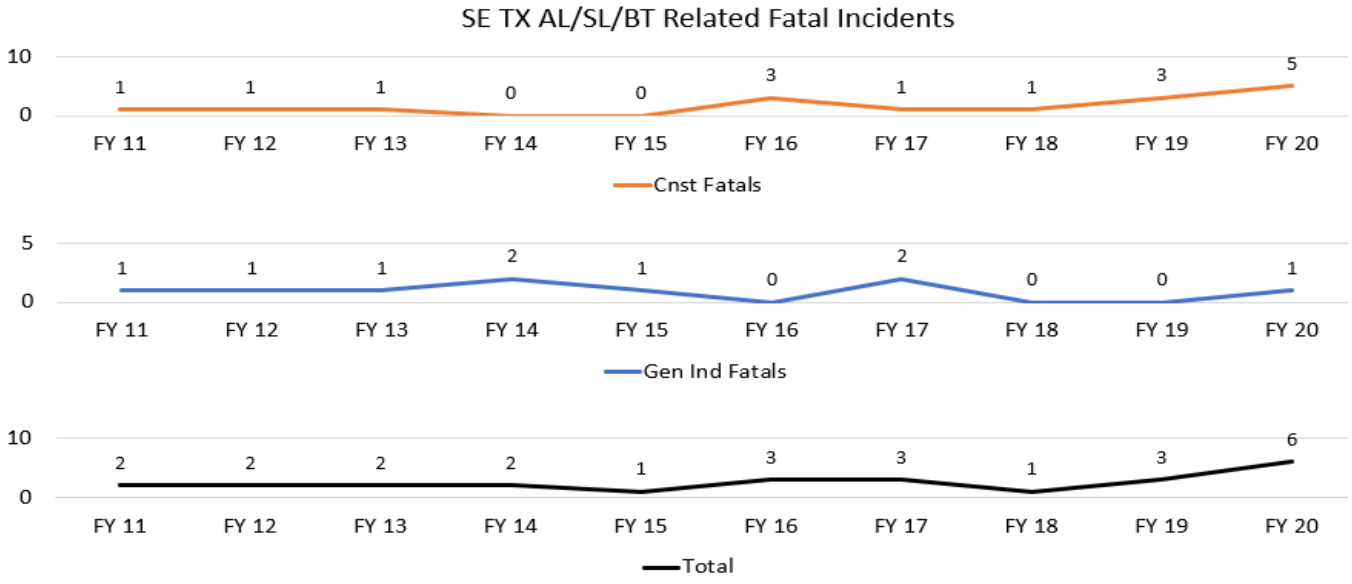
SE TX Aerial Lift/Scissor Lift/Boom Truck (AL/SL/BT) Overview* (02/2021)

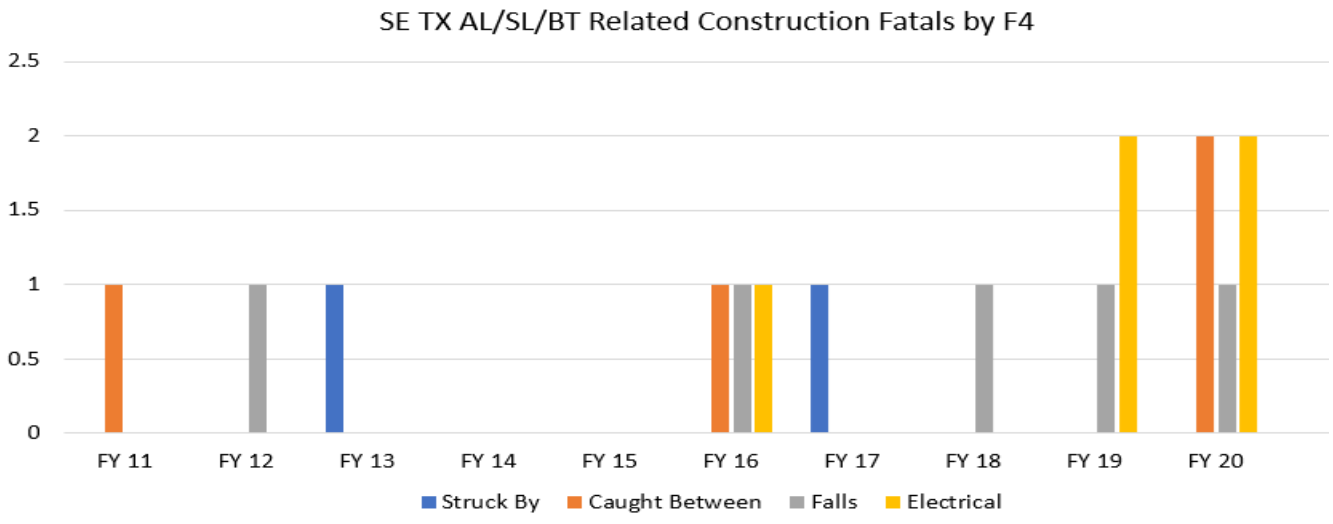
In FY 20 there were six aerial lift/scissor lift/ boom truck related incidents in SE TX. In the last ten years, including FY 20, there has been a total of twenty-five fatal incidents. In FY 20 there were also seven serious incidents related to these types of equipment and a total of twenty six serious incidents since October 1, 2015. It's important that equipment is safely used and employees are competently trained on their usage.

