



The School Bus Collision Investigation Newsletter

Volume 1, Issue 1
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School Bus Collision Investigation Team Training Just-in-Time

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School bus collision team training (SBCIT) is the most efficient, least costly and most appropriate training that can be provided to school bus collision investigation teams. Training must be proactive to prepare for the next school bus collision event that happens in your school district. SBCI Training is also just-in-time while teams are at the collision site and need immediate reporting solutions. This training is also useful when the collision team later and off-site begin further collision analysis to determine if the collision as a preventable or a non-preventable one.

Laptops with wireless access can download the generic school bus collision report form provided by Dr Ray Turner and complete it onsite, analyze the data off-site and within 24 hours have full documentation of the collision event.

Just-in-time training and support are not new concepts but are concepts whose time has come. Use of new technology must be based on utility, ease of use, reduced costs in a contracting economy and reduced liability.

School districts may not have established or used active lines of communication between the central office administrators, the school district safety officer and transportation supervisors. The time for close coordination between several school district officers is now in order to stem the increasing litigation through careful documentation of actual collision events.

Documentation of school bus collisions taking place this school year may not be litigated for two or three years into the future. School



districts must be fully prepared to defend their employees, assure the parents of genuine safe transportation being provided and reduce general motorist reluctance to stop for the school bus red lights and stop arm sign.



Are School Administrators and Boards of Education Reluctant to Examine and Analyze Their School Bus Collisions?

Pros:	Cons:
Most have established clearly written policies to reduce preventable school bus collisions.	Yet those same Boards of Education may have not articulated specific procedures to implement those policies.
School Boards assign full responsibility for school bus collisions to their Director of Pupil Transportation.	Yet the Director does not receive adequate funding or central office training authorization to support the training of existing Transportation Supervisors to the level of a Collision Investigator or that of an Accident Reconstructionist.
The Transportation Director and all Transportation Supervisors have too wide a span of personnel to effectively supervise them and at the same time truly promote safety and effective collision prevention.	Transportation Directors are charged by School Boards with the responsibility to effectively train school bus drivers to obtain their Commercial Driver's License with the School Bus Endorsement rather than to emphasize to all Department employees real collision cause and effects and countermeasures.



By not examining school bus collisions that resulted in expensive litigation and out-of-court settlements Boards of Education became more highly motivated to attach blame (stepping backwards). Would it not be better to step forward, to be proactive, and to create SBCITs who will fully pursue collision identification, documentation and investigation along with improving driver training?

Must School Boards Attach Blame?

When School Boards only “attach blame” the Director of Transportation bears the obligation to accept responsibility and to attempt future school bus collision reductions in consort with the Transportation Department Supervisors under that Director’s supervision. Individually, or collectively, these supervisors do not have the skills or the training required of a Collision Investigator—much less that of an Accident Reconstructionist—in order to protect the interests of the

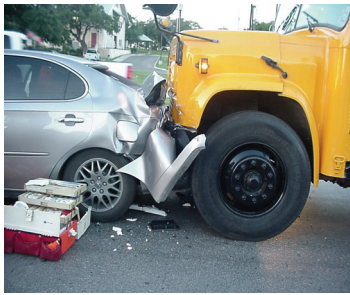
school district and to uphold the public trust.

With effective SBCI Teams school boards move from attaching blame to recognizing driver and others collision mistakes and how to avoid them the next time. Knowing how school bus drivers and special needs driver teams can avoid mistakes and minimize the risk of collision events that are no one’s fault is an evolutionary process that helps Boards retain the best drivers, attendants, transportation supervisors and SBCI Teams. The best

SBCI Teams will never reach the 100% level put in their pursuit of excellence they will leave a trail of great accomplishments, safer pedestrian bus service, happier parents, and more supportive school administrators from the grassroots up.



Do School Boards Attribute Budgetary Constraints to Avoid Having to Create SBCITs?



School Boards and their Superintendent often argue that the number of serious school bus collisions in their fleet per year does not justify the creation and ongoing costs of having an SBCIT. They reason that since only major bus collisions need to be analyzed by an outside consultant who is an Accident Reconstructionist and only when the School Board is being sued by collision victims, pedestrians on their buses, occupants of the other vehicle or other parties. They do not recognize that even minor school bus collisions or a huge number of “close calls” may go unreported by drivers reluctant to communicate with their supervisor for fear of losing their jobs.

