SPECWORK

CSI®
LITTLE ROCK CHAPTER

Little Rock Chapter - Chartered November 1965 December 2024

In This Issue

OUTSTANDING CHAPTER COMMENDATION
CSI
Building Knowledge
Improving Project Delivery
SILVER LEVEL

CSI®
LITTLE ROCK CHAPTER

Dear Members and Friends of the Little Rock Chapter, CSI

We are entering into the holiday season, a time when people are both happy and stressed to the max. I have a short message this month.

Take time to look around and count your blessings.

Tell those you love just how important they are to you.

Tell your friends just what their friendship means to you.

Live your life to fullest and share where you can.

I have developed a life motto that keeps me on an even keel. It is – "**As long as I am 6-ft tall and not 6-ft under, it is a good day**". If you can approach life with that positive attitude you will feel better, see the good thing out there, and maybe even make someone else happy.

Happy Holidays from the Board of Directors

What I Learned From CSI - Spindletop Revolving Restaurant: Now Serving Spinning Heads and (no) Pea Soup - Houston Texas

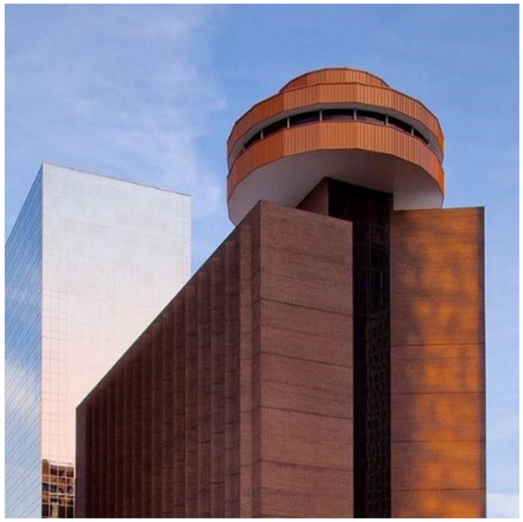
By: Gary Bergeron, CSI, CCS, GSR Technical Chair

What does a group of Construction Specification Institute (CSI) people do after an evening awards ceremony while out of town in Houston, TX? We were in a celebratory mood since the Knoxville chapter earned the Outstanding Chapter Commendation (OCC) and Stacy Colbaugh again won the National Communication Award for THE SPECK newsletter. Earlier, we noticed the advertisement for the Spindletop restaurant in the Hyatt Regency welcome folder. The advertisement promised an extraordinary dining experience with a rotating floor that allowed you to see the Houston skyline from several different vantage points.

Noticing the Spindletop restaurant elevator button on the 30th floor, the group decided to “perform” a site visit. Until the elevator doors opened, we did not know the revolving restaurant was empty and unoccupied. A simple excursion to the 30th floor quickly turned into a “haunted” tour of the restaurant with Suzan Jordan, Kathy Proctor, Chris Leibensperger (1st time CSI National Conference attendee), and Gary Bergeron. The only light was from our cell phone flashlights reflecting off Suzan and Kathy's sparkly outfits they wore for the awards ceremony. Suzan didn't find any Dupont Tyvek, but Kathy found several architectural wonders of the restaurant. Chris and I were interested in the back of the house where the kitchen and other parts of the restaurant are located. We also found the narrow treacherous steps that lead up into the penthouse area, and found ourselves in the presence of elevator machinery, fire sprinkler, and fire hose equipment; along with some compromised sprayed-on fireproofing. Sadly, the roof access door was locked.

We highly recommend visiting this restaurant for an event or even a special dinner once it is open again. The photos in the link below are certainly a harbinger of the menu.

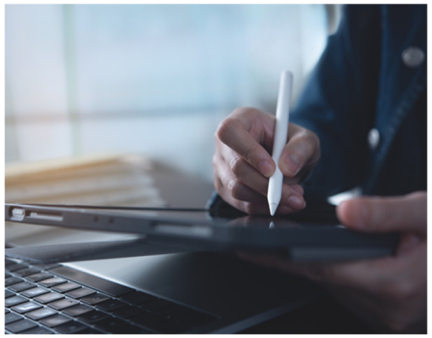
Please see the photos below which illustrates interesting aspects of the building and additional photos at https://www.facebook.com/SpindletopHouston/photos_by/ You might want to attend the next local CSI meeting or even come to the National CSI conference which will be in Cleveland, Ohio next year. Some “seasoned professionals” might lead you on another mysterious site visit. Contact Gary Bergeron at Gary@kelso-regen.com for any comments or more information.




RE HOSE

Seals and Signatures Evidence of Responsible Charge by Design Professionals Part 2 – Electronic Seals and Signatures

By: Kevin O'Beirne, PE, FCSI, CCS, CCCA, CDT



This is the second in a four-part series on this blog addressing sealing and signing of instruments of service by design professionals, comprised of: (a) Part 1 – Definition and Purpose of Seals; (b) Part 2 – Electronic Seals and Signatures; (c) Part 3 – Statutory Requirements Concerning Sealing and Signing of Documents; and (d) Part 4 – Practical Considerations Concerning Sealing and Signing.

Electronic sealing and signing is likely the predominant means for design professionals to indicate they were in responsible charge of the preparation of a document comprising their instruments of service. The prevalence of digitally producing, distributing, and using electronic construction documents and reports, together with multiple personnel serving in responsible charge, and distribution of project teams across multiple offices, has fostered use of electronic seals and signatures. However, improved convenience provided by technology may come with associated risks.

Terms such as, “[architect] [engineer] of record” and “[architect] [engineer] -in-responsible-control” are typically construed as having the same meaning as, “’[architect] [engineer] -in-responsible-charge”. In many organizations, the terms are used interchangeably for a given design discipline. For convenience and uniformity, the term “responsible charge” is used in this article. Also, in this article, laws, rules, and regulations are referenced as either “laws and regulations” or “statutory requirements”. Furthermore, the term “instruments of service” means the collection of documents, drawings, specifications, calculations, and other tangible materials produced by design professionals during the various stages of a project. (Source: Understanding Instruments of Service (aiacontracts.com))

For many decades, licensed design professionals sealed and signed their instruments of service using the traditional approach of either inked rubber stamps or raised, embossed metal seals, followed by applying an original, “wet” signature. Since approximately the early- to mid-2000s, electronic sealing and signing has become perhaps the dominant means to indicate the person serving in responsible charge. Practices concerning electronic sealing and signing vary considerably by jurisdiction, design firm, and individual, as well as information technology resources available. How electronic sealing and signing is accomplished in 2024 is a hodge-podge of practices and technological applications, with the most basic, and perhaps most common, approaches being among the least secure.

