School Bus Safety and the CPS Challenge
Child passenger protection is one of the greatest concerns for transportation managers in school districts, Head Start programs, pre-schools, early intervention programs, as well as programs for children with disabilities.

School buses are not designed for children who require the use of child safety restraint systems (CSRS) such as car seats or vests.
School Buses and the CPS Technician’s Role

This presentation was written to give you:

1. Awareness of complexity of school bus-related child safety issues.
2. Understanding of the differences between school buses and personal vehicles related to CSRS installation.
3. Selection of various types of CSRS appropriate for school bus use.
4. Correct use of various types of CSRS in the school bus setting.

This is not intended to make you an expert in the school bus field - it is to provide you the knowledge and tools to help when questions are asked.
School Bus Safety Facts

- Buses are the safest form of transportation on our roadways.

- Why?
  - They must meet stringent Federal Motor Vehicle Safety Standards (FMVSS 208, 209, and 210).
  - They are larger and heavier than most vehicles on the roadways.
  - They are less likely to be in a crash as they travel the same route each day.
  - They are conspicuous (easy for other drivers to see).
School buses are designed to provide occupant protection through compartmentalization.

Imagine a carton of eggs. Each egg has its own individual space and the carton cradles the egg to provide protection.

Compartmentalization protects passengers in a very similar way.
Seat Belts, LATCH and School Buses

- NHTSA has required LATCH in at least two seating positions on buses under 10,000 pounds since 2002.
- Lap-shoulder belts on all new small school buses has been required by NHTSA since 2011.
Types of Transportation

Large School Buses

Small School Buses

Multi-function School Activity Buses (MFSABs)

10-15 Passenger Vans
Large School Buses (over 10,000 lbs.)

- These buses are the majority of buses used in school districts and are usually not equipped for easy installation of CSRS because they have:
  - No lap belts or other CSRS anchors
  - Seating which doesn’t have the reinforcement needed for lap belt installation
  - Seat spacing less than the maximum allowed under FMVSS 222 (24 inches from the point of reference)
Small School Buses

- Small buses weigh less than 10,000 pounds.

- The introduction of LATCH and lap-shoulder belts on the smaller buses has made it somewhat easier to install conventional car seats on this type of bus.

- Some bus features, such as seat spacing, can still make a difference on how easily a car seat can be installed.
Multi-Function School Activity Buses (MFSABs)

- MFSABs are popular with child care centers, churches and community centers and are recognized by NHTSA as a safer form of transportation than a 11 or 15 passenger vans.

- MFSABs may looks very similar to school bus in general design but they are usually a different color.
Multi-Function School Activity Buses (MFSABs)

- MFSABs are built to most school bus standards but are exempt from the portions of school bus requirements relating to traffic control, such as stop arms and warning lights.

- MFSABs are subject to individual state regulations in addition to federal regulations.
Multi-Function School Activity Buses (MFSABs)

• The Illinois State Board of Education (ISBE) recognizes the use of MFSABs for official school use but only for students in grades 9-12.

• ISBE allows the use of MFSABs for students in grades 8 or lower but only for school-sponsored activities that do not require student participation as part of the student’s regular credit schedule.
10 to 15 Passenger Vans

- NHTSA warns against the use of large vans for pre-school, childcare or school use due to their increased risk of rollover, especially when fully loaded.

- New large vans cannot legally be sold or leased for the purpose of routinely transporting students to and from schools. This includes students in child day-care facilities as well as students in grades K-12.
10 to 15 Passenger Vans

• If they are used to transport passengers of any age, you must follow these rules:
  • All passengers must be properly restrained.
  • The driver must have training/experience handling this type of vehicle.
  • Tires must have adequate tread and be inflated properly.
Federal Regulations (FMVSS)

1. Head Start Act
2. FMVSS 208
3. FMVSS 210
4. FMVSS 222
5. FMVSS 225
1. Head Start Act

- Head Start Federal Regulation 45 CFR part 1310.10 states that children must be transported in the appropriate restraint in all vehicles.
2. FMVSS 208

- FMVSS 208 regulates seat belts in all vehicles.
- According to FMVSS 208, buses manufactured on or after Oct. 21, 2011 are required to meet the following regulations:
  - Small School Buses - 10,000 pounds or less are required to have lap and shoulder belts instead of currently required lap belts.
  - Large School Buses - New buses can be ordered with optional lap and shoulder belts.
3. FMVSS 210

- FMVSS 210 regulates school bus seats.

- Seat belts can only be installed on a school bus IF the bus seat meets the FMVSS 210 regulations.

- FMVSS 210 requires a bus seat be reinforced so that it can support the added crash forces of a restrained passenger.
3. FMVSS 210 (cont.)

This shows a picture of a school bus seat that meets the FMVSS 210 regulations.

Notice the reinforcement bar.
4. FMVSS 222

- FMVSS 222 addresses compartmentalization on school buses.

- It sets forth requirements for closely spaced, high-back, padded seats and reinforced seating with lap belts in small school buses.

- Reinforcement of the bus seat frames is not required on large school buses since lap belts are not required.
When can this be a safety issue?

- **Child size** – Younger children are less likely to sit on the seat correctly due to their smaller size.
- **Positioning** – In order for compartmentalization to work, the passenger must be correctly seated facing the front of the bus.
- **Crash type** - Compartmentalization has been proven to be very effective in reducing injury in frontal crashes but provides little-to-no protection in other types of crashes.
The bus seat backs are designed to provide some ride-down in the event of a frontal crash.

When the occupant comes into contact with the back of the bus seat in front of them, the bus seat will bend, increasing the time it takes for the occupant to stop.