In the long term the School Bus Collision Investigation Team will save ten times their salary and school district support funds. The SBCIT’s combined salaries and benefit costs to the district are significantly less than the district expenditures that would have been required if the SBCIT did not exist to reduce school bus collisions, reduce bus collision repairs or replacements, use of spare buses during bus collision repairs, school bus operator injuries, hospital stays and the impact of Family Medical Leave Act (FMLA) for prolonged driver or attendant absence, and the cost of substitute drivers and substitute attendants. There are real cost savings to the school district in reduced litigation against the school district for school bus collisions and

occupant injuries, defeating false injury claims with accurate occupant kinematics, lowering fleet insurance rates, lowering insurance carrier set-aside or reserve funds to pay for possible school bus collision related expenses, and fewer man hours expended by Transportation Supervisors who are themselves not skilled and experienced in collision investigation compared to the SBCI Team.



School Boards That Require and Support School Bus Accident Investigation Teams

Once the School Board has authorized establishing The SBCI Team there is a transition period of at least one year before Teams are fully ready, willing and able to investigate. Teams together and individually each become safety specialists in collision analysis, documentation, preventability and countermeasures. When mandated by the School Board to reduce the number of school bus collisions from major to minor ones, or from minor collisions to non-collisions the first year of Team

effort may fall short of meeting Board expectations. Instead of reducing the number of school bus collisions the numbers over the first year may very well increase. Why would that be so? Boards, Directors of Transportation and newly-formed SBCI Teams for the first time are accurately documenting the collisions events with school buses in their districts. Older projections or data sources are found to be very much wanting. New data and collision event documentation for the first time provides a far more realistic picture.

time provides a far more realistic picture. It should be the mandate of all school boards to remember that identifying Knowing the problem is virtually half-the solution. The SBCIT is half-way there to a 100% solution. Yet when the second year is completed and SBCITs are doing their job and doing it well the collision events will be better understood and documented more than ever before and reality-based solutions pursued, preventability measures made effective and countermeasures implemented.

SBCIT Collision Findings Translate Into Improved Preservice and Inservice Driver Training Content

The SBCI Team must learn collision countermeasures and vigorously train school bus drivers to implement those countermeasures on streets and roadways that are hostile to school buses. School bus collision countermeasures are examples of defensive strategies designed to reduce school bus preventable collisions. School district fleet managers and School Bus Collision Investigation Teams must initiate and maintain a comprehensive database of school bus collision and non-collision information. That information should be directly linked to pre-service, inservice and advanced driver training content.

Collision Prevention Analysis (CPA) is an essential component of the SBCIT team critical mass of skills and experience and school bus collision knowledge.

The wise person learns from his or her mistakes. The foolish person does not learn from previous mistakes and is condemned to repeat those mistakes again.

There are practical countermeasures that can be taken both by the SBCI Team and by individual school bus drivers now available. These countermeasures prevent school bus collisions or at minimum will reduce the severity

of school bus collisions. The SBCIT can generate case histories of successful school bus collision countermeasures as readily as they can utilize the district collision database to determine driver mistakes. Case histories can be included in the pre-service and inservice training content along with a clear explanation how the Accident Review Committee uses the Collision Investigation to guide them in determining school bus collision preventability and countermeasures. The SBCIT analyzes accidents and creates strategies found to work in actual collisions that is knowledge and technology transfer to keep similar accidents from happening in the

Determining Collision

Preventability

No school bus and other vehicle accidents are exactly alike. Not all school bus collisions are preventable. Some types of school bus collisions can be prevented by informed, alert and careful drivers. Those drivers are professionals who adhere to safety policies and procedures in their Department and know what countermeasures are available to them in a potential collision situation. Some countermeasures will require changes in school bus maintenance, equipment, routes, and other procedures and may require additional classroom and on-the-road retraining even for the most experienced and of school bus drivers who for many

Who Is on the SBCI Team?

There are several individuals with specific training and certification that are needed to form a complete School Bus Collision Investigation Team (SBCIT). Those Team members include: The District Safety Officer, the Collision Investigator, the Collision Team GPS/CCTV Onboard Data Specialist, the School Bus Fleet Maintenance Supervisor, the Regular and Special Needs Route Managers. The Accident Reconstructionist (AR), The Director of Transportation is Ex-Officio Chairperson of all Committees within the Transportation Department.