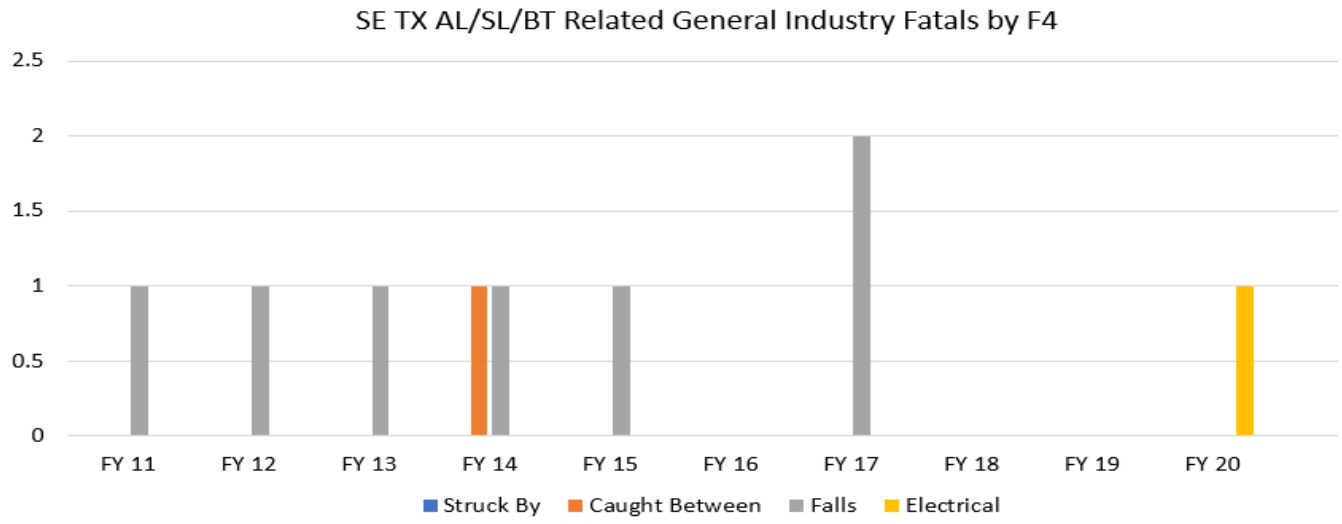
Aerial lifts and scissor lifts are commonly referred to as Mobile Elevating Work Platforms (MEWPs) while boom trucks are a separate category. For purposes of this flyer all three types of equipment were combined together since they are used in a similar manner – lifting an employee to work at elevation.

AL/SL/BT Related Fatality Incidents by Fiscal Year (FY) SE Texas

FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	Total
2	2	2	2	1	3	3	1	3	6	25







When looking at fatal incidents overall, the time period of FY 11 – FY 15, falls were most prevalent event, particularly in general industry. Other events such as electrical, struck by, or caught between were intermittent but more represented in construction. When looking at the time period of FY 16 – FY 20, fall related events occurred, but in overall events, electrical related incidents seemed to have significantly increase, particularly in construction.

FY 11 - FY 20 AL/SL/BT Related Fatalities by Event

Struck by falling object or equipment

- The employees were in the process of removing the bucket from a sky lift in order to stored it on the trailer. While in the process of attempting to remove the bucket, the flagman was signaling the operator to scope out and that's when the flagman noticed the sky lift tipping over to the right. The worker who was positioned the in the back of the sky lift ran towards the front and in the line of fire and was struck by the sky lift. FY 17
- A concrete finishing worker at ground level was struck in the head by a 13 ft. x 3.5 in x 3.5 in piece of angle iron which was ejected from an aerial lift approximately 70 feet overhead operated by another employer on the site. The injured employee was transported to a hospital and later died. FY 13

Fall lower level trees

- A foreman was in a vehicle mounted aerial lift assisting with blocking down a pine tree when a hydraulic line blew. The foreman made a decision to get down by exiting the aerial lift basket and attempting to climb down the tree. The foreman got onto the tree and wrapped his lanyard around the tree. As he was climbing down, he unhooked his lanyard to get around a knot in the tree and fell approximately 60 feet. FY 17

