

All About Telescopic Bleacher Seats



Telescopic bleacher seats offer versatility and flexibility for gymnasiums and multi-use facilities. When more floor space is needed, they store in a very small space and extend when needed to provide spectator seating.

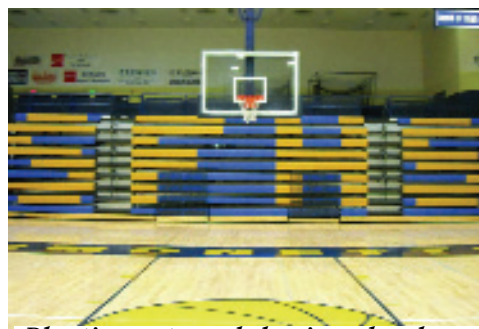
Today's telescopic seating offers a wide variety of choices in seat material, colors and configurations. Banks of seating can rise as high as 30 rows. Some telescopic bleacher seats can even be moved to form different seating configurations.

In the 70+ years or so that telescopic bleacher seats have been around, the basic underlying design has not changed that much. Improvements such as motorized drives to extend and retract the seating offer push-button convenience; plastic seat modules provide more comfortable seating and a rainbow of colors. However, the design and engineering of the telescopic mechanism has not kept pace with other innovations of modern life.

Unlike the advances made in other areas such as school architecture, HVAC, security and lighting, telescopic bleacher seats have been stuck using old technology and

outdated operating systems. The status quo has been preserved with design criteria, applicable standards and building codes that spell out the minimum requirements for acceptable telescopic bleacher seats.

The problem is that the design flaws that are perpetuated by the old technology do eventually surface and cause telescopic bleacher seats to break down, not work right and have to be repaired repeatedly. In extreme cases, there is even the potential for the seating to collapse from metal fatigue and failure. Problem-plagued telescopic bleacher seats can be a real headache and a financial drain on schools.



Plastic seat modules in school colors provide a colorful element in school gymnasiums.

How did this come to be? To answer this question, let's examine how the situation may have come about. (The exact details are lost in time, but perhaps the story goes something like this . . .)

A Not-So-Old Fairy Tale

Once upon a time, all bleacher seats were the stationary kind. The Roman Colosseum, and before that the open-air theaters of the Greeks, used stationary stone seats. In time, someone proposed that if seats could be made to fold up against the wall, more floor space would be available.

Was it a school administrator who requested the first folding set of bleachers? Maybe the process played out like this: The school administrator approached an engineer to design and build the storable seats. At the top of the school administrator's list of requirements was that the seating would be safe for the students to sit on. The engineer assured the school administrator that the final result would bear all the weight of the seated spectators. Then he got together with a metal fabricator to come up with a solution.

They went through all the steps of making a prototype for a trial demonstration at the factory, then on to production and installation. After a demonstration and acceptance of the newly installed telescopic bleacher seats the school received a one-year warranty.

The first year passed with no communication from the school. By the second year, the school administrator contacted the engineer and stated they were having problems with the seating. The engineer and metal fabricator came to the school and immediately saw some things that were causes for concern. Poor housekeeping had resulted in debris piling up beneath the bleachers. The leading edge of the seats from the second row up was bent down, appearing to "sag". Bleacher sections were not opened and closed evenly.

During their inspection, the engineer and metal fabricator also observed a coach extend the bleachers part way, so students could sit on rows one through three while the teacher takes attendance for class. One of the students then climbed up the front of the stored rows and sat on the top rows.



When conferring with the school administrator, the engineer and metal fabricator pointed out what was causing the difficulty in operation:

- Debris beneath the bleachers did not allow the wheels to turn freely and damaged the supporting structure.
- The bleachers were not being opened and closed properly. They were not opened in the correct sequence of steps and were being used in a partially extended position.
- Climbing on the retracted bleachers is not allowed and is a factor in making the bleachers sag downward.

As a result of this meeting, the bleachers were repaired at no cost to the school administrator. The engineer and metal fabricator again reminded the school administrator of the importance of operating the bleacher mechanism as intended, no students climbing on the bleachers in the stored position and keeping the floor beneath the bleachers clean and free of debris.

A Happy Ending?

