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LITTLE ROCK CHAPTER

Little Rock Chapter - Chartered November 1965 November 2025

In This Issue

President's Thoughts

By: Billy J. Mathis, FCSI, CDT, Little Rock Chapter President

When it comes to being a "Leader" in any environment, there are many way to achieve goals and influence people to follow you lead. I asked my computer "What does leadership mean?" and this is what was presented.

Leadership is fundamentally about influencing and guiding a group toward achieving common goals. It encompasses a range of skills and behaviors that empower individuals to provide direction, motivate team members, and foster collaboration. Importantly, leadership is not confined to formal positions of authority; anyone can exhibit leadership qualities regardless of their title.

Key aspects of leadership include:

1. Direction: Setting a clear vision and goals for the team.
2. Alignment: Ensuring that everyone understands their roles and how they contribute to the overall objectives.
3. Commitment: Fostering a sense of mutual responsibility among team members, where everyone prioritizes the group's success.
4. Effective leadership is characterized by strong communication, emotional intelligence, adaptability, and the ability to inspire trust and collaboration.

In essence, leadership is a social process that thrives on the interactions and relationships among individuals working together

I all of my studies on leadership, both in my previous career in the USAF and my current affiliation with CSI, I have learned that good leaders are few and far between but most people can learn to be good leaders. All you need is an openness to learn, a willingness to put the effort into learning, and a good mentor to be there when you need answers or guidance. I have been lucky to have good leaders in most of my jobs and positions.

I will discuss the effects that learning leadership skills can bring to your life and working relationships in future articles. Suffice it to say the good leaders always make sure that there is another good leader or two coming down the road to take their place when they leave.

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THURSDAY, DEC 4 2025
6 PM - 9:30 PM
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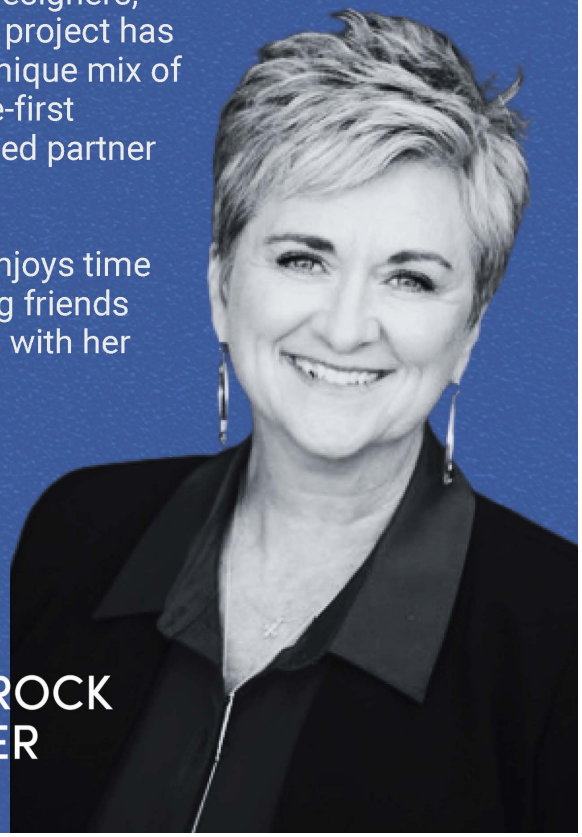
When she's not at work, Gwyn enjoys time with her granddaughters, hosting friends and family, and beach getaways with her husband.



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Fixed-It Friday: Frankenstein Door

By: Lori Greene, I Dig Hardware Blog

Tim Weller of Allegion sent me today's Fixed-it Friday photo and I'm not sure what to think, between the sensor bar on an inswinging door and the deadbolt that overrides the electrified hardware. And on a door that someone really wants to make sure is locked!

Fixed-It Friday: A Day at the Zoo

Posted by Lori Greene, July 2nd, 2025

Last week when I was in Denver to do some training, I had an unexpected free day. I had my son (21) with me, who has suddenly taken an interest in the door and hardware industry, and we went to the Denver Zoo. While we were there I realized that a zoo is one of the few types of projects that I have never written a hardware specification for. That's kind of a shame because there are some cool applications on a zoo that you wouldn't run into in any other type of building.

Here are a few that I noticed during our visit…

This gate serves a covered pool where visitors can pet and/or feed the rays. I'm guessing there have been problems with people thinking that they couldn't exit through the gate, so the "instructional signage" was modified.

The giraffes had very specialized doors to accommodate their height. I'd like to know more about the one with the rails at the top and the chain across the top panel.

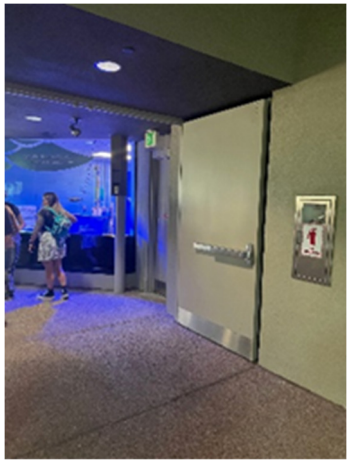
This area was constructed to look like stone, including the panel on the door. I would have painted the door a coordinating color, but with regard to codes, it's ok to disguise the door this way because the "stone" was on the access side of the door leading to an employee area. This wouldn't be allowed if it was the egress side of a door in the path of egress.

The next one is going to take some explaining. It's the tiger enclosure – a space shared by two tigers who apparently don't come into direct contact with each other. The tigers can individually access the "bridge" over the entrance to the viewing area, but only one side can be open at any given time.

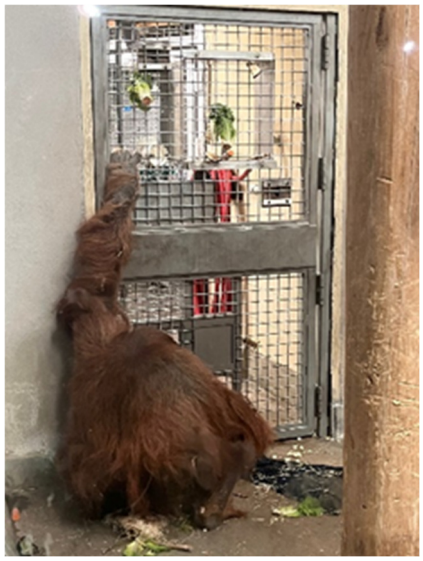
In these photos you can see that the tiger door on the left is closed (look up) and the one on the right is open.

It looks like the doors are controlled electrically, but access to the control panel is limited by padlocks. In order to open the box, employees with the "blue" and "green" keys must remove those padlocks to allow access to the key cylinder on the primary padlock.

Even my son (a total rookie!) knew what was wrong with the next openings…I swear he has absorbed a lot of door-related info over the years. If you're new here, the touchpad of the panic hardware is supposed to measure at least half the width of the door.



Doors serving areas housing primates have special requirements due to the strength and dexterity of the animals. I'm curious about the tubes attached to the opposite side of this door in the orangutan enclosure. Any ideas?



Fixed-It Friday: Do Not Push

By: Lori Greene, I Dig Hardware Blog

Paul Laseter of Niles Bolton sent me today's Fixed-it Friday photo, taken in a maternity suite. Do you think this was an intentional double entendre? And am I the only one wondering why there are so many mag-locks?

Fixed-It Friday: Von Duprin Paddle

By: Lori Greene, I Dig Hardware Blog

Evan Ballard of Allegion saw this super cool OLD Von Duprin product on an exit serving one of the oldest restaurants in America – open since 1826! This paddle was probably state of the art at one time, but it wouldn't be compliant with today's codes, because the restaurant has a calculated occupant load of more than 200 people.