What if the School Bus Collision Investigation Team Was Available at the Collision Scene at the Same Time As the First Responders?



A School Bus Collision Investigation Team can be at the accident site about the same time as the first responders. Here is the sequence of events that the SBCI Team will be ready to do when a collision occurs within their school district:



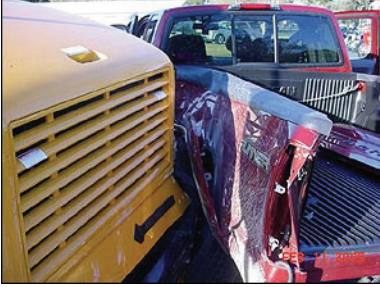
Phase I-Arrive at the scene at about the same time as the first responders. The SBCI Team comes with the equipment, instruments and expertise needed to do a complete onsite collision investigation.



Phase II-While the first responders are doing triage and expediting first aid, CPR, victim rescue and/or extraction the SBCIT is initiating the collision scene data gathering process.



Phase III-Digital still photographs of the collision scene can be done by one Team member while another completes a digital videotape of collision scene elements. Photogrammetry software analysis of digital still or digital video sources can be used to determine collision scene events.



Phase IV- Roadway conditions will not have changed within the 30 minutes before the roadway surface measurements are taken. Digitized and archived bus fleet data is already available to the SBCI Team to compare the school bus exterior and interior appearance before it was damaged in the collision.

The Team can also digitally photograph and videotape the other vehicle before it is moved by a towing service. Morphing software is one of the tools of the SBCI Team to compare and contrast the bus and the other vehicle before and after their collision.

Phase V-Analysis of the photogrammetry data on a laptop at the scene can be completed within less than an hour. Measurement of all relevant roadway markings (Skids, yaw marks, slide marks, splatter, vehicle parts, tire conditions, etc.) is done during the same weather conditions when the collision occurred.

Phase VI-The entire collision scene can be surveyed quickly and effectively with a Total Station and [Crash Zone](#) software on a laptop at the scene. Major intersections within school district boundaries that have had a history of school bus collisions may already be archived with Total Station surveys already done in anticipation of the intersection being the site of a serious collision sometime in the future. The school district architect or building and grounds supervisor may already have a Total Station surveyed school loading zone archived and the streets surrounding the school site where a collision may occur on school property. The SBCI Team has already been at work preparing for a collision with this archived data in order to complete the accident reconstruction that an

outside consultant would otherwise do.

Intersection surveys, school loading zone surveys, surrounding street surveys are all archived in digital format and ready to use when a collision occurs. Once the school bus and the other vehicle data and characteristics are entered into Crash Zone the analysis can rapidly begin. The data analysis done by Crash Zone should always be done by another analysis with the same data using collision software such as [Rec-Tec](#). Both analyses results should closely match to cross-validate the findings as displayed by Crash Zone collision animation. The SBCI Team has been trained to start from points of rest of both vehicles and work backward to the point of impact and still further backward to the point of recognition for both drivers when each recognizes that a collision is eminent. Crash Zone and Rec-Tec software link together to permit a 3-D animation of the collision scene. One or all of the SBCI Team members can be deposed by the plaintiff's counsel and comprehensively answer plaintiff's interrogatories with the guidance of the school district counsel. The school district counsel will rehearse with the SBIC Team member who is the most experienced of the group when and if court testimony is required.

What if the School Bus Collision Investigation Team Included an Accident Reconstructionist to Train and Support the Team?

The role of the Accident Reconstructionists for school districts is a traditional one in being ready, willing and able to react to a school bus collision. School superintendents may hire an accident reconstructionist directly for a specific school bus collision. The other option is to obtain the skills of an accident reconstruction when the district's own legal counsel hires the reconstructionist under contract to investigate a collision.

The accident reconstructionist is not only a collision analyst but acts as an expert witness to be deposed by the opposing attorney. Once the expert witness is deposed a trial date is set. During the initial phase of the trial the accident reconstructionist will be cross-examined by both attorneys before the judge will rule that the reconstructionist is "court certified." Certification means that this specialist has sufficient skills, subject matter expertise and training to testify before the court with respect to the collision in litigation.

Reconstructionists as consultants do not arrive at the collision scene until days, weeks, months or years later to take surveys of the street, roadway or intersection where the accident occurred a year or more ago. The reconstructionist must also rely on the Police Accident Report completed by the police officer at the scene.