Statutory Requirements for Electronic Seals and Signatures

The first step in determining appropriate practices for electronic sealing and signing is understanding and complying with applicable laws and regulations governing the practice of the associated design profession in each jurisdiction where a design firm and its licensees practice. As with other matters related to statutory requirements governing the design professions, requirements for electronic sealing and signing vary by jurisdiction.

The National Council of Architectural Registration Boards (NCARB) publishes model statutory language governing the practice of architecture in the United States. Both Section 401 and Section R401, of NCARB Model Laws and Regulations expressly allow the use of electronic seals by architects. However, NCARB’s Model Laws and Regulations include no suggested language concerning use of electronic seals. Section 401 of NCARB’s Model Law states in part, “It is the responsibility of the Architect to provide adequate security over the use of the Architect’s seal”, but provides no further clarification concerning security obligations for electronic seals and signatures.

The National Council of Examiners for Engineering and Surveying (NCEES) publishes suggested language for state and territorial laws and regulations governing the practice of professional engineering and land surveying in the United States. Section 240.20 of NCEES's Model Rules (revised August 2022) presents comprehensive, suggested requirements for using electronic or digital seals and signatures by professional engineers and land surveyors. These requirements appear to be complete and appropriate relative to securing the integrity of the licensee's digital or electronic seal and signature, and might serve as a model for all licensed design professionals desiring to properly secure their electronic seals and signatures. Section 240.20.H reads as follows:

"H. When a licensee is required to seal and sign engineering/surveying documents, one of the following methods must be used:

"1. Physical placement of a seal and a handwritten signature in permanent ink containing the name of the licensee
"2. Digital placement of a seal and a handwritten signature in permanent ink containing the name of the licensee
"3. Digital placement of a seal and a digital signature containing the name of the licensee

"Drawings, reports, and documents that are signed using a digital signature must have an electronic authentication process attached to or logically associated with the electronic document. The digital signature must be

"1. Unique to the individual using it
"2. Capable of verification
"3. Under the sole control of the individual using it
"4. Linked to a document in such a manner that the digital signature is invalidated if any data in the document is changed.

"A digital signature that uses a process approved by the board will be presumed to meet the criteria set forth in Section H above. Any hard copy printed from the transmitted electronic file shall bear the facsimile of the signature and seal and be a confirmation that the electronic file was not altered after the initial digital signing of the file. Any alterations to the file shall cause the facsimile of the signature to be voided.

Not all jurisdictions follow the excellent example suggested by Section 240.20.H of NCEES's Model Rules. As just two examples, New York State's and California's laws and regulations governing the practice of architecture, engineering, geology, and other design professions do not appear to address requirements for digital or electronic seals and signatures.

In contrast, Pennsylvania statutes establish complete and appropriate requirements for electronic sealing and signing. In Pennsylvania, both Section 37.60 of Title 49, Chapter 37, concerning the State Registration Board For Professional Engineers, Land Surveyors and Geologists, and Section 9.141a of Title 49, Chapter 9, pertinent to the State Architects Licensure Board, are virtually identical to Section 240.20.H of the NCEES Model Rules, copied above.

Types of Electronic Seals

Numerous online sellers of design professional seals and stamps offer electronic seals for modest prices, approximately $10 to $15, in return for an electronic file of the licensee's seal. Such files may be available in a variety of formats, including, ".jpg", ".png", ".tiff", ".pdf", ".dwg", and perhaps others.

However, such files are often merely unencrypted facsimiles of the associated stamp or seal, essentially similar to what the licensee could produce themselves using an inked stamp, a sheet of white paper, and a scanner. The principal advantage of purchasing such an electronic “seal” is that the image will be clear, and probably of better quality, than if the individual licensee scanned a copy of their own seal. The drawback of such files, whether purchased from a third-party seller or created by the individual licensee, is security and verifiability. The extent to which such files are properly secured depends on how widely the individual licensee allows access to such a file, and the electronic seal is applied to a native (executable) file of the associated document, such as a “.docx”, “.dwg”, or “.xlsx” file of reports, specifications, drawings, or calculations.

Security Concerns

Similar concerns apply to electronic signatures that are merely a scanned facsimile of the licensee’s signature. Without proper security, such files may potentially be copied and used without proper authorization or, perhaps, without appropriate regard concerning responsible charge. As just one example, when an instrument of service has an electronic seal and signature applied in native (executable) file format, others, whether or not acting under the supervision and control of the licensee, could potentially edit the associated document while retaining the electronic seal and signature. Such action would be a violation of applicable statutory requirements governing the associated design profession.

Practices vary considerably from one licensee to the next concerning the security of electronic seals and signatures. A practice often witnessed by this writer for projects in New York State, where laws and regulations governing the design professions do not address electronic sealing and signing, is for the licensee to apply their inked stamp to a piece of white paper, sign on or directly adjacent to the seal, indicating the date of signature, followed by scanning the image and sharing it with a trusted CAD/BIM operator for application to the drawings for which the licensee served in responsible charge. The level of trust between the licensee and the CAD/BIM operator may dictate how the electronic image of the seal and signature is subsequently handled. Some licensees may not express further concern of the security of their seal and signature after it is entrusted to the CAD/BIM operator. Others may have issued clear instructions that the electronic seal and signature was not to be applied to the native (executable) file and saved, but, rather, was to be used only for generating an electronically sealed and signed “.pdf” copy of the drawing, followed by the CAD/BIM operator deleting the scanned seal and signature from their computer and network.

Relative to electronically sealing and signing reports, specifications, and calculations, it is often more common for the individual licensee to directly apply the electronic facsimile of their seal and dated signature. Prudent licensees concerned about the security of their electronic seal and signature will typically save sealed and signed documents as a “.pdf” file, followed by removing the electronic seal and signature from the native (executable) document file. When specifications will be sealed and signed by separate individuals who served in responsible charge of various design disciplines, either on the project manual cover or on a “seals and signatures” document bound behind the cover or title page, complete security of the electronic seal and dated signature may be more challenging, because of the need to collect multiple licensees’ seals and signatures on the same document.

The potential for misuse of improperly secured electronic seals and signatures can manifest in various forms. Perhaps the most common may be for an unsecured electronic seal and signature applied to a native (executable) file to be subsequently revised without the responsible charge, or the knowledge of, the licensee. More nefarious outcomes may be possible when improperly secured seals and signatures are subsequently used without the knowledge or consent of the licensee. The latter, has potential for serious consequences for both those who misused the electronic seal and signature as well as, potentially, the licensee.