Fall lower level structure or equipment

- Employee was moving the aerial lift when a mechanical failure occurred and he was catapulted from the basket and his head hit the arm of the aerial lift and he fell 12'-16' to the concrete ground. He was brain dead from the head trauma and later died after being removed from life support. FY 20
- Connection crew were in the process of installing a precast wall on the 11th floor of a building. The precast member was not aligning properly and one of the workers was told to go to 10th floor to remove a brace so that precast wall could easily slide in place. Before he could reach the brace, the precast wall began to align into place. A connection crew member closest to edge of the building heard a noise from behind him coming

from the boom lift. He turned around and saw that the worker was not in the basket. He went to edge of the floor and looked down to see the worker had fallen 105 feet to the ground. FY 18

- Employee was a network technician and was at the site to replace old cable wire. The boom bucket was approximately 14 feet from the ground and the bucket door was open. Employee was wearing a harness but was not anchored to the bucket. He fell face first to the ground. FY 17
- An employee was working from an articulating boom when he climbed out of the basket to tighten bolts at a column connection. The employee lost his footing and fell approximately 18' to the ground and died. FY 16
- Employee was trimming a palm tree from a vehicle mounted articulating boom when the boom leading to the bucket broke cause the bucket and employee to fall 30'. FY 14
- An employee was approximately 48 feet high in a boom lift bucket trimming a tree branch at a residential home. Another employee was holding the branch being cut with a rope from the ground so that it could be lowered down. At some point the branch being cut or the rope tied to it hit the lift bucket which threw him out of the bucket sustaining fatal injuries. FY 13
- An employee was rimming trees along power lines from a bucket truck when while trying to swing the bucket over the front of the truck the booms turntable suffered a mechanical failure. The turntable separated from the boom and the boom which was at 30' fell into the sloped side of a bayou causing the employee to fall outside the bucket. FY 12
- Three employees in an aerial lift performing demolition of an abrasive blast room when a dust explosion occurred. The 27 and 36 year old employees jumped from the aerial lift and fell 20' and died. FY 12
- A 51 year old employee working 15-20' high on aerial lift detaching rigging used to lift a rig derrick onto a stand. When the stand failed the derrick hit the aerial lift basket ejecting him. FY 11

Fall from tip over

- An employee was driving a scissor lift off a trailer when the ramp collapsed causing the scissor lift to tip over. The employee hit his head on the ground and died the next day from internal brain bleeding. FY 19
- The worker was on a scissor lift when it fell over and he died. FY 15

Electrocution power lines

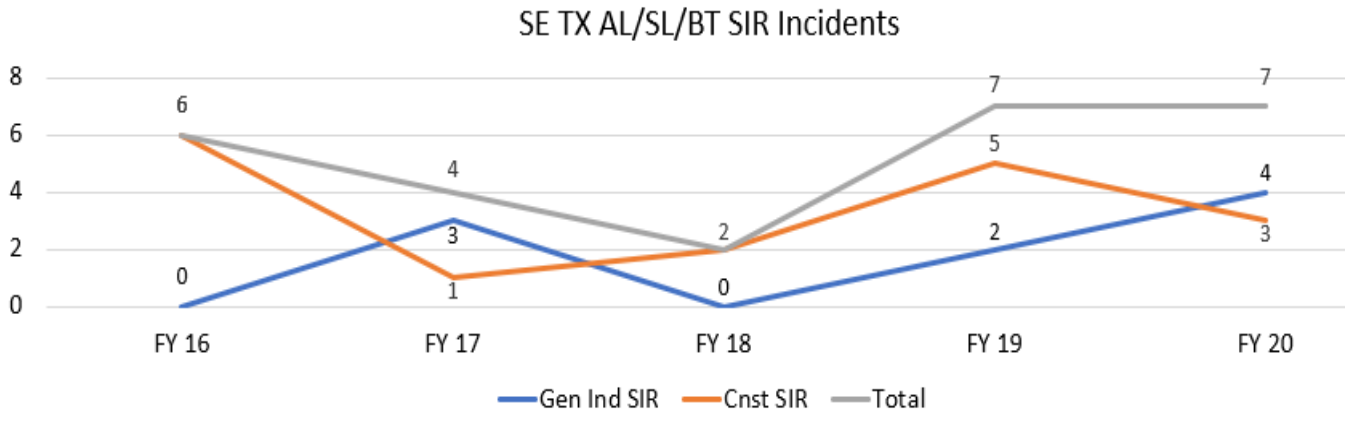
- Employee was standing on a scissor lift installing waterproofing material below the gutter of a commercial building. As the work was about to finish, his brother backed up the scissor lift instead of lowering it. He contacted an 18,000 V line and was electrocuted. FY 20
- Crew was cleaning up debris from hurricane Laura. The lift boom truck was struck by an arc from an overhead power line. It is believed the electricity passed through the lift boom to the crew's truck and trailer parked nearby and struck him as he was touching the trailer. FY 20
- Employee was in the process of replacing an insulator on a substation while working from an aerial lift. At some time during the process, he received an arc flash from induced voltage and was electrocuted. Estimated electric voltage was 138 kV. FY 20
- An employee in contact with the ground and the rear of a boom truck was electrocuted when the boom truck became energized by a nearby overhead power line. FY 19
- An employee was in an aerial lift taking down a fiber optic box when he came into contact with electrical lines of approximately 19k volts. He was pronounced dead at the scene. FY 19
- Injured employee made electrical contact with a distribution power line while in a bucket truck. FY 16