Police officers often have Field Commanders whose primary responsibility and concern is to clear the collision scene and have normal traffic resumed as quickly as possible. Only if there is a fatality involved will the Police bring to the scene their own certified Accident Reconstructionist--if they have one. There are other very real problems or challenges the consulting accident reconstructionist must overcome. The Vehicle Accident Report describes the weather conditions at the time of the accident. The reconstructionist is expected to determine by drag sled analysis the roadway surface coefficient of friction. However, the measurement may not be an accurate determination without the same roadway conditions that were present at the time of the collision. The consultant if arriving months or years later at the collision scene may view a roadway that has been recently repaved, intersection signals or lighting upgraded, and other physical changes made to the roadway.

Accident Reconstructionists were not typically hired on a full-time basis within the administrative structure of even the largest school districts. Instead they have been under contract with school districts over the years to do reconstructions after school bus accidents occurred that were being litigated.

Many reconstructionists were hired to work with the school district Transportation Department through legal counsel representing the school district in lawsuits.

Accident reconstructionists have not traditionally been an active member of the School Bus Collision Investigation Team. As highly trained specialists and experts in their field they remained separate from the SBCIT and typically did not share the skills of the science of collision analysis.

SBCITs can no longer afford not to have comparable skills of the accident reconstructionist as a member of their Team. SBCITs using convergent technology that was formerly used only by Accident Reconstructionists can now learn over time how to analyze collisions and find effective collision countermeasures that can be shared with driver trainers. The SBCI Team thereby becomes a valuable "in-house" resource rather than relying on external consultants to complete their work.

When a school district has two or more school bus accidents that go to trial the cost of a full time Collision Investigator who leads the School Bus Collision Investigation Team is paid for instead of hiring the accident reconstructionist.

But how will the Collision Investigator as a school district employee learn and develop skills up to and comparable with the accident reconstructionists he or she may face across the aisle in the courtroom? To determine the cause of a school bus collision with another vehicle or pedestrian the Reconstructionist must rely on the Police Accident Report and any documentation provided by the school safety officer and analyze the data after the collision has occurred.

The Reconstructionist of tomorrow must be a part of the SBCI Team and at the same time proactively mentor and train the other Team members in the art and science of accident reconstruction. The Reconstructionist of tomorrow must also share with fellow SBCI Team members their joint responsibility to train drivers and attendants on effective collision countermeasures.

What Do SBCITs Learn in Training at the Scene?

Observing a variety of school bus collisions—Teams learn that the more collisions they investigate the greater their understanding of the dynamics of a school bus collision, the causes and the effects, as well as the countermeasures that apply to prevent the next similar school bus collisions. This includes school bus collisions with other vehicles, with roadside barriers, against objects on or off of the roadway, or striking pedestrians, cyclists, or animals.

Determining the type of school bus collision in the field—Collision Type—Includes all collisions, near collisions, collision-relevant conflicts and proximity conflicts (close calls) which are based on the initial conflict that lead to the collision that occurred or would have occurred with near-collisions and incidents. There are 20 major types of collisions used: conflict with a lead vehicle, following another vehicle, oncoming traffic, another vehicle in the adjacent lane, a merging vehicle, a vehicle turning across the school bus path (in the same direction), a vehicle turning across the school bus (in the opposite direction), a vehicle turning into the school bus path (from the same direction), vehicle turning into school bus path (from the opposite direction), a vehicle moving across the school bus path (through an intersection), a parked vehicle, a pedestrian, a pedalcyclist,

an animal, an obstacle or object in roadway, a single vehicle conflict, other collision types not listed here, no known collisions between the school bus and other vehicle, and the school bus involved in an unknown collision or a collision cause as yet not discovered.

Understanding What Were The Pre-Event Maneuvers—This is the maneuver that the school bus driver was performing immediately prior to the event. The importance of this is to record what the school bus driver was doing before the precipitating event occurred.

Understanding What Were the Contributing Factors--Any circumstance that leads up to or has an impact on the outcome of the collision event. Contributing Factors include school bus driver proficiency, driver willful behavior, roadway infrastructure, driver distractions inside or outside the bus, the condition of the school bus as a contributing factor, and school bus driver visual obstructions.

Determining if There Was Any Sign of School Bus Driver Impairment—The school bus driver's behavior, judgment, or driving ability when altered or hindered. This includes driver drowsiness, use of drugs or alcohol while driving, driver illness, driver sudden illness, lack of, or incorrect use of prescribed medication, or disability.