Another year went by, and again the school administrator called the engineer and again informed him that the school was having problems with the telescopic bleacher seats. The engineer and metal Fabricator visited the school and saw - again - debris underneath, uneven open and closed sections being used, and even students climbing on the retracted bleachers.

When these shortcomings were pointed out to the school administrator, he explained that he could not supervise the gym every minute of every day. Lapses in housekeeping and kids climbing were bound to occur, even with his best efforts. Of course, the engineer quickly pointed out that these were outside the scope of what the telescopic bleacher seats were designed for, and not his responsibility. In fact, the engineer's opinion was that this constituted misuse and abuse.

The two sides were at an impasse. As a "band-aid" solution, signs were attached to the bleachers that read: "Do not climb, stand or sit on gym seats when in the closed position. It will damage the understructure. Keep clean and free of debris prior to operation. Operation by authorized personnel only. Open and close evenly". (Note: Handy reminders also provide a disclaimer for manufacturer) The impasse continues.



Welcome To The Real World

Our fable illustrates the point that problems with telescopic bleacher seats are built into the original design. Without a modification to the design, these problems will emerge - sometimes sooner, sometimes later. But they always, eventually, occur.

Remember, telescopic bleacher seats are designed to do two things: 1) Safely hold spectators in the full open and locked position, and 2) Retract up against the wall. Even though the supporting structure is adequately designed to do these two functions, telescopic bleacher seats were not designed for people to climb or sit on them in the partially open or fully closed positions.

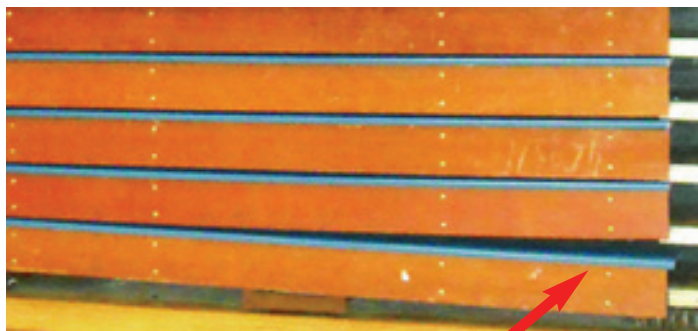
A Closer Look At How Telescopic Bleacher Seating Works.

You don't have to be an engineer to understand the basic principle behind the design. When telescopic bleacher seats are completely closed, all the vertical support columns are retracted back toward the wall. The weight of the seating, floorboards and risers is supported by a telescopic arm coming out from the wall. This arm has enough strength to support the weight of the seats ("dead load") when closed. When opened fully, a vertical support column moves out from the wall and locks in position under the telescopic arm to support the additional weight of spectators ("live load").

Without the vertical support column being locked into position, any downward force (either from students climbing on closed bleachers or of their own weight) will cause the telescopic arm to bend down. The seats will sag.

Meet Bleacherman

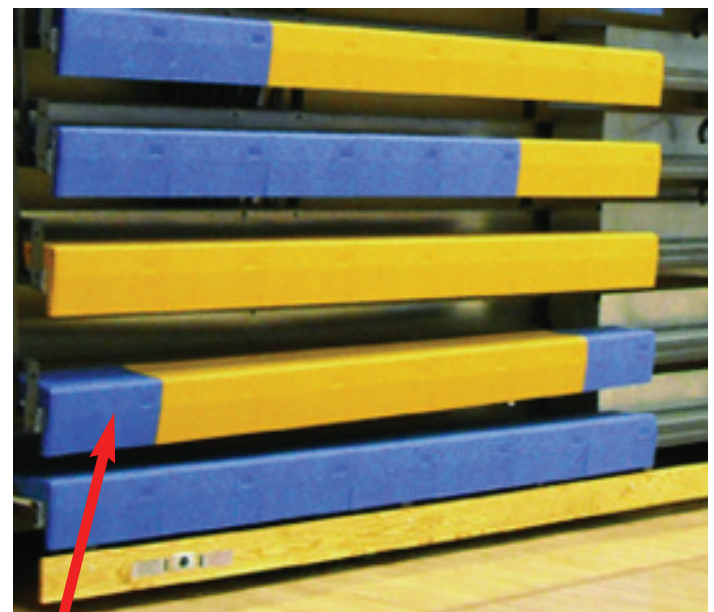
Once the seats sag, opening and closing the telescopic bleacher seats becomes difficult, as the bent arms scrape against the row below. Sometimes (in badly bent seats), opening the first row of seats is a major ordeal. When crowbars and grease are called for, just to operate your telescopic bleacher seats, call for Bleacherman!