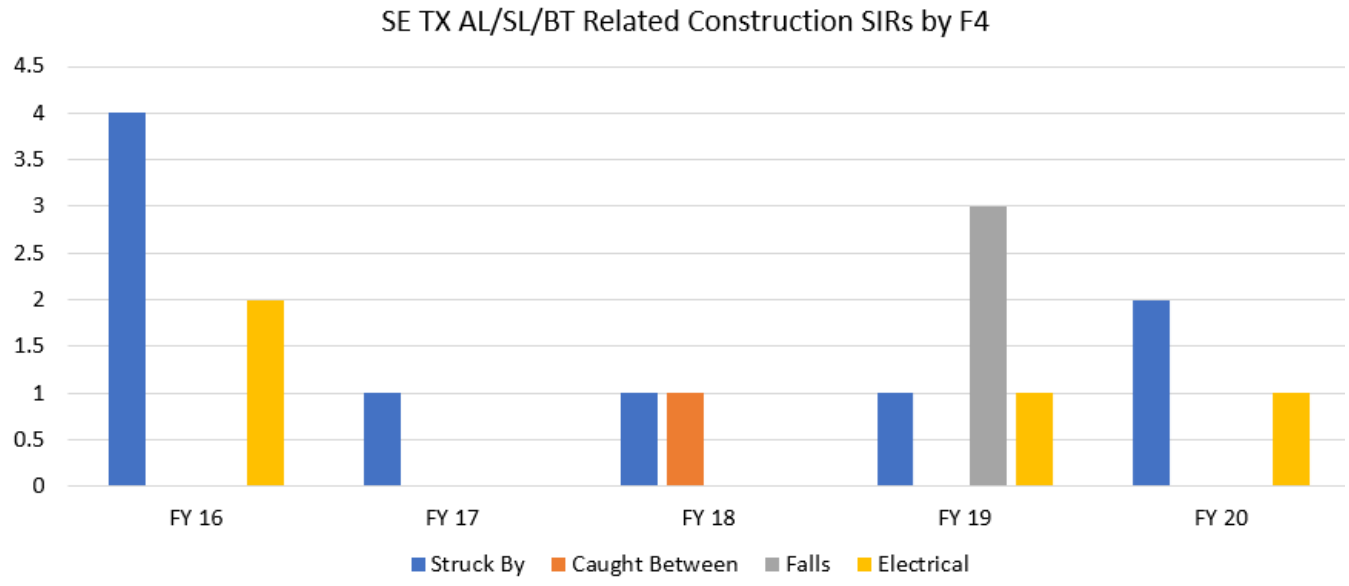
Caught between stationary and moving equipment or objects

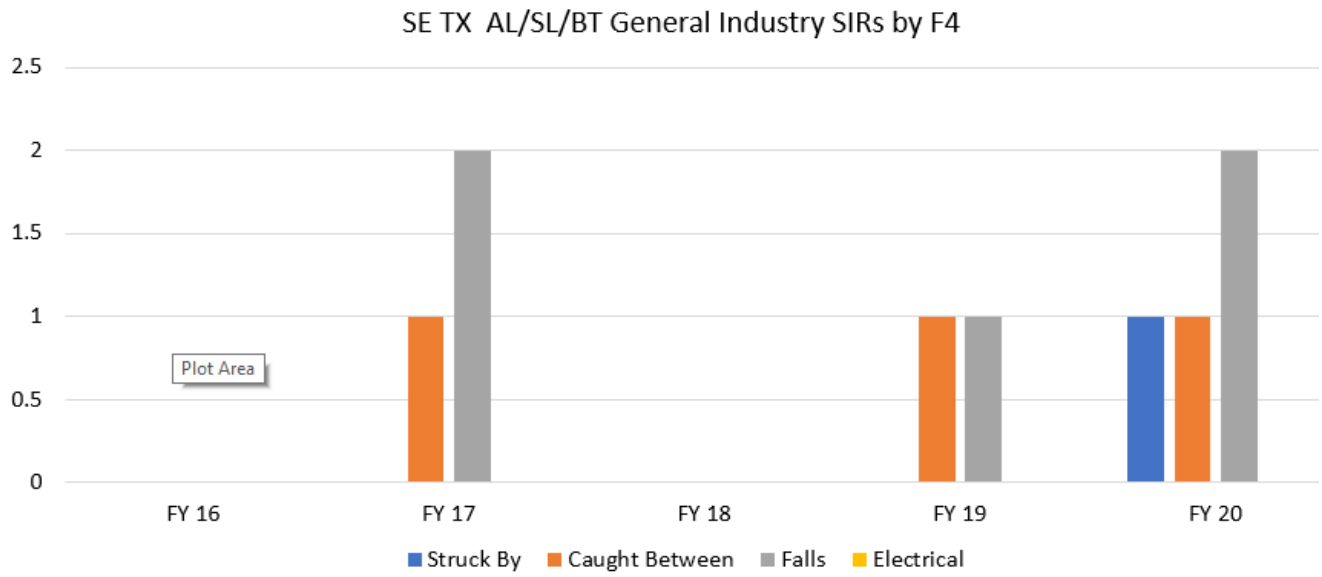
- Employee was welding angle iron on a gymnasium under construction. He was working from an aerial lift and became caught between the steel beam above him and the control panel of the aerial lift. He was found unresponsive with the aerial lift still applying pressure to him. He was removed from the lift and was pronounced dead at the hospital. FY 20

