

Standard Details

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Standard details are ubiquitous in contemporary architecture, common in many of the buildings we occupy every day. Despite this reality, there is limited scholarly attention given to theorizing their role; clearly, these types of repetitive, ubiquitous details are not what Edward Ford was concerned with in *The Architectural Detail*.

This paper will interrogate the significant role of the standard detail in professional practice, focusing not on a technical or historical perspective, but rather a practical one focused on how standard details are put into use. Using Lawrence Busch's expansive exploration of standards and their role in structuring our world as a broad framework, the paper will explore the connections between standard details and their relationship to power in shaping professional practice. Standard details exert their agency within the design process, setting the range of what is possible and serving as a standing reserve for the design team to use. Standard details are also materializations of much broader systems, inextricably connected to the construction industry, manufacturing processes, professional liability, and standardization. The standard detail exerts significant but anonymous power in the practice of architecture and reveals the uncomfortable relationship that the discipline has with the actual contingencies of professional practice.

An adaptive reuse project by the author provides the context for the deployment of standard details as an unexceptional yet common example of much of normative contemporary architectural practice. Like many other projects, this one used the following standard details: resilient wall base, acoustical panel ceilings, and hollow metal frames. These standards are deployed in a wide variety of projects and a similar ecology structures their usefulness. Like all standards, their apparent naturalness masks the complex apparatus that created them and gives standard details their power. Their influence in the everyday makes standard details worth our consideration.

THE PROJECT

The client was a small company that develops software for theater productions. The site was a former movie theater building, built in the 1950s, located on a formerly thriving commercial street in a gritty area of the city. The project was an adaptive

reuse to transform the building into a black box theater that can be used as a laboratory for the client, a teaching facility, and a venue for emerging and experimental theater. The project was a significant reach for the small company but it had bold ambitions for investing in the neighborhood and supporting the local theater community. The budget was extremely tight, and as such, so were the architect's¹ design fees.

The design proposal developed within this specific context and its contingent realities. The materials were mass-produced products: proven over time, readily available, standardized sizes and configurations. The design team assembled the contract documents through well-worn details that incorporated these products, drawing from the firm's Revit template and past projects, following industry standards for their configuration and installation into common assemblies. The team has developed experience with combining these products into design solutions that are thoughtful and well crafted. A regional general contractor that has considerable experience with these products and their installation constructed the project, organizing the means and methods of its construction and sequencing the various subcontractors' work to create a cohesive whole.

The project won an Honor Award from the state chapter of the AIA: "A humble but extraordinary renovation, both respectful of the original building but transforming it with daylight and a light screen into a dynamic community hub... Simple, sustainable, and community focused, the jury applauds the concept and the execution."²

Despite this recognition by the architect's peers, the project will very likely never achieve canonical status or have disciplinary impact beyond its local community. This is not to claim that the project should be recognized this way; however, the project deserves our attention because it is *not* exceptional. It is indicative of much of normative architectural practice in the United States today. Within this situation, design solutions relying on exceptionally custom details are simply not an option. Instead, the standard detail plays a key role in this work and this type of practice, and the following essay will focus on the standard detail as one of the architect's instruments of service worthy of further investigation. The standard detail exerts significant but anonymous power in the practice

of architecture and reveals the uncomfortable relationship that the discipline has with the actual contingencies of professional practice.

In order to consider the standard detail and its effects, we must first identify what we mean by “standard” and “detail,” separately as well as in combination. Lawrence Busch’s expansive exploration of standards and their role in structuring our world will provide a useful, broad framework, while Edward Allen and Edward Ford’s ruminations on the detail will situate the discussion more definitively within the discipline of architecture. After establishing these terms, we will then explore standard details as they are deployed within the context of professional practice.

STANDARD

For a discipline that typically prides itself on uniqueness, the term and concept of “standard” places us on uncomfortable ground from the beginning. Standard suggests ubiquity and lack of novelty and can imply near invisibility in that it typically does not draw special attention to itself,³ remaining somewhat hidden in plain sight. This familiarity does not mean that standards are insignificant, however. In his book offering a comprehensive look at how standards of all kinds are used and put into practice in contemporary life, Lawrence Busch argues that “standards are means by which we construct realities... *partially* ordering people and things so as to produce outcomes desired by someone.”⁴ Standards are an important part of the context in which life unfolds; as a sort of infrastructure, they set constraints and boundaries for our interactions with people and things, and we adapt ourselves to them.⁵