Determining if the Other Driver Was Also Impaired—The other driver's behavior, judgment, or driving ability when altered or hindered. This includes driver drowsiness, use of drugs or alcohol while driving, driver illness, driver sudden illness, lack of, or incorrect use of prescribed medication, or disability.

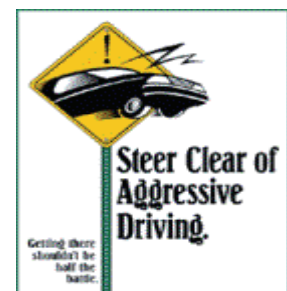
Documenting School Bus Driver Proficiency—Were the school bus driver's driving skills, abilities, or knowledge are inadequate. For example, a lack of driver proficiency would be evident if the driver appeared or should have been aware of specific traffic laws (i.e., no U-turn), was the driver incompetent to safely perform the U-turn maneuver by checking for traffic before pulling out on a roadway, or that driver being unaware of the school bus turning radius that would not allow the bus maneuver without leaving the roadway, or jumping the curb, or making a legal U-turn under the faulty assumption that it is safe, (i.e., drives over a concrete median while making the turn).

Tracking All Near Collisions—Any circumstance that requires a rapid, evasive maneuver by the school bus driver, or any other vehicle, pedestrian, cyclist, or animal to avoid a collision.

This includes rapid, evasive maneuvers such as a hard steering, hard braking, hard accelerating, or any combination of major vehicle control inputs that approaches the limits of the school bus capability to not rollover, or undergo any other major bus displacement.

School Bus Driver-Distractions From Attention to the Forward Roadway—Was the school bus driver's attention and focus away from the roadway to paying attention not to events inside the bus (e.g., bus passenger misbehavior, disturbances, loud noises, screaming or the more common driver use of makeup at the steering wheel, reading a route map, or focusing on a panel dial, the bus speedometer or other driver controls).

Was School Bus Willful Behavior Involved?—The willful school bus driver knowingly and purposefully drives in an unsafe or inappropriate manner. This includes aggressive driving, purposeful violation of traffic laws, or use of vehicle for improper purposes such as using the school bus to intimidate other drivers.

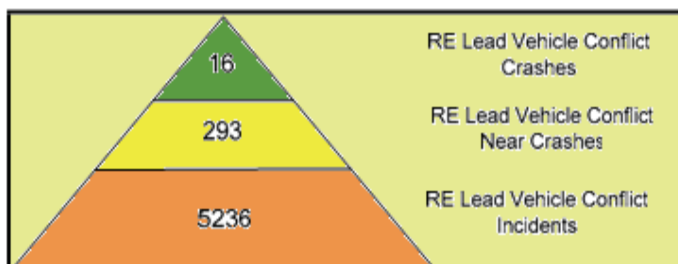


Heinrich's Triangle and School Bus Collision Prevention

When a precipitating event occurs for the school bus driver on the roadway, a street, or at the school loading zone, or at any bus stop to board or unload passengers, there may be contributing factors that will determine whether the school bus driver can and will respond to those collision-causing factors that occur too early (an incident or ones that can be avoided well ahead of their leading to a collision), too late (near-collision that requires a school bus driver-initiated evasive maneuver to avoid the collision at the last second), or too little, or when school bus drivers responses are ineffective and lead to an actual collision).

The SBCIT team when evaluating the database can see trends emerge from multiple years of school bus collision data from their district. The top of Heinrich's Pyramid are the fewest actual collision events that occur that were not preventable or were preventable had the school bus driver use appropriate countermeasures in time.

For every 1 collision event there are 18 times more near-collisions shown at the middle of the Heinrich pyramid ($296/16=18.31$) or collision incidents where school bus driver took maneuvers or countermeasures that can caused a "near-miss" or a "close-call" but did not cause a collision. The bottom of Heinrich's triangle above suggests that for every 1 school bus collision with a lead vehicle there may be 18 near collisions or ($5236/16=327.25$) or 327 conflict incidents that are not close calls (near collisions) and that are not a collision. **SBCI Teams can use their own database information and determine their own Heinrich's Triangles for all major types of school bus collisions, near accidents and incidents. The more the SBCIT examines their own school district collision and near-collision data the more they will begin to understand the extreme importance of training their drivers to be vigilant, to prevent more collisions than those that occurred before their SBCI Team training and to know what data-driven collision countermeasures are available to them beyond the basic Defensive Driving course.**



