Partnership Alliance for Safer Schools

WHITE PAPER: Mobile Classroom Structures

The volunteers who make up the Partnership Alliance for Safer Schools (PASS) bring together their research and expertise from the education, public safety and industry communities to develop and support a coordinated approach to make effective use of proven security practices for schools. The PASS team is also dedicated to developing white papers on specific, school-safety topics.

The content in these white papers may point to specific products, brands, or organizations as illustrations of how certain safety and security measures are implemented. PASS does not endorse specific products or brands. Together, the volunteers and partners of the PASS share a single vision: making all schools safer is both achievable and urgently needed

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KEY TOPIC

Safety and Security Considerations for Mobile Classrooms

PROBLEM SOLVED

Rapidly increasing school enrollment, aging infrastructure, and weather-related damage have driven the use of mobile classrooms. These structures provide flexible, cost-effective solutions but introduce unique safety and security challenges. This white paper equips school districts with tools to ensure mobile classrooms are safe, secure, and compliant with PASS Safety and Security Guidelines for K-12 Schools.

RELEVANT PASS GUIDELINES SECTION

Building Perimeter Layer

MOST RELEVANT FOR

- School administrators and safety officers
- Mobile classroom manufacturers/providers
- Public safety personnel (police, fire, EMS)
- School board members and governance stakeholders
- Systems integrators, architects, and security consultants

TIME TO READ

Approximately 20 minutes

The Partnership Alliance for Safer Schools (PASS) unites education, public safety, and industry expertise to promote proven security practices for K-12 schools. This white paper, developed by PASS volunteers, provides guidance on ensuring the safety and security of mobile/portable classroom structures, which are increasingly deployed to address enrollment growth, facility repairs, or weather-related disruptions.

PASS advocates a layered, non-product-specific security approach adaptable to local threat assessments and resources. Mobile classrooms, though temporary, must meet the same rigorous safety standards as permanent facilities. This white paper offers detailed strategies, practical recommendations, and policy considerations to create secure, accessible, resilient learning environments in mobile units.

INTRODUCTION

Mobile classrooms – often called learning cottages, modulars, portables, or trailers, depending on local terminology – serve as essential solutions for schools experiencing space shortages due to increasing enrollment, renovations, or natural disasters. Some communities use the term "learning cottages" to foster a more positive image and alleviate parental concerns about these temporary structures. However, the temporary nature of mobile classrooms and their separation from main campus buildings create vulnerabilities related to security, accessibility, and emergency preparedness.

The PASS K-12 Guidelines emphasize a layered security approach — integrating physical, technological, and procedural measures — to mitigate risks. This white paper provides a road map for school districts to implement robust safety and security measures in mobile classrooms, ensuring compliance with PASS standards and fostering safe learning environments.

Mobile classrooms are often deployed with short lead times, leaving limited opportunities for comprehensive security planning. Unlike permanent buildings, they may lack integrated infrastructure (e.g., centralized access control, surveillance, or fire suppression systems). To mitigate these risks, mobile classrooms should be equipped with the same life safety systems as permanent facilities, including fire alarms, smoke detectors, and emergency communication systems, to ensure consistent protection across the campus.

Additionally, their placement — often at campus perimeters — can complicate supervision and emergency response. This white paper addresses these challenges by offering tiered recommendations, detailed technical specifications, and policy frameworks aligned with PASS' holistic approach to school safety.

MOBILE CLASSROOM CHALLENGES

Mobile classrooms present unique obstacles that require proactive planning. Key areas of concern include:

- **Access Control:** Ensuring only authorized individuals can enter while maintaining free egress for emergencies
- **Communication:** Providing reliable, real-time connectivity between mobile units and the main campus
- **Accessibility:** Meeting ADA and local building code requirements for equitable access
- **Perimeter Security:** Securing the surrounding area to prevent unauthorized access or external threats

- **Technology Infrastructure:** Ensuring consistent power, internet, and security system integration
- **Supervision:** Monitoring student movement to and from mobile units prevents gaps in oversight. Frequent transitions, such as restroom access when mobile units lack facilities, increase supervision challenges and potential security risks. Where possible, equip mobile classrooms with restrooms (e.g., with waste tanks emptied regularly) to minimize student movement to the main building. Alternatively, consider enclosing walkways between mobile units and the main building to enhance security and weather protection during transitions.
- **Emergency Preparedness:** Integrating mobile classrooms into campuswide drills and response plans
- **Environmental Resilience:** Protecting units from weather-related risks (e.g., high winds, flooding)
- **Community Perception:** Addressing stakeholder concerns about the safety of temporary structures
- **Cybersecurity:** As mobile classrooms increasingly rely on networked technologies (e.g., Wi-Fi, access control systems, cameras), they become potential entry points for cyberattacks. Schools must secure these systems to prevent data breaches or disruptions to security operations.

