



# Delaware State Fire Commission

## F.I.R.E. TEAM Incident Report



## **E**xecutive Summary

On Tuesday, July 2, 2024, a 32-year-old career firefighter was injured while conducting ventilation on a rowhouse roof. At 12:32:25 hours, the Wilmington Fire Department was dispatched and responded to a residential structure fire located at 834 N. Lombard Street, Wilmington, Delaware. The following units responded. Engine 1, Engine 2, Engine 3, Squad 4, Ladder 1, Ladder 2, Battalion Chief 1 and Battalion Chief 2. Engine 2 arrived and reported smoke showing from the cockloft and roof. Ladder 1 arrived with a staffing of 4. Staffing included the driver, officer, and two firefighters. The driver remained with the truck and prepared for aerial operations. The outside vent fire firefighter from Ladder 1 placed a 16-foot ground ladder on the front porch to the 2nd floor. The



The officer and firefighter from Ladder 1 entered the residence to conduct a primary search. Ladder 2 arrived with four personnel, including the injured firefighter. Ladder 2 was assigned to the roof to begin ventilation operations. Fireboard activated the alert tones advising firefighters at the scene that the residence was under renovations and to use caution. At 12:41:10 hours, a side Charlie report indicated heavy fire showing from the 2nd-floor windows. At 12:42:30 hours, the Ladder 2 officer advised Command they were going to lose the roof to the main fire building and ordered personnel to the Bravo 1 exposure. The incident Commander ordered an alert tone and ordered all personnel on the roof to the Bravo 1 Exposure. At 12:44:48 hours, a Mayday was declared by the Ladder 2 officer, who reported a roof collapse. Ladder 2 officer requested a ladder to the side Charlie. Firefighters on the scene deployed ground ladders to the structure while the incident commander ordered an emergency evacuation of the structure. At 12:50:34 hours, the incident command cleared the Mayday. The injured firefighter was transported to the emergency department for treatment after receiving burns to his facial area. The Wilmington Fire Department conducted an after-action investigation of this incident. The incident review revealed that the Ladder 2 officer declared the Mayday after the roof collapsed. The collapse caused his leg to fall through the roof to his knee level, which he was able to self-extricate with no injury. Ladder 2 officer also observed the fire exiting through the cockloft and believed they lacked escape due to the lack of ground ladders.



Photo 1 View from side Charlie (FIRE Team Photograph)



Photo 2 View from side Alpha (FIRE Team Photograph)



Photo 3 View from where the fire ignited from the cockloft. (FIRE Team Photograph)

## Contributing Factors

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. These are some contributing factors that were reviewed from this incident.

- Burn time of the fire prior to the fire department's arrival.
- Building under renovation.
- Lack of use of proper PPE.

## Key Recommendations

- *Key Recommendation 1: Fire departments should ensure all firefighters are within NFPA standards when wearing protective gear. 2024 NFPA-1010 3.3.47.2, PPE-Fire Operations.*
- *Key Recommendation 2: Fire departments should ensure that firefighters follow standard operating procedures (SOPs) for structural firefighting. This includes the use of self-contained breathing apparatus (SCBA) while conducting roof ventilation operations. (DSFS, IFSTA)*