A foundational premise for Busch’s work is an assertion that non-human actors like material objects also have agency within human interactions in “a unified world of people and things.”⁶ As Bruno Latour and Alben Yaneva have argued from the framework of Actor Network Theory, non-human things like foam and foam cutters, physical models, renderings, and computers also have incredible influence within the discipline of architecture but are often unacknowledged in architectural theory.⁷ Busch argues that his approach towards standards is unique in that he suggests “symmetry” in standards for people and standards for things. Standards apply to people, things, and the interaction between them.⁸ A standard for people will necessarily imply standards for things and vice versa, so distinguishing between how standards work for human relations and material objects is a false distinction, which ultimately limits our understanding of how standards work.⁹

The key argument Busch makes is that standards are manifestations of social, political, and economic power dynamics.¹⁰ While this may seem to be a vast overstatement, Busch argues that the subtlety of their influence is what makes them so powerful. “Standards display *anonymous* power”¹¹ in that they do not usually call attention to the person or institution forming

them. Aided by their anonymity, they establish a framework for our engagement with the world as they define rules to follow or establish the parameters for our choices.

As they are repeatedly enacted in the world, standards come to shape the lens through which we view reality. Busch relates this dynamic to Heidegger’s notion of handiness, in which tools allow us to perceive the world through how the tool affects the world: in Heidegger’s famous example, the hammer as a tool causes a specific understanding of wood.¹² The implications of handiness are that we come to see this understanding as objective and natural. This naturalness is another aspect imbuing standards with power;¹³ we come to see standards as the way that things are *supposed* to be, defining our expectations and understanding of the world. As standards are embedded in everyday life, “objects acquire a kind of taken-for-grantedness that is not the case for nonstandardized objects.”¹⁴ Standards appear natural and predictable, in that we can expect things and people to conform to them.

While Busch identifies four types of standards, the category of “filter” is particularly germane for a discussion of standard details. The filter identifies certain criteria in stipulating what is acceptable and what is not. While disallowing the unacceptable, the filter allows for many conditions to be included as long as they pass the prescribed threshold and parameters. Standards as filters define the range of acceptability for a given element through identifying parameters for tolerance. Changes to filters can lead to overall improvements, in effect “raising the bar,” but Busch also notes that rapid changes can have unintended adverse effects as companies, people, etc. may struggle to adapt quickly to new standards.¹⁵

DETAIL

A single accepted definition of detail in architecture is hard to come by. In *Architectural Detailing*, Edward Allen defines details as a set of drawings that aid in the construction of an architectural idea.¹⁶ The book is structured around certain “detail patterns” or principles that are organized in categories of function, constructability, and aesthetics. Allen’s emphasis on building science and performance is evident; while aesthetics are recognized as a concern for details, they are treated as almost an afterthought glossed over in five pages, significantly fewer pages than used to consider function and constructability.

Another obvious point of reference is Edward Ford’s well-respected work in this area, most notably with the two volumes of *The Details of Modern Architecture* and his subsequent work on *The Architectural Detail*. The dissonance between standard and detail is stark in the latter book; through discussing canonical projects and their novel details, it is clear that Ford is not talking about something that is standard in any sense of the definitions given above. Instead, the “good detail” is “non-forming...exceptional...heretical,”¹⁷ the antithesis of standard.

Ford identifies five common types of architectural details: abstraction, motif, an order, joint, and as subversive activity. Despite well-known examples given for the first four types, Ford argues that detailing reaches its pinnacle in the autonomous or “subversive” detail, in which the act of detailing results in a detail that achieves a special autonomy of its own, beyond mere motif, abstraction, or tectonic ambitions.¹⁸ Ford acknowledges that it is difficult to explain why these details are significant, ultimately suggesting that they articulate the contradiction between abstraction and animation, between “understanding” a building and “feeling” a building.¹⁹ He cites as exemplars details by Louis Kahn, Steven Holl, OMA, Herzog and de Meuron, Alvar Aalto, and many others; these are the types of details commonly celebrated in the discipline, and they achieve this status precisely because they are exceptional in materiality, configuration, and craft.

In the end, Ford understandably stops short of actually defining “detail” due to the complexity and limitations that an all-encompassing definition would entail. Instead, he advocates for “detailing,”²⁰ an almost mystical activity²¹ that imbues a project with meaning. He acknowledges that detailing itself is not commonly considered in architectural theory²² so his work is significant in this regard as a book-length interrogation into theorizing the detail in architecture. It is significant to note, however, that “detailing,” also echoed in the title of Allen’s book, shifts the focus from a specific material condition within a building to an act, that of designing. Ford reveals his bias for the highly revered act of design in the subtitles for his detail categories, referring to the first four as “detail as...” (abstraction, motif, an order, and joint), while deviating from parallel structure in his preferred “*detailing as a subversive activity.*”²³

STANDARD DETAIL

The conflicts between standard and detail described above are evident. So what is a standard detail in architecture? Returning to Busch’s definition, a standard detail is a “means of *partially* ordering people and things so as to produce outcomes desired by someone.”²⁴ That definition is open-ended enough that it begs certain questions: who and what is the detail ordering, what outcomes are desired, and who desired those outcomes? The term “standard detail” can mean many things.