Recommendations by PASS Tier Level

PASS' tiered framework allows schools to implement security measures based on resources, risk assessments, and local needs. Below, each tier is expanded with detailed guidance, practical examples, and additional considerations.

Tier I – Foundational Security Measures (Minimum Requirement)

These measures establish baseline protections to reduce unauthorized access and ensure basic safety.

- **Locked Doors:** All exterior doors of single classroom units and interior classroom doors in double- and multi-classroom units must remain locked during instructional hours with a heavy-duty commercial mechanical (or electronic) lock or exit device. Classroom locks should be specifically designed for classroom doors and must be lockable from the inside of the room. Use ANSI/BHMA Grade 1 to withstand forced entry attempts.
- **Door Status Monitoring:** All exterior doors should be electronically monitored to indicate whether they are open or closed with a door position switch (wired or wireless) to ensure they are not propped open.
- **Basic Communication:** Install intercom systems and classroom phones in each mobile unit, enabling direct contact with the main office. Ensure systems are battery powered for reliability during power outages.
- **Wayfinding Signage:** Deploy clear, durable signage directing visitors to the main campus's secure entry point. Include reflective or illuminated signs for visibility during low-light conditions.

- **Perimeter Checks:** Conduct daily visual inspections of mobile unit perimeters to identify vulnerabilities (e.g., damaged fencing, obscured sightlines).
- **Emergency Egress Plans:** Map and communicate clear evacuation routes from mobile units to designated safe zones, taking into account students with mobility challenges. Post evacuation maps in each classroom for easy reference during emergencies.
- **First Aid Kits:** Install fully stocked first aid kits in each mobile classroom, placed in easily accessible locations to support emergency response.
- **Outdoor Area Inspections:** Regularly inspect outdoor areas near mobile classrooms, including playgrounds and adjacent roads, to identify and mitigate hazards such as uneven surfaces or traffic risks.
- **Emergency Supplies:** Ensure mobile classrooms are equipped with accessible storage for emergency supplies, such as water, flashlights, and communication devices, to support shelter-in-place scenarios.

Example: A rural school district installs battery-powered intercoms and high-visibility signage at each mobile classroom, ensuring visitors are routed to the main office while maintaining communication during power outages.

Tier II – Enhanced Situational Awareness

This tier builds on Tier I by integrating technology and improving visibility.

- **Centralized Access Control:** Equip exterior doors with electronic access control systems (e.g., keycard or fob readers) integrated with the main campus's security platform. Ensure systems allow remote lockdown capabilities.
- **Locks with Visual Indicator:** Equip locksets and exit devices with a visual indicator that allows the condition of the lock (locked or unlocked) to be visible to staff and room occupants, without them having to exit the room to check.
- **Secure Fencing:** Install 6-8-foot fencing around mobile classroom clusters, with a single monitored entry point. Use anti-climb mesh or ornamental fencing to balance security and aesthetics. Ensure fencing gates are equipped with egress push bars (exit devices) to facilitate emergency exits where required. Consult with the local Authority Having Jurisdiction (AHJ) before installation to comply with Life Safety Codes.
- **Door Labeling:** Affix weather-resistant labels (e.g., "Unit A-1") to exterior doors, visible from 50 feet for responders on foot or in vehicles. Include reflective or illuminated labels for nighttime visibility.
- **Motion-Activated Lighting:** Deploy LED motion-sensor lights along pathways and entry points to deter unauthorized access and enhance visibility.
- **Staff Training Enhancements:** Provide staff with portable radios or mobile apps for real-time communication with security personnel during transitions to/from mobile units.

Example: An urban high school installs card-reader locks, linked to the campus's security system, on mobile classroom doors and surrounds the units with 7-foot anti-climb fencing monitored by a single gate.

Tier III – Integrated Security Features

Tier III integrates mobile classrooms into the campus's comprehensive security ecosystem.