Crash	Any contact with an object, either moving or fixed, at any speed, in which kinetic energy is measurably transferred or dissipated. Includes other vehicles, roadside barriers, objects on or off the roadway, pedestrians, cyclists, or animals.
Near- Crash	Any circumstance that requires a rapid, evasive maneuver by the subject vehicle (or any other vehicle, pedestrian, cyclist, or animal) to avoid a crash. A rapid, evasive maneuver is defined as steering, braking, accelerating, or any combination of control inputs that approaches the limits of the vehicle's capabilities. As a guide, subject vehicle braking greater than 0.5g or steering input that results in a lateral acceleration greater than 0.4g to avoid a crash, constitutes a rapid maneuver.
Crash- Relevant Conflict	Any circumstance that requires a crash avoidance response on the part of the subject vehicle or any other vehicle, pedestrian, cyclist, or animal that is less severe than a rapid evasive maneuver (as defined above), but greater in severity than a "normal maneuver" to avoid a crash. A crash avoidance response can include braking, steering, accelerating, or any combination of control inputs. A "normal maneuver" for the subject vehicle is defined as a control input that falls outside of the 99 percent confidence limit for control input as measured for the same subject.
Proximity Conflict	Any circumstance resulting in extraordinarily close proximity of the subject vehicle to any other vehicle, pedestrian, cyclist, animal, or fixed object when, due to apparent unawareness on the part of the driver, pedestrians, cyclists or animals, there is no avoidance maneuver or response. Extraordinarily close proximity is defined as a clear case in which the absence of an avoidance maneuver or response is inappropriate for the driving circumstances (e.g., speed, sight, distance, etc.).

Mentoring School Bus Collision Investigation Teams—The Right Skills and the Right Tools for the Job

Mentoring school bus collision investigation teams is an ongoing process that begins with SBCIT access to the right tools for the right job. Collision investigation can be done with a simple, hand-held cellular phone with a video camera installed to sweep the collision site and the bus interior sometimes before the First Responders arrive.

The mentor helps only when asked, suggests only when requested and debriefs the Team after the collision has been cleaned up and the students fully accounted for. As the mentor initially does the investigation process Team members learn on the job how to do it themselves. The mentor has progressively less involvement as SBCITs gain the necessary collision investigation skills.

With a wireless laptop brought to the scene or with the cellular phone video downloaded to the mentor the reconstructionist can zoom down on any intersection or roadway in the United States using Google Earth Pro Street Level feature many intersections and residential streets have been digitized. The mentor captures an overview of the intersection, zooms down to measure the intersection dimensions using Street Level, identifies roadway altitude and slope, and determines sightline capabilities of both bus driver and the other vehicle operator. The Team member uses a Handheld Laser Distance

from bus bumper axle positions distances to street furniture (Stop signs, utility poles, manhole covers, etc.). Distances are called into the mentor to precisely position the bus in the intersection at point of rest. The Team member repeats the process for the other vehicle with four axle distances to the same street furniture objects previously measured. The Team measures all skid marks after photographing them and calling those skid marks and their exact locations with reference to the same road furniture used. The Team will use a digital thermometer to give the current road surface temperature and other surfaces (roadway shoulder, grass, gravel, etc.) Using a digital moisture meter gives the roadway and other surfaces moisture levels. Using a digital roadway surface friction meter provides additional essential data.

The Team uses a digital camera (10 meg. SLR with a 2 Gigabyte Memory Card) to videotape from the driver's seat at the driver's eye level the bus interior, 180° panning of eye-level collision scene viewing area. The videotape is done of all student passengers while the Team member is inside the bus. Taking the video of bus occupants provides face recognition of all passengers, where they were seated, and notes the distance from the point of impact.

The Team member calls from within the bus with the passengers on board

student by name, age or grade who is on board and any student that has been removed by first responders to the hospital. The Team obtains the seating chart that was completed by the driver or builds a seating chart with assigned students onboard using the laptop and the BusRyder Seating Chart Program.

The Team member secures or downloads the onboard videotape recording hard drive or immediately on return of the bus to the facility. The mentor advises on how to maintain the proper and legal chain of custody of all investigation data and in particular, of all videorecordings done from all sources.

