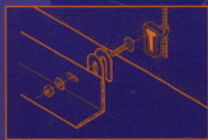
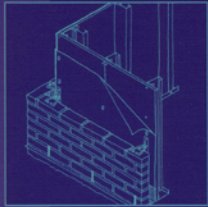
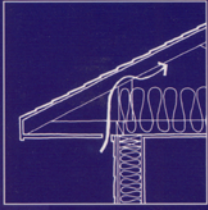


Second Edition



Architectural Detailing

- FUNCTION
- CONSTRUCTIBILITY
- AESTHETICS

Edward Allen • Patrick Rand



Simulated Assemblies

Build representative samples of challenging or unusual details to simulate the construction processes and to reveal the qualities of the finished product. The sample is the dress rehearsal of the intended building assembly.

1. Simulating the construction of unusual building assemblies helps to avoid costly and difficult removal of unsatisfactory work, and establishes acceptable standards of appearance and workmanship. This is especially important when materials or construction techniques are innovative, unfamiliar to the builder, or dependent on a particular quality of workmanship.

2. Much of the flow of information in a project is from the architect to the builder. The simulated assembly allows the builder to demonstrate what the result will be, at minimal cost. It is an excellent vehicle to bring expectations of architects, builders, and owners into convergence. Once accepted, the simulated assembly sets the standard for quality of work and appearance. It should be left safely on the site for the duration of the project, serving as a record of many qualitative features that are difficult to describe through drawings or specifications.

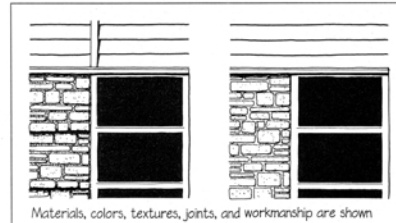
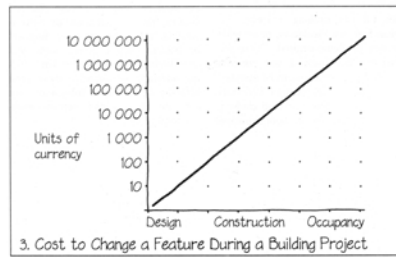
3. Changes in a detail are easiest and least expensive to make early in the design and construction process. Erasing a sketch is much easier than jackhammering concrete. Simulated assemblies help identify areas where changes are needed before they become part of the finished building.

4. A sample panel may be used to demonstrate the exposed appearance

and workmanship of the detail or assembly. The materials, colors, textures, joints, and accessories intended for the building are used in the sample panel. It may be freestanding, apart from the building, or may be the first portion of

stern conditions to evaluate its resistance to wind-driven rain.

6. The sample panel or mock-up assembly usually includes the intended finishes, such as paint, caulk, and mortar roofing profiles. These finishes should also be cleaned or power-washed, just as the actual building will be, because these processes sometimes alter their final appearance. For building additions or adaptive reuse projects, the simulated assembly allows for accurate comparisons of new and existing conditions.



the actual building. Sometimes multiple freestanding samples can be prepared, each revealing a variation in material or finish, to give the best possible basis for final selection.

7. In most projects, crews composed of several tradespeople, each with different experience and skills, carry out the installation of materials. The simulated assembly establishes a common standard of workmanship; it is a reference for the workers to minimize variation due to differences in techniques. This is especially important when freehand finishing techniques are used, such as brick or stone masonry, stucco, or a textured concrete slab.



Expected Life

How long should a material or detail last? The durability of a specific building material or detail must be proportional to its intended useful life.

1. The useful life of a material or an assembly is determined by how its intrinsic physical properties resist deterioration caused by conditions of its environment, use, and errors of workmanship at the time of installation. The life span is also affected by nonphysical factors such as economic forces, aesthetics, and functional obsolescence, but these are beyond the scope of this book.

2. Decisions regarding materials and details are based on a premise about the anticipated life span of the building. We should always build well, but materials and details appropriate in a building meant to serve for a few years may be dif-

ferent than those for a building meant to serve for 100 years or more. For instance, stainless steel flashing is less appropriate in an exposition building that will be used for two years than it is in a state capitol building that has an unlimited life expectancy. Conversely, it would not be appropriate for the stone-clad statehouse walls to use PVC flashing, which has a service life of only about ten years.

3. Establish a premise about the service life of the building in general, for instance, 25 years, 60 years, or 100 years. There are no legal standards for this, but precedents for the type of building are a good indication. Recognize that it is not essential that all elements of an entire building expire at the same time. Establish service-life tiers or categories, within which the elements should last about the same length of time.