- Employee was bolting/connecting steel joists from an aerial lift at a height of approximately 40'. He was going to move lift 25' towards the crane's spread bar to untie the joist bed. As he initiated the movement he traveled backwards and his neck became pinned between the steel joist and aerial lift control console. A co-worker saw him pinned and not responsive and yelled for another worker on the ground to start lowering the aerial lift. As the aerial lift was being lowered, he fell out of the aerial lift and struck the ground. He had a fall protection system, but he was not tied off. He died from multiple blunt force trauma. FY 20
- Employee was on a scissor lift riding it upward quickly and he hit his head on the ceiling and was crushed between the lift and the ceiling. FY 16
- Employee was working on an overhead crane from a boom lift. He was found pinned between the controls of the aerial lift and the I-beam of the crane slumped over and un-responsive. Hospitalized and died 21 days later. FY 14
- A 35 year old employee operating an aerial lift painting. While attempting to position the aerial lift employee had his back to the building and either moved the aerial lift or boomed out pinning him between the building and control station inside the lift. FY 11

AL/SL/BT Related Serious Incidents (SIR) by Fiscal Year (FY) SE Texas







FY 16 – FY 20 AL/SL/BT Related SIRs by Event

Arc flash

- Employee was transferring live wires from an old power pole to a new pole while working from a bucket truck. His safety lanyard came close to a live power line causing an arch flash. He suffered 2nd degree burns where the metal parts of the harness contacted his body. FY 20

Caught between stationary and moving equipment or objects

- Employee was trying to scan the barcode on a truck. The truck driver lowered the scissor lift while his left foot was still under it, and it was caught under the lift. The big toe of the left foot was amputated. FY 20
- One employee was driving and another employee was riding the scissor lift and the employee riding the scissor lift was pinned between scissor lift rail and an exterior metal door frame breaking ribs and causing blood in his lungs. FY 19
- Employee was preparing to install mechanical rigging onto a new line when he pinched the 4th and 5th fingers of his right hand between the rail of aerial lift basket and cross arm of the power line structure crushing his fingers. FY 18
- Employee was in the process of using a scissor lift. The scissor lift would not lower all the way to the ground so he attempted to investigate what the problem was. He reached his hand underneath the fold of the lift to grab a wire that may have been the problem and at that time the lift came down on top of the employees left arm causing nerve damage. FY 17

Electric shock

- Employee was trouble shooting a light fixture when he came into contact with an energized circuit. The employee was working from a scissor lift at a height of approximately 19 feet. After the shock, the employee fell out of the scissor lift and landed on concrete surface. The employee was transported and admitted to the hospital. Electrical shock and multiple fractures. FY 16

Electrical burns

- Employee was replacing/fixing wiring on a light pole while in a bucket truck and received electrical burns to his face and body. FY 19

- Employee was in the process of moving an insulator cover that was draped over a power wire. Employee was working from a bucket truck about 30 feet up working at a utility power pole with another employee who was working in a separate bucket truck. The employees were in the discussing the job when the employee removed the insulator and when that happened the insulators cover failed. Employee received flash burns on his hands. Voltage was estimated around 34,000 volts. Employee was wearing all applicable PPE to include Class 3 gloves and sleeves, FR shirt and pants, hard hat, safety glasses and a restraint device located in the bucket truck. Employee was taken to the hospital. FY 16

Fall from tip over

- Holding a man lift while a contactor was changing light bulbs the lift tipped over and fell on the employee fracturing his left leg. FY 17
- Employee was working as a porter and was asked to replace a light bulb in the parking lot. While using an aerial lift and it tipped and he struck his head against the ground surface receiving lacerations and head injuries. FY 17