Bleachers sagging at the end.



Bleachers sagging in the middle.



Bleachers sagging at the end.



Another view of sagging at the end of the bleacher section.

“Bleacherman” aka Mr. Louis R. McArthur, Jr. was an experienced metal fabricator when he began M.A.R.S. Inc. (Manufacturers Applied Renovation Systems, Inc.) in 1987. At that time, M.A.R.S. Inc. was a business that installed, repaired and refurbished school lockers, as well as being involved in other aspects of school renovation.

In the course of business, Lou McArthur was approached on several occasions by school personnel, asking him to “take a look at our telescopic bleacher seats”. Before long, he was able to identify a common thread among all the seats - no matter who manufactured the seats.

- Bleachers sag after students climb on them, or of their own weight
- Poor housekeeping underneath was an area of concern
- Uneven opening and closing of sections contributes to understructure damage

Compounding the potential to sag was the trend toward new telescopic bleacher seats being made cheaper, with lighter steel and with longer “spans” (space between vertical support columns*). That meant that not only did new bleacher seats sag downward from the wall attachment, they were also sagging from left to right, especially on the ends.

* *Originally, most telescopic bleacher seats used a maximum of four vertical support columns every twelve to sixteen feet. Some years ago, seats were introduced that used two vertical support columns every twenty feet, maximum. Today, most systems have spans as large as twenty-six feet wide with just two vertical support columns.*



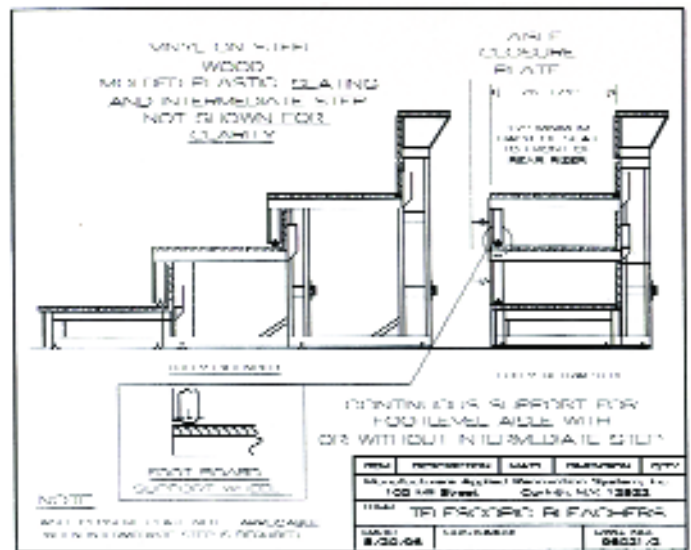
End view shows vertical support columns.

Also, new bleachers began to incorporate foot level aisles in the design, these aisles (in the closed position) look like a ladder -- an “invitation” to climb the bleachers. After all, the top two rows are the “best seats in the house.”

Learning about problems with sagging telescopic bleacher seats from school personnel was the beginning of an education in telescopic bleacher seats for Lou McArthur. It was also the beginning of his search for a solution to these persistent problems. With his background in metal fabrication, and with his existing shop and crew, he first learned how to repair sagging bleachers so they would operate correctly.

He also learned that sagging problems would return. Kids continued to climb on them, housekeeping would lapse, and the same damage would occur all over again. This prompted him to take another look at the design parameters of telescopic bleacher seats, from a real-world perspective.

Then it hit him. The arm holding the seats is like an arm held out parallel to the floor. It’s easy to push the arm down toward the floor. But if you put a cane under the arm, you can’t push the arm down.



That’s the principle behind the patented Century Design®, invented by Lou McArthur. With this system installed, telescopic bleacher seats simply won’t sag. The seating will support the same weight in the closed, partially open and full open position. This improved ability to support weight in any position is because of the “continuous footboard support” system.