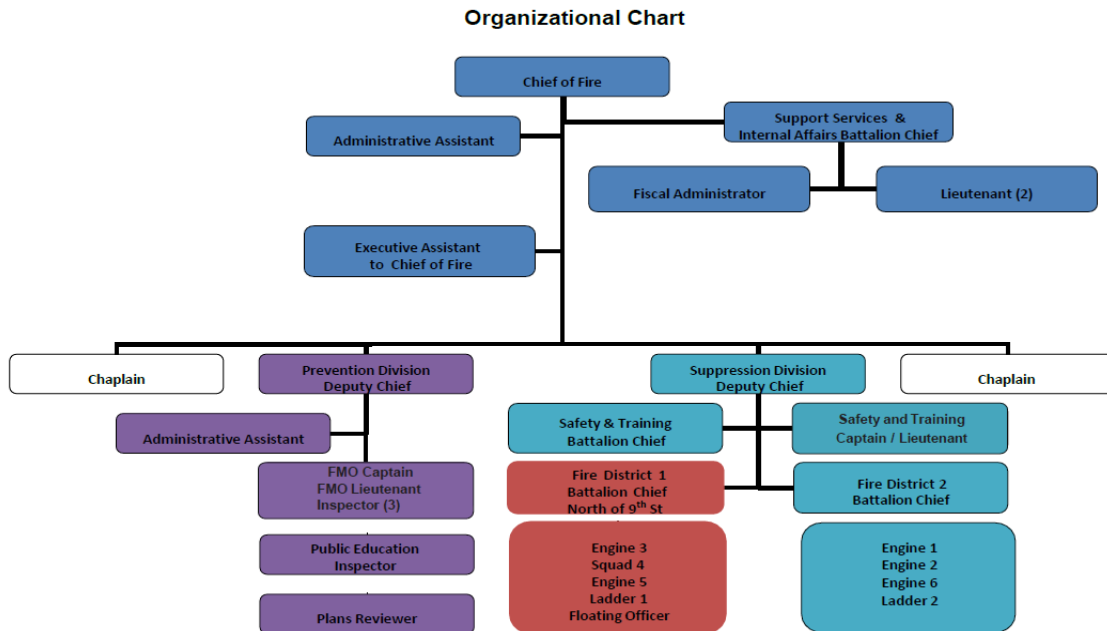
## Introduction

On July 2, 2024, at 1341 hours, Chief Investigator David Truax was notified by New Castle County (Fireboard) Communications that the Wilmington Fire Department experienced Mayday during a structure fire. Also, a firefighter was transported to a local emergency department for injuries. Members of the Fire Commission's F.I.R.E Team responded to the scene of the incident while the mental health administrator responded to the hospital. Investigators documented the scene by taking ground and aerial photographs. During the investigation, investigators interviewed the department's Deputy Chief of Operations. Investigators reviewed the following documents: New Castle County (Fireboard) CAD report, radio transmissions, fire school training transcripts, and department policies. The focus of this report is to determine the following: the root causes of the fire fighter injury, if current training standards were followed by the firefighter(s); if the proper protective equipment including SCBA was utilized, and whether there was a command-and-control function.

## Fire Department

The Wilmington Fire Department began over 100 years ago on November 30, 1921. The first platoon of 50 firefighters reported for duty one year after the city's most costly fire destroyed 10 buildings at the Wilmington Leather Company at 2nd Street and Greenhill Avenue. The career fire department incorporated 12 companies that had previously operated as volunteer stations, with the oldest one dating back to 1775.

- This fire department serves as the state of Delaware's only career fire department serving over 70,000 citizens.





## **Training and Experience**

All probationary fire fighters are required to attend and be certified by the department's training academy. All candidates must obtain and maintain all certifications as prescribed by the Wilmington Fire Department. WFD Training Academy will include the National Registry Emergency Medical Technician (NREMT) course that provides the student with in-depth knowledge and skill-based training to appropriately assess, stabilize, monitor, and transport the pre-hospital patient. The National Fire Protection Association (NFPA) standard NFPA 1001, Standard for Fire Fighter Professional Qualifications Firefighter Level I and II requirements are intended to teach new members of the fire service basic firefighting skills, such as wearing and using proper personal protective equipment and self-contained breathing apparatus, loading and unloading fire hoses, using portable extinguishers, extinguishing flammable liquid and gas fires, extinguishing structural fires, saving property and evidence, fire prevention and building surveys, and overview on the incident command system. The course consists of classroom and intense hands-on participation. There will be a practical and written examination based on questions and skills using the NFPA 1001 for Firefighter I and II based upon the curriculum from the International Fire Service Training Association (IFSTA) Manual, 7th Edition.

The fire department has the following requirements for each position or rank.

### **Recruit School**

- 15 weeks, 10-hour days – Monday through Friday
- NFPA 1001, Standard on Fire Fighter Professional Qualifications, Fire Fighter I, and Fire Fighter II (ProBoard)
- Hazardous Materials Awareness and Operations (ProBoard)
- NREMT Emergency Medical Technician Basic

### **Probationary Firefighter**

At 6 months – pass a written examination and a physical agility test.

- At 12 months – pass a written examination and a physical agility test.