In the context of the adaptive reuse project described above, the standard detail had power in defining the realm of what was possible for the architect. Standard details exist as default positions to be deployed and combined as needed, structuring how the team works as well as the resulting design proposal itself. The standards’ availability demonstrated handiness in serving as a “standing reserve”²⁵ for the design team. Their unquestioned presence in the life of the office suggests future projects will necessarily employ them, offering predictability to achieve the owner, architect, and contractor’s desired result within the project’s economic constraints.

More broadly within professional practice, it is important to identify how the standard detail is produced to understand how it further orders relationships and actions. To produce a standard detail, the architect synthesizes standard details from personal experience, relevant product manufacturers, and industry reference guides. The standard details assume the use of industrialized building products, themselves the manifestation of various standards (ASTM, NFPA, etc.) that ensure conformity and predictability for their implementation.

For product manufacturers, the standard detail is an important register of liability concerns, construction logic, and proprietary knowledge. The manufacturer’s standard details provide applications of their products that have been vetted to perform in a predictable way that will limit the manufacturer’s exposure to liability from failure. These details have been proven over time through testing, research and development, manifestations of a particular expertise in the use of their product. Manufacturers honor warranties when their products are installed according to their standard details. Power dynamics are enacted as major manufacturers are often represented on boards for industry organizations that set the standards for their own products.

Industry resources like *Architectural Graphic Standards*,²⁶ *Fundamentals of Building Construction*,²⁷ and *Building Construction Illustrated*²⁸ serve as another key source for standard details. These resources are standards themselves, collections of standard details showing best practices that have developed over time, while remaining free from the specificity of any particular manufacturer’s product. These details capture conventions and incorporate technological developments, serving as an index of general disciplinary knowledge.²⁹ Liability for the content is shifted to the professional; Allen’s book explicitly states that “it is the responsibility of the users to apply their professional knowledge to the use of information contained in this book.”³⁰ It is important to note here that even with standard details, architects are obligated to exercise professional judgment in their use.

Within a firm itself, standard details become a way to improve efficiency within the design process while also maintaining design quality and preferred outcomes. The standard detail demonstrates a way that various products will be combined to produce a desired condition. Firms develop standard details to varying degrees that are able to coordinate the efforts of their internal staff to provide consistent and predictable results based on experience. Some firms develop their own standard details, customized solutions to common design problems that can be used on subsequent projects to increase efficiency in documentation. A common refrain heard in professional practice is that standard details are used to free up architects to focus on “design.”