The mentor as an accident reconstructionist requires specialized training and equipment to determine occupant displacement during the collision event inside the school bus. Forensic Videoanalytics is the skillset and specialized hardware and software to determine student ejections out of the compartmentalization envelope and against the bus interior, or other passengers, or both. The forensic videoanalysis need not be done until a student or that student's parents elect to sue the school district.

Onboard archived video recordings properly maintained in the chain of custody can be analyzed for years after the collision date in preparation for an effective school district litigation defense.

School bus driver or bus attendant gross negligence notwithstanding, the SBCIT and a mentor in less than two hours has completed an accident investigation that will stand up in court with Team member testimony and ample supporting collision investigation data. That data includes:

1. Accurate collision site maps with accurate roadway and/or intersection dimensions as well as precise positioning of vehicles at their points of rest.
2. Accurate seating charts with supporting video recordings of students onboard that day, their seating assignments and sufficient data to do a later occupant displacement analysis if needed.
3. Accurate measurement of skid marks, roadway surfacing, temperature and surface moisture levels.
4. Jury-convincing digital photographs with date/time stamps on the date and time of the collision investigation.
5. Attorneys for the prosecution are 5 to 10 times less able to obtain a settlement, damages or a favorable jury decision when jurors see the evidence that is authentic, valid, timely and professionally done by the SBCIT for the benefit and protection of school district litigation defense.

From Investigating "Accidents" to Investigating "Collisions"

From the "Reaction Team" to the "Reaction, Analysis, Prevention and Collision Countermeasures Team"

In years past a mid-level Transportation Supervisor in every school district Transportation Department had the additional duty of "Accident Investigator" for the school bus fleet. That person was on call 24/7 to arrive at what was formerly termed the "school bus accident site." That person typically had no formal training in collision investigation. They were not prepared to deal with all types of vehicles or pedestrians that were involved in school bus collisions. Now the Collision Investigator must be a professional who is well-trained and has sufficient expertise to complete a valid collision investigation that will stand up in court for any school bus in the fleet, for any vehicle that was involved with a school bus in a collision, and for any pedestrian who was involved in a collision with a school bus. School districts can no longer afford to be unprepared and therefore highly vulnerable to lawsuits without completing a thorough internal investigation. Collision investigations done within the school district resources and personnel, though threatening to some, are by far the best insurance policy a district can have. The ability to defend the school bus driver for actions that were not egregious helps school districts to retain the best drivers, retrain other drivers up to a higher standard of performance and safety behind the school bus steering wheel and to

identify, document and remove those drivers who are high risk, low performers.

A single school district collision investigator cannot accomplish effective collision analyses alone. A team of other skilled persons must help the collision investigator during the Collision Reaction Phase to follow up with a careful Collision Analysis. On the basis of the Collision Analysis realistic and effective Collision Prevention steps can then be taken. Countermeasures generated from real-world collision analysis are generated so that all can learn the lessons from the few.

School Bus Collision Investigation Teams (SBCITs) Roles and Responsibilities

1. Reacting appropriately to school bus collisions after they occur.
2. Establishing and maintaining a database of district school bus collisions.
3. Analyzing collision preventability for major or minor collisions and close-calls or non-collisions.
4. Determining effective collision countermeasures to prevent future school bus collisions.
5. Implementing collision countermeasures during driver training and on-the-route performance.

Drivers Receiving Retraining Based on Their Highest Priority Risk Factors

Drivers receive SBCI Team member retraining based on the following highest priority risk factors:

1. Drivers who demonstrate a pattern of collision risk performance. These drivers are observed using onboard driver and passenger monitoring technology.
2. Newly trained drivers who are undergoing a two to three week "ride along" orientation with driver trainer are observed by an SBCI Team member. SBCIT monitoring of new driver performance establishes that driver's performance baselines.

3. Drivers undergoing remediation training who have been observed not to implement effective collision countermeasures.

4. Drivers who are subject to documentation prior to termination.

SBIC Team Member Authority

SBIC Team members must have the authority to recommend termination to the Transportation Director for any and all drivers found to be at high risk for bus collisions following their remediation training. Such recommendations are based on digital video and audio documentation of onboard driver monitoring of close-calls and/or driver responses in pre-collision situations, during the collision and their inappropriate responses following collisions.