*Note: The probationary period is completed in 12 months but can be extended for a total of 18 months maximum.*

### **Firefighter**

- After 12 months can become a certified driver/operator
- At 3 years, can be certified to be an acting lieutenant.
- At six years, can become a Senior Firefighter and test for Lieutenant
- NFPA 1001, FF I and FF II; NREMT Emergency Medical Technician Basic

### **Lieutenant**

Must be a firefighter/senior firefighter for 6 years to test

The testing process includes:

- Written examination
- Assessment Center (evaluates candidates for promotion)
- The department establishes a 2-year promotional list
- Fire Officer I (Proboard)

## **Captain**

Served as a lieutenant prior to test

The testing examination includes:

- Written examination
- The department establishes a 2-year promotional list
- Fire Officer II (Proboard)

## **Battalion Chief**

- By appointment of the fire chief
- Covered by union contract
- Fire Officer III (Proboard)
- Incident Safety Officer (Proboard)

## **Deputy Chief**

- By appointment of the fire chief
- Not covered by union contract

## **Fire Chief**

- Appointed by Mayor

**The Fire Captain (Near Miss) has the following training and certifications: (Total Training Hours, 1907)**

- Basic Firefighting Skills
- Structure Firefighting Skills
- Vehicle Rescue
- Crew Leader
- Hazardous Materials Response Skills
- Firefighter I
- Firefighter II
- Fire Officer I
- Fire Officer II
- Fire Officer III
- Fire Officer IV
- RIT
- NREMT
- Aerial Apparatus Operations

The fire captain has met the minimum training standards to perform the tasks he was completing at the time of the near miss.

**The injured firefighter has the following training and certifications: (Total Training Hours, 1122.50)**

- Firefighter I
- Firefighter II
- Emergency Medical Technician
- Hazardous Material Operations
- Vehicle Rescue
- Advance Vehicle Rescue

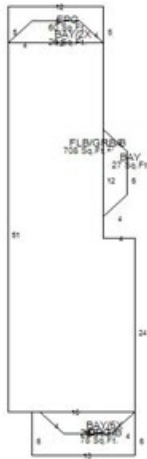
- Fire Emergency Services Instructor
- Fire Ground Operations
- Incident Command System 300
- Incident Command System 400
- Fire Officer I
- Fire Officer II
- Driver Operator
- Water Rescue

The injured firefighter has met the minimum training standards to perform the tasks he was completing at the time of the injury.

## Structure

The building is an inside rowhouse located at 834 N. Lombard Street, Wilmington, Delaware. Built in 1907, the 2-story structure is approximately 1500 square feet and has 7 rooms, a brick exterior, a wooden floor, and a flat roof built with compressed wood. The structure is located on a lot size of 0.03.

Additionally, the residence was not protected with an automatic fire sprinkler system. The residence was vacant and under construction thus not having smoke detectors. The roof materials appeared to be original wood construction and a building permit was current. However, the building permit did not include repairs for the roof work being conducted on the day of the fire.



## Injury

The 32-year-old career firefighter suffered a superficial burn to his left facial area. The firefighter was transported to the emergency department where he was treated and released.

## Root Cause of Injury

A concealed fire in the cockloft/attic space went unreported for an unknown time as workers of the renovation project tried to extinguish the fire. The fire progressed, and conditions on the roof deteriorated rapidly. The 32-year-old firefighter suffered superficial burns to the left side of his face due to fire exiting through the cockloft. The 32-year-old firefighter at the time was not wearing an SCBA facepiece thus causing the superficial burn.

## Weather

Underground weather recorded the following observations.

11:51 AM	78 °F	57 °F	48 %	VAR	5 mph	0 mph	30.17 in	0.0 in	Fair
12:51 PM	80 °F	57 °F	45 %	VAR	6 mph	0 mph	30.16 in	0.0 in	Fair
1:51 PM	81 °F	55 °F	41 %	SE	6 mph	0 mph	30.14 in	0.0 in	Fair
2:51 PM	82 °F	57 °F	42 %	S	8 mph	0 mph	30.13 in	0.0 in	Mostly Cloudy
3:51 PM	81 °F	57 °F	44 %	SSW	7 mph	0 mph	30.12 in	0.0 in	Fair

## Was Current Training and Standards Used

International Fire Service Training Association, IFSTA, 7<sup>th</sup> Edition, Chapter 11, *Vertical Ventilation* requires fire fighters operating on a roof are wearing full PPE, including SCBA. Also, firefighters must be wearing their SCBA facepiece and be “on air”. IFSTA also requires proper scene size up and ensuring proper ground and aerial ladders are in place while personnel conduct vertical ventilation. In this incident, the injured firefighter was not wearing proper PPE and the incident lacked sufficient ground ladders being in place.

## Was Proper Protective Gear Used

Wilmington Fire Department policy requires each member of the fire department to receive two sets of turnout gear. One set of gear shall be 1- 5 years in age while the second set of gear shall be 5-10 years in age. The injured firefighter was wearing his fire department-issued turn-out coat, pants, gloves, and helmet at the time of injury. The firefighter did not have his Nomex hood worn over his face, helmet flaps were not in the down position to cover his ears, nor did he have a SCBA on and breathing air.