As many of you know, according to the International Building Code, doors serving assembly occupancies of 50 people or more can not have a lock or latch unless it is panic hardware (with the exception of key-operated locks). The model codes require panic hardware to have an actuating portion that measures at least half the width of the door, so the paddle doesn't qualify.

Decoded: Electric Strikes on Fire Doors

By: Lori Greene, I Dig Hardware Blog

I'm working on updating some past Decoded articles for a project that I'm working on…this one addresses the requirements for electric strikes installed on fire door assemblies.

Someone recently asked me why, after going to architectural school, I decided to become a hardware consultant instead of an architect. Right around graduation, I decided that I couldn't become an architect because the process was way too subjective for me. I like right/wrong, black/white. I like math…you get an answer and it's either correct or it's not.

I think that has a lot to do with my interest in the codes. When someone asks me a code question I can usually go right to the applicable code book and interpret what is written there, and there's always the Commentary or Handbook version to give a little extra insight. They're not always black and white but we can work toward an understanding of the intent even if the code language isn't perfect. The Authority Having Jurisdiction (AHJ) can sometimes be a bit of a wild card, but they are usually open to having a discussion and most of the time we end up on the same page.

I hate to respond to a question by saying, "Well, that's a grey area…" In those cases I like to dig around until I can provide a solid interpretation with proof to go along with it. My interpretation isn't official, but at least it's something to refer to and discuss.

In my opinion, the issue of electric strikes on fire doors is NOT a grey area, but in researching the requirement for someone who needed some evidence, I discovered that the codes are not very specific about this topic. You need to put all of the pieces together to find something more than "because I said so."

The question has come up several times in relation to electric strikes on stair doors. According to current codes, most stair doors have to allow reentry back into the building during a fire, therefore, fail safe electrified hardware must be used to lock stairwell doors. With a fail safe electric strike, cutting the power means that the spring-loaded keeper is the only mechanism holding the door closed, and that is not enough for the door to be considered positively latched. The pressure from a fire can push the latchbolt right through the keeper and the open door could allow smoke, heat, and gases to compromise the stairwell. I have had several people tell me that the pressure in the stairwell will keep the door latched, but not all stairwells are pressurized, and I have never seen a basis for that belief in the codes.

If a door is fire-rated, an electric strike must be fail secure to provide positive latching, and a fail secure electric strike will not provide for stairwell reentry. Electric strikes can not be used on stair doors to facilitate reentry because of the fire-rating requirements, but the fail safe / fail secure question is not specifically addressed in the code language. You have to look at all the evidence and come to a conclusion.

The International Building Code (IBC) clearly states: "Stairway exit doors shall not be locked from the side opposite the egress side, unless they are openable from the egress side and capable of being unlocked simultaneously without unlatching by any of the following methods."

The IBC Commentary further clarifies the latching requirement by stating, "This provision further requires that the stairway doors be unlocked without unlatching. Stairway doors will typically be fire door assemblies, and their continued latching is necessary to maintain the integrity of the fire-resistive separation for the exit enclosure."

Although the terms "fail safe" and "fail secure" are not specifically included in NFPA 80, Standard for Fire Doors and Other Opening Protectives, the standard does permit the use of electric strikes: "***Electric strikes shall be permitted to be used in lieu of conventional strikes in single swinging doors and pairs of doors where provided for in the published listings."***

One important clue is that NFPA 80 requires components of fire door assemblies to be listed/labeled, and these Von Duprin fail secure strikes have UL labels for fire and burglary, while the fail safe strikes only have a UL label for burglary:

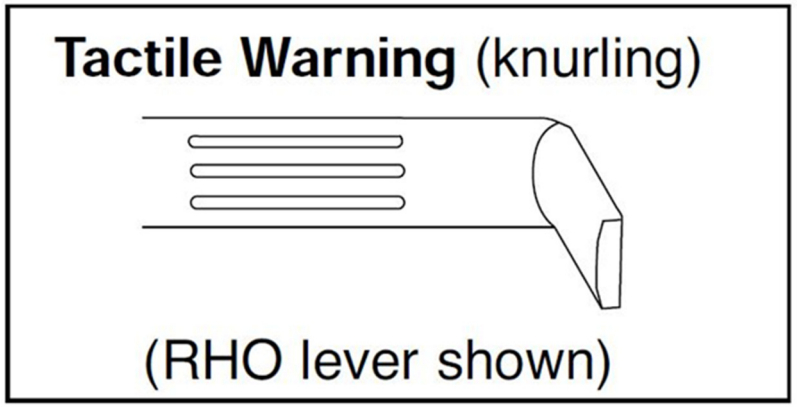
If you connect the dots, it seems obvious that a fail safe electric strike won't meet the latching requirements, and a fail secure strike won't meet the reentry requirements, so electric strikes can not be used on stairwell doors that require reentry. On other fire-rated doors that are not required to unlock upon power failure, a fail secure electric strike may be used.

Decoded: Tactile Warnings

By: Lori Greene, I Dig Hardware Blog

Some questions about tactile warning on door hardware have come up recently, so I've updated this Decoded article.

Question: Am I required by code to provide a tactile warning on certain doors in my facility? If tactile warning is required, are stair doors included? What types of materials are allowed for tactile warning on doors?



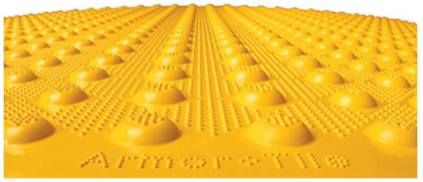
Answer: The 1986 edition of ICC A117.1 (which was then called Providing Accessibility and Usability for Physically Handicapped People – now called Accessible and Usable Buildings and Facilities) included a requirement for tactile warnings on doors leading to hazardous areas. The intent was to provide a warning to a person with a visual impairment that the door leads to a room where they could encounter something dangerous. Examples of hazardous rooms included loading docks, boiler rooms, and stages – other standards include electrical and mechanical rooms on the list of examples.

While I have seen some state standards (ex: Massachusetts) which still contain a requirement for tactile warning on doors leading to hazardous areas, there has been no requirement for this in ICC/ANSI A117.1 since 1992. The Uniform Federal Accessibility Standards (UFAS) do contain a requirement for tactile warning, but this standard has for the most part been replaced by the 2010 ADA Standards for Accessible Design. The 1991, 1994, and 2010 ADA standards do not include a requirement for tactile warning on doors leading to hazardous areas – the section heading is "reserved" in the earlier editions and does not appear at all in the 2010 edition. So the jurisdictions that require tactile warning on doors to hazardous areas are quite limited.

Where a tactile warning is required for door hardware, typically either knurled levers, raised or recessed "dots", or an abrasive material is acceptable. I have often seen abrasive tape applied to the back of a lever to meet the requirements in my home state of Massachusetts. Because the types of rooms considered hazardous are not specifically defined, it's difficult to know where the Authority Having Jurisdiction will require a tactile warning, and abrasive tape can be a good solution in this case.

The question of whether or not to provide knurling or an abrasive coating on stair doors is an interesting one. The thought behind this practice is that someone who is visually impaired could fall down the stairs, but my concern would be that the person might not enter the exit stair because they believe that the door leads to a hazardous room. This would be especially true if the stair door was equipped with a lever handle. For stair doors with fire exit hardware, years ago I heard of some AHJs requiring abrasive tape as a tactile warning on the touchpad. Again, I think this could discourage someone from using the exit. I think a much better solution for those jurisdictions would be tactile lettering and/or braille on the touchpad of the exit device, indicating that the door leads to a stair. The tactile signage now required for stair doors will also help to prevent someone from unknowingly entering a stair.