School bus driver violations

The following charges were filed against Palm Beach County school bus drivers between 1995 and 2005, for violations committed both on duty and off duty.

Charge	Number of incidents
DUI*	1
Leaving the scene of a crash	2
Failure to yield	19
Failure to obey signal	15
Crossing private property to avoid light	1
Driving without lights	1
Improper backing or turn	5
Following too closely	1
Improper lane change	2
Failure to obey stop sign	10
Careless driving	14
Speeding	55
Non-moving violations	64

*Driver was fired in December upon reporting arrest, according to the Palm Beach County School District.
Source: State Department of Highway Safety
BRENAN KING/Staff Artist

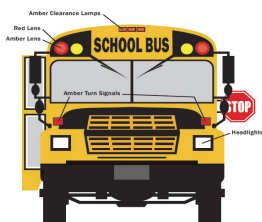
School Bus Accident Reconstruction, LLC

5306 King George Drive
San Antonio, TX 78229
210-614-1395 Voice



The School Bus Collision Investigation Newsletter is part of the Special School Bus Collision Investigation Online Team Training provided by Dr. Ray Turner. The comprehensive school bus collision investigation team training text is available online from Dr. Ray Turner [School Bus Collision Investigation Team \(CIT\) Support](http://www.schoolbusaccidentreconstruction.com).

School Bus Collision Investigation Online Newsletter subscriptions provide collision investigation teams, transportation directors and school district safety officers with an in-depth single topic issue each month Annual subscription is \$195.00 for the first 12 issues or \$19.95 per single issue. School districts and Non-Profit agencies are authorized to make copies of this online newsletter with their paid annual subscription for use by district employees only.



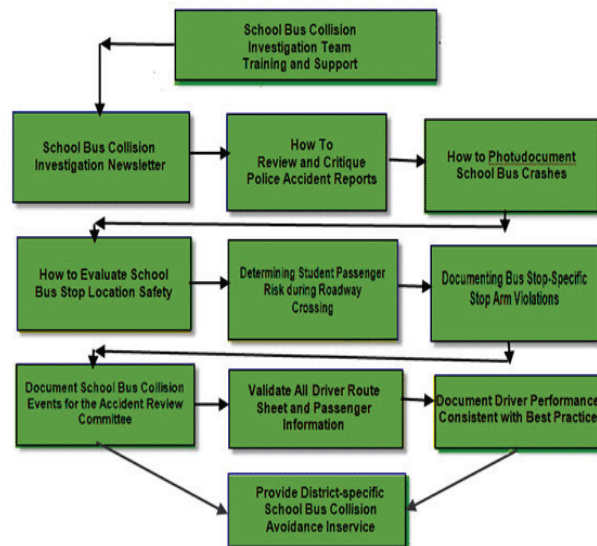
Turner, Ray. [School Bus Collision Investigation Team Support](http://www.schoolbusaccidentreconstruction.com). 2008. School Bus Accident Reconstruction, LLC. San Antonio.

Google Earth Pro-Street Level.

Crash Zone Software. www.Cadzone.com.

Rec-Tek Software. <http://www.rec-tek.com>

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Please note that the flowchart above provides hyperlinks to additional information on each of the subjects shown. Or you may link to the [Schoolbusaccidentreconstruction.com](http://www.schoolbusaccidentreconstruction.com) website using: <http://www.schoolbusaccidentreconstruction.com/sbtraining.html>. SBCIT Newsletter volume 1 through 12 listing on this page are also hyperlinked to the same website. The hyperlink provides the first page of each of the newsletter issues to view.



School Bus Collision Investigation Online Newsletter Topics:

[V1N1 School Bus Collision Investigation Team Online Training](#)

[V1N2 Police Accident Reports are Not Enough](#)

[V1N3 Effective School Bus Collision Exterior and Interior Photography](#)

[V1N4 Preventable and Non-Preventable Collision-Decision Tree](#)

[V1N5 School Bus Rear-end and Underride Collisions](#)

[V1N6 Accident Review Committee Guidelines](#)

[VIN7 Student Pedestrians and Stop Arm Violators](#)

[VIN8 Special Needs School Bus Collision Investigation](#)

[V1N9 School Bus Driver Sightlines](#)

[VIN10 Student Pedestrian Collision Investigation](#)

[V1N11 Hazardous School Bus Stop Countermeasures](#)

[V1N12 School Bus vs. Transit Passenger Safety Best Practice](#)