Predicting the service life of a detail or an assembly is difficult because there is insufficient knowledge about the actual performance of specific materials and details. Therefore, detailers and owners should establish durability criteria for materials and details based on past experience.

Premature failure of a building material may result in damage to adjoining materials and will require costly and disruptive repair. Premature failure is especially disruptive when an otherwise durable assembly fails because of one weak link. Ideally, the detailer should anticipate the forces acting on an assembly and design the details so that the components of an assembly expire uniformly or in magageable segments.

TABLE 10-1: Service Life Tiers

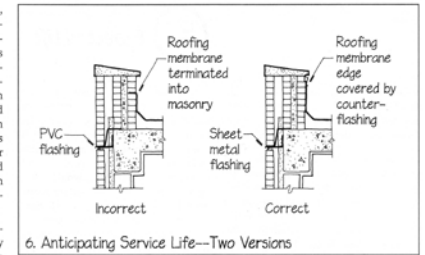
1. Primary structure and primary enclosure system	Major load-bearing elements and building envelope	Permanent: Should last as long as the intended life of the building
2. Major building service systems	Elevators, furnaces, boilers, chillers, major fans, plumbing and electrical systems	Long life: Should last 20 years minimum
3. Interior enclosure systems	Partitions, flooring, ceilings	Medium life: Should last up to 20 years or with change in occupancy
4. Furnishings, interior and exterior finishes	Surface finishes, sealants	Temporary: Should last up to 10 years

Source: Adapted from "Guideline on Durability in Buildings," Canadian Standards Association, S478.

4. To lower initial construction costs, elements of a detail are sometimes eliminated, or less durable alternative elements are chosen, often with disastrous results. Many expensive recladding projects are the result of hastily made cost-trimming decisions that saved less than 1 percent of the eventually needed repair costs. Lower quality execution during initial construction often results in higher maintenance costs or shorter service life. Detailers are well informed and should assist in making optimum choices regarding substitutions of materials and details.

5. Just as we have an operating manual for our automobile, architects may offer to provide building owners with a guide summarizing the maintenance and replacement cycles anticipated for each tier of the building systems. Owners and maintenance staff are collaborators in determining the building's life span; maintenance procedures need to be followed if the predicted service life is to be realized.

6. Details for all building elements should be designed to be accessible in



proportion with their longevity. Building elements that are to be replaced at the most frequent intervals, such as lighting tubes and air filters, should be detailed to make routine maintenance easy. Low-slope roof membranes should be detailed so that the membrane can be replaced without requiring that the parapet be reconstructed.

unsolicited comments from readers

Barry Yatt, FAIA, Professor, The Catholic University of America
This book is the thinking person's "Graphic Standards" (no slight to that book intended). But in this case, instead of handing you details, it teaches you how to design your own details. It is not only a one-of-a-kind approach but quite well-done, well organized, and beautifully illustrated as well. It is a guide to knowing why details should be designed in particular ways. It explains, in depth, what to think about when designing at the level of the detail. And the three case studies in the back of the book are worth their weight in gold. This book truly makes the point that detailing is part of the process of design. Get it, and keep it.

RWL Architects

An excellent book for architectural students and young professionals, now made better in the second edition. Expanded with more insight and expertise from Professor Allen augmented by Professor Rand makes it invaluable to readers. A must on every professional's book shelf providing the basic fundamentals and principles of detailing.

Edward Allen FAIA, ACSA Topaz Laureate

Patrick Rand FAIA, NCSU Design/Architecture

Architectural Detailing: Function Constructibility Aesthetics is the industry standard on architectural detailing. In the second edition, content from the preceding edition has been revised, and new text and drawings have been added to address sustainability, the International Building Code, and other factors that affect current building design and construction. Architectural Detailing delivers reliable, insightful information on how to design details that will be water- and air-tight, control the flows of heat and water vapor, adjust to all kinds of movement, age gracefully, be easy to construct, and still look good.

Detailing is the language of the architect, the means by which architectural ideas are transformed into built reality. It is the one technical area in which the architect must be expert.

Rather than being an inventory of stock details, this book describes and illustrates the most important principles that affect the design of architectural details. These are the "patterns" that affect the function, constructibility, and aesthetic qualities of a building. These patterns can be used to produce countless effective detail solutions, enabling students and practicing professionals to detail a building competently. The book also contains case study projects that reveal the thought processes involved.