The photos and drawings on the next page show how this design bridges the gap, using footboard support wheels that are coupled to foot extensions and travel continuously on the seatboards and seat level or floor level aisle. This method supports the understructure in all positions.

U.S. Patent No. 5,784,835

McArthur applied for and received patent protection for his design, which eliminated the design flaw in virtually all telescopic bleacher seats. Schools

found that when their sagging bleachers were repaired by Bleacherman – first to return them to a non-sagging condition, and then retrofitting with McArthur’s Century Design® system – that sagging problems were eliminated. In fact, the very first telescopic bleacher seats that were retrofitted with the Century Design® system ten years ago are still operating today, with no sagging.



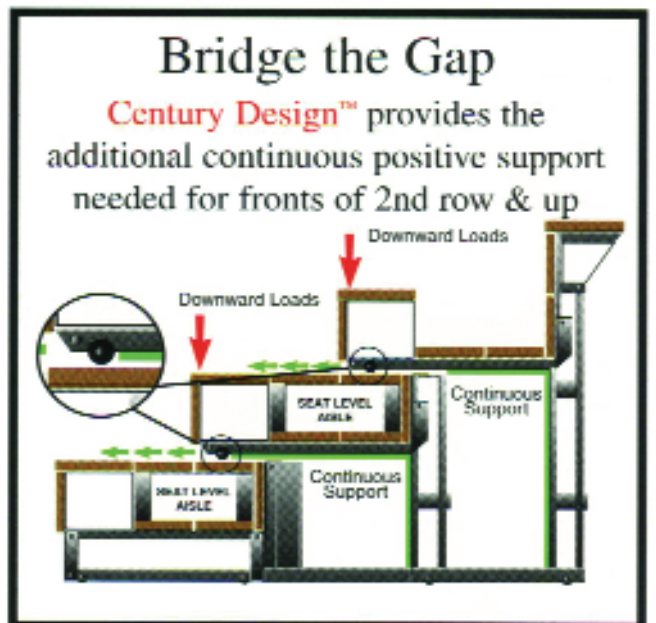
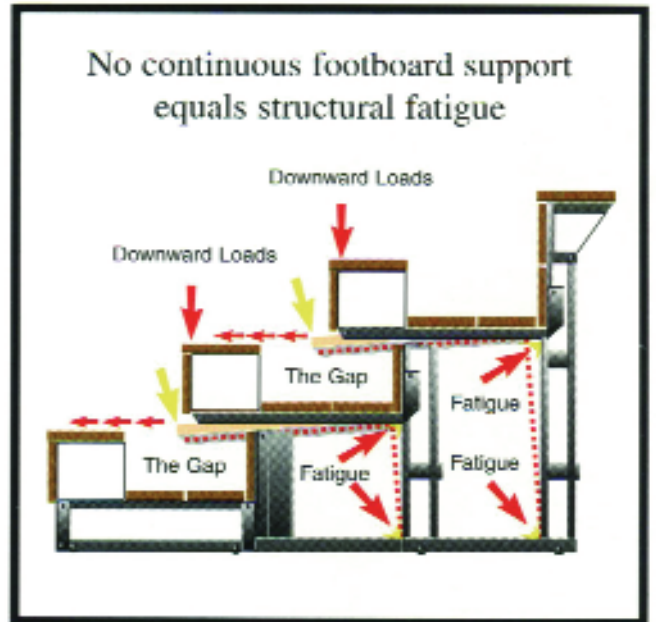
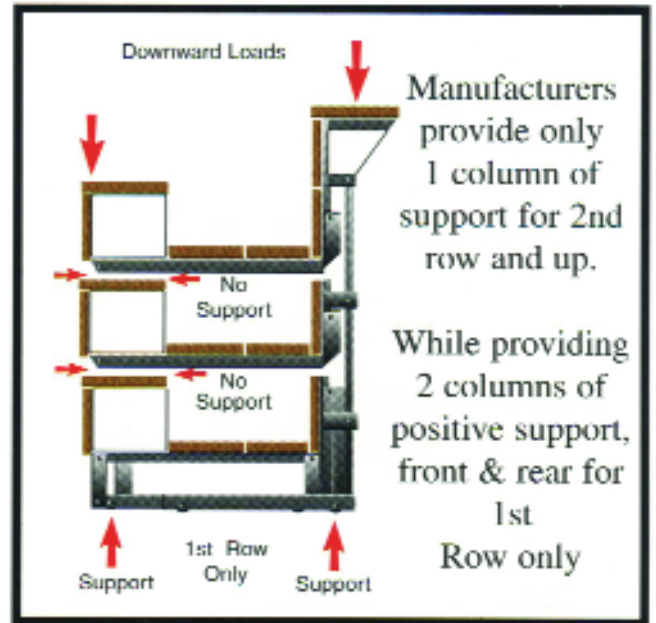
Continuous support wheel in closed position.