Because of this design, a CSRS cannot be installed on a school bus unless the seat behind it is either left empty or all occupants of that seat are using some type of restraint.
5. FMVSS 225

This standard establishes requirements for child restraint anchorage systems (LATCH). It applies to passenger cars; to trucks and multipurpose passenger vehicles; and to buses that weigh 10,000 lbs or less (not Large School Buses, but small School Buses).

The lower anchors on a school bus seat will look like these.

Exception: School Buses are excluded from the requirements to be equipped with tether anchorages.
Have you ever tried to install a large convertible car seat rear-facing in a small two-door car?

Not Very Easy, Right?
When a school bus is ordered, the purchaser can request seat spacing from 20” to 24”.

Most purchasers request the closer spacing (20”). This is Why:
- Allows more bus seats installed on each bus;
- Results in more students transported per bus;
- Requires fewer buses needed per agency/school district.

But, this creates problems with installing CSRS!
Spacing Between Seats

- It is recommended that rows be spaced to the **maximum** spacing allowed under FMVSS 222 if a CSRS will be used on the bus.
- The picture below shows a rear-facing convertible seat installed on a bus with seat spacing at the 24 inch maximum.
Some organizations transporting pre-school age children have found it easier for a driver to carry a CSRS through aisles that are wider than 12 inches. To get wider aisles, the bus is configured with seats of varying width, such as a 39-inch seat on one side and a 30-inch on the other side.
Different Belts & Anchors
Lap belt properly attached

Lap belts must be anchored to an approved FMVSS 210 bus seat frame in order to meet the FMVSS 208 standard.
Loops vs. Anchor Attachments

This type of belt is unacceptable for installation of a child restraint on a school bus.

Instead of anchoring to the seat frame (shown in the previous slide), it loops around it the frame.

It is merely used to help position the occupant in the bus seat, not actually restrain them.
Non-adjustable webbing

Even though this type of belt anchors to the bus seat frame, it is not adjustable in length so it cannot be used with child restraint.
Correct Lap Belt Length

The non-adjustable end (buckle) of lap belt should extend no more than 1-2 inches to allow for a proper car seat installation.
The Bus Baby is one type of double-buckle belt. It is made specifically for anchoring CSRS on a school bus.
School buses **must** have the following to safely install a CSRS:

1. Seat belts properly placed and attached.
2. Reinforced bus seats meeting FMVSS 210 safety standards.
3. Adequate room between bus seats.
4. Adequate aisle width.
Other Factors to consider in School Buses when installing a Car Seat

- The position of other occupants
- Width of the bus seat
- Size of child restraint
- Seat belt or LATCH system

NEVER install a CSRS in an Emergency Exit Row!
Many special needs seats require the use of a tether. Since most buses do not have tether anchors, car seat manufacturers may allow tethering to the seat belt of the bus seat located behind.

Always check the Car Seat Owner’s Manual for further instructions!
Tethering Special Seats

• Always follow the manufacturer’s instructions regarding when and how to tether special needs seats.
Safety Vests
Reasons for Using a Safety Vest

- Child is too big for a conventional car seat (must be at least 20 lbs. for most vests).
- No lap belts available on school bus and no other school bus available.
- Behavioral problems or when a child’s actions cause safety concerns.
- Child needs positioning assistance.
- Other medical problems.
Safety Vest

• Entire seat directly behind must be unoccupied or have restrained occupants.
  • Restrained means any form of restraint including lap belt, lap/shoulder belt, car seat, safety vest or integrated seat.
• Remember that the bus seat back will bend forward as an unrestrained passenger comes into contact with it to help with ride down.
• Attach to bus seat according to instructions (cam wraps, seat mounts, tethers, floor mounts).
E-Z-ON Vest
Installation

Unbuckle safety release, lift bench seat and insert buckle end between seat cushion and backrest, leaving hooks on seat. Lay release end over top of backrest with upper hooks to front side of backrest. Place harness on passenger with zipper side on back. Attach upper and lower D-rings to hooks (see illustration at right), securing passenger in seat. Pull adjusting strap on seat back snug and affix excess strap end with hook and loop stitched on strap.
The Q’Vest is in the process of being discontinued. Current supplies will be around for several years though.
Integrated Seat (Safe Guard)

SafeGuard Integrated Child Seat

3-point belts
Wheelchairs on Buses
Best Practice for Using Wheelchair as Transportation Device

- There are different types of wheelchairs. Only wheelchairs approved for transportation should be used on a bus or in a passenger vehicle.

- Wheelchairs approved for transportation will have a 3-point harness system used to hold the passenger in the wheelchair.

- The wheelchairs should also have a tie down system utilizing 4 straps (two in front and two in back) that attach to 4 separate securement points on the bus.
Best Practice for Using Wheelchair as Transportation Device

- Always consider the combined weight of the wheelchair and the occupant when determining the weight limits on tie downs.

- When the combined weight is 375 or more, additional tie down straps may be needed.

- Always face the rider forward.

- Remove lap trays.
What’s Next?
If you would like to learn more about safely transporting children on school buses, there are a few things you can do:

- Take NHTSA Training for School Buses.
But Remember…

- Buses may be contracted company.
- Parents/Schools may not have resources for seats/vests/etc.
- Remember your technician problem solving skills.
- Everyone needs to be trained.
  - Drivers, aids, parents, etc.
- Each child is different.
  - Each seat will be different.
Resources for Bus Transportation

- www.nhtsa.dot.gov
- www.nasdpts.org
- www.americanschoolbuscouncil.org
- www.ncstonline.org
- www.nsc.org
- www.saferidenews.com
THANK YOU!