- **Visitor Management Integration:** Link electronic access control to the school's visitor management system, ensuring only pre-authorized individuals can enter mobile units. Use temporary digital badges for approved visitors.
- **Comprehensive Surveillance:** Install high-resolution IP cameras covering all entry/egress points, pathways, and perimeter areas. Based on district resources and infrastructure, ensure cameras have night vision and storage capabilities such as cloud, Network Video Recorder (NVR), or Digital Video Recorder (DVR) for redundancy.
- **Emergency Duress Systems:** Equip each mobile classroom with panic buttons or wearable duress devices that alert central security and/or local law enforcement. Test systems monthly to ensure functionality.
- **Environmental Monitoring:** Deploy sensors in mobile units to detect environmental hazards (e.g., smoke, carbon monoxide, flooding), integrated with the campus's fire and safety systems. Ensure fire extinguishers are installed in each unit, inspected regularly, and compliant with local fire codes.
- **Redundant Communication:** Provide dual-mode communication (e.g., VoIP and cellular backup) to ensure connectivity during network disruptions.
- **Intrusion Detection Systems:** Deploy monitored intrusion detection systems, including motion detectors, glass-break sensors, and beam detectors, in mobile classrooms to protect against after-hours unauthorized access. These systems are critical, as mobile units are often more vulnerable to break-ins than main buildings. Integrate with alarm services for real-time alerts, especially in districts without a sophisticated Emergency Operations Center (EOC), as most 911 centers do not monitor video management system (VMS) streams.

Example: A suburban middle school equips mobile classrooms with panic buttons, 360-degree surveillance cameras, and environmental sensors, all integrated with the district's centralized security dashboard.

Tier IV – Fully Secure Zones

Tier IV transforms mobile classrooms into fortified safe zones, maximizing protection.

- **Secure Administration Zones:** Incorporate mobile units into campuswide secure zones, with pathways to permanent buildings for rapid relocation during threats.
- **Shelter-in-Place Design:** Reconfigure mobile classroom interiors with lockable storage areas or reinforced partitions for temporary shelter during lockdowns or severe weather.

- **Force Protection Glazing:** Install laminated or polycarbonate glazing on exterior windows to resist forced entry and protect against debris during storms. Consider ballistic-rated glazing in high-risk areas.
- **Biometric Access:** Consider enhanced access control technologies, such as biometric readers (e.g., fingerprint or facial recognition), for staff access to mobile units to reduce the risk of lost keys or fobs. Note that biometric systems are used only by a few districts currently due to privacy concerns and regulatory restrictions in some states, so consult local policies and stakeholders before implementation.
- **Hardened Infrastructure:** Anchor mobile units to withstand high winds (e.g., 120 mph) and elevate them in flood-prone areas. Use corrosion-resistant materials for long-term durability.

Example: A coastal school district retrofits mobile classrooms with ballistic glazing, biometric locks, and FEMA-compliant shelter zones, ensuring resilience against hurricanes and active threats.

Access Control and Security Measures

Effective access control is the cornerstone of mobile classroom security.

- **Lock Specifications:** Use ANSI/BHMA, Grade 1 heavy-duty commercial locksets and exit devices that prevent unauthorized entry while allowing quick, single-motion exit for occupants.
- **Egress Compliance:** Locking hardware must always permit free egress to meet life safety requirements. Ensure locks do not require special knowledge or effort to operate during an emergency.
- **Door Locking:** Classroom and shelter-in-place doors must have the ability to be locked from the inside by all occupants and be keyed or otherwise accessible on the corridor or exterior side for quick access by authorized personnel.
- **Cylinder Dogging:** Where exit devices are provided with a dogging feature (the ability to hold the exit device in an unlocked condition), the dogging mechanism should be the cylinder type.
- **Key Management:** Implement a key control policy to track physical keys and restrict duplication. Where possible, use a master key system that integrates mobile classrooms and perimeter fencing with the main campus's keying system to ensure rapid access by administrators and School Resource Officers (SROs), especially during power outages when electronic systems may fail. Keys should not be able to be duplicated without following a formal authorization process controlled by the district. Consider keyless entry systems to eliminate key-related risks.
- **Electronic Access Options:** Consider electronic locking systems (e.g., keycard or fob readers) for staff and authorized personnel, allowing remote monitoring or lockdown capabilities. Ensure systems are compatible with the school's broader security platform.
- **Audit Trails:** Deploy access control systems with audit capabilities to log entry/exit events, aiding investigations of security incidents.
- **Door Construction:** Exterior doors should be a minimum of 1-3/4-inch thick heavy-duty (16-ga) steel doors.