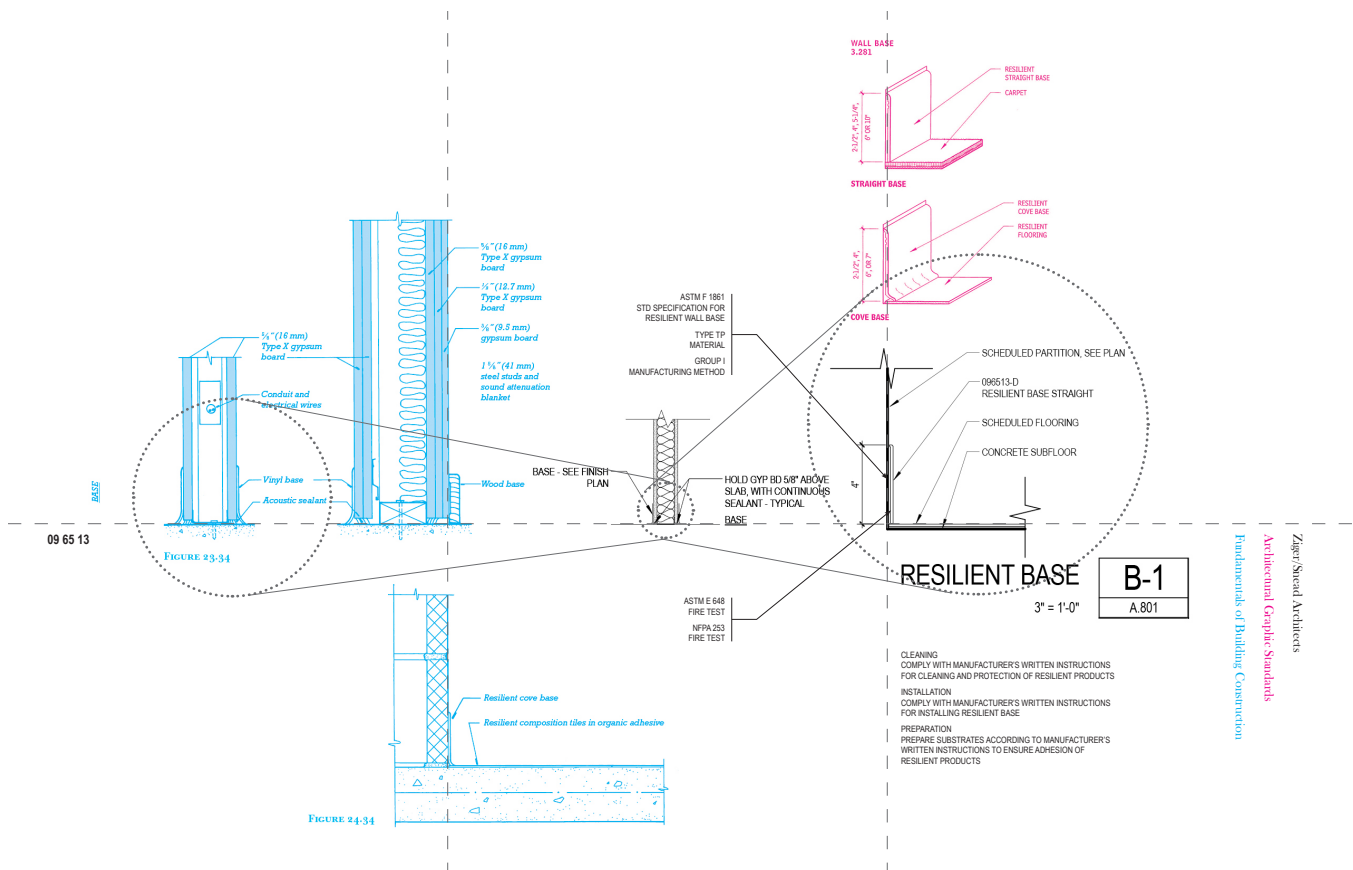


Figure 1. Detail— resilient wall base. Credit: author.

Busch asserts, “Power is present only when it is performed or enacted.”³¹ A standard detail by the architect ultimately achieves agency in a construction project when it is included in a set of contract documents as part of the architect’s instruments of service.³² Through the framework of standard AIA contracts, the standard detail structures relationships between the client, manufacturers, trades, contractors, architects, consultants, and the architect, finding its ultimate manifestation in a built instance of the detail.

DISCIPLINARY BAGGAGE

Despite its significance within the context of professional practice, disciplinary attention to the standard detail has been relegated to technical resources that address issues of constructability and building science, and it has not been extensively theorized. Rather than arguing whether standard details *should* be used, it is worth further consideration of why the theoretical discourse of the discipline chooses not to talk about them.

In his investigation into the history of *Architectural Graphics Standards (AGS)* as a social history of the profession of architecture, Johnston “advances an implicit critique of the ideologies underlying dominant modes of architectural production.”³³ Through a close examination of *AGS*, he notes the widening rift

between the vocational and the professional identities of the architect in the drafting culture of the time of its early publication.³⁴ The vocational identity, associated with conventional wisdom about documentation and construction, was “devalued and effaced,”³⁵ while the professional identity of the architect, reinforced by theory and design methods through the academy, was elevated and became more elite. Over the first half of the twentieth century, “design” increasingly replaced drafting, widening the labor division between draftsman and architect.³⁶ The gap between the content in *AGS* and Ford’s discussion of details is indicative of this divide between the vocation and the discipline.

Despite the profession’s commitment to building buildings, architects do not typically even claim to have expert knowledge in technical aspects of construction,³⁷ relying instead on product manufacturers, installers, and specialty consultants to offer this expertise as needed. Books like *Building Construction Illustrated* and the *Fundamentals of Building Construction* emphasize construction in their very titles, reinforcing their vocational nature. In architectural education, these resources are often used as textbooks in required material courses, yet their content is rarely integrated into the design studio in any meaningful way, with the possible exception of comprehensive studios. The studio model does not typically teach students