Digitally Certified Seals and Signatures

The only way to truly secure one's electronic seal and signature, with the capability of appropriate verification, is using a third-party digital certification service. Such entities exist in the online marketplace, often furnishing their services on a subscription basis. One digital certification firm offers a line of credentialing services intended specifically for the architect- engineer- contractor (AEC) market, with a one-year subscription for one person costing approximately $370 per year in August 2024. Each person who will apply a digital seal and signature would need to be included under such a subscription. Other options include multi-year subscriptions with a correspondingly lower price per year, and bulk subscription rates intended for design firms.

Such services may be oriented toward applying an electronic seal and signature via a commonly-used, third-party software application, such as Bluebeam Revu or Adobe Acrobat. Some design firms may have such subscriptions available to their employees, without cost to the employee, via applications such as Bluebeam or Adobe. Proper digital certification of seals and signatures also protects the document from subsequent, unauthorized revisions or tampering. In the event of such revisions, the digital seal and signature will automatically be removed. Electronic seals and signatures should include Long-term Validation (LTV), meaning they will not expire after the subscription to the digital certification service expires.

RFC 3161 compliant timestamps can be automatically included with electronic seals and signatures verified through a third-party digital certification service. The "RFC 3161" standard is issued by the Internet Engineering Task Force, which is responsible for developing and promoting voluntary internet standards. RFC 3161, titled "Internet X.509 Public Key Infrastructure Time-Stamp Protocol (TSP)", defines a protocol for requesting and verifying time-stamp tokens from a "time stamping authority" (TSA), such as a digital certification service. RFC 3161-compliant verification provides proof that a specific piece of data existed at a particular point in time, which is crucial for proper security of credentials.

An example of a digitally certified design professional seal and signature is presented below:

Recommendations for Securing Electronic Seals and Signatures

Electronic files in native format should never be released outside the design professional's organization with electronic seals or signatures in unsecured graphic format. Such documents should be issued only as locked PDF files or in other secure format.

Within a design firm or other organization, licensees should properly secure their seal and signature, whether in electronic form or otherwise. Regardless of whether applicable laws and regulations expressly address electronic sealing and signing, the model language of Section 240.20.H of NCEES's Model Rules present what may perhaps be regarded as best practice for electronically sealing and signing instruments of service.

Conclusions

Since approximately the early 2000s, electronic sealing and signing has progressed from rare and unique to commonplace and predominant, compared with applying "wet" seals and signatures. While electronic sealing and signing provides greater convenience and versatility, especially for multi-disciplinary design teams spread out over multiple locations, it also presents new risks and opportunities for misuse. Although laws and regulations governing the design professions in the United States vary considerably in the extent to which electronic sealing and signing are addressed, the model regulations of the National Council of Examiners for Engineering and Surveying present what may, perhaps, be an ideal for securing and verifying the use of electronic seals and signatures, that should be carefully considered by licensed design professionals.

Kevin O'Beirne, PE, FCSI, CCS, CCCA is a professional engineer licensed in NY and PA with over 35 years of experience designing and constructing water and wastewater infrastructure for public and private clients. He is the engineering specifications manager for a global engineering and architecture design firm. He has been a member of various CSI national committees and is the certification chair of CSI's Buffalo-Western New York Chapter. He is an ACEC voting delegate in the Engineers Joint Contract Documents Committee (EJCDC) and lives and works in the Buffalo NY area. Kevin O'Beirne's LinkedIn page

Wordless Wednesday: Closer Creativity

By: Lori Greene, I Dig Hardware Blog

I saw today's photos shared by James Hanna on the Crap Locksmithing Facebook page, and I had to decide whether to post them for Wordless Wednesday or Fixed-it Friday. It was a tough call, but I'm definitely wordless. (James is not responsible for this fix!)

Wordless Wednesday: Fire Door – Do not block open

By: Lori Greene, I Dig Hardware Blog

Today's Wordless Wednesday photo, taken in a wastewater treatment pump station and sent to me by Macan Deve Engineers, is a classic!

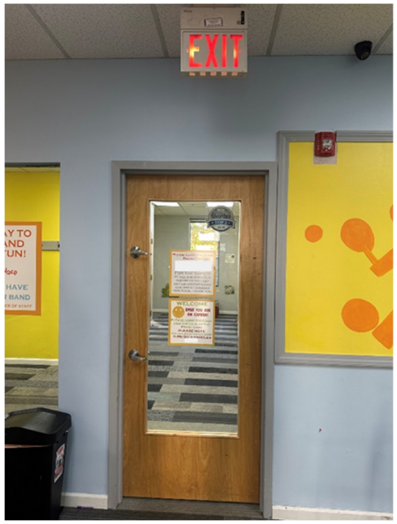
And because I promised to explain these photos for people who are newer to the code requirements for doors and hardware, the sign says that these doors are fire doors, and fire doors have to be closed and latched to do their job, and these doors are permanently blocked open. Yikes!

Wordless Wednesday: “Child Safety Door”

By: Lori Greene, I Dig Hardware Blog

Jamie Lyn Callahan of Allegion sent me today’s Wordless Wednesday photos, taken during a kids’ birthday party at a facility for indoor play. While I don’t know all of the details of this facility, I do know that is 9,000 square feet in area and includes an adventure playground and sports fields and courts.

This is a great opportunity to learn about how the codes would impact this door, which currently has two lever handles that have to be turned simultaneously in order to open the door for egress. Scroll down for (a lot!) more info…



Things we don’t know:

- **Use Group / Occupancy Classification**: We don’t know whether this door is serving a space that is considered an assembly occupancy, a business occupancy, or something else. Code requirements vary according to the use group, so this is important information to have. For example, if this door was serving an assembly occupancy, delayed egress locks would not be permitted by the International Building Code (IBC) or the International Fire Code (IFC). (The NFPA codes might allow a delayed egress lock for this door.)

- **Calculated Occupant Load**: The occupant load is calculated based on the area of the space and the occupant load factor, which is determined by how the area is used. Among other things, the occupant load affects how many egress doors are required, and may also impact the door hardware. For example, if this door was serving an assembly occupancy with a calculated occupant load of 50 people or more, the I-Codes would require the door to have panic hardware.

- **AHJ Approval**: We don’t know whether the local code official approved the additional lever handle. Based on the requirements of the codes and standards outlined below, I hope not.