- **Security Film for Exterior Door Vision Panels and Sidelites:** Apply security window film at least 14 millimeters thick (350 microns) to all exterior door vision panels and sidelites. This film helps deter attackers and limits injuries from glass shards in cases of blasts, fires, accidents, natural disasters, or severe weather.
- **Door Viewers:** Install door viewers (peepholes) on the exterior doors without vision panels to allow staff to identify individuals outside safely. This enhances security during entry decisions.
- **Perimeter Barriers:** Use bollards, landscaping, vehicle-resistant gates, or concrete jersey barriers to prevent unauthorized vehicle access near mobile units. When using concrete barriers, ensure they are placed to avoid obstructing emergency exits and allow sufficient spacing for pedestrian ingress and egress, particularly in high-risk areas such as parking lots.

ADA Compliance and Accessibility

Local or state building codes may have specific requirements for door hardware, such as restrictions on reach ranges or maximum opening forces, which may differ from federal ADA standards. Schools must consult with the local AHJ to ensure compliance with all applicable regulations.

To ensure equitable access, mobile classrooms must meet or exceed both ADA requirements and local building codes:

- **Door Width:** Doors should have a minimum clear width of 32 inches.
- **Door Hardware:** Hardware should be easy to operate without requiring tight grasping, pinching, or twisting of the wrist and should be accessible within a height range between 34 and 48 inches from the floor.
- **Lever Handles:** These should be operable with one hand. Hardware that can be operated with a closed fist or a loose grip generally accommodates a wider range of users.
- **Exit Devices (Panic and Fire Exit Hardware):** The force needed to activate the panic actuator bar should not exceed 15 pounds. This requirement ensures that individuals with disabilities, such as those with limited upper body strength, can easily operate the panic actuator bar and exit the building in case of an emergency.
- **Opening Force:** Interior hinged, sliding, and folding doors (excluding fire doors) require a maximum opening force of 5 pounds (22.2 N).
- **Thresholds:** Keep thresholds below 1/2 inch, with beveled edges for smooth transitions. Use weather-resistant materials to prevent deterioration.
- **Accessible Routes:** Ensure pathways to mobile units are paved, slip-resistant, and at least 36 inches wide, with no abrupt level changes.

- **Signage:** Install tactile and Braille signage at accessible entrances, compliant with ADA Standards for Accessible Design.
- **Ramps and Landings:** Comply with local codes and provide ramps and landings. Include handrails on both sides for stability.
- **Maneuvering Space:** Provide adequate maneuvering clearance (30 inches by 48 inches) in front of doors to allow individuals using wheelchairs or other mobility aids to effectively approach and operate door hardware.
- **Food Service Access:** Ensure students in mobile classrooms have accessible routes to food service areas, compliant with ADA requirements for paved, slip-resistant pathways and minimal level changes.

Weather-Resistant Hardware at Exterior Doors

Mobile classrooms must withstand environmental challenges.

- **Corrosion Resistance:** Use stainless steel or weather-resistant hardware to resist rust and weathering for exterior doors.
- **Sealing:** Apply weatherstripping and seals around doors and windows to prevent water intrusion and maintain energy efficiency.

Signage, Labeling, and Surveillance

Clear identification and monitoring enhance responder efficiency and deter threats.

- **Labeling Standards:** Use consistent naming (e.g., “Portable 1-A”) across all units, with labels on all sides visible from 100 feet.
- **Surveillance Integration:** Ensure cameras are part of a campuswide video management system, with real-time feeds accessible to administrators and responders.
- **PA and Alarm Systems:** Install public address speakers and fire alarms in each unit, synchronized with the main campus’s systems.

Lighting Recommendations

Effective lighting improves safety and visibility.

- **Perimeter Lighting:** Install lighting around the boundaries of mobile classroom areas to illuminate potential access points and reduce hiding spots. Use fixtures that provide consistent, even coverage during nighttime hours.
- **Pathway Lighting:** Place lights along walkways connecting mobile units to the main campus to ensure safe student and staff movement. Consider low-level or ground-mounted lights to minimize glare.
- **Entry Point Lighting:** Ensure all doors and access points are well lit to support surveillance and assist emergency responders in locating units.
- **Emergency Lighting:** Equip mobile classrooms with backup lighting that activates during power outages, providing sufficient illumination for safe evacuation or sheltering.
- **Energy Efficiency:** Use timers, motion sensors, or dusk-to-dawn controls to reduce energy consumption while maintaining security. Solar-powered options may be suitable in some settings.
- **Surveillance Compatibility:** Select lighting that supports any installed cameras, avoiding overly bright or poorly positioned fixtures that could create shadows or glare.

Drills and Emergency Response

Mobile classrooms must be fully integrated into emergency protocols:

- **Drill Inclusion:** Conduct fire, lockdown, and severe weather drills involving mobile units. Simulate scenarios where communication or power is disrupted.
- **Relocation Plans:** Develop and rehearse plans to move students from mobile units to permanent structures during tornado or hurricane warnings. Identify accessible routes for students with disabilities.
- **Responder Coordination:** Share mobile classroom layouts and access plans with local police, fire, and EMS. Conduct annual tabletop exercises with responders to test coordination.