Fall lower level roof

- Employee was on the roof, guiding insulated roof panels into place for securing into steel beams with self-tapping bolts. He was working with two other employees, each of which were in a scissor lift used to lift the panels into place for securing. A roof panel being installed slipped from the beam at the peak before being secured and fell to the scissor lift below. This caused the other end to teeter upward and make contact with a 7620 volt power line. All three employees suffered electrical shock and burn injury and the employee on the roof fell onto concrete approximately 25' below suffering multiple blunt trauma injuries. FY 19
- An employee was getting down from a roof using a scissor lift. He unhooked his fall arrest lanyard to attempt to get into the lift and fell 30’ outside the to the base and suffered leg injuries. FY 19

Fall lower level structure or equipment

- Employees were working from a bucket truck about 10' off the ground trimming a tree. The bucket got snagged on a branch and as he pulled on it the tension pushed him and fell. He had left his PFAS in the truck. He suffered a sprained back and shoulder. FY 20
- Employee was operating an aerial lift taking his welding lead material to the roof of a tank. When the lift reached approximately 57' it stopped. He went to adjust the lift, and the lift fell with him attached to the basket. The basket fell to the floor of the tank. He broke both feet, both ankles, multiple lacerations, and five fractured vertebrates. FY 20
- Employee was in an elevated scissor lift running wires to light ballasts when the scissor lift fell over when struck by a near-by aerial lift. The employee and the lift fell to the cement ground and he fractured his ankles, pelvis, and vertebra. FY 19
- Employee climbed on the mid rail of a lift (without wearing fall protection) to fix an air line with a pair of pliers. He fell out of the lift and struck a tank car below fracturing his pelvis. FY 19

Struck by

- Employee was operating a scissor lift and was going from a room to a main corridor of the building that was under construction. As he was moving from the room to the corridor his head scraped the part of the ceiling where the two rooms met. The employee was wearing a hard hat and received bruises and small lacerations to the head from the hard hat's carriage assembly. The company stated that he is 6 foot 4 inches and that the scissor lift was completely lowered when he was moving it from room to room. Head trauma. FY 16

Struck by blade/knife/sharp object

- An employee was in a boom lift replacing emergency light at a warehouse. Employee was lowering himself when he swung the bucket into an industrial ceiling fan causing lacerations to his left forearm. Employee was taken to the hospital for treatment. FY 16

Struck by collapsing structure, equipment, or material

- Employee in an aerial lift was assisting in the erection of precast tilt up concrete panels. Upon completion of the panel's erection, he detached the panel's rigging, and the crane's boom swung away from the work area. About 5 minutes later workers adjusting the panel began to notice it shifting away from its structure. Immediately after noticing the shift workers started clearing the area. Within seconds the panel became displaced and completely fell. During the panel's descend it struck the left side of an employee's aerial lift guardrail. The panel's strike caused the aerial lift to rebound sporadically. The rebounding motions caused the injured employee to strike the left side of his abdomen against the aerial lift's guard rails, and platform. This caused him to break his 5th and 6th left ribs, and suffer a partially collapsed lung. FY 20

Struck by falling object or equipment

- Red iron beams were being rigged to be removed as part of the form work for a concrete task. In removal of the beam, the crew lost control of one and it struck the scissor lift knocking it to the ground with the worker inside injuring his spleen and other injuries. FY 18
- Employee working from an extendable boom platform and was thrown outside of the platform due to the boom being struck by an overhead crane's block and tackle which had broken loose. The employee but was tied-off to the lift but sustained numerous spine injuries. FY 17
- One employee fell from structure being built at the time. He was performing connector duties making ready to extend the structure on the concrete pad. Another employee working in an aerial lift basket, performing welding on a beam plate on the wall suffered injuries because the structural steel which fell came crashing down on his aerial lift and slammed it to the ground. The employees suffered multiple blunt force trauma injuries and were taken to a nearby medical center. Multiple blunt force trauma laceration over left orbital bruised/broken ribs. FY 16

Struck by moving object or equipment

- Employee was installing drywall to the exterior building of a hotel. The employee was working from a boom lift and was approximately 40 feet from the ground. Another employee got on the service elevator and went up. The elevator made contact with the bottom portion of the cage of the boom. Upon contact the employee hit the rails of the cage and received a fractured jaw. FY 16