Things we do know:

- **Child Safety**: From the signage and the fact that the door has two lever handles – one installed very high on the door, the intent is to prevent children from exiting unaccompanied. This is a very common request in schools and other locations where small children or children with special needs may be in danger if they leave the space. In an educational occupancy, the I-Codes would allow a delayed egress lock which sounds an alarm and delays egress for 15 seconds – but only on doors serving classrooms with a calculated occupant load of less than 50 people. The door in the photos is not serving an educational occupancy. If it’s a business occupancy, delayed egress would be an option. If it’s an assembly occupancy, delayed egress would not be permitted by the I-Codes.

- **Releasing Motion(s):** For doors in almost all locations, the model codes require the door to be unlatched for egress with one releasing motion, such as turning a lever handle or pushing the touchpad of the panic hardware. Two releasing motions are permitted by the model codes for entry doors serving residential dwelling units and sleeping units, and the NFPA codes permit two releasing motions for existing classroom doors (the I-Codes do not permit this). When two releasing motions are permitted by the model codes, those motions must be non-simultaneous, for example, a deadbolt and a lever handle. The door in the photos would not be permitted by the model codes to require two releasing motions, and definitely not two simultaneous releasing motions (both lever handles must be turned at the same time).
- **Mounting Height**: The model codes and accessibility standards require releasing hardware to be mounted between 34 inches and 48 inches above the floor. This allows the hardware to be operated by all building occupants, including those using a wheelchair. The second latchset on this door is mounted well above the allowable range.
- **Special Knowledge and Effort**: The model codes require egress hardware that is operable without a key, tool, special knowledge or effort. Although this requirement is somewhat subjective, based on Jamie Lyn's experience during the party, building occupants did not intuitively know how to open the door. Some needed help to get the door open, and the door was propped open at times for convenience – defeating the intended purpose. The top latchset looks like a privacy set, which if locked from the outside could require a tool for egress.
- **Doors Provided for Egress Purposes**: The door in the photos was a marked exit, but there were several other egress doors serving the space. One argument for non-compliance with the codes could be that this door is not required for egress. Maybe with the AHJ's approval the door could be taken out of service and marked "Not an Exit", with the exit sign removed – I can't say whether that's a viable option based on the information I have. But the IBC and IFC state that required egress doors AND DOORS PROVIDED FOR EGRESS PURPOSES must comply with the codes. This means that even if a door is an "extra door" (for example, if the code requires 2 exits and this door is a 3rd), if it's provided for egress it has to comply. And almost all doors must meet the accessibility requirements (the exceptions are listed in this post).

Possible solutions:

- **Exit Alarm**: In some locations, signage and an audible alarm are enough to deter use of the door.
- **Delayed Egress**: If this door is not serving an assembly occupancy, a delayed egress lock might be an option.
- **Not an Exit**: If the door is not required or provided for egress purposes, maybe the AHJ would allow it to be marked with signage stating that it is not an exit, and therefore would not have to be code-compliant. The accessibility requirements could still be an issue.
- **Staff Supervision**: When the space is occupied by small / more vulnerable children, an additional staff person could be responsible for monitoring the exit.

Wordless Wednesday: Stadium Egress

By: Lori Greene, I Dig Hardware Blog

I received today's Wordless Wednesday photos from a retired AHJ…what can I say?? Sports facilities tend to have problems with security vs. egress, and sometimes come up with solutions like this (check out the related posts below for more).

Quick Question: Egress Courts

By: Lori Greene, I Dig Hardware Blog

This Quick Question came up recently in relation to the IBC section addressing egress for exterior spaces:

Would the enclosed courtyard in my building be considered an egress court?

When the means of egress serving an exterior area passes through the interior of the building, the need to allow free egress at all times can create security issues. For example, if someone was able to access a school courtyard or an office building's roof terrace after hours, they could enter the building through the egress doors serving these spaces.

Prior to the 2021 edition of the International Building Code (IBC) and International Fire Code (IFC), the model codes did not include prescriptive language that would allow these doors to be locked in the direction of egress when the exterior space was not occupied. The doors could have exit alarms or possibly delayed egress locks (depending on the occupancy type and load), but for many facilities, these options didn't solve the security issues.

Language was added to the 2021 I-Codes addressing the means of locking these egress doors when the spaces are not occupied, and these requirements were carried forward into the 2024 edition. This Decoded article covers the code change. One of the requirements of this added section is that the exterior space must not be an egress court. So what's an egress court?

The I-Codes define an egress court as: ***A court or yard which provides access to a public way for one or more exits.***

The italicized words in the I-Codes are words that are defined in the code. Here are the definitions for the four defined terms included in the definition above:

- **Court**: An open, uncovered space, unobstructed to the sky, bounded on three or more sides by exterior building walls or other enclosing devices.
- **Yard**: An open space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the lot on which a building is situated.
- **Public way**: A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).
- **Exit**: That portion of a means of egress system between the exit access and the exit discharge or public way. Exit components include exterior exit doors at the level of exit discharge, interior exit stairways and ramps, exit passageways, exterior exit stairways and ramps and horizontal exits.

In the 2024 IBC, Section 1029 addresses egress courts that serve as part of an exit discharge. The section covers the required egress capacity and minimum width and height. For some buildings, the walls of the egress court must be fire-resistance rated, and openings in the walls must have fire door assemblies (this is one example of where an exterior door might require a fire rating).

An egress court is typically used when the exit discharge passes through confined areas near the building, which means that building occupants are not exiting directly to a wide open space. As they are exiting, even though they are technically "outside", they may be passing close to the building which creates a potential hazard. I imagine it almost like an exterior corridor that has to accommodate the occupant load of the area it is serving, and possibly be protected from fire. If the egress court is wide enough, fire protection may not be required by code as the building occupants are not forced to pass close to the exterior wall of the building.

This is all to say that most enclosed courtyards and roof terraces are not egress courts, and typically the doors serving these exterior spaces are providing egress for the exterior space itself. But if there are required means of egress that pass through the exterior space, it's important to verify whether that area must meet the requirements applicable to an egress court. And if it IS an egress court, the 2021 (and 2024) sections of the I-Codes that address the means of securing the doors will not apply.

Code Update: Requiring Lockable Doors

By: Lori Greene, IDig Hardware Blog

In Part 1 of our code update webinar series for DHI, Mark Kuhn and I talked about a change that has been approved for the 2027 I-Codes, related to school security (register for Part 2 of our update here). I had not written about this change because I was waiting to get to the point-of-no-return in the code development process. This change has been officially approved for the 2027 edition of the International Building Code (IBC), so I can now share this important update.