Some of the confusion about tactile warning on stair doors may come from sections from the standards addressing “Detectable Warnings.” The original ADA guidelines include two reserved sections with the headings “Detectable Warnings at Stairs” and “Detectable Warnings on Doors to Hazardous Areas.” This could lead to the belief that detectable warnings are the same (knurled hardware) for both applications.



Detectable warnings are defined by the 2009 and 2017 editions of A117.1 and the 2010 edition of ADA-ABA as “A standardized surface feature built in or applied to walking surfaces or other elements to warn of hazards on a circulation path.” They are raised domes in the walking surface, and they’re typically only required at transportation platform edges and similar changes in level. In standards that require detectable warnings for stairs, there is typically an exception for dwelling units as well as for enclosed stairs, so the raised domes in the flooring would typically apply to open stairs with no doors.

To summarize:

The prevalent accessibility standards currently used in the U.S. (ICC A117.1 and the ADA Standards for Accessible Design) do not require tactile warning on doors leading to hazardous areas.

The last time either of these standards did include this requirement was the 1986 edition of ICC A117.1.

These standards do not include a requirement for hardware on stair doors to have a tactile warning.

Applying a tactile warning to stair doors could prevent a person with a visual impairment from accessing the exit.

“Detectable Warnings” required by some codes and standards are typically raised domes in the floor surface.

Some state or local standards may require tactile warnings on certain doors.

Where tactile warnings are required, knurling or an abrasive tape/coating should be acceptable unless the requirements or the AHJ require a specific method of creating the tactile warning.

Here are excerpts from the standards regarding tactile warning:

1986 edition of A117.1 (this section was removed in the 1992 edition):

4.27.3 Tactile Warnings on Doors to Hazardous Areas. Doors that lead to areas that might prove dangerous to a blind person (for example, doors to loading platforms, boiler rooms, stages, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull, or other operating hardware. This textured surface may be made by knurling or roughening or by a material applied to the contact surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those to hazardous areas.*

4.27.4 Detectable Warnings at Stairs. All stairs, except those in dwelling units, in enclosed stair towers, or set to the side of the path of travel shall have a detectable warning at the top of stair runs (see Fig. 41).

1991 and 1994 Editions of the Americans With Disabilities Act (ADA) Guidelines:

4.29.3 Detectable Warnings on Doors To Hazardous Areas. (Reserved).

4.29.4 Detectable Warnings at Stairs. (Reserved).

Uniform Federal Accessibility Standard (UFAS):
Note: This standard has very limited usage currently, but the text is included for historical reference.

4.29.3 TACTILE WARNINGS ON DOORS TO HAZARDOUS AREAS. Doors that lead to areas that might prove dangerous to a blind person (for example, doors to loading platforms, boiler rooms, stages, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull or other operating hardware. This textured surface may be made by knurling or roughing or by a material applied to the contact surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those to hazardous areas.*

A4.29.3 TACTILE WARNINGS ON DOORS TO HAZARDOUS AREAS. Tactile signals for hand reception are useful if it is certain that the signals will be touched.

4.29.4 TACTILE WARNINGS AT STAIRS. (Reserved).

Massachusetts 521 CMR Architectural Access Board Regulations:

26.11.4 Special hardware: Doors opening into hazardous areas shall have door-opening hardware which is knurled or has a roughened surface to give tactile warning to persons with visual impairments. Hazardous areas shall include but not be limited to loading platforms, boiler rooms, and electrical equipment rooms.

Interpretations and Clarifications Part 3 – “Order of Precedence” Clauses

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

This is the third in a three-part series on this blog addressing interpretations and clarifications of construction documents, comprised of: (a) Part 1 – Introduction to Resolving Conflicts, Ambiguities, and Discrepancies in Construction Documents; (b) Part 2 - Procurement and Construction Stages, and (c) Part 3 - “Order of Precedence” Clauses.

Provisions in construction contracts establishing the priority order in which the contract documents take precedence and will be interpreted, often known as “order of precedence” clauses, are quite common. Drafters of construction contracts who include such clauses are often seeking to reduce the potential for bidding or procurement stage requests for interpretation or clarification (RFIs) and construction stage RFIs, as well as construction stage changes, claims, and disputes.

However, “order of precedence” clauses can be more complex than many drafters of construction contracts may initially believe, and can, in fact, be a two-edged sword with as much potential to injure or dismay the owner and design professional as often as such clauses work to the benefit of the owner and the project.

Advantages and Drawbacks of “Order of Precedence” Clauses

The principal **advantages** of order of precedence clauses are:

- They may reduce the potential for construction stage contract modifications, such as change orders, because order of precedence clauses may provide greater clarity at the time of pricing. Rather than having to guess or assume which conflicting or ambiguous requirement applies to a given element of the work, an order of precedence clause may give the bidder or proposer clear direction on pricing. However, this advantage may cut both ways, as discussed below, relative to drawbacks.
- Order of precedence clauses may reduce the quantity of procurement stage and construction stage requests for interpretation or clarification (RFIs), by automatically establishing which conflicting provision governs. This advantage may result in giving with one hand while taking with the other, as further discussed below, relative to drawbacks.

Drawbacks associated with order of precedence clauses include the following:

- Order of precedence clauses have the potential to muddy the waters concerning which documents constitute “the Contract Documents”.
- Order of precedence clauses can work against the interests of the owner and the project. By automatically establishing which conflicting provision governs, an order of precedence clause could potentially result in an assignment of priority between conflicting provisions that is not intended by the owner and design professional and, consequently, yields an outcome that is inconsistent with the owner’s or project’s design intent.
- Order of precedence clauses may obviate or supersede a construction contract’s requirements for bidders and the contractor to submit RFIs in the event of a conflict, ambiguity, or discrepancy in the construction documents.
- When order of precedence clauses include language to the effect of, “the most-stringent”, or, “the most-expensive” provision governs, the project’s contract price is likely to be greater than when the contract omits such language.

Each of these is briefly discussed below.

Muddying the Waters Regarding What Constitutes the Contract Documents*: Optimally, a construction contract should indicate at only one location what constitutes the Contract Documents. When the contract includes multiple listings of what constitutes "the Contract Documents", there may be potential for the contractor, or its legal counsel, to contend that one or more elements intended by the owner as part of the construction contract were not actually contractual obligations. The potential adverse effect of this on the project, owner, and design professional is obvious. Because most order of precedence clauses reviewed by this writer are separate from the contract's enumeration of what constitutes the contract documents, order of precedence clauses have the potential to be interpreted, by a court or arbitrator, as establishing an alternative listing of what constitutes the contract documents. Almost all order of precedence clauses reviewed by this writer either incorporated additional elements not present in the contract's principal listing of the contract documents, or, worse, omitted documents the owner intended as part of the construction contract. Such discrepancies have the potential to lead to varying, and possibly unintended, interpretations of what constitutes the contract documents.*

Work Against the Interest of the Project*: By imposing an automatic, one-size-fits-all interpretation, order of precedence clauses have as much potential to work against the interests of the project, owner, and design professional, as to their benefit. As a highly experienced design professional and construction contract expert has repeatedly asserted to this writer, "If I knew, at the time I was developing the construction documents, where a mistake would be made, then I could write an appropriate order of precedence clause." For example, if an order of precedence clause stipulated that the drawings take precedence over the specifications, and the drawings required stainless steel fastening hardware in a corrosive environment, but the specifications required carbon steel fastening hardware, then the contractor would be obligated to provide only carbon steel hardware. Such a scenario would likely reduce the project's service life.*