Continuous support wheel in the partially open position.



Continuous support wheel in full open position.



As the business of refurbishing telescopic bleacher seats expanded, McArthur's company (Manufacturers Applied Renovation Systems, Inc.) became known as Bleacherman and adopted that as its trade name. The news spread by word-of-mouth, and soon calls were coming in from all over the northeast United States to fix sagging telescopic bleacher seats. Other safety innovations and patents followed, along with the ability to service telescopic bleacher seats anywhere in the United States.

Today Bleacherman works with K-12 schools, colleges and other facilities across America, repairing sagging bleachers - and making sure they never sag again with the addition of the Century Design® system. The company has refurbished telescopic bleacher seating at more than 300 facilities in 30 states, plus Canada and Greenland. Bleacherman has a growing network of local sales representatives across the U.S. When a Bleacherman is contracted to refurbish bleachers, no sub-contractors are used -- although we frequently use local labor under the supervision of our factory trained professionals.

Years of Experience

In the past 25+ years of repairing and renovating all kinds of telescopic bleacher seating around the country, Lou McArthur has seen just about every bleacher problem imaginable: Bleachers that sag. Bleachers that won't open or close correctly (even with motor operation). Sections that don't fit evenly together. McArthur found that with telescopic bleacher seats, minor things do not stay minor very long.

But what really got his attention was that some bleachers problems can pose real safety hazards. Older bleachers can lack safety features that are required today. Statistics of 20,000+ injuries annually due to falls occurring on bleacher seating show there is a valid concern for bleacher-related safety issues. Bringing old bleachers up to full compliance with all national, state and local codes and addressing any safety issues for a particular installation of telescopic bleacher seating has always been a priority for Bleacherman.

When older bleachers were opened one section at a time (with either muscle power or "mules," portable motorized assists), they can have gaps or spaces where the sections should come together. Obviously, this poses a safety hazard because a child's foot can slip into the gap, with the potential for injury. Bleacherman's solution

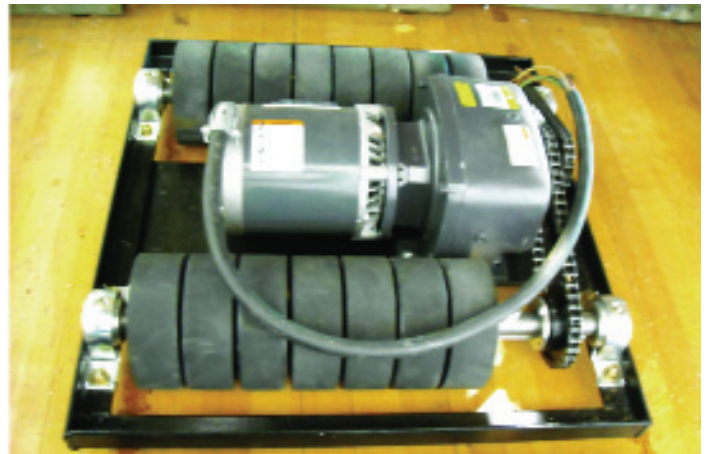


is to connect all the sections securely together and add heavy-duty motors to open and close all the sections at once. Eliminating opening by sections eliminates the gap, and the public and personnel safety issues associated with manual operation.