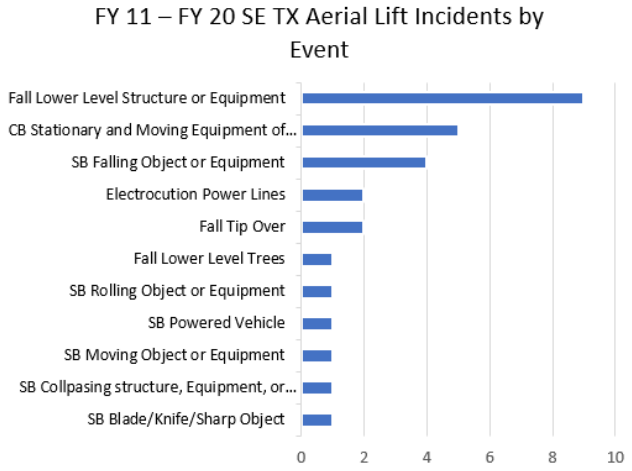
Struck by powered vehicle

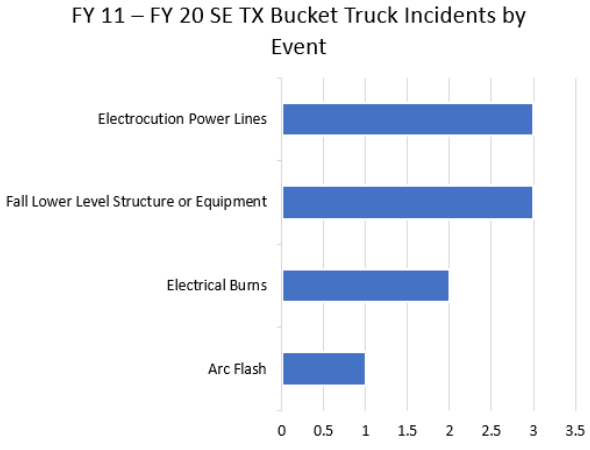
- A pipefitter was struck by and/or had his ankle crushed by a scissor lift that was being moved onsite. He was walking along side of, and operating, the scissor lift via the machine's remote control, moving it another location for storage. Employee used the remote control to change the direction of travel of the scissor lift and the wheel of the lift made contact with his left ankle breaking it. FY 20
- Crane technician was in a man lift, tied off, and was struck by a stacker crane operated by another crane technician from the same company. The lift fell over and the tech inside received a broken ankle. FY 19

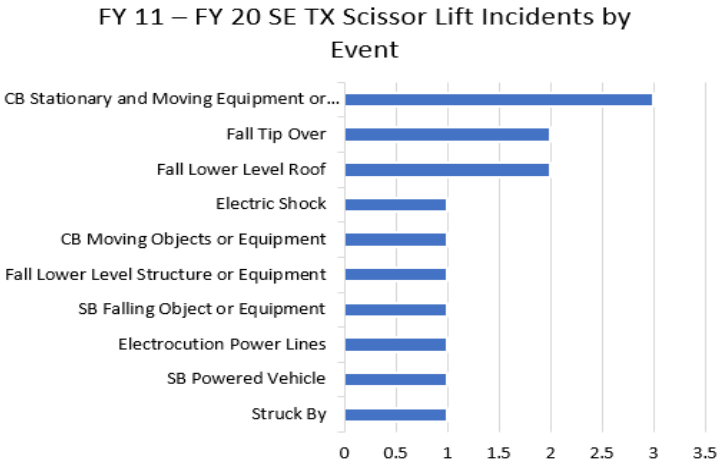
Struck by rolling object or equipment

- Employee was run over by a man lift as he was off loading it manually from a trailer that was sitting at an angle of approximately 13 degrees. The man lift began moving faster down the trailer than he thought and it rolled over him and then toppled over on him. He suffered multiple injuries - 3 broken ribs (r), clavicle (L), head on left side lacerations, ear lacerations (L), L3 Lumbar spine fractured. FY 20

All SE TX Incidents on Record (25 fatalities and 26 Serious**) by Major Type of Equipment**







When looking at the fatalities and serious incidents, failure to follow a few key safety practices seem to be the cause of the majority of incidents. Workers must be trained on how to safely operate the equipment and to identify and avoid hazards. Many of the incidents in SE TX appear to relate to these safety hazards:

- Falls – On aerial lifts ensure a body harness or a restraining belt with lanyard is attached to the boom or bucket. On scissor lifts ensure guardrails are installed, functional, and the gate is closed. When on an elevated work platform keep your feet on the floor and don't climb on or lean over guardrails and hand rails. When accessing a work level ensure your protected from falls if you're transitioning from the lift to a structure.
- Electrocutions – Select work locations that do not approach electrical power sources such as overhead power lines by at least 10'. If the job task requires work near an electrical source, the worker must be qualified and have received the required electrical training. [29 CFR 1910.269; 29 CFR 1910.333; 29 CFR 1926 Subpart V] and use the appropriate lift for electrical work.
- Crushing Injuries – Position the lift to avoids crushing hazards that occur when the lift is near fixed objects, near other moving vehicles and operations, or when the lift is going to pass under or near a door frame or support beam. Before moving, or repositioning the lift, take a minute to look around at the work location and the position of the lift, and identify any hazards in the area that may present a hazard.