When we were working on the proposals for the 2018 model codes back in 2014/2015, retrofit security devices for classroom doors were hitting the market; many of these classroom barricade devices did not comply with the model codes. The focus of the BHMA CGIA was to ensure that when classroom doors were secured, requirements for egress, fire protection, and accessibility were met. In addition, an important code change was made, stating that the doors must be "capable of being unlocked from outside the room with a key or other approved means." This requirement helps to ensure that school staff or emergency responders are able to enter a locked classroom quickly to render aid.

This section of the I-Codes did not change much from the 2018 to the 2021 and 2024 editions. Doors in schools and other educational facilities were permitted to be locked, as long as they allowed authorized access, free egress, and complied with the accessibility standards. Unfortunately, several school shootings occurred that demonstrated the need for additional code changes.

Beginning with the 2027 edition of the IBC, doors in schools, day care centers, and colleges and universities will be REQUIRED to be lockable. The requirements apply to classrooms, offices, and other occupied rooms in the applicable use groups. In addition to the mandates of this section that were included in the previous editions, the 2027 IBC will state: "The doors shall be capable of being locked from inside the room."

The new code will also include locking requirements for exterior entry doors in these facilities. The doors must be lockable from the egress side of the door – opening the door to lock or unlock the outside lever will not comply. This section will also require at least one door on each building face to be able to be unlocked from the outside with a key or other approved means.

These modifications to the 2027 IBC will help to ensure that doors serving schools will be lockable without opening the door, and will allow emergency responders to enter. This will enhance security and safety protocols for students and staff, facilitating lockdown and reducing emergency response time.

Fixed-It-Friday / Decoded: Control Vestibules in a Means of Egress

By: Lori Greene, IDig Hardware Blog

Today's Fixed-it Friday post is a little different…I'm updating a past Decoded article to share an important "fix" that has been approved for the 2027 edition of the I-Codes. As interlocks (AKA man-traps or control vestibules) have become more common in labs, health care facilities, data centers, and other high security locations, the fact that they were not specifically addressed in the model codes has become more problematic. I'm happy to say that this application will be addressed in the next edition of the IBC and IFC.

The purpose of a control vestibule is to limit immediate through passage into or out of an area, to reduce air transfer or increase securi-

In some buildings, limiting the flow of pedestrian traffic is a method used to reduce air transfer or to provide increased security. Examples of these locations include clean rooms in laboratories, infection control areas in health care facilities, data centers where secure information is stored, and cash counting rooms in casinos or banks. Control vestibules are sometimes incorporated into the design to limit immediate through passage into or out of these areas.

A control vestibule is a space with two or more doors in series, arranged so that when one door is open the other door or doors cannot be opened. Under normal operation, a building occupant opens one door to enter the vestibule, and that action causes the other door(s) to lock until the first door closes. The building occupant may then open another door to exit the vestibule. This function is facilitated by electrified hardware – often electromagnetic locks that are controlled by door position switches. Control vestibules are commonly called interlocks, mantraps, or air locks.

Although the physical layout is similar, a control vestibule should not be confused with a sallyport – this is a term that is typically used in detection and correctional settings. A sallyport is defined by the International Building Code (IBC) as: A security vestibule with two or more doors or gates where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door or gate at a time. The IBC allows sallyports to be used in I-3 occupancies (ex. correctional centers, jails, prisons), if there are provisions for egress during an emergency condition. Sallyports in a detention setting are different from the control vestibules used in other occupancies, because a sallyport typically prevents user passage under normal operation and a control vestibule allows user passage through one door at a time.

The model codes do not currently include prescriptive requirements for control vestibules in use groups other than I-3 – each proposed system must be submitted to the Authority Having Jurisdiction (AHJ) for approval. Without guidance in the codes to mandate safety overrides and release methods, requirements can vary from one AHJ to the next, or even between projects in the same jurisdiction. Because of the potential for interlocks to inhibit egress, the operation of these doors during an emergency is critical.

A change addressing control vestibules has been approved for the 2027 edition of the I-Codes, and a proposal is in the works for the 2027 edition of NFPA 101 – Life Safety Code. Until these editions are adopted in a given jurisdiction, it will be up to the AHJ to decide how to evaluate a proposed control vestibule. However, the approved section provides some good guidance for these applications.

For the 2027 I-Codes, proposal E61-24 addresses the following requirements:

- **Definition**: The I-Codes will define a control vestibule as: A space with doors in series that are interlocked such that when one door is open other doors are restricted from opening.
- **Use group or occupancy classification, and occupant load**: It is typically easier to ensure the safety of building occupants using a control vestibule in a "trained-traffic" situation, where people are familiar with the operation of the system. For this reason, the 2027 I-Codes will permit control vestibules in the means of egress for security, environmental control, or clinical needs in:
    - ◊ Groups F, H-3, H-4, H-5, I-1, I-2, and S where the occupant load of the room or space served by the control vestibule is less than 50.
    - ◊ Groups B and M where the occupant load of the room or space served by the control vestibule is 10 or less.
- **Fire suppression/detection systems**: The new section will require the building to either be equipped throughout with an automatic sprinkler system, or for the room or space served by the control vestibule to have an approved automatic smoke detection system. Activation of these systems must deactivate the interlock function of the control vestibule doors, to facilitate immediate egress through the vestibule. This requirement also applies to areas that have an emergency alarm system for hazardous materials.
- **Door operation**: Doors in control vestibules must swing in the direction of egress travel (exception: power-operated doors in accordance with Section 1010.3.2), and must be equipped with self-closing devices.
- **Power failure**: As with other special locking arrangements, loss of power must result in the deactivation of the interlock function of the doors in the control vestibule, to allow free egress. Fail safe locks will operate as required by code, as they unlock upon loss of power.
- **Egress-side override**: If one door in a control vestibule fails to close, it will prevent the operation of the other doors. To address this potential barrier to egress, an override switch is required on the egress side of each door. Operation of the switch must result in direction interruption of power to the electrified locks – independent of the other electronics, and the locks must remain unlocked for at least 30 seconds. An audible alarm could be incorporated to deter use of the override switch in non-emergency conditions, although this is not crucial for life safety. The code addresses the required location of these switches.
- **Signage**: Signage is required with instructions on the use of the interlock override switches, to ensure that building occupants understand how the control vestibule operates under emergency conditions.
- **Number of control vestibules**: To minimize the effect on egress, the I-Codes will state that the egress path from any point shall not pass through more than one control vestibule.
- **UL listings**: The model codes require some types of electrified hardware to be listed to UL 294 – Standard for Access Control System Units or to UL 1034 – Standard for Safety for Burglary-Resistant Electric Locking Mechanisms. This is typically required when the hardware could affect egress, and this listing will be required for electrified locks used in a control vestibule.

Remember, these considerations are not currently included in the model codes but should be addressed when designing a control vestibule that will be submitted to the AHJ for approval. In some jurisdictions, there may be local code modifications related to this application; it's also possible that a jurisdiction may prohibit control vestibules completely. Including the new requirements in the 2027 model codes will help to ensure a more consistent approach to these special locking arrangements.

Fire-Proofing the Approach to Historic Building Renovations

By: By Birgitte Messerschmidt / Retrofit Blog / November 25, 2024

Giving old buildings new life, particularly historic buildings, is a trend that will continue to rise. Adapting these spaces to fit contemporary needs, or updating their aesthetics or infrastructure, is a creative and sustainable way to pay homage to the past. Often, these buildings are beloved by communities, so restoring them is as good for people as it is for the environment. However, the sad reality is that modernizing historic buildings has a track record of causing fire disasters, and this pattern is likely to continue without a change to the status quo. Luckily, the solutions exist, but it's up to us to be more proactive in embracing them.

First, it's helpful to review the commonalities that make historic buildings more vulnerable to fire risk. These buildings were constructed in eras when fire safety standards were nonexistent or nowhere near as rigorous as they are today, meaning they may lack certain fire safety systems or design considerations (interconnected fire alarms, automatic sprinklers or proper compartmentalization).

The materials they were built with also are older and often more flammable, such as bone-dry timber. Further, renovation activities compound these fire risks by exposing combustible elements or creating sparks or flames through "hot work" tasks, like welding. Moreover, it's common for built-in fire detection or suppression systems to be disconnected during renovations, slowing the response time in the case of emergencies. Human error and, in rarer cases, malicious intent, also need to be considered.

Without an action plan to combat these vulnerabilities, we'll continue to see the damage or loss of iconic historic structures, injuries or deaths, and enormous costs. To this end, here are three concrete steps to prevent these incidents:

Acknowledge there's a problem with the current approach. Familiarize yourself with the unique fire vulnerabilities of historic buildings and assess the causes of past fires to keep history from repeating itself.

Bring the fire safety levels during renovation projects closer to the fire safety levels otherwise required for the building. The U.S. and Europe face a startling lack of specific fire safety requirements for buildings undergoing renovations. While this is a huge safety shortcoming, the broader implementation of codes and standards like NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, and NFPA 914, Code for the Protection of Historic Structures, will reduce the number of fires during these operations by providing more specific recommendations and requirements to follow.

Promote more comprehensive training on cultivating fire-safe work environments, especially for those tasked with hot work. While job site safety is a shared responsibility, much of the burden falls on workers who may not know how to prevent or respond to fires during renovation projects. Certification programs, such as Certified Fire Protection Specialist (CFPS) courses, are designed to bolster workers' knowledge and skills in these contexts.

Before we collectively embark on more historic renovation or restoration projects, we first must learn from the mistakes of our past. To break the cycle of fires during work on historic buildings, construction leaders and other stakeholders need to be aware of the risks and implement the codes, standards, and training programs to help mitigate them. By doing so, we can (re)build a safer future while preserving structures from the past.

Data Center Security

By: Mark Kuhn

The latest post from Mark Kuhn addresses a type of facility that is becoming much more common these days – data centers. One of my last projects as a specwriter, about 10 years ago, was a facility that stored sensitive data for an entire state. It was a huge building with heavy security, and very few people working inside. We had lots of "security vs. egress" challenges on that project, which we worked out with the local AHJ. Maybe Mark's right and these facilities should be specifically addressed in the model codes…what do you think?

Ever since I've worked with Lori, she's maintained her "wish list" – things she would like to see either changed or added to the code. Now that I've been working with her for a while, I'm developing my own "wish list" and today I want to tell you about one of the items on my list…data centers!

When we talk about "the cloud," I wonder how many of us understand that we are speaking about a real brick and mortar physical location. There are large buildings located around the country, filled with computer servers, data storage drives and network equipment. We refer to these buildings as data centers.

I don't pretend to be an expert on data centers, but I have been involved with a few. Here's what I've observed. As you can imagine, SECURITY is the highest priority when it comes to data centers. Anyone who's ever written a specification knows that finding the balance between security and life safety can be the most challenging part of the job. Typically the owner wants to tilt the scales toward security, and the building and fire codes always have something to say about life safety.

When it comes to a data center, we are dealing with large buildings that hold a lot of equipment but not very many people. The people working in the building are mostly technicians and security personnel making sure that the data stored "in the cloud" stays safe. Because of this, the data center owners want these buildings to be very secure.

Normally this wouldn't be a problem, we all like our buildings locked up to keep unwanted people out. But in my experience, the goal in the data center is not only to keep people out, but also to keep everything in, and to isolate and separate one space in the building from another space in the building. This is where the goals of the data center clash with the current codes.

Under the current model codes, a data center would fall under a Group B (business) occupancy or a mixed B/S (business/storage) occupancy. This means that we can't lock anyone into a space or inside of the building. All we can do is use delayed egress locks (to delay egress one time for 15 seconds) or incorporate exit alarms on doors serving the means of egress. This approach does not meet the requirements of a data center.

The types of openings that the data centers would like to see are currently not permitted in this occupancy:

- **Controlled egress doors** – These doors are locked in the direction of egress until they are released by staff or by an automatic release method. Doors with controlled egress locks are currently only permitted in health care units where patients require containment for safety or security.
- **Doors that are fail-safe** – These are doors that are locked in the path of egress and released upon activation of the fire alarm, that are fail secure on the exterior (if the fire alarm cuts power to allow egress, the door remains locked on the exterior). This type of system is now allowed for elevator lobbies, but only with the addition of a two-way communication system adjacent to the locked door.
- **Control vestibules/interlocks** – This is a vestibule configuration where both doors can not be open at the same time – one door must close before the other door can be opened. Control vestibules will be addressed in the 2027 I-Codes.

This brings me to why data centers are on my "wish list." I believe most everyone thinks that keeping our data safe and secure is a priority and that locking up these types of facilities is a good idea. However, the current model codes do not permit this. I think the model codes need to address these facilities and possibly develop a new occupancy type that speaks to the special needs of a data center.

I'll end with this…look for future posts taking a deeper dive into data centers and into some of the unique openings that we are asked to specify in these facilities. I'm also interested to know what your thoughts are as it relates to the balance between security and life safety, and the possibility of developing code requirements specifically related to data centers.