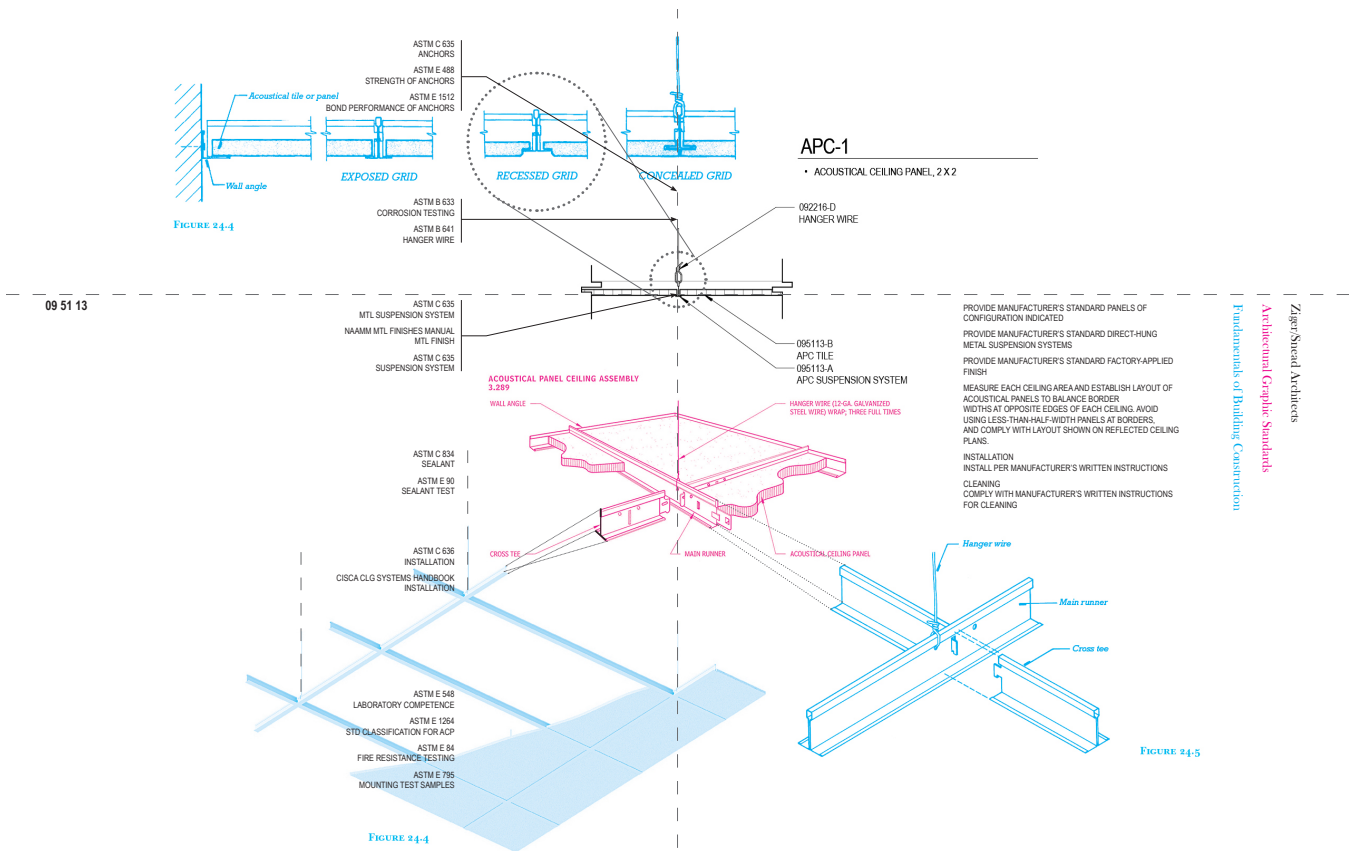


Figure 2. Detail—acoustical panel ceilings. Credit: author.

how to design within the context of opposing forces, emphasizing design priorities in a suspension of disbelief rather than addressing concerns that are more pragmatic or technical in nature.³⁸ Standard details like those referenced above are considered to have no place in the design studio and would not even be drawn as part of a student's final deliverables because they are seen as being unrelated to design.

In their well-known sociological investigations into professional practice, Robert Gutman and Dana Cuff highlight the arcane status of “design” above other concerns like business practices and building technology.³⁹ Gutman provides some insight into the motivation for this emphasis. In his final chapter of *Architectural Practice: A Critical View*, he identifies the need to maintain a secure hold on the market for services as one of ten challenges facing the discipline. Gutman argues that since there is overlap in the knowledge base of other disciplines, architecture tends to respond by emphasizing the artistic side because there is less competition in this area.⁴⁰ Since a defining characteristic of a profession is to claim a particular knowledge base for itself, Cuff argues that architecture upholds design as the “master value,” treating it with some degree of secrecy and limiting the ability to evaluate its merits to other architects. Design is considered in very narrow terms as concerned with aesthetics.⁴¹ Gutman's prediction that

architecture will always be a “highly vulnerable profession”⁴² due to its inability to clearly identify its knowledge base seems to hold, as nearly 30 years later, Flora Samuel made the same argument in her book *Why Architects Matter*, with the profession “largely focused on nuances of aesthetics and form,”⁴³ leading to its lack of meaningful impact. When the profession narrows its focus to aesthetic concerns as its exclusive knowledge base, it devalues pragmatic and technical concerns of construction. Within this context, standard details do not lend themselves to architecture as artistic practice, as they do not typically engage the nuances of aesthetics and form implying exceptional and unique solutions.