There are many more safe work practices discussed in the OSHA Fact Sheets on Aerial and Scissor Lifts. However, review of the SE TX incidents shows that most incidents could be avoided by correctly using fall protection, staying at least 10' from overhead lines, and checking the work position for crushing hazards before moving or adjusting the lift.

Examples of Applicable OSHA Regulations and Consensus Standards

OSHA Regulations for Scissor Lifts:

General Industry

- 1910.27 – Scaffolds and rope descent systems
- 1910.28(b)(12) – Duty to have fall protection and falling object protection
- 1910.29(b) (Note) – Fall protection systems and falling object protection-criteria and practices

Construction

- 1926.20(b) – Accident prevention responsibilities
- 1926.21 – Safety training and education
- 1926.451 – General requirements
- 1926.452(w) – Additional requirements applicable to specific types of scaffolds - mobile scaffolds
- 1926.454 – Training requirements

The American National Standards Institute (ANSI) has standards for manufacturing, owning and operating scissor lifts. They can be found in ANSI A92.3-2006 (Manually Propelled Elevating Aerial Platforms) and A92.6-2006 (Self-Propelled Elevating Work Platforms).

OSHA Regulations for Aerial Lifts:

General Industry

- 1910.67 – Vehicle-mounted elevating and rotating work platforms
- 1910.333(c)(3) – Work Near Overhead Lines
- 1910.269(p) - Electric power generation, transmission, and distribution mechanical equipment

Construction

- 1926.20(b) – Accident prevention responsibilities
- 1926.21 – Safety training and education
- 1926.453 – Aerial lifts
- 1926.502 - Fall protection systems criteria and practices

Additional information can be found in ANSI A92.2-1969: Vehicle Mounted Elevating and Rotating Work Platforms into the standards. ANSI/SIA A92.3, ANSI/SIA A92.5, ANSI/SIA A92.6 are also applicable.

New ANSI standards, not adopted by OSHA, have been promulgated covering Mobile Elevating Work Platforms (MEWPS) which include aerial and scissor lifts. These updated consensus standards include:

ANSI/SAIA A92.20-2020

- Design, Calculations, Safety Requirements and Test Methods for Mobile Elevating Work Platforms (MEWPs)

ANSI/SAIA A92.22-2020

- Safe Use of Mobile Elevating Work Platforms (MEWPs)

ANSI/SAIA A92.24-2018

- Training Requirements for the Use, Operation, Inspection, Testing and Maintenance of Mobile Elevating Work Platforms (MEWPs)

These standards can provide additional information on safe work practices and operations.

Resources**

	**OSHA Aerial Lift Publications** https://www.osha.gov/publications/bytopic/aerial-lifts **OSHA Scissor Lift Publication** https://www.osha.gov/publications/publication-products?publication_title=scissor
	**OSHA Scaffolding eTools** https://www.osha.gov/SLTC/etools/scaffolding/index.html
	**OSHA Hurricane eTool Aerial Lifts** https://www.osha.gov/SLTC/etools/hurricane/aerial-lifts.html
	**Harwood Grant Aerial Lifts in Tree Care Industry** https://www.osha.gov/dte/grant_materials/fy14/sh-26301-sh4.html

* DISCLAIMER: This information has been developed by an OSHA Compliance Assistance Specialist and is intended to assist employers, workers, and others improve workplace health and safety. While we attempt to thoroughly address specific topics [or hazards], it is not possible to include discussion of everything necessary to ensure a healthy and safe working environment in this presentation. This information is a tool for addressing workplace hazards, and is not an exhaustive statement of an employer's legal obligations, which are defined by statute, regulations, and standards. This document does not have the force and effect of law and is not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies. It does not create (or diminish) legal obligations under the Occupational Safety and Health Act. Finally, OSHA may modify rules and related interpretations in light of new technology, information, or circumstances; to keep apprised of such developments, or to review information on a wide range of occupational safety and health topics, you can visit OSHA's website at www.osha.gov. Fatalities, catastrophes, serious incident reports are logged or recorded in various mediums and reports are generated using various sorting criteria. Houston specific data is edited to determine a count of fatalities/catastrophes or Serious Incident Reports (SIRs) under OSHA jurisdiction and may change over time as records are updated. Narratives are generally based on the first report of the incident and are rewritten and edited for brevity and/or readability and may not reflect the final results of an investigation. The incidents are a snap shot in time and may not be an exact count and are provided for accident prevention purposes, trending, and educational purposes and is not intended to be a statistical study or evaluation.

** Note that some older OSHA documents may refer to standards that have changed e.g. the General Industry Walking Working Surfaces Standard. Always verify the most current applicable OSHA standard.

For questions contact Jim Shelton, CAS, at the Houston North Area Office, shelton.james@dol.gov.