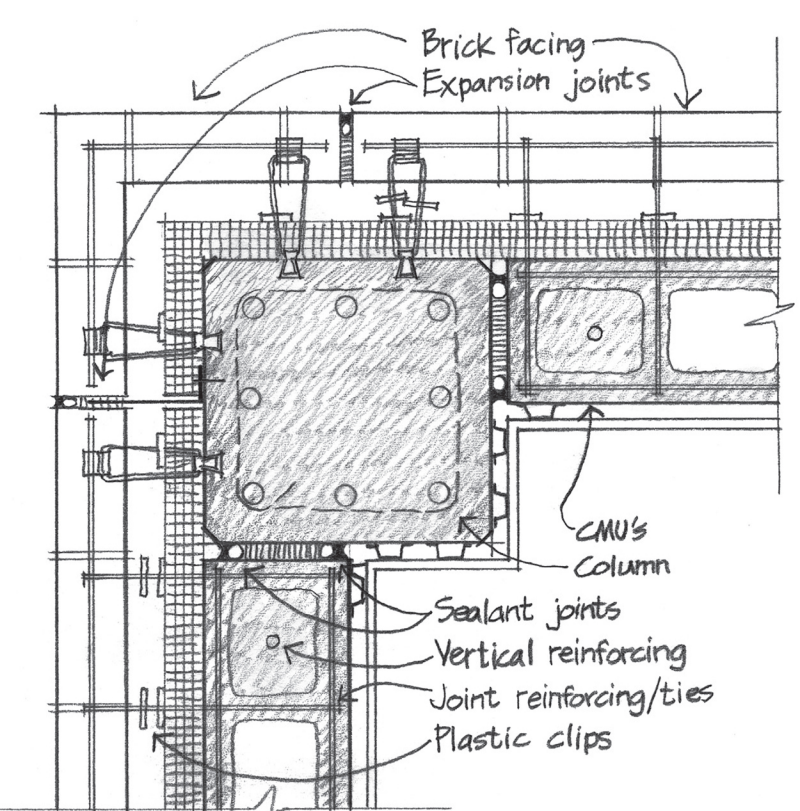
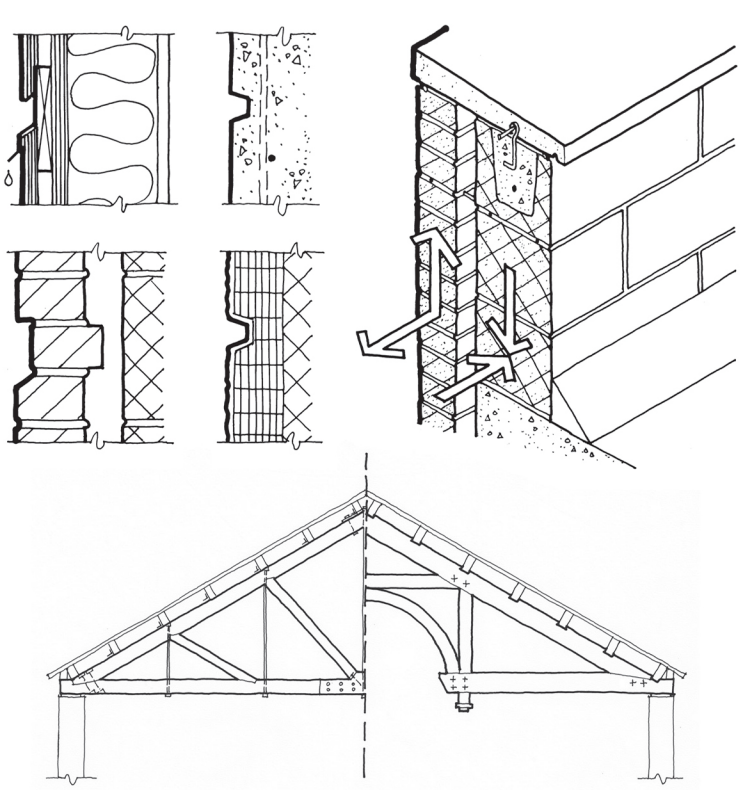
FOURTH EDITION

ARCHITECTURAL DETAILING

FUNCTION CONSTRUCTABILITY AESTHETICS

PATRICK RAND • JASON MILLER • EDWARD ALLEN





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Architectural Detailing

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Function • Constructability • Aesthetics

Fourth Edition

Patrick Rand | Jason Miller | Edward Allen

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CONTENTS

ACKNOWLEDGMENTS

Patrick Rand thanks Edward Allen, generous mentor to a generation of architectural educators, for the opportunity to collaborate with him on previous editions of this book. Ed showed us all how to make the most important aspects of our craft vivid and accessible, empowering countless young designers to make architecture that is functional, constructable, and aesthetically pleasing.

Ed Allen understood that excellence in architectural design and building technologies were inseparable. He often said that any pedagogy based on a separation of design from technology was a flawed pedagogy. Students must never come upon a book, a faculty member, a course, or a curriculum based on the belief that architectural design could be disengaged from technology, or that technology could be engaged without a healthy dose of design.

Ed once answered the key question, What is the Essence of Building Technology? "The primary focus of all of our courses is **getting the form right!** With the right form, the rest is easy."

Pat is also grateful to his many excellent students spanning more than four decades; whose ambitious designs and probing questions helped him grow. Students in his graduate detailing seminars explored the breadth and depth of the principles in this book as they used them to analyze existing buildings and to design their own new projects. Work by these students provoked revisions of nearly all the patterns in this edition.

Pat found this collaboration with Jason Miller brought refreshing new insights to every pattern in this book. Jason's revisions to text and drawings substantially improve the content for today's readers. He also thanks Christine Nalepa for her patience, support, and candid critiques of word and image.

At John Wiley & Sons, Inc., Todd Green, executive editor, guided all phases of the preparation and publication of this edition of this book with wisdom, patience, and good humor. Many thanks especially to our managing editors: first Amy Odum and then Monica Chandra Sekar, who provided valuable guidance and judgment in this new edition.

We acknowledge the compatibility between this and other publications with which the authors have been involved. Most notably, the widely used text *Fundamentals of Building Construction: Materials and Methods*, 7th ed. (2019) by Iano and Allen, which shares similar concepts, terminology, and graphic approach. *Detailing for Landscape Architects* (2011) by Ryan, Allen, and Rand transforms the detailing patterns approach to the realm of landscape architecture. Both volumes are by John Wiley & Sons, Inc.

Patrick Rand, FAIA, DPACSA
Distinguished Professor of Architecture

To work in the footsteps of Edward Allen and Patrick Rand continues to be a truly humbling experience.

Jason Miller thanks Patrick Rand for providing the opportunity to participate in the making of a fourth edition of this book. The clarity of thought Ed and Pat have committed to many publications regarding the design process and its resulting constructed product has deeply influenced Jason's thought and work in both professional and academic settings.

With knowledge, skill, and patience, Pat has mentored generations of architecture students, empowering them to contribute to the built environment in significant ways. Pat possesses a unique capacity to instill belief in others. Collaborating with Pat on this edition has offered Jason an important reminder: Joy is found in the asking of good questions and the discovery of new things.

Jason would like to recognize the aggregate contributions of his students who, in myriad ways, have helped shape a pedagogic perspective about the importance of connecting architectural education with architectural practice. In the studio, in the shop, or on a jobsite, work by these students has consistently reinforced the timelessness – and timