWNER

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY
FACILITIES SERVICES, GROUNDS BUILDING
185 STERRETT DRIVE
BLACKSBURG, VA 24061
T: 540.230.4186

ARCHITECT

CLARK NEXSEN, A JMT COMPANY
213 SOUTH JEFFERSON, SUITE 1011
ROANOKE, VA 24011
T: 540.982.0800

STRUCTURAL ENGINEER

BENNETT & PLESS
111 SHERLAKE LANE, SUITE 200
KNOXVILLE, TN 37922
T: 865.539.8227

MECHANICAL, PLUMBING, AND ELECTRICAL ENGINEER

2RW CONSULTANTS, INC.
2677 PROSPERITY AVENUE, SUITE 275
FAIRFAX, VA 22031
T: 703.718.4355

CIVIL ENGINEER

TIMMONS GROUP
109 NORFOLK AVE. SW, SUITE 100
ROANOKE, VA 24011
T: 276.308.8255

INTERIOR DESIGNER

CLARK NEXSEN, A JMT COMPANY
213 SOUTH JEFFERSON, SUITE 1011
ROANOKE, VA 24011
T: 540.982.0800

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DESIGNER

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A JMT Company

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ROANOKE, VIRGINIA 24011
540.982.0800

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
JOHN C. SHIELDS
Lic. No. 7476
John Shields
10/23/2026
This item was signed by John C. Shields, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

UBO CONFORMANCE

SUBMITTAL

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REVISIONS

KEY PLAN

SHEET

COVER SHEET

GI001

DESIGN: JCS
DRAWN: EB & NK
REVIEW: DP

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BUILDING CODE SUMMARY

Name of Project: FORESTRY RESEARCH OPERATIONS CENTER

Address: 140 INVENTIVE LANE, BLACKSBURG, VA Zip Code 24061

Owner / Authorized Agent: VIRGINIA TECH. - Jason Paljug Phone # 540-231-3295 E-Mail: jlpaljug@vt.edu

Owned By: ☐ City / County ☐ Private ☒ State

Code Enforcement Jurisdiction: VIRGINIA TECH OFFICE OF THE UNIVERSITY BUILDING OFFICIAL

CONTACT: John Wissinger, Principal - Clark Nexsen - 540-982-0800

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	CLARK NEXSEN	JOHN SHIELDS	7476	540 982 0800	
Civil	TIMMONS GROUP	JOHN BRODIE		276 308 8255	
Electrical	2RW CONSULTANTS	BRANDON M WILSON	053738	703 718 4355	
Fire Alarm	N/A				
Plumbing	2RW CONSULTANTS	LUCAS W HOFFMAN	042595	703 718 4355	
Mechanical	2RW CONSULTANTS	LUCAS W HOFFMAN	042595	703 718 4355	
Sprinkler-Standpipe	N/A				
Structural	BENNETT & PLESS	CRAIG M FAVOR	39775	865 539 8227	
Retaining Wall >5' High	N/A				
Other	N/A				

2021 VIRGINIA CONSTRUCTION CODE:

☒ New Building ☐ Addition ☐ Renovation ☐ 1st Time Interior Completions

☐ Shell / Core: Contact the local inspection jurisdiction for possible additional procedures and requirements

☐ Phased Construction - Shell / Core: Contact the local inspection jurisdiction for possible additional procedures and requirements

2021 VA EXISTING BUILDING CODE: Existing: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III ☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch 3): _____

RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch 3): _____

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA

Construction Type: (check all that apply) ☐ I-A ☐ I-B ☐ II-A ☒ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes
Standpipes: ☒ No ☐ Yes ☐ Class I ☐ Class II ☐ Class III ☐ Wet ☐ Dry
Fire District: ☐ No ☐ Yes **Flood Hazard Area:** ☒ No ☐ Yes
Special Inspections Required: ☐ No ☒ Yes (Contact the local inspection jurisdiction for additional procedures and requirements)

GROSS BUILDING AREA TABLE

FLOOR	EXISTING (SQ FT)	RENOVATION (SQ FT)	NEW (SQ FT)	SUB-TOTAL (SQ FT)
FINISH FLOOR	0 SF	0 SF	3491 SF	3,491 SF
TOTAL	0 SF	0 SF	3491 SF	3,491 SF

ALLOWABLE AREA

Primary Occupancy Classification(s):

Assembly	☐ A-1	☐ A-2	☐ A-3	☐ A-4	☐ A-5
Business	☒				
Educational	☐				
Factory	☒ F-1 Moderate	☐ F-2 Low			
Hazardous	☐ H-1 Detonate	☐ H-2 Deflagrate	☐ H-3 Combust	☐ H-4 Health	☐ H-5 HPM
Institutional	☐ I-1 Condition	☐ 1	☐ 2		
	☐ I-2 Condition	☐ 1	☐ 2		
	☐ I-3 Condition	☐ 1	☐ 2 ☐ 3 ☐ 4	☐ 5	
	☐ I-4 Condition				
Mercantile	☐				
Residential	☐ R-1	☐ R-2	☐ R-3	☐ R-4	
Storage	☒ S-1 Moderate	☐ S-2 Low	☐ High-piled		
	☐ Parking Garage	☐ Open	☐ Enclosed	☐ Repair Garage	
Utility and Miscellaneous	☐				

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): N/A
Special Uses (Chapter 4 - List Code Sections): N/A
Special Provisions (Chapter 5 - List Code Sections): N/A
Mixed Occupancy: ☐ No ☒ Yes Separation: N/A Hr Exception: N/A

1 HR Separation being provided for Residential occupancy areas per Section 420 of the 2021 VCC.

☒ Non-Separated Use (508.3)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply the entire building.

☐ Separated Use (508.3)
See below area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

STORY AND OCCUPANCIES	DESCRIPTION AND USE(S)	BLDG AREA PER STORY (ACTUAL)	ALLOWABLE AREA FROM TABLE 506.2	FRONTAGE INCREASE %	TOTAL ALLOWABLE AREA	ALLOWABLE BUILDING AREA 506.2.1-506.2.2
1 (B, F-1, S-1)	(B) (F-1) (S-1)	3,491	15,500	N/A	N/A	N/A

STRUCTURAL DESIGN

REFER TO STRUCTURAL DRAWING S001 FOR DESIGN LOADS

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

FORESTRY RESEARCH OPERATIONS CENTER		WATER CLOSETS			LAVATORIES			SHOWERS	DRINKING FOUNTAINS		SERVICE SINKS	CLOTHES WASHER
		MALE	FEMALE	UNISEX	MALE	FEMALE	UNISEX		REGULAR	ACCESS.		
LEVEL 1	REQUIRED:	-	-	1	-	-	1	N/A	1	1	1	N/A
B , F-1 , S-1 (23 OCC'S)	PROVIDED:	-	-	2	-	-	2	N/A	1	1	1	N/A

TOTAL FIXTURE CALCULATIONS PER CHAPTER 4 OF THE 2021 VCC PLUMING CODE

BUSINESS *3 OCCUPANTS*
Toilets : *3 / 25* = **0.12**
Lavatories : *3 / 40* = **0.075**
DF: *3 / 100* = **0.03**

FACTORY *13 OCCUPANTS*
Toilets : *13 / 100* = **0.13**
Lavatories : *13 / 100* = **0.13**
DF: *13 / 400* = **0.0325**

STORAGE *7 OCCUPANTS*
Toilets : *7 / 100* = **0.07**
Lavatories : *7 / 100* = **0.07**
DF: *7 / 1000* = **0.007**

TOTAL TOILET FIXTURES : 0.1112 + 0.124 + 0.0621 = 0.2973 : Rounded to **1**

TOTAL LAV FIXTURES : 0.0695 + 0.124 + 0.0621 = 0.2556 : Rounded to **1**

TOTAL DF FIXTURES : 0.0278 + 0.031 + 0.00621 = 0.06501 : Rounded to **1**

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]	55'	27' - 6"	504.3
Building Height in Stories (Table 504.4) [3]	2	1	504.4

1. Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

FIRE RATED CONSTRUCTION SCHEDULE

Building Element			Rating Required	Rating Provided	Rating Reduct*	Detail # & Sheet #	Assembly Design #	Penetration Design #	Joint Design #
TABLE 601 & 602	Primary Structural Frame		0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
	Bearing Walls and Partitions	Exterior North Fire Sep. Dist: >30'	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
		Exterior East Fire Sep. Dist: >30'	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
		Exterior West Fire Sep. Dist: >30'	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
		Exterior South Fire Sep. Dist: >30'	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
		Interior	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	--
	Nonbearing Walls and Partitions	Exterior North Fire Sep. Dist: n/a	0	0	--	--	--	--	--
		Exterior East Fire Sep. Dist: n/a	0	0	--	--	--	--	--
		Exterior West Fire Sep. Dist: n/a	0	0	--	--	--	--	--
		Exterior South Fire Sep. Dist: n/a	0	0	--	--	--	--	--
		Interior	0	0	--	--	--	C-AJ-1226	--
	Floors Above Grade	Floor Construction	0	0	--	--	Note #2	C-AJ-8000 C-AJ-2109	FF-D-1052
		Supporting Structure	0	0	--	--	--	--	--
	Roofs	Roof Construction	0	0	--	--	Note #2	P719	--
		Supporting Structure	0	0	--	--	Note #2	P719	--
Shaft Enclosures (713)		Stair - Elevator	N/A	N/A	--	--	HW-D-0097 BW-S-0007 HW-D-0209 Note #2	CAJ-1226 CAJ-8099 CAJ-2109 WL-1054 WL-2078 WL-1095	--
		Mechanical	N/A	N/A	--	--	U-428	WL-1054 WL-2078 WL-1095	BW-S-0007 HW-D-0209 #ER-09038
Corridor Ratings (1020.1)			0	0	--	--	U-419 Note #2	CAJ-1226 CAJ-8099 CAJ-2109 WL-1054 WL-2078 WL-1095	BW-S-0007 HW-D-0209
Occupancy Separation (508.4)		Vertical	0	0	--	--	--	--	--
		Horizontal	0	0	--	--	--	--	--
Party/Fire Wall Separation			N/A	N/A	--	--	--	--	--
Smoke Barrier Separation			N/A	N/A	--	--	--	--	--
Tenant/Unit Separation (708.1 & 711.2.4.3)		Vertical	N/A	N/A	--	--	U-495	WL-1054 WL-2078 WL-1095	BW-S-0007 HW-D-0209
		Horizontal	N/A	N/A	--	--	Note #2	CAJ-1226 CAJ-8099 CAJ-2109	--
Incidental Use Separation (509.4)		Vertical	0	0	--	--	--	--	--
		Horizontal	0	0	--	--	--	--	--

FIRE PROTECTION SCHEDULE NOTES:
1. *Assemblies listed are from Underwriters' Laboratories (UL) unless otherwise noted.*
2. *Calculated fire resistance per IBC Table 722.2.2.1.*

*Indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: (1008)	☐ Yes	☒ No	
Exit Signs: (1013)	☒ Yes	☐ No	
Fire Alarm: (907, NFPA 72)	☒ Yes	☐ No	
Voice Communication System: (907)	☐ Yes	☒ No	
Smoke Detection Systems: (907)	☐ Yes	☒ No	☐ Partial _____
Carbon Monoxide Detection:	☐ Yes	☒ No	
Panic Hardware: (1010.1.10)	☐ Yes	☒ No	
Life Safety Systems Generator: (2702)	☐ Yes	☒ No	

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: T-101 - T-106

☐ Fire and / or smoke rated wall locations (Chapter 7)
☒ Assumed and real property line locations (if not on the site plan)
☒ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☒ Occupancy use for each area as it relates to occupant load calculation (Table 1004.1.2)
☒ Occupant loads for each area
☒ Exit access travel distances (1017)
☒ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☒ Dead end lengths (1020.4)
☒ Clear exit widths for each exit door
☒ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☒ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☒ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☒ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☒ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☒ 4A ☐ 5A

Method of Compliance:
☐ Energy Code (Prescriptive)
☐ Energy Code (Performance)
☒ ASHRAE 90.1 (Prescriptive)
☐ ASHRAE 90.1 (Performance)
(If "Other" specify source here: _____)

THERMAL ENVELOPE (Prescriptive Method Only)

Roof / Ceiling Assembly

Description of assembly: PRE-ENGINEERED METAL BUILDING LINER SYSTEM ROOF ASSEMBLY
U-Value of total assembly: N/A
R-Value of insulation: R - 19 + R -11
Skylights in each assembly: N/A
U-Value of skylight: N/A
Total square footage of skylights in each assembly: N/A

Exterior Walls

Description of assembly: PRE-ENGINEERED METAL BUILDING WALLS
U-Value of total assembly: N/A
R-Value of insulation: R-13 + R-13 CONTINUOUS INSULATION
Openings (windows or doors with glazing)
U-Value of assembly: U: 0.36
Solar heat gain coefficient: 0.36
Projection factor: N/A
Door U-Values: 0.37

Walls below grade N/A

Description of assembly: N/A
U-Value of total assembly: -
R-Value of insulation: -

Floors slab on grade 7 1/2" CONC. SLAB

Description of assembly: 7 1/2" CONC. SLAB
U-Value of total assembly: N/A
R-Value of insulation: R-15
Horizontal/vertical requirement: VERTICAL
Slab heated: N/A

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UBC CONFORMANCE

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KEY PLAN

SHEET

CODE REVIEW SHEET

GI002

DESIGN: JCS
DRAWN: ES & NK
REVIEW: DP

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GENERAL NOTES

1. COORDINATE ALL FIRE EXTINGUISHERS LOCATIONS SHOWN ON PLANS W/ LOCAL FIRE OFFICIAL'S REQUIREMENTS.
2. PROVIDE & INSTALL ALL BLOCKING IN WALLS AS REQUIRED FOR MOUNTING FIRE EXTINGUISHERS.
3. COORDINATE INSTALLATION REQUIREMENTS OF EXIT SIGNS, ALL ASSOCIATED HARDWARE, JUNCTION BOXES, WIRING & REQUIRED EXIT DEVICES W/ ELECTRICAL DRAWINGS & LOCAL INSPECTOR.