Despite the profession's emphasis on aesthetic matters, expectations for practice are tempered by another standard codified in AIA contracts (industry standards in their own right): standard of care. According to its definition in the AIA contracts, architects are expected to provide services “consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances.”⁴⁴ Although many students socialized into the primacy of design are shocked when they learn about standard of care (often in a professional practice course), the averageness suggested by standard of care aligns

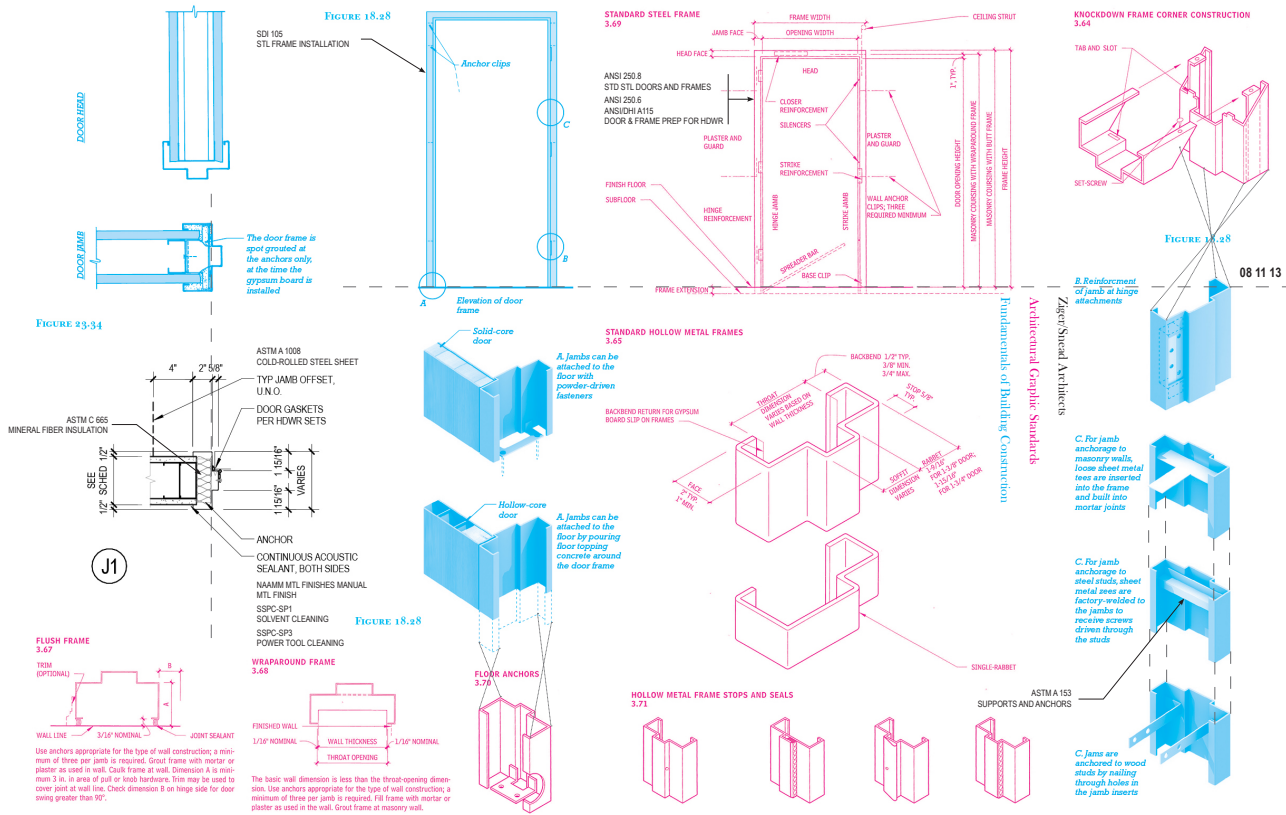


Figure 3. Detail—hollow metal frame. Credit: author.

with the logic of standard details defined by industry standards and captured in common industry reference guides.