Motorized Drive Systems

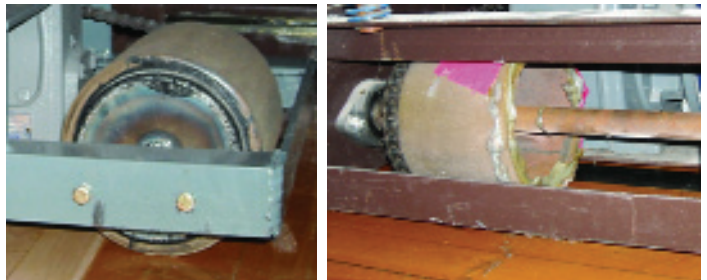
Our heavy duty motorized drives to open and close telescopic bleacher seats incorporate additional safety features:

- Improved design of friction drive wheels. Many manufacturers use two or four-inch-wide metal wheels with synthetic "tires" for the friction drive wheels. Bleacherman uses 6-inch diameter, 50 durometer wheels, ganged together to form one sixteen-inch-wide drive roller and one fourteen-inch-wide drive roller.



Bleacherman's motorized drive (with safety shroud removed) shows wide-track friction drive.

This design's wider track not only grips better, it avoids problems with the metal wheels and tires which can lose traction, delaminate and cause damage to the wood or synthetic floor).



Motorized drive systems by others show (at left) metal wheel with "tire" and (at right) four-inch-wide drive wheels.

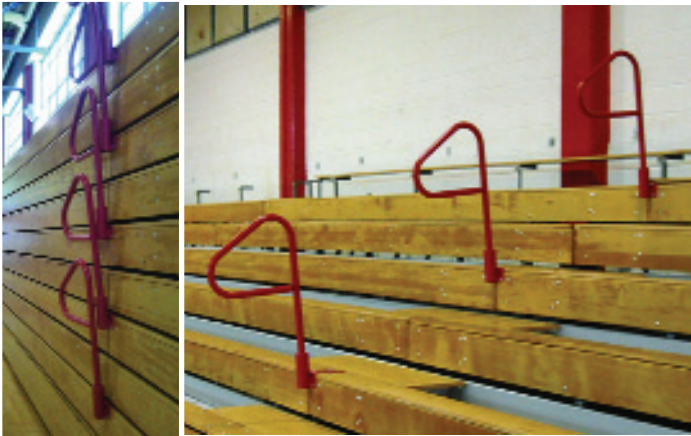
- Customized for the needs of each installation, with properly-sized motors. These components are frequently downsized by manufacturers to meet minimum specs (which also produces a lower bid). If the motors do not have sufficient power, they can burn out, or reduce the useable life of the motor.

- Pendant Controls for the drive system allow the operator to walk around to the end, and do a visual safety check before moving bleachers and during movement.

- Correct, even opening and closing. Bleachers that are opened manually or in sections can open unevenly, in a fan shape. This can bend and damage the telescoping system. Bleacherman's motorized drives open and close bleachers evenly, at the touch of a button.

- Option of no live wiring underneath. Many facilities prefer the option of a system which can only be energized when the pendant controls are plugged in by an operator, ready for use.

"We do whatever it takes for safety and code compliance," explains McArthur. "With some of the older bleachers we have to add closed-deck ingress/egress aisles, self-storing end rails and aisle rails. We'll also add new features the school may want, such as ADA cutouts, end curtains, video platforms and so on."



Bleacherman's uses its own design of aisle rails, the self-storing "P-rail," with self-locking feature. Set-up or storage is quick and easy, just lift and turn 90°.

When older bleachers are upgraded with aisles and cutouts, some seating area is lost when these features are added. Adding an extra row or extending a section is one way to add more seats when upgrading to new safety features. Whatever special needs your school may have, (including refurbishing telescopic bleacher seats at the same time as your wood or synthetic gym floor), and chances are that Bleacherman can save your school money.

Savings Add Up

With Bleacherman, faulty telescopic bleacher seats can be returned to like new condition (and work better than new), for a fraction of the cost of replacement seating. Instead of tearing out old sagging bleachers and replacing them with new bleachers, schools who chose Bleacherman to refurbish their

bleachers discovered that they saved 30 to 40 percent of the replacement cost. These savings can be applied to the school's "wish list" - every athletic director and school superintendent of buildings and grounds has one, especially these days.