Visitor and Student Procedures

Structured procedures ensure accountability:

- **Visitor Routing:** Require all visitors to check in at the main campus's Secure Visitor Entry Center. Use escort policies for visitors accessing mobile units.
- **Student Transitions:** Assign staff to monitor student movement to/from mobile classrooms, using two-way radios or apps for real-time updates. Equip monitoring staff with safety vests, two-way radios, whistles, and emergency supply fanny packs to enhance visibility, communication, and preparedness during transitions. Consider staggered schedules to reduce congestion.
- **Emergency Access:** Ensure responders can access master keys, digital access codes, or biometric overrides for rapid entry during crises.

Policy, Procedure, and Training

Robust policies and training are critical for sustained security.

Policy Development

- **Comprehensive Plans:** Update emergency operations plans to address mobile classroom-specific scenarios, including active shooter, bomb threat, and hazardous material incidents. Document the purpose, operational practices, and intended timeframe for mobile classroom use to ensure they remain temporary and do not become a permanent fixture without proper safety upgrades.
- **Supervision Protocols:** Establish clear guidelines for monitoring student transitions, including staff-to-student ratios and accountability checkpoints.
- **Maintenance Schedules:** Mandate quarterly inspections of mobile unit security systems (e.g., locks, cameras, alarms) to ensure functionality.
- **Maintenance and Environmental Safety:** Develop maintenance schedules for mobile classrooms, including regular HVAC inspections to ensure proper ventilation and temperature control, and winter weather procedures to keep pathways clear of snow and ice for safe ingress/egress.

Staff Training

- **Annual Training:** Conduct in-person or virtual training on mobile classroom emergency procedures, focusing on relocation, lockdown, and communication protocols.
- **Scenario-Based Drills:** Use role-playing exercises to prepare staff for real-world incidents, such as managing a lost student or responding to an unauthorized visitor.
- **Technology Familiarity:** Train staff on using access control, duress systems, and communication tools specific to mobile units.

Visitor Management

- **Centralized Check-In:** Enforce a no-exception policy for visitor entry through the main campus, with digital or physical logs for tracking.
- **Event Protocols:** During large events (e.g., parent nights), deploy temporary visitor checkpoints near mobile units, staffed by trained personnel and equipped with ID verification tools.

Cybersecurity Considerations

As mobile classrooms adopt networked technologies, cybersecurity becomes a priority.

- **Network Segmentation:** Isolate mobile classroom Wi-Fi and security systems on a separate VLAN to limit exposure to campuswide network breaches.
- **Encryption:** Use AES-256 encryption for access control and surveillance data to protect against interception.
- **Firmware Updates:** Regularly update firmware on cameras, locks, and communication devices to address vulnerabilities.
- **User Authentication:** Require multi-factor authentication (MFA) for staff accessing mobile classroom systems remotely.
- **Incident Response:** Develop a cybersecurity incident response plan, including steps to isolate compromised devices and notify stakeholders.
- **IT Support Processes:** Establish IT support processes to promptly address connectivity or system failures in mobile classrooms, ensuring uninterrupted operation of security technologies such as surveillance, access control, and communication systems.

Community Engagement and Stakeholder Buy-In

Ensuring community support for mobile classroom security measures is essential.

- **Parent Communication:** Host town halls or send newsletters explaining the safety features of mobile classrooms, addressing concerns about their temporary nature.
- **Student Involvement:** Educate students on mobile classroom safety protocols through assemblies or classroom discussions, emphasizing their role in reporting suspicious activity.

- **Board Approval:** Present detailed security plans to school boards, highlighting alignment with PASS Guidelines and cost-benefit analyses.
- **Vendor Partnerships:** Collaborate with mobile classroom providers to ensure units are pre-equipped with PASS-compliant security features, reducing retrofit costs.

Summary

Mobile classrooms are indispensable for addressing space constraints, but their detachment from main campus buildings demands intentional security planning. Schools can ensure mobile units are as safe and secure as permanent facilities by implementing PASS' tiered recommendations, which span access control, technology integration, policy development, and community engagement. Robust infrastructure, proactive training, and stakeholder collaboration create resilient, productive learning environments prioritizing student and staff safety.

References

- PASS K-12 Guidelines: pass-school-security-guidelines/
- ADA Standards for Accessible Design: ada.gov