Another neutralizing force is the current role of the architect as specifier or “master controller.”⁴⁵ Due to our advanced stage of industrialization, the palette of materials is standardized as mass-produced building components and the significant inertia of the construction industry perpetuates the status quo. The architect merely assembles a building composed of various products, and expertise in practice is often seen as knowing various materials, their relative merits and price points, and selecting the best options. The building is then a collection of these products, combined in standardized ways. Standardized approaches are used because custom details and custom materials are inefficient to implement, swallowing up precious fee to design and document, which affects profitability. Further, custom details can expose a practice to liability for a detail’s failure, without a product manufacturer’s warranty to fall back on.

The lack of theorizing the standard detail reveals the uncomfortable relationship that the discipline has with the actual contingencies of professional practice. Design as it is commonly taught in schools and celebrated in canonical projects has little to do with realities that the vast majority of architecture firms’

projects must contend with. As the profession downplays the technical and pragmatic concerns captured in the standard detail and falls back on its purported expertise in design, it denies the incredible power of the realities of construction practices, professional and contractual liability, and supply chain realities. In spite of this often unacknowledged baggage, architecture pushes on, doubling down on aesthetics and accepting the limiting range of possibilities offered by standard products and details while lamenting the evacuation of opportunities for “design” from many projects.

CASE STUDIES

In order to lend specificity to this discussion, three standard details from the previously mentioned project are highlighted: resilient wall base, acoustical panel ceilings, and hollow metal frames. These are commonly used standard details, but there were many others used in the project that could have been highlighted as well. The amplified details (Figures 1, 2, & 3) show the original detail in the contract documents, augmented by the industry knowledge and standards that they rely on for their efficacy. These standard details are formed through nested layers of standards: conventional knowledge from AGS and *Fundamentals of Building Construction* is included, along with other standards referenced in the specifications from the contract documents. The specifications themselves were



Figure 4. Found conditions—standard detail meets steps. Credit: author.

created from standard sections produced by MasterSpec and adapted to address the particularities of the project.

These standard details are ubiquitous in contemporary architecture, common in many of the buildings we occupy every day. These details would not be considered exceptional in any design sense, and it is likely that many firms use very similar versions of these same details. They represent typical conditions meant to be applied throughout the project, and they are indicated as such in the contract documents with a type designation. They are adaptable systems, not the singular, perfect execution of an exceptional detail that would merit Ford's attention. They are seemingly indifferent to either abstraction or animation, simply providing a frame to mount a door, covering a gap, or hanging a ceiling. Yet they set constraints and a range of possibilities and manifest significant social, political, and economic relations of power.

While the scope of this paper does not permit a deep dive into each of these standard details⁴⁶ to explore these unique contingencies, they are deployed in a wide variety of projects and a similar ecology structures their usefulness. The relational structure of these standard details reveals the messy contingencies of professional practice and the embeddedness of other logics beyond pure design, most of which is glossed over in architectural education. Like all standards, their apparent naturalness masks the complex apparatus that created them and gives standard details their power.

Too concerned with their "expertise" in design, architects generally are not determining these standard details. Instead they are created from a vast manufacturing and construction industry that has incredible inertia to maintain the status quo. Manufacturing techniques have been developed to

increase efficiency of production. New dies, new processes, and new features require engineering, material research, prototyping, focus group testing, advertising, and promotion. ASTM, ANSI, and NFPA standards confirm the acceptability of individual materials and their assembly. These standards represent significant investment, time and money incurred by the manufacturer to achieve compliance. Meeting these standards ensures predictable performance and integration with other products. For example, profiles for hollow metal frames are standardized to achieve commensurability with doors and hardware by other manufacturers. Suspension systems are tested to ensure that they perform acceptably when exposed to fire.

CONCLUSION

This rumination on standard details is not an argument for or against their use but rather foregrounds them in order to facilitate an understanding of their agency in the discipline. Not all projects can be free from the use of standard details (if it is possible at all), so we need to understand standard details in order to know how to critically engage them. If standard details are filters that determine what is acceptable and possible in contemporary architecture, then it is worth evaluating whether a given standard needs to be raised. As Johnston highlights, standards can be understood "both as the default condition of the status quo and as a vehicle for social and technological progress."⁴⁷ How does a particular standard detail contribute to issues of climate change or social justice and equity? How can architects move beyond more limited views of "design" to intervene in the much larger ecology of standard details to have more impact?

While they seem natural and at-hand as defaults in practice, standard details are not assumed and taken for granted in the

studio in architectural education. If the academy were to properly acknowledge the value of standard details in professional practice, architectural education may be forced to shift from the often unexamined primacy of design focused on aesthetic nuances to a broader view of design that considers the actual contingencies of architecture. As Jeremy Till argues, “purity is a myth... we need more people who dare to eschew the greats and the specials, and look to the everyday, the social, and the economic as forces that shape architecture.”⁴⁸ This is the realm of the standard detail.