Obviating or Superseding Contract Requirements to Submit RFIs*: Order of precedence clauses may obviate or supersede contractual requirements for the contractor to submit RFIs and obtain interpretations or clarifications in the event of a conflict, ambiguity, or discrepancy in the contract documents, because such clauses provide an automatic interpretation. By inherently rendering such an interpretation, without involving the design professional, there is essentially no conflict, ambiguity, or discrepancy. The following excerpt, from Florida Construction Legal Updates, discusses a relevant case well-known among construction law attorneys:*

"To illustrate the application of an order of precedence provision, in Hensel Phelps Const. Co. v. U.S., 886 F.2d 1296 (Fed. Cir. 1989), a prime contractor sought an equitable adjustment of its contract. The contractor relied on an order of precedence provision that required the specifications to govern over any conflict between the drawings and specifications (see routinely incorporated F.A.R. 52.236-21). In this case, the specifications called for a minimum of 18" of fill under concrete floor slabs; however, the drawings called for 36" inches of fill. The contractor priced the job with the 18" of fill. During construction, the contracting officer directed the contractor to install 36" of fill which triggered the equitable adjustment. The government, however, argued that the contractor knew of this discrepancy all along. The Federal Circuit Court nevertheless held that the contractor should be entitled to an equitable adjustment since the specifications had priority over this direct conflict:

"'Reliance was properly placed on the order of precedence clause to resolve a discrepancy between the specifications and the drawings and this resolution was reflected in the bid. When the government insisted on 36 inches of fill, rather than the 18 inches called for in the specifications, the contractor was required to perform more work than the contract required and more than its bid price contemplated. Consequently, on the record here neither Hensel Phelps [prime contractor] nor Watts [subcontractor] can be said to have profited or otherwise benefited by reliance on the order of precedence clause." Hensel Phelps, 886 F.2d at 1299."

Increased Construction Costs: By automatically rendering an interpretation, order of precedence clauses, especially those that include language requiring that the “more-stringent” or “most-expensive” conflicting requirement governs, may result in bidders or proposers adding hidden contingencies into their prices. The owner will wind up paying for such hidden contingencies, regardless of whether conflicts, ambiguities, or discrepancies exist and have a real effect on costs during construction. Despite the Spearin Doctrine, a prudent bidder or proposer is virtually obligated to include some type of hidden contingency to cover the effect of automatic interpretations resulting from order of precedence clauses. Unfortunately, there is usually no appropriate means for the owner or design professional to identify the amount of such hidden contingencies, whether at the time bids or proposals are submitted, or in the ensuing schedule of values required at the start of the construction stage.

Examples of “Order of Precedence” Clauses

Order of precedence clauses come in many forms and levels of detail. Presented below are several examples from construction contracts reviewed by this writer. Standard contract documents in widespread use in the United States, such as those published by the American Institute of Architects (AIA) and Engineer’s Joint Contract Documents Committee (EJCDC) do not include order of precedence clauses, except that AIA A503—2017/2019, Guide for Supplementary Conditions, includes a very-basic, high-level, potential order of precedence clause associated with Section 1.2 of AIA A201—2017, Standard General Conditions of the Contract for Construction”. Section 1.2.1.2 of AIA A503 is discussed further, below, in this article’s section titled, “Precedence Clauses in Widely-Used Standard Contract Documents”.

Example 1

“Not withstanding any other language to the contrary contained in the contract documents, in case of an inconsistency between drawings and specifications or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided.“

Evaluation of Example 1: The above example is a requirement relatively common in non-standard construction contracts where the order of precedence clause obligates the contractor to provide something like “better quality or greater quantity of work”. Other, similar clauses reviewed by this writer obligate the contractor to provide the “more-expensive” of the conflicting requirements, or to comply with the “more-stringent” requirement. Ultimately, provisions like Example 1, may cause bidders and proposers to add hidden contingencies to their bid prices, which the owner will end up paying regardless of whether the construction documents include conflicts, ambiguities, or discrepancies.

Example 2

“In case of any conflict or inconsistency between the Plans and Specifications, the Specifications shall govern. Any discrepancy between the Specifications and Drawings shall be submitted by the Contractor to the Engineer.”

Evaluation of Example 2: The example, above, is relatively common. In some cases, such provisions require that specifications govern over the drawings and, in others, drawings govern over the specifications. An interesting twist in Example 2 is that, immediately after establishing an order of precedence, which appears to create an ironclad interpretation of whether the drawings or specifications govern, the provision contradicts itself by subsequently requiring that conflicting matters be submitted for a written interpretation, seemingly obviating the order of precedence established in the first sentence.

Example 3

“In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

“(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Proposal.”

Evaluation of Example 3: The above is a relatively common order of precedence variant. Such provisions are often inconsistent with indications, elsewhere in the construction contract, of what exactly comprises the contract documents. Like many order of precedence clauses, Example 3 includes things like, “standard specifications” and “detailed specifications”, the meaning or intent of which is often unclear.

Example 4

“Technical specifications take priority over general specifications and detail drawings take precedence over general drawings. Special Conditions take precedence over General Conditions. Any conflict or inconsistency in the drawings shall be submitted by the Contractor to the A/E, with a copy to the Owner, whose decision thereon shall be conclusive. In case of conflict or inconsistency between the drawings and the specifications, the specifications shall govern.”

Evaluation of Example 4: Above is another example frequently observed by this writer. In Example 4, the intent of terms like, “technical specifications” versus "general specifications”, and “detail drawings” versus "general drawings” is unclear, because elements of the contract documents are rarely so labeled. Example 4 also establishes multiple orders of precedence, but then, like Example 2, requires submitting the matter for interpretation. A unique aspect of Example 4 is that it seems to empower the owner to either render interpretations or overrule the design professional’s (“A/E”) interpretations, which might transfer to the owner some of the design professional's risk. However, the meaning of the words, ““shall be submitted by the Contractor to the A/E, with a copy to the Owner, whose decision thereon shall be conclusive”, is unclear, because it may be interpreted that either the A/E’s, or the Owner’s, decision is final.

Example 5

“In case of discrepancy, the governing order of the documents shall be as follows:

“1. Written Interpretations
“2. Addenda
“3. Specifications
“4. Supplementary Conditions to the General Conditions
“5. General Conditions
“6. Approved Shop Drawings
“7. Drawings
“8. Referenced Standards.

“Written/computed dimensions shall govern over scaled dimensions.”

Evaluation of Example 5: Unique aspects of the example, above, include: (1) Previously-issued written interpretations appear to be elevated to the status of contract modifications, because they appear to be given the status of contract documents. Interestingly, Example 5 entirely omits contract modifications, such as change orders. (2) “Approved shop drawings” (which may exclude other types of contractor submittals, such as product data) also appear to be elevated to the status of contract documents because, in Example 5, they take precedence over “the drawings”. Both AIA and EJCDC standard contract documents expressly indicate that shop drawings and other contractor submittals, whether or not approved by the design professional, are not contract documents, because contractor submittals are not prepared, sealed, or signed by the design professional. (3) In Example 5, the meaning and intent of “referenced standards” is unclear. The term might mean third-party reference standards, such as those published by ASTM, AWWA, AISC, IEEE, and others, or it might refer to the local department of public works’ construction standards, or something else.

Example 6

“Priority of Contract Documents. In case of conflict between Contract documents, priority of interpretation shall be in the following order: signed agreement (or Contract), performance and payment bonds, proposal, special provisions (or conditions), advertisement for bids (or invitation to bidders, or request for proposals), project (or Contract) drawings, Standard Specifications from Public Works Construction Standards • [owner name redacted] Standard Drawings from Public Works Construction Standards • [owner name redacted] referenced specifications.”

…” In cases of discrepancies, figured dimensions shall govern over scaled dimensions; plans shall govern over Standard Specifications, special provisions shall govern over both plans and Standard Specifications.”