## Was Proper Command Structure Utilized

The command was established, and its location was announced upon arrival per the National Incident Management System and Wilmington Fire Department policies and procedures. Command was maintained throughout the incident. The incident commander was located at his vehicle in a private parking lot across from the structure fire on the side Alpha.



## Was There a Command-and-Control Function

Wilmington Fire Department dispatched Battalion Chief 1 to the scene and upon arrival, Battalion Chief 1 assumed command of the incident. Battalion Chief 2 was assigned as Division 2 Supervisor, the Captain of Ladder 2 was assigned Roof Division Supervisor and another Captain was assigned as the incident safety officer (Side Charlie). The Deputy Chief of Operations arrived at the scene and assisted Battalion Chief 1. Once the Mayday was activated, Battalion Chief 1 was assigned to manage Mayday operations. Deputy Chief of Operations assumed Command until the Mayday was cleared.



Photo 4. Side Alpha View



Photo 5. Alpha/Side Bravo View



Photo 6. Aerial view of the roof from side Alpha



Photo 7. Aerial view of cockloft and roof



Photo 8. Aerial view of roof and side Charlie



Photo 9. Aerial view of side Charlie

## References

- NFPA – [NFPA LiNK® - 2020 NFPA-1561 - Chapter 5 Functions and Structure of Command](#)
- NFPA - [NFPA LiNK® - 2024 NFPA-1026 - Chapter 4 Incident Commander](#)
- NFPA- [NFPA LiNK® - 2024 NFPA-1010 - Chapter 6 Firefighter I \(NFPA 1001\)](#)
- IFSTA – Essentials of Fire Fighting, 7<sup>th</sup> Edition, Chapter 11, Vertical Ventilation.
- Google Maps - [N Lombard St - Google Maps](#)
- New Castle County Tax Map - [Untitled Page \(newcastlede.gov\)](#)
- City of Wilmington - [Permits & Applications | Wilmington, DE \(wilmingtonde.gov\)](#)
- Wilmington Fire Department - [Wilmington Fire Department | Wilmington, DE \(wilmingtonde.gov\)](#)
- Wilmington Fire Marshal Office - [Fire Marshal's Office | Wilmington, DE \(wilmingtonde.gov\)](#)
- Delaware State Fire School – Training Records and Curriculum [State Fire School - State of Delaware - Welcome to the Website for the Delaware State Fire School - Excellence Through Training](#)
- Incident Command System 300 Manual - <https://www.usda.gov/sites/default/files/documents/ICS300.pdf>
- CAD Report
- Radio Transmissions
- Photographs/Videos
- Wilmington Fire Department – Mayday Worksheet
- NIOSH/CDC - Challenges and Tactics for Fighting Row House Fires

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*The objectives of the Delaware State Fire Prevention Commission are to protect the public, specifically, those persons who are the direct recipients of services regulated by this chapter, from unsafe practices. The State Fire Commission shall have the power to investigate injuries to firefighters sustained in the line of duty and issue reports of its findings and conclusions concerning such investigations. The Commission established an investigative team for those purposes known as Firefighter-Investigative-Review-Education ("The F.I.R.E. Team"). The F.I.R.E Team works in conjunction with the Delaware State Fire Commission Investigators, Delaware State Fire School, Delaware State Fire Marshal's Office, and other necessary agencies that may be needed to complete such investigation.*

*The program does not seek to determine fault or place blame for the injuries. Rather, the purpose is to determine factors that cause or contribute to firefighter deaths and or injuries sustained in the line of duty. Identification of cause and contributing factors enables researchers and safety specialists to develop strategies to prevent future similar incidents. This report represents a review of the situation at issue and a path forward toward safer practices for Delaware. This report is limited by the information known to the F.I.R.E. Team.*