"The quality of a person's life is in direct proportion to their commitment to excellence, regardless of their chosen field of endeavor."

Vince Lombardi

Complete “What’s That” Series

By: Lori Greene, I Dig Hardware Blog

I have collected all of the “What’s That” Series and will include them here.

What’s that? CUSH Shoe Support

By: Lori Greene, I Dig Hardware Blog

It turns out that my camera roll is a great source of inspiration for iDigHardware posts, especially the “What’s that?” series. (If you have any photos to share, you can submit them here.) I tend to notice and appreciate details, and I get a little thrill when I see that someone has taken the time to install hardware with the correct components.

I’ve shared several posts about various parts and pieces – coordinator brackets, ratchet release assemblies, etc., and today’s posts addresses an LCN Closer component called a CUSH shoe support. It’s that small angle on the face of the frame, up above the door closer shoe.

When installing a parallel arm closer from LCN, it’s important to use five screws to attach the parallel arm shoe to the underside of the frame head. This is especially critical when the closer has a CUSH or Spring-CUSH arm. These arms have a built-in stop to stop the door in the fully-open position, so the connection between the shoe and the frame has to handle the extra force generated by the stop.

When the jamb depth of the frame is not wide enough to install the fifth screw (typically when the reveal is less than 3 1/16-inch), the CUSH shoe support provides a way to install the screw, helping to ensure a strong connection. The CUSH and S-CUSH arms have two different holes that can be used for the fifth screw, to provide two options depending on the configuration of the frame. Refer to the installation instructions here.

What's that? Coordinator Bracket

By: hn, I Dig Hardware Blog

I received a FaceTime call today and spent several minutes explaining what a piece of hardware was, how it worked, and where it was mounted. So obviously my first thought was…"this would make a great iDigHardware post."

The piece of hardware in question is a coordinator mounting bracket. And if you said, "a what?" then this post is for you. Because I believe a picture is truly worth a thousand words, this post includes photos of a coordinator bracket from various angles.

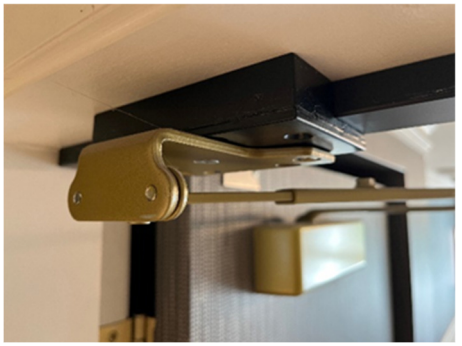
First, we need to understand the purpose of this piece of hardware. The mounting bracket is designed to allow a parallel arm closer shoe to be installed without damaging a soffit-mounted door coordinator. If that sentence just made you more confused, then please look here for some more information on coordinators.

A soffit-mounted door coordinator mounts to the soffit of the door frame (the underside of the frame head), but here's the problem: a parallel closer shoe also mounts on the soffit of the door frame. Because they both need to be installed in the same place on the frame, and you can't just attach the closer shoe to – or through – the coordinator, we need a way to resolve this conflict. The coordinator mounting bracket allows us to mount the parallel arm closer shoe to the bracket and not to the coordinator…allowing both pieces of hardware to mount to the frame header and to function properly.

Things to know…

- The coordinator mounting bracket is sized according to the width of the frame soffit – you need to know the soffit dimension to order the correct bracket.
- The coordinator mounting bracket typically comes with no holes predrilled for the closer shoe – you will need to drill and tap those holes in the field. (Also make sure the screws are the proper length and that they do not touch the coordinator.)
- Using a coordinator mounting bracket will require special templating of the door closer. Because of the thickness of the coordinator and the thickness of the bracket, the closer will be mounted lower on the door.

I hope that this post has helped some of you get a little better understanding of this piece of hardware, which may seem insignificant but is really very important.



.

What's that? Hinge Prep

By: Lori Greene, I Dig Hardware Blog

A few weeks ago, I wrote a post about heavy weight hinges and how to tell them apart from standard weight hinges. That reminded me of another "unidentified hardware door-related object" that some readers may have wondered about (or may have never given it a second thought!).

When you see a wire like this in a hollow metal hinge preparation, its purpose is to allow the door to accommodate standard weight or heavy weight hinges. Because the thickness varies between the two hinge types, the wire remains in place for standard weight hinges and is removed to create a deeper hinge prep for heavy weight hinges.

What's that? Thick Hub Shoe

By: Lori Greene, I Dig Hardware Blog

Continuing with my posts on "unidentified hardware objects," I saw this closer arm at a high school a couple of weeks ago. The hub on the closer shoe is much thicker than on a typical arm, AND…the arm has an extra bend in it. But why?

This is a special template for LCN closers – there are thousands of special templates available for different applications. Sometimes they only involve a different mounting location but in other cases the special template is a modification to the hardware, as with the one in the photos (LCN 4110 x ST-2730 or 4040XP x ST-2731).

The purpose of this special closer arm is to move the closer down slightly on the door to make space for the overhead stop – a GJ90 series. With the door closer installed in the standard location, there would be a conflict between the closer and the stop.

Although a stop can be specified as part of the closer arm, in some high use/high abuse applications I would specify a separate overhead stop even though this requires a little extra coordination..

What's that? Rachet Release Assembly

By: Lori Greene, I Dig Hardware Blog

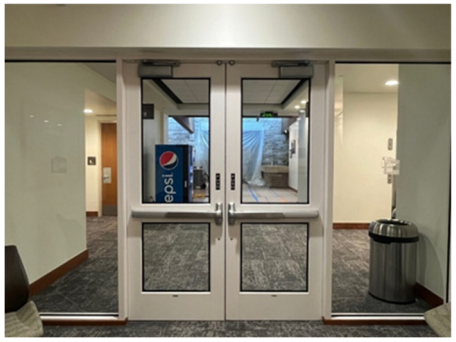
A few weeks ago, I saw a question in the Building Code Forum's Door & Hardware section asking about a piece of hardware that a member of the forum had seen on a fire door assembly. If you're not familiar with the Building Code Forum, it's a great place to ask code questions and have some code officials weigh in. I recognized the piece of hardware right away, and I think my answer surprised some of the other responders based on what they thought the purpose of the mysterious hardware item was.

Mark Kuhn and I spent last week in Denver with this year's cohort of the Allegion Early Careers Program. We headed out on a field trip and I said to Mark, "I'm looking for a rachet release assembly…let me know if you see one." If he thought it was a weird question, he didn't let it show.