…” Errors and Corrections in Drawings and Specifications. The Engineer shall be permitted to make such corrections or interpretations as may be necessary for the fulfillment of the intent of the Contract documents. The CONTRACTOR shall not take advantage of any apparent errors, omissions or discrepancies in the drawings or specifications. In case of any errors, omissions or discrepancies in the drawings or specifications, the CONTRACTOR shall promptly submit the matter to the OWNER who, in turn, shall promptly make a determination and issue the necessary instructions in writing. Any adjustment by the CONTRACTOR without this determination and instructions shall be at the CONTRACTOR'S own risk and expense. The work is to be made complete as intended by the Contract documents.”

Evaluation of Example 6: The above contains an array of precedence clauses, collected from a single construction contract, and is both lengthy and somewhat confusing. Among its more notable aspects are: (1) The provision establishes a public works department’s “standard specifications”, “standard drawings”, and “referenced specifications”, as taking precedence over drawings and specifications that may have been prepared specifically for the project. However, a subsequent provision in the same construction contract indicates, “plans shall govern over Standard Specifications”. (2) Like Examples 2 and 4, above, Example 6 establishes a fairly complex priority order of the construction documents, but also requires that conflicts, ambiguities, and discrepancies, be submitted to the owner for interpretation, which appears to conflict with the order of precedence clauses themselves. (3) Example 6 includes, “The CONTRACTOR shall not take advantage of any apparent errors, omissions or discrepancies in the drawings or specifications.” This writer has observed such language in a number of non-standard construction contracts. The intent of such provisions is unclear, although it is likely meant to furnish the owner a contractual basis for denying contractor change proposals and claims arising from conflicts, ambiguities, discrepancies, errors, and omissions in the construction documents. The extent to which such a clause would be enforceable is unclear.

Example 7

“In resolving such conflicts and discrepancies, the documents should be given preference in the following order:

“a. Agreement
“b. Change Orders
“c. Specifications
“d. Drawings
“e. Other materials included in the bid documents (e.g. geotechnical reports)”

“Within the specifications, the order of precedence is as follows (note that not all elements listed are included in all contract documents):

“a. Addenda
“b. Special Conditions
“c. Special Notes
“d. Notice to Bidders
“e. Instructions to Bidders
“f. Proposal
“g. Bid Bond
“h. Performance and Labor and Material Bonds
“i. General Conditions
“j. Technical Specifications
“k. Standard Specifications (e.g. [state identity redacted] DOT Standard Specifications)
“l. Requirements of other agencies (e.g. FAA Advisories)

“With reference to the drawings, the order of precedence is as follows:

“a. Figures govern over scaled dimensions
“b. Detail drawings govern over general drawings
“c. Change order drawings govern over contract drawings
“d. Contract drawings govern over standard drawings
“e. Contract drawings govern over shop drawings

“In no case shall the CONTRACTOR proceed with the Work in uncertainty. Any Work done by the CONTRACTOR after the discovery of any conflict or discrepancy, until authorized, will be at the CONTRACTOR’S risk and responsibility.”

Evaluation of Example 7: The author of the complex order of precedence clauses, above, seems to have attempted addressing as many problems as could be envisioned. Notable aspects of this provision include: (1) The following appears to be elevated to the status of a contract document, “Other materials included in the bid documents (e.g. geotechnical reports)”. Exactly what is meant by “other materials included in the bid documents” may be open to interpretation, although geotechnical reports were expressly included. Ordinarily, resource information about the site, such as results of subsurface investigations, record documents from prior projects, results of investigations for hazardous materials, and similar documents are neither intended to be part of the contract documents, nor

Example 8

“Limitations Of Drawings. The drawings show conditions as they are supposed or believed by the Owner to exist, but are not intended to be or inferred to be that the conditions as shown thereon constitute a representation or warranty expressed or implied by the Owner that such conditions actually exist. The Owner shall not be liable for any loss sustained by the Contractor as a result of any variance between the conditions as shown on the drawings and the actual conditions revealed during the progress of the work, except as indicated in paragraph 5.16. In case of difference between small- and large-scale drawings, the large-scale drawings shall govern. In cases of difference between drawings and specifications, the specifications shall govern.”

Evaluation of Example 8: Much of Example 8’s, unique order of precedence clause attempts to assign to the contractor risks associated with discrepancies between the drawings and actual site conditions, which appears to contradict the Spearin Doctrine.

Example 9

“Shop Drawings, when approved by the Engineer, shall govern all details of the work, taking precedence over all other drawings. […] Figured dimensions on drawings shall take precedence over measurements by scale. Detailed working drawings shall take precedence over general drawings and shall be considered as explanatory of them and not an indicating extra work.”

Evaluation of Example 9: The example provision, above, appears to elevate the contractor’s shop drawings to the status of contract documents, by expressly indicating they take precedence over “all other drawings”. As discussed in the evaluation of Example 5, above, both EJCDC and AIA standard contract documents expressly indicate that contractor submittals, whether or not approved by the design professional, are not contract documents. Example 9 appears to omit other types of contractor submittals, such as product data and samples, so the exact meaning of, “shop drawings” is unclear. Shop drawings and other contractor submittals should not be considered as contract documents, nor should they take precedence over the contract documents prepared by the design professional. Rather, contractor submittals are intended only to demonstrate how the contractor proposes to comply with the contract documents (see “Shop Drawings and Submittals: Definition, Purpose, and Necessity”, and “Shop Drawings and Submittals—Deviations from Contract Requirements”, previously published on this writer’s blog). Furthermore, Example 9, includes, “Detailed working drawings shall take precedence over general drawings”, which is unclear. “Working drawings” may imply coordination drawings prepared by the contractor or its subcontractors, which are typically not submitted to the design professional and, of course, should not have the status of contract documents. The meaning of, “general drawings” is unclear. Ultimately, the only drawings that should be considered part of the contract documents are those prepared under the supervision and control of the design professional-in-responsible-charge, and are appropriately sealed and signed by such individual.

The foregoing are only selected examples. Order of precedence clauses vary considerably from one organization to the next, and can introduce more concerns and potential problems than discussed in the evaluations presented above.

Precedence Clauses in Widely-Used Standard Contract Documents

None of the standard owner-contractor agreement forms, nor the standard general conditions, published by AIA and EJCDC include comprehensive order of precedence clauses. In fact, AIA A201—2017, Standard General Conditions of the Contract for Construction, includes the following in Section 1.2.1: “The Contract Documents are complementary, and what is required by one shall be as binding as if required by all”. Similarly, EJCDC C-700—2018, Standard General Conditions of the Construction Contract, Paragraph 3.01 (“Intent”), indicates, “The Contract Documents are complementary; what is required by one Contract Document is as binding as if

The foregoing, quoted provisions of EJCDC C-700 and AIA A201 are very important, powerful clauses. Together with AIA A201—2017, Sections 4.2.11 through 4.2.14, and EJCDC C-700—2018, Paragraphs 3.03 and 3.04, these provisions establish that the construction documents are intended as an integrated, coordinated whole, where resolution of conflicts, ambiguities, and discrepancies in the contract documents is to be impartially determined by the design professional (for additional information on this, see "Interpretations and Clarifications: Part 1 – Introduction to Resolving Conflicts, Ambiguities, and Discrepancies in Construction Documents", previously published on this writer's blog.