Recycle And Save

Since the metal understructure of any telescopic bleacher seating is the most expensive part of the mechanism, it makes sense to recycle it. With some large installations costing in the six-figure range, saving a third or more of the replacement cost is welcomed in today's cost-cutting climate. The fact is that even damaged understructures have value. According to McArthur, "It is our policy not to discard anything of value, whether it is understructure, seating or motor systems. This allows the owner to preserve as much of their equity in their telescopic bleacher seats as possible and stretch their dollars".

Bleacherman can refurbish all makes of telescopic bleacher seats and motor systems, even for manufacturer who are no longer in business. An extensive inventory of replacement parts and fabrication materials are held in inventory at the company's main plant, a 29,000 square foot facility in Corinth, N.Y.

Old Bleachers Look New Again

When it comes to telescopic bleacher seats, lots of choices are available. Plastic seat modules are available in a rainbow of colors, and many schools choose to spell out the school's name in school colors. If a school likes the traditional look of wood seats, that material can be recycled as well for additional savings.



Vinyl on steel seating is durable and damage-resistant, offering low-cost maintenance.

Another seating surface is vinyl on steel (VOS) which is typically the lowest cost option when refurbishing seats. Seat and riser are formed as one piece from sheet steel and a vinyl coating applied (in colors or simulated wood grain). Another advantage is that dents or damage can be easily repaired, similar to automotive sheetmetal work. This seating "wears like iron" - because it is.

A Word About Wood

Most wooden seats used in telescopic bleacher seats are made of wood from one of three species: fir, yellow pine or mahogany. Older seating is likely to have high quality lumber (thicker boards of top grades) which can be difficult, expensive or even impossible to find today. Bleacherman has an extensive inventory of new and recycled lumber that can be used as required for replacement.

Bleacherman's on-site team of experts can refinish the wood to like new condition, with experienced wood workers who will plane, sand and seal the wood seats, and reinstall with new hardware for an "as new" look.



Fifty-year-old Fir seats before refinishing (at left). After planing, sanding and edging, the same lumber (at right) looks new again. Re-installed with new hardware, this seat is ready for another fifty years.

Schools that retain the traditional beauty and warmth of vintage wood seating save a substantial amount, when compared to replacement costs. Ultimately, refinishing costs much less than buying new seating.

20-year Warranty

Only Bleacherman offers a 20-year warranty on telescopic bleacher seats that the company has refurbished and retrofitted with the patented Century Design® support system.

The warranty is unlike any other warranty in the industry, covering all parts and labor for understructure, motors and drive rollers. If your bleachers sag, drive motors become defective, or drive wheels delaminate, they will be repaired or replaced free of charge. Climbing, standing or sitting in the closed or partially open position is not a disclaimer, and does not void your warranty.

Remember, telescopic platform seating should be treated the same as a school bus. Both have hundreds of moving parts and carry a lot of people. NFPA Life Safety Code requires annual inspection and service to be performed ensuring safe conditions. At least biennially this inspection should be performed by qualified service persons or a professional engineer. Code compliance relies on the school's policy on following State and Federal mandates.



When we say "NO Sag," we mean NO sag. Bleachers retrofitted with Century Design are shown here with 1500 lbs of liveload in closed position (unintended for occupancy).

Get The Experts On Your Side And Get What You Need, The First Time

If you are considering a telescopic bleacher project, don't make the mistake of buying old technology. The best way to avoid the problems that are built into bleacher seats that sag, is to find out about the only bleachers that won't sag - new or existing bleachers retrofitted with the patented Century Design® support system. It all starts with the specifications for your project. While many manufacturers will provide their basic specs as a guideline for bidding, that is only a starting point. Remember these three points when preparing specifications for your project: 1) Specify exactly what you need, 2) Qualify the bidders, 3) Confirm that the bleachers meet all specifications.

Available For Consultation

Mr. Louis R. McArthur, Jr. is the inventor of the patented Century Design® system, President of M.A.R.S., Inc. /Bleacherman and a recognized expert on telescopic bleacher systems and safety. In 1999, he appeared before the Consumer Products Safety Commission in Washington, D.C. to give testimony on potential safety hazards in telescopic and stationary bleacher seats. McArthur is available as a consultant, advising owners of public seating on safety and mechanical issues. He is available to assist owners in preparing specifications for bleacher seating that allows for long-term, trouble-free use at the lowest cost.



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