Working with new members of the industry and seeing the question (and answers) on the forum gave me an idea for a new type of post. There are all kinds of parts and pieces that play important roles in the operation of door openings, so I'll be sharing some of them in future posts. If you have a favorite part or piece, or something you're wondering about, send it along!

So here it is…the part that was posted on the Building Code Forum…

This is a rachet release assembly. It is used with concealed vertical rod panic hardware or fire exit hardware. In the photo below, you can see two of them at the top of the doors, near the meeting stiles.

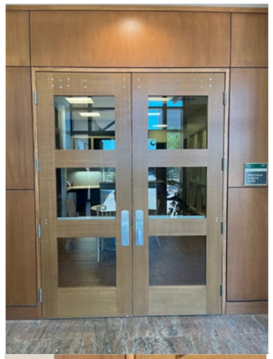


When the touchpad is used to retract the latch of the concealed vertical rod panic, the latch stays retracted until the door comes to a close. The rachet release plunger projects into a small hole in the face of the door (you can see the holes in the photo below), and projects the latch when the door reaches the closed position. There are shims provided to help position the plunger in the correct location on the door, and you can see the assembly on page 7 of the Von Duprin 98/9947 installation instructions.

The question about this part was posted on the Building Code Forum because the plunger was no longer correctly aligned with the hole in the fire door, and was preventing the door from closing. The hole had already been enlarged(!) but they were still misaligned – probably because the door was sagging. I recommended trying to address the door sag as a means of bringing everything back into the proper position.

What's that? Ball Bearing Hinges

By: Lori Greene, I Dig Hardware Blog



Last month I started sharing a new type of post highlighting some "unidentified hardware objects," like a thick hub shoe or a ratchet release assembly. Have you ever looked at a piece of hardware and wondered…"What IS that?"

When Mark Kuhn and I were in Colorado to do some training for the current cohort of Allegion's Early Careers Program, we went on a field trip to a local high school. I'm sure you can imagine the two of us excitedly pointing out automatic door bottoms and auxiliary fire pins, while the specwriters- and sales-reps-in-training looked on with intense interest.

I noticed some heavy weight hinges on a pair of doors, and then things got a little weird. Here are the doors and a closer view of two of the hinges:

If you're an intense scrutinizer of doors like I am, you might notice that these two hinges are different:

Both hinges are ball bearing hinges. The hinge on the left is a standard weight ball bearing hinge, and the one on the right is a heavy weight hinge. You can tell by the number of ball bearing housings on the hinge barrel – 2 housings vs 4.

It's very unusual to see both types of hinges on one door, because in addition to having more ball bearings, heavy weight hinges are thicker than standard weight. I like to think that Mark and I wowed the group with our lengthy discussion of the variation in the hinge thickness – 0.134-inch for standard weight and 0.180-inch for heavy weight. (I have no idea how those numbers stay in my head when I can't remember what I did yesterday.)

The prep in the frame and the door is different for these two hinge types. The doors and the frame would have been prepped for either standard weight or heavy weight hinges, so some of the hinges would need to be shimmed or others would stand proud of the hinge prep. And now you know (if you didn't already), what those little housings in the hinge knuckles are for (ball bearings) and how to tell the difference between standard and heavy weight hinges (2 ball bearing housings vs. 4)!

What's that? Electric Power Transfer (EPT)

By: Lori Greene, I Dig Hardware Blog

I've been sharing some posts showing "unidentified hardware objects" as a way to help readers who are less familiar with the numerous parts and pieces that make up a door opening. The idea for today's post actually came from a question I received about the standard mounting location for an EPT. So for starters…what's an EPT?

Someone recently sent me a photo of a door opening that wasn't functioning as required by code, and in my response I noted that the door had electrified hardware. I was asked how I knew that, as there was no way to tell just by looking at the panic hardware. The presence of the Von Duprin EPT was the tip-off.

An EPT is an electric power transfer, and in the photo below, you can see one on the edge of the door – above the panic hardware. The purpose of an EPT is to transfer the wires between the wall/frame and the door, to provide power to the electrified hardware and/or to carry a signal from a switch within the hardware. This switch may release an electromagnetic lock for egress, signal a "legal release" to the security system, or perform another function.

There are other products that serve this purpose, like an electric hinge or a door loop, but the EPT is the product I have always preferred to specify. Unlike a door loop (AKA door cord), the EPT is concealed when the door is closed and is less prone to vandalism. An EPT can accommodate larger gauge wires than a typical thru-wire hinge, increasing the durability and reliability of the access control system.

If you are interested in following the Little Rock Chapter, our links are as follows (*for Facebook and LinkedIn look for the CSI Little Rock Chapter*):

Website: https://csilittlerock.org
Facebook: www.facebook.com
LinkedIn: www.linkedin.com

If you are interested in Joining CSI or if you are just interested in keeping up with the information provided by CSI, follow this link to the Institute Website Membership Pages:

For Membership Information:
https://www.csiresources.org/communities/membership/individual-membership

To Join CSI:
https://higherlogicdownload.s3.amazonaws.com/CSIRESOURCES/143a718d-6df6-484a-8a79-76d79635b741/UploadedImages/PDFs/CSI_MembershipFormFY18.pdf

To See what CSI is all about:
https://higherlogicdownload.s3.amazonaws.com/CSIRESOURCES/143a718d-6df6-484a-8a79-76d79635b741/UploadedImages/CSI_ResourcesCatalogFinalLowRes.pdf

LITTLE ROCK CHAPTER INFORMATION

Chapter Officers

President:	Billy J. Mathis, FCSI, CDT
President-Elect:	Open
Immediate Past President:	Melissa Aguiar, CSI, CCS, CDT, SCIP
Secretary:	Melissa Aguiar, CSI, CCS, CDT, SCIP
Treasurer:	Clark Wood, CSI
Directors	
Operations	Rachal Belanger, CSI
Honors	Billy J. Mathis, FCSI, CDT
Membership	Clark Wood, CSI
Education / Certification	Open

Chapter Info

Chapter Website:	**https://csilittlerock.org**
Chapter Newsletter:	**SpecWork**
Chapter Meeting Day and Time:	**2nd Wednesday of Each Month unless otherwise specified by the Chapter President**
Chapter Board Meeting Day and Time:	**1st Friday of each Month unless otherwise specified by Chapter President**

If you are interested in Joining CSI or if you are just interested in keeping up with the information provided by CSI, See the slides shown from the “Why CSI” presentation