EJCDC C-001—2018, Commentary on the 2018 EJCDC Construction Documents, includes the following (bracketed text, below, is not present in the original and was included here for clarity):

"EJCDC generally discourages use of "order of precedence" provisions, because a rigid, predetermined order of precedence will work against the correct intent and a fair result as often as it works to their benefit. The limited exceptions to this are: 1) [EJCDC] C 700 [Paragraph] 3.01.C, which indicates that in the event of a discrepancy between printed or electronic/digital versions of the Contract Documents, the printed version shall govern; and 2) [EJCDC] C 700 [Paragraph] 3.03.B, which establishes that the Contract Documents drafted or furnished by the Engineer (essentially the Drawings and Specifications) take precedence over reference standards, standard specifications, manuals, and similar items whose requirements have perhaps been incorporated by reference."

Also, EJCDC C-523—2018, Construction Subcontract, includes Paragraph 2.02 ("Precedence of Subcontract"), which states, "If a provision of this Subcontract conflicts with a provision of the Prime Contract, the terms of this Subcontract govern, unless under controlling laws the conflicted provision of the Prime Contract cannot be waived." EJCDC's rationale for this is that the prime contractor may consciously elect to enter into a construction subcontract that, in certain ways, is inconsistent with the prime contract. As just one example, a small subcontract for something like, say, striping a new parking lot, may interest only smaller, specialized subcontractors, who may be unable to furnish liability insurance in accordance with the insurance provisions of the prime contract. In such a situation, the clause of EJCDC C-523—2018, quoted above, would allow the prime contractor to knowingly retain the small subcontractor with deficient insurance coverage, with the prime contractor assuming the associated risk.

Similar to EJCDC C-523, AIA C401—2017, Standard Form of Agreement Between Contractor and Subcontractor, Article 2, states in part (bracketed text is not present in the original and was included here for clarity): "…Where a provision of such documents [the prime contract] is inconsistent with a provision of this Agreement, this Agreement shall govern." AIA's rationale for including this is likely the same as EJCDC's reasons for including the parallel provision in EJCDC C-523.

AIA A503—2017/2019, Guide for Supplementary Conditions, appears to be AIA's principal location for presenting guidance on order of precedence clauses. A503 essentially discourages contract drafters from incorporating order of precedence clauses but, in the event one is desired, A503 presents a basic order of precedence clause that is one of the better such clauses seen by this writer, although it still has problems (bracketed text, below is not present in the original and was included here for clarity):

"§ 1.2 Correlation and Intent of the Contract Documents

"§ 1.2.1 The AIA General Conditions do not establish a system of precedence among the Contract Documents, but provide that all documents are complementary. In the event of inconsistencies among the Contract Documents, the Architect is to interpret them to reflect the design intent. Establishing a fixed order of priority is not recommended because no one document constitutes the best authority on all issues that may arise. The order shown here is suggested for consistency in the event an Owner insists on establishing a precedent. Note that this modification does not establish a precedent between Drawings and Divisions 2 through 49 of the Specifications, which together describe the Work.

“Add Section 1.2.1.2 to Section 1.2.1 [of the General Conditions]:

“Model Language:

“§ 1.2.1.2 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

“.1 Modifications.
“.2 The Agreement.
“.3 Addenda, with those of later date having precedence over those of earlier date.
“.4 The Supplementary Conditions.
“.5 The General Conditions of the Contract for Construction.
“.6 Division 1 of the Specifications.
“.7 Drawings and Divisions 2-49 of the Specifications.
“.8 Other documents specifically enumerated in the Agreement as part of the Contract Documents.

“In the case of conflicts or discrepancies between Drawings and Divisions 2-49 of the Specifications, or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13 [of the General Conditions].”

While A503’s model language, presented above, appropriately allows the architect to render interpretations in the event of “conflicts or discrepancies between Drawings and Divisions 2-49 of the Specifications, or within or among the Contract Documents and not clarified by Addendum”, it nevertheless presents a notable drawback: It adds what might be interpreted as a fourth listing of what constitutes “the Contract Documents”, with the others at A201—2017 Section 1.1.1, and AIA A101—2017, Standard Form of Agreement Between Owner and Contractor (Stipulated Sum), Article 1 and Section 9.1. Discrepancies may exist between the listings of what comprises the contract documents in A101 and A201, and the introduction of what might be construed as a fourth listing, via the model language of A503 Section 1.2.1.2, might contribute to potential misinterpretations of what is intended as “the Contract Documents”.

Another, although probably less-important, drawback of the suggested order of precedence clause in AIA A503 is the consequences of the Division 01 specifications taking precedence over the specifications of Divisions 02-49. In some cases, it may be desirable for Division 02-49 sections to have precedence over Division 01. In cases where the Division 01 specifications were prepared by a third-party, such as a construction manager as advisor, the model language of A503 would make requirements drafted by the third-party a priority over the design professional-developed, sealed, and signed specifications of Division 02-49, which may have unintended consequences. Also, A503 gives the general conditions precedence over the Division 01 specifications. In fact, the general conditions in Division 01 should have equal precedence, similar to how A503 assigns equal standing to the drawings and Division 02-49 specifications, because Division 01 typically augments the general conditions.

Finally, the order of precedence clause set forth in A503 omits the performance bond and payment bond, when such bonds are required by the contract. In many cases, the requirements of the bonds, such as AIA A312—2010, Performance Bond and Payment Bond, as well as EJCDC C-610—2018, Performance Bond, and EJCDC C-615—2018, Payment Bond, essentially supersede selected provisions of the general conditions. For example, a performance bond typically comes into effect only after the owner has issued a notice of termination for cause. In such event, the provisions of the associated performance bond will typically supersede selected provisions of the

general conditions concerning termination for cause. In fact, language more-or-less to this effect is included in EJCDC C-700—2018, Paragraph 16.02.G. Accordingly, an order of precedence clause, when incorporated into the contract documents, should include the performance bond and payment bond, when such bonds are required under the contract.

Conclusions

Despite their relatively common frequency of use, order of precedence clauses often present more drawbacks than advantages, and, when incorporated into the contract, have potential to work against the interests of the project and owner as often as to their benefit. Order of precedence clauses may be written in an impressive array of different approaches, styles, and intent, many of which have associated drawbacks. For this reason, standard contract documents in widespread use in the United States, such as AIA and EJCDC, typically do not include order of precedence provisions. When such clauses are incorporated into a construction contract, they should be written with appropriate care, professional judgement, and foresight, with the understanding that they may often be a two-edged sword.

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The Drama of Space: How Architectural Environments Tell Stories

Ron Blank, Ron Blank and Associates

Architecture has always been more than mere shelter. The most memorable buildings—from Gothic cathedrals to modernist masterpieces—share a common quality: they transform the act of inhabiting space into a narrative experience. This approach, known as spatial dramaturgy, treats architecture not as a static container but as an active participant in human life, one that shapes behavior, evokes emotion, and creates meaning through carefully orchestrated spatial sequences.

Beyond Function: Space as Performer

Traditional architectural practice focuses primarily on program, efficiency, and aesthetics. Spatial dramaturgy asks a different question: How does this space perform? This shift in perspective reveals architecture's potential to create experiences that unfold over time, much like theatrical performances. Just as a skilled playwright crafts scenes that build tension and release, architects can design spatial sequences that guide users through emotional journeys—from the anticipation of approach to the satisfaction of arrival.

Consider your last visit to a well-designed museum. The entrance likely compressed space before opening into a grand atrium, creating a moment of revelation that prepared you for the treasures within. The circulation probably offered choices—multiple routes that each revealed different aspects of the collection. These aren't accidents but deliberate design decisions that treat your movement through space as a form of choreography.

The Theoretical Foundation

Scholars like Holger Kleine and Ramón Griffero have developed sophisticated frameworks for understanding how spatial dramaturgy operates. Kleine's work on spatial sequences demonstrates how architects can create dramatic narratives through carefully planned progressions of compression and release, light and shadow, public and private spaces. His analysis reveals patterns in masterworks from Baroque churches to contemporary museums: successful projects guide users through exposition, rising action, climax, and resolution, just like traditional dramatic structures.