LEGEND

EGRESS TRAVEL PATH

FEC — FIRE EXTINGUISHER CABINET

SPACE NAME	
9,876 SF	385 OCC

SPACE NAME
OCCUPANT LOAD (PEOPLE)
SPACE AREA

PANIC — INDICATES DOOR EQUIPPED WITH PANIC EXIT HARDWARE

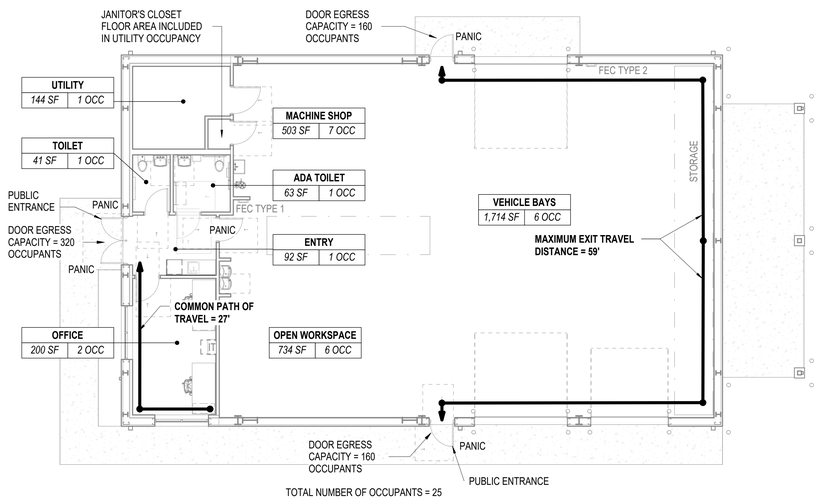
EXISTING UNMANNED SYSTEMS LABORATORY:
USE GROUPS B, F-1, S-1
TYPE OF CONSTRUCTION: 5B
MINIMUM REQUIRED FIRE SEPARATION DISTANCE
TO IMAGINARY LINE FOR 0-HOUR EXTERIOR WALL
FIRE RATING PER VCC TABLE 705.5: GREATER THAN 10 FEET

15'-3"

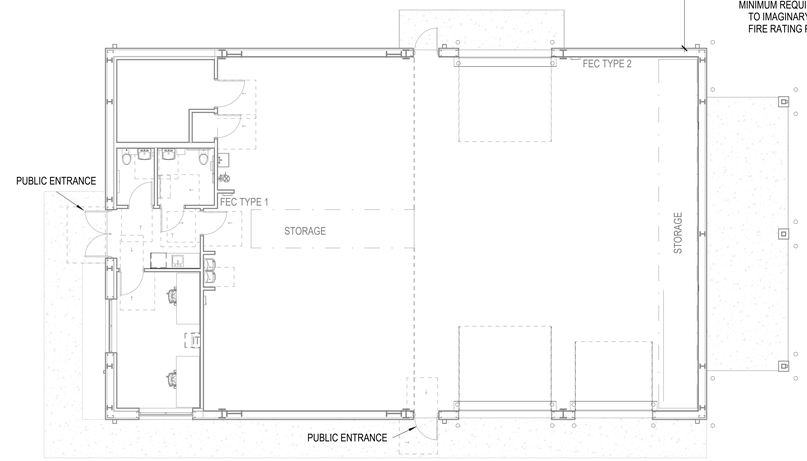
IMAGINARY LINE PER VCC 705.3

15'-3"

FORESTRY RESEARCH OPERATIONS CENTER:
USE GROUPS B, F-1, S-1
TYPE OF CONSTRUCTION: 2B
MINIMUM REQUIRED FIRE SEPARATION DISTANCE
TO IMAGINARY LINE FOR 0-HOUR EXTERIOR WALL
FIRE RATING PER VCC TABLE 705.5: GREATER THAN 10 FEET



A1 LIFE SAFETY PLAN
SCALE: 1/8" = 1'-0"



A3 FLOOR PLAN AND FIRE SEPARATION DISTANCE TO BUILDING ON SAME LOT
SCALE: 1/8" = 1'-0"

GRAPHIC SCALE(S)
1/8" = 1' - 0" 0 5' 10' 15' 30'

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