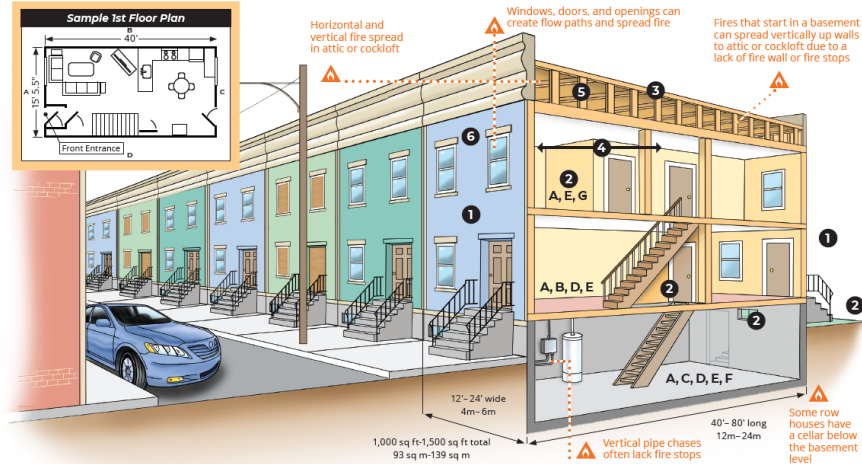
## Appendix One Wilmington Fire Department Mayday Worksheet

### WILMINGTON FIRE DEPARTMENT **MAYDAY** TACTICAL WORKSHEET

INITIAL ACTIONS & CONSIDERATIONS	Time of Mayday	Mayday Channel	Time Mayday Cleared																														
<ul style="list-style-type: none"> <li>O 1. Confirm Mayday: ID Problem – Who, What, Where</li> <li>O 2. Fire Ground Announcement <span style="color: red; font-size: 2em;">➔</span></li> <li>O 3. Location of Mayday</li> <li>O 4. Unit with Mayday</li> <li>O 5. Name of Member(s) <span style="color: red; font-size: 2em;">➔</span></li> <li>O 6. Air Status of Member(s)</li> <li>O 7. Resources Needed</li> <li>O 8. Deploy RIT – Establish Rescue Plan</li> <li>O 9. Notify Fireboard &amp; Request Additional Resources <span style="color: red; font-size: 2em;">➔</span></li> <li>O 10. Continue Fire Attack &amp; Assign Operations</li> <li>O 11. Assign RIT/Mayday Rescue Officer</li> <li>O 12. Assign Incident Safety Officer</li> <li>O 13. Conduct Accountability Check (PAR)</li> <li>O 14. Assign EMS Officer &amp; EMS Staging</li> <li>O 15. Assign Staging Area for Additional Units</li> <li>O 16. Establish a Second RIT</li> <li>O 17. Create a Defendable Space/Exit</li> <li>O 18. Notify All Units &amp; Fireboard When the Mayday Has Been Cleared or Rescue is Completed</li> <li>O 19. Conduct Accountability Check</li> </ul>	<p style="color: red; font-size: 0.9em;">“ _____ Command to all units on the fire ground, a Mayday has been declared by (Name of Mayday) _____ from (Company) _____. Stop all routine radio traffic &amp; continue operations.”</p> <p style="color: red; font-size: 0.8em; text-align: center;">BEGIN LUNAR WITH FIREFIGHTER CALLING THE MAYDAY</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <thead> <tr> <th style="width: 20%;">Name</th> <th style="width: 20%;">Company</th> <th style="width: 20%;">Problem</th> <th style="width: 20%;">Location</th> <th style="width: 20%;">Air/Time</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p style="color: red; font-size: 0.9em;">“ _____ Command to Fireboard, A Mayday has been declared by (Name) _____ from (Company) _____ on the (Location) _____. _____ has been assigned RIT and _____ has been assigned Operations. A radio restriction on this channel is in effect and start a second alarm assignment and additional EMS.”</p> <p style="color: red; font-size: 0.8em; text-align: center;">FIREBOARD WILL ACTIVATE THE ALERT TONE (Warble – 5 Seconds) AND BROADCAST THE MAYDAY</p>			Name	Company	Problem	Location	Air/Time																									
Name	Company	Problem	Location	Air/Time																													
	<ul style="list-style-type: none"> <li>- RIT COMPANIES: _____</li> <li>- RIT/RESCUE OFFICER: _____</li> <li>- OPERATIONS OFFICER: _____</li> <li>- INCIDENT SAFETY OFFICER: _____</li> <li>- EMS OFFICER: _____</li> <li>- SECOND RIT COMPANIES: _____</li> <li>- EMS STAGING AREA: _____</li> <li>- 2<sup>nd</sup> ALARM STAGING AREA: _____</li> <li>- SPECIAL RESOURCES: _____</li> </ul>		<p style="text-align: center; font-size: 0.8em;">NOTES</p>																														