ENDNOTES

1. Although I will use the singular figure of “architect,” I want to acknowledge here the collaborative nature of the discipline and the way that work is produced in using the term as a stand-in for the design team.
2. Juror comments for 2020 AIA Maryland design awards. The Voxel project by Ziger/Snead Architects was recognized with an Honor Award.
3. Lawrence Busch, *Standards: Recipes for Reality* (Cambridge, MA: The MIT Press, 2011), 2.
4. Busch, 13.
5. Busch, 2.
6. Busch, 5.
7. Bruno Latour and Albena Yaneva, “Give Me a Gun and I Will Make All Buildings Move: An ANT’s View of Architecture,” in *Explorations in Architecture*, ed. Reto Geiser (Basel: Birkhäuser, 2008), 86.
8. Busch, 23.
9. Busch, 4.
10. Busch, 28.
11. Busch, 29.
12. Busch, 30-32.
13. Busch, 32.
14. Busch, 31.
15. Busch, 43-45.
16. Edward Allen, *Architectural Detailing* (New York, NY: John Wiley & Sons, Inc., 1993), 1.
17. Edward Ford, *The Architectural Detail* (New York, NY: Princeton Architectural Press, 2011), 312.
18. Ford, 42-45.
19. Ford, 284.
20. Ford, 309.
21. Michael Caldwell’s rumination on the work of Scarpa, Wright, van der Rohe, and Kahn in *Strange Details* certainly falls into this category as well. Michael Caldwell, *Strange Details* (Cambridge, MA: The MIT Press, 2007).
22. Ford, *The Architectural Detail*, 18.
23. Ford, 42. Emphasis mine.
24. Busch, *Standards: Recipes for Reality*, 13.
25. Busch, 32.
26. American Institute of Architects, *Architectural Graphic Standards*, ed. 11 (New York, NY: McGraw-Hill, 2007). First published in 1932 by Charles George Ramsey and Harold Reeve Sleeper, now in its 12th edition.
27. Edward Allen and Joseph Iano, *Fundamentals of Building Construction* (New York, NY: John Wiley & Sons, Inc., 1985). First published in 1985, now in its 6th edition.
28. Francis D. K. Ching, *Building Construction Illustrated* (New York, NY: John Wiley & Sons, Inc., 1975). First published in 1975, now in its 5th edition.
29. George Barnett Johnston, *Drafting Culture: A Social History of Architectural Graphic Standards* (Cambridge, MA: The MIT Press, 2008), 5.
30. Allen, *Architectural Detailing*, vii.
31. Busch, *Standards: Recipes for Reality*, 28.
32. As defined in AIA Contract Documents such as the A201 and B101.
33. Johnston, *Drafting Culture*, 7.
34. Johnston, 5-7. Johnston’s categories of vocational and professional can be somewhat confusing. The “professional” is more popularly seen as representing the pragmatic and technical aspects of practice, while Johnston links the “professional” to the academy in its emphasis on design and theory.
35. Johnston, 6.
36. Johnston, 3.
37. Dana Cuff, *Architecture: The Story of Practice* (Cambridge, MA: The MIT Press, 1991), 31.
38. Cuff, 72.
39. *Architectural Practice: A Critical View* and *Architecture: The Story of Practice*, respectively. Although over 30 years old, from this author’s perspective their insights still largely align with contemporary practice.
40. Robert Gutman, *Architectural Practice: A Critical View* (New York, NY: Princeton Architectural Press, 1988), 101-102.
41. Cuff, *Story of Practice*, 21.
42. Gutman, *Architectural Practice*, 104.
43. Flora Samuel, *Why Architects Matter: Evidencing and Communicating the Value of Architects* (New York, NY: Routledge, 2018), 51.
44. Section 2.2 of AIA Document 101 – 2017. Standard Form of Agreement Between Owner and Architect.
45. Stephen Kieran and James Timberlake, *Refabricating Architecture: How Manufacturing Methodologies Are Poised to Transform Building Construction* (New York, NY: McGraw-Hill, 2004), 28.
46. A key example of this technique was the *Elements of Architecture* exhibition at the 2014 Venice Biennale by Rem Koolhaas and his team. Although the exhibition and related book were a massive undertaking in terms of scope, this work was merely a beginning into investigating these fundamental elements of architecture.
47. Johnston, *Drafting Culture*, 93.
48. Jeremy Till, *Architecture Depends* (Cambridge, MA: The MIT Press, 2009), 18-19.