Griffero's concept of "environmental presence" goes further, arguing that spaces possess their own form of agency. Rather than passive backdrops, environments actively influence behavior through atmospheric qualities—temperature, texture, sound, and light. This perspective suggests that architects must consider not only how spaces accommodate human activities but how they actively shape those activities.

Learning from History

The principles of spatial dramaturgy aren't new. Greek amphitheaters demonstrated sophisticated integration of performance, landscape, and social organization. Medieval cathedrals created immersive experiences that unfolded throughout the liturgical year, using light, acoustics, and processional routes to support religious experience. The Baroque period perfected architectural manipulation of emotion through scale, materials, and sequence—Bernini's colonnades at St. Peter's still embrace visitors in a gesture of maternal welcome.

Even vernacular traditions understood these principles. Japanese tea houses create elaborate spatial sequences that prepare participants for mindful engagement, while Islamic architecture uses geometry, water, and light to evoke paradise while providing practical comfort in challenging climates.

Contemporary Applications

Today's design challenges—sustainability, wellness, social connection—align naturally with spatial dramaturgy principles. The most sustainable buildings are those that users love and maintain well, making experiential quality inseparable from environmental performance. Biophilic design, which connects occupants to natural processes, creates both ecological benefits and the temporal variability that spatial dramaturgy requires.

Progressive workplace design increasingly employs theatrical strategies, creating "neighborhoods" with distinct characters, providing both collaborative stages and contemplative retreats. Healthcare facilities use spatial dramaturgy to reduce stress and support healing through carefully planned sequences from arrival to treatment. Educational environments create gradients from social to contemplative spaces, acknowledging that learning requires diverse spatial settings.

The Sensory Dimension

Effective spatial dramaturgy engages all senses, not just vision. Acoustic design shapes privacy and social interaction while supporting natural ventilation strategies. Thermal conditions become active design elements that connect occupants to seasonal cycles. Tactile qualities invite physical engagement while often incorporating sustainable materials with distinctive textures and temperatures.

This multi-sensory approach creates richer experiences while supporting environmental goals. Natural materials that age beautifully reduce maintenance needs while providing sensory variety. Passive cooling strategies that move air through spaces create dynamic thermal conditions that enhance rather than compromise comfort.

Movement as Narrative

Circulation design offers perhaps the greatest opportunity for spatial dramaturgy. Rather than treating corridors as mere connectors, they can become galleries, social conduits, and transition zones that prepare users for different activities. Staircases can encourage physical activity while creating opportunities for chance encounters. Vertical circulation can transform necessary movement into spatial revelation.

The key is treating movement as storytelling. Entrance sequences create first impressions and threshold rituals. Transition zones provide opportunities for adjustment between different spatial characters. Destination points offer climactic moments that reward the journey. Return trips reveal different aspects of the same spaces, maintaining user interest and discovery.

Measuring Success

Evaluating spatial dramaturgy requires expanding beyond traditional architectural metrics. Post-occupancy evaluation should document not just functional performance but user experience, community impact, and environmental outcomes. How do spaces make people feel? Do they encourage desired behaviors? Do they strengthen social connections while supporting environmental goals?

Successful spatial dramaturgy creates environments that feel alive rather than static—spaces that respond to and enhance human activities while contributing to larger narratives about community, sustainability, and well-being. In an era of climate change and social disconnection, this approach offers tools for creating architecture that serves both human needs and planetary health.

RON BLANK
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When Ancient Wisdom Meets Modern Practice: Vitruvius and the Future of Sustainable Design

By Ron Blank, Ron Blank and Associates

In 1414, while Europe struggled through the twilight of medieval civilization, a Vatican spy and scholar named Poggio Bracciolini made a discovery that would fundamentally reshape how we think about the built environment. Hidden in a Swiss monastery, beneath centuries of dust and neglect, lay a complete manuscript of Marcus Vitruvius Pollio's De Architectura—a Roman engineer's comprehensive manual that had been gathering dust while European cities festered in their own waste and deforestation stripped the continent bare. What Bracciolini unearthed was not merely an ancient text, but a time capsule containing design principles that remain startlingly relevant to today's environmental challenges.

For contemporary design professionals grappling with climate change, resource depletion, and urban sustainability, Vitruvius offers something invaluable: proof that environmental consciousness in design is not a modern luxury but an ancient necessity. His work demonstrates that the greatest architectural achievements have always been those that work with, rather than against, natural forces.

The Vitruvian Foundation

While most design professionals know Vitruvius for his famous triad of architectural principles—strength (firmitas), function (utilitas), and beauty (venustas)—the deeper environmental consciousness embedded within these concepts is often overlooked. Vitruvius understood that true strength meant creating buildings designed to last for generations, reducing the need for replacement and renovation. Function encompassed not just programmatic efficiency but environmental appropriateness—structures that enhance rather than fight their surroundings. Beauty included not merely aesthetic appeal but the kind of harmony that makes buildings pleasant to inhabit and maintain over centuries.

This integrated approach challenges contemporary design practice, where sustainability is often treated as an add-on rather than a fundamental design driver. Vitruvius reminds us that environmental responsiveness and design excellence are not competing priorities but mutually reinforcing aspects of great architecture.

Environmental Analysis as Design Foundation

Perhaps Vitruvius's most relevant contribution to modern practice lies in his systematic approach to environmental analysis. Long before we had computerized energy modeling or climate data, Roman architects were conducting sophisticated site assessments that contemporary designers would recognize. Vitruvius describes detailed techniques for testing soil stability, assessing water quality, evaluating wind patterns, and optimizing solar orientation—all fundamental to creating structures perfectly adapted to local conditions.

For today's design professionals, this represents a crucial paradigm shift. Rather than imposing universal solutions regardless of context, Vitruvian methodology insists that each project begin with deep understanding of its environmental setting. His emphasis on site-specific design speaks directly to contemporary challenges with global architectural homogenization and the environmental costs of context-blind design.

Learning from Renaissance Innovation

The rediscovery of Vitruvian principles during the Renaissance provides a compelling model for how ancient wisdom can drive contemporary innovation. When Leon Battista Alberti encountered De Architectura in the 1440s, he didn't simply copy Roman solutions but adapted Vitruvian principles to address 15th-century challenges. His treatise "On the Art of Building" demonstrates how timeless environmental principles can be translated across technological and cultural contexts.

Filippo Brunelleschi's dome for Florence Cathedral represents perhaps the most spectacular application of Vitruvian structural principles to Renaissance conditions. His solution to spanning a 140-foot opening without massive internal scaffolding synthesized classical Roman engineering with cutting-edge 15th-century innovation. The dome's lightweight construction, self-supporting structural systems, and integration of construction process with final form demonstrate how environmental principles can drive rather than constrain design innovation.

Leonardo's Systematic Thinking

Leonardo da Vinci's engagement with Vitruvian principles reveals the potential for environmental thinking to transform entire design methodologies. His famous Vitruvian Man drawing, while iconic, represents only the surface of a much deeper investigation into the relationships between human needs and natural systems. Leonardo's notebooks reveal systematic studies of water flow, wind patterns, plant growth, and human anatomy—all extensions of Vitruvian site analysis aimed at understanding the natural systems that architecture must accommodate.

Leonardo's hydraulic projects demonstrate practical applications of Vitruvian water management principles that remain relevant today. His canal designs, irrigation systems, and proposals for diverting the Arno River show sophisticated understanding of working with rather than against natural water systems. For contemporary professionals dealing with stormwater management, urban flooding, and water scarcity, Leonardo's synthesis of engineering precision with environmental sensitivity provides valuable precedents.