# Appendix Two Row House Firefighting Tactics

## ROW HOUSE FIREFIGHTING TACTICS



**FIREFIGHTERS STAY SAFE FOLLOW THESE 6 TACTICS**

<p><b>1</b> If interior unit size-up Sides A and C; locate fire and extent; send resources to Side C</p>	<p><b>2</b> Hoseline deployment:  <b>A.</b> Fight fire on the level of the fire (exterior attack may be most effective initially)  <b>B.</b> Protect search  <b>C.</b> Basement window or door</p>	<p><b>D.</b> Side C through alley or adjoining house  <b>E.</b> Backup hose line ready  <b>F.</b> Use cellar nozzle to get water into below grade areas  <b>G.</b> Use piercing or cockloft nozzle to get water into void spaces</p>	<p><b>3</b> Coordinate ventilation with fire attack</p>	<p><b>4</b> Send resources inside to Exposure B and D</p>	<p><b>5</b> Send resources and charged hose line to attic or cockloft to check for extension</p>	<p><b>6</b> Position ground ladders to all upper floor windows; use caution around utility wires</p>
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### TYPICAL FEATURES

**▶ EXTERIOR ROW HOUSE**

- NARROW WINDOWS**
- FRONT STOOP (STEPS)** leads to street
- 2ND & 3RD FLOOR 'BAY'** 3 or more windows that extend from the structure
- ORNATE CORNICES**
- SINGLE SLOPING ROOF** modest or ornate wood or brick cornice

**▶ INTERIOR ROW HOUSE**

- SINGLE RUN, STEEP STAIRS**
- LONG, NARROW HALLWAYS**
- WALKOUT BASEMENT**
- BASEMENT and/or CELLAR** used for storage
- CELLAR** only accessible from the basement

**▶ CONSTRUCTION AND MATERIALS**

- BALLOON** frame construction
- BUILDING PERIOD** late 1800s to early 1900s
- BRICK EXTERIOR WALLS**
- SOLID WOOD BEAM** floor joists and roof rafters
- PLASTER and LATH** over wood framing
- TYPE III CONSTRUCTION**

**⚠** Conduct a community risk assessment to understand unique features of row houses in your jurisdiction. Row house modernization efforts may mean the exterior is refaced and interior has a different floor plan. Materials used for modernization or new row house construction may burn more quickly.



**"Don't underestimate the danger to firefighters when fighting a row house fire. Access to the rear of the property is a major challenge. Basement and cellar fires in row houses have resulted in many line of duty deaths. You must be diligent and prepare as though you're going to a fire each time you report for duty."**

Assistant Chief Harry Bannan  
Philadelphia Fire Department, Platoon D



**"Basic skills – quick, proficient hoseline deployment and advancement – aggressive searches. Firefighters must perform these skills effectively when fighting row home fires."**

Firefighter Vincent DeNisio  
Wilmington, DE Fire Department, Squad 4

**MORE INFORMATION** [cdc.gov/niosh/fire/](https://cdc.gov/niosh/fire/)  
 Follow us on Facebook, Instagram or Twitter @NIOSH  
 Acknowledgements: Assistant Chief Bannan and the Philadelphia Fire Department and Firefighter DeNisio and the Wilmington, DE Fire Department for their support with this material.

UL Basement Fire Video




U.S. Fire Administration

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## Appendix Three Row House Info and Features

# ROW HOUSE INFO & FEATURES

### A TYPICAL ROW HOUSE



Photo courtesy of Christopher Naum

- ▶ 1 to 4 story residential house with a basement or cellar
- ▶ Constructed in a row, often running the length of a block with 30–45 occupancies
- ▶ Potentially occupied by multiple people
- ▶ Attached to houses on both sides, with separating fire wall
- ▶ Located on a narrow street
- ▶ Accessible only from a front and rear door

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**Assistant Chief Harry Bannan**  
Philadelphia Fire Department, Platoon D

### OTHER RESOURCES

- NIOSH investigations of deaths involving row house fires:
- [cdc.gov/niosh/fire/reports/face201618.html](https://www.cdc.gov/niosh/fire/reports/face201618.html)
  - [cdc.gov/niosh/fire/reports/face201425.html](https://www.cdc.gov/niosh/fire/reports/face201425.html)
  - [cdc.gov/niosh/fire/reports/face201424.html](https://www.cdc.gov/niosh/fire/reports/face201424.html)
- UL Firefighter Safety Research Institute video on basement fires:
- <https://ulfirefightersafety.org/basement-fires.html>

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