Perhaps most relevant to current practice are Leonardo's plans for ideal cities, which represent comprehensive applications of Vitruvian urban design principles. His multi-level circulation systems, gravity-fed waste management, and building orientations that maximize natural light and ventilation anticipate many strategies that sustainable urbanists are now rediscovering. These proposals demonstrate how environmental principles can be scaled from individual buildings to entire urban systems.

.The Digital Vitruvius

Modern computational tools offer unprecedented opportunities to apply Vitruvian environmental analysis at new scales and levels of precision. Building performance simulation, climate analysis software, and parametric design tools can extend the Roman architect's methodical approach to environmental optimization. However, technology alone cannot substitute for the fundamental environmental consciousness that underlies Vitruvian practice.

The challenge for contemporary designers is to use digital tools to enhance rather than replace the kind of deep site analysis and environmental understanding that Vitruvius advocated. Computational fluid dynamics can reveal wind patterns, but designers must still understand how to orient buildings to take advantage of prevailing breezes. Energy modeling can quantify thermal performance, but architects must still design spaces that feel comfortable to inhabit.

Lessons for Practice

The Vitruvian legacy offers several crucial lessons for contemporary design professionals. First, environmental analysis must be the foundation, not an afterthought, of the design process. Every project should begin with careful study of climate, site conditions, local materials, and regional building traditions.

Second, sustainability and design quality are not competing priorities but aspects of the same fundamental commitment to creating buildings that enhance rather than degrade their environments. The most successful sustainable buildings are those that achieve environmental performance through design strategies that also improve spatial quality, user comfort, and aesthetic experience.

Third, local specificity is essential to both environmental performance and cultural authenticity. Global environmental challenges require locally specific solutions that respond to particular climates, landscapes, and communities.

Finally, the integration of technical knowledge with humanistic understanding that characterized Vitruvian practice remains essential. Today's design professionals must be simultaneously environmentalists and artists, engineers and cultural observers, combining technical precision with deep understanding of human needs and natural systems.

Conclusion: The Continuing Story

The manuscript that Poggio Bracciolini discovered continues to be written today, each new building adding another layer to the ongoing story of environmental design. The principles that Vitruvius articulated—integration of performance with beauty, understanding of buildings as parts of larger systems, recognition that human construction must work within natural limits—remain as relevant in our age of climate crisis as they were in the Roman Empire.

For contemporary design professionals, the Vitruvian legacy offers both inspiration and practical guidance. It demonstrates that environmental consciousness and design excellence have always been inseparable, that the greatest architectural achievements have been those that enhance rather than degrade the natural systems that sustain all life. The challenge facing today's designers is not to invent sustainable design from scratch but to recover and extend this ancient wisdom, continuing to write the palimpsest of environmental architecture that Vitruvius began two millennia ago.

Quick Question: Gasketing Requirements of NFPA 101

By: Lori Greene, I Dig Hardware Blog

With the increased focus on fire door assemblies, particularly in health care facilities, I'm receiving numerous questions on this topic. The most recent, received from a fire door assembly inspector, is…

Which door openings are required to have gasketing, according to NFPA 101 – The Life Safety Code?

Since the Centers for Medicare and Medicaid Services (CMS) have adopted the 2012 edition of NFPA 101, that's the edition I referred to in order to answer this question. [Note: I have updated the information below based on the 2015-2024 editions of NFPA 101.] I have previously written articles addressing the requirements of the International Building Code (IBC), so if the IBC is the applicable code, refer to this post.

Gasketing is typically required when a door assembly must limit air infiltration to a maximum value stated in the code when tested in accordance with UL 1784 – Air Leakage Tests of Door Assemblies.

Similar to the IBC, NFPA 101 does not specifically mandate gasketing for fire doors or smoke doors. Instead, these model codes require some doors to limit the amount of air infiltration to a certain level (3.0 cubic feet/minute/square foot of door opening at 0.10 in. water column for both the ambient and elevated temperature tests) when tested in accordance with UL 1784 – Standard for Air Leakage Tests for Door Assemblies. That's a mouthful, but the key is to start by looking for a reference to UL 1784.

The 2012 edition of NFPA 101 and subsequent editions through 2024 refer to UL 1784 in Section 8.2.2.4, stating that where door assemblies are required by other sections of the code to be smoke leakage-rated in accordance with section 8.2.2.4, they are required to limit the air infiltration to the level stated above, when tested in accordance with UL 1784. This section also requires these door assemblies to be installed and maintained in accordance with NFPA 105 – Standard for Smoke Door Assemblies and Other Opening Protectives, which would require that the assemblies be inspected at least annually as well as after installation and after maintenance or repair work.

The next step is to look in other sections of the code for references to Section 8.2.2.4 and smoke-leakage-rated assemblies.

I found only two references in each of the 2012-2024 editions of NFPA 101 that would require smoke leakage-rated assemblies in accordance with Section 8.2.2.4:

7.2.12.3.4.1 – New fire door assemblies serving an area of refuge shall be smoke leakage-rated in accordance with 8.2.2.4.

8.5.4.2 – Where required by Chapters 11 through 43, doors in smoke barriers that are required to be smoke-leakage–rated shall comply with the requirements of 8.2.2.4.

However, I didn't find any occupancy chapters which currently require doors in smoke barriers to be smoke-leakage-rated, so that brings us back to one location – new fire door assemblies serving an area of refuge would require gasketing in order to limit the air infiltration to the level stated in the code.

Annex A of NFPA 101 further clarifies that "***Gasketing of doors should not be necessary to achieve resistance to the passage of smoke if the door is relatively tight-fitting."*** This language (or similar) appears in sections A.18.3.6.3.1/A.19.3.6.3.1 in reference to corridor doors in new and existing health care facilities, in addition to section A.8.4.3.4 in reference to fire door assemblies. But read on…there's more.

What about NFPA 80 and NFPA 105? NFPA 80 does not reference UL 1784, but states in Annex A, paragraph A.9.3, "Where door assemblies are used for smoke or draft control, gasketing or reduced clearances might be necessary," referencing NFPA 105. Although NFPA 105 does require smoke door assemblies to limit the airflow to the stated level when tested in accordance with UL 1784, we need to go back to NFPA 101 and look for locations that are required to be smoke doors installed in accordance with NFPA 105.

Searching NFPA 101 for references to NFPA 105, I found 3 more locations where doors are required to limit air infiltration to the stated level when tested in accordance with UL 1784:

New door assemblies opening into a vestibule (if provided) that are part of a smokeproof enclosure (7.2.3.4)

New door assemblies in horizontal exits (7.2.4.3.9)

Elevator lobby doors in occupant evacuation elevator shaft systems – except doors to the hoistway, exit stair enclosure, control room, or control space (2012: 7.14.8.7, 2015: 7.14.9.7, 2018, 2021, 2024: 7.15.9.7)

The bottom line is that there are actually very few locations where NFPA 101 requires doors to have smoke gasketing – new fire door assemblies serving an area of refuge, new door assemblies in the vestibule of a smokeproof enclosure, new door assemblies in horizontal exits, and elevator lobby doors in occupant evacuation elevator shaft systems. If anyone finds additional locations or references, please let me know.

Note: If the building was built in accordance with the IBC and doors were required to have gasketing in order to limit air infiltration when tested in accordance with UL 1784, this gasketing should be present and intact when the fire door inspection is conducted. The 2015-2024 editions of the IBC require limited air infiltration and reference UL 1784 for the following locations: elevator lobby doors, doors in smoke barriers in underground buildings and I-3 occupancies (i.e. correctional centers, detention centers, jails, prerelease centers, prisons, and reformatories), and fire door assemblies in corridors and smoke barriers. Refer to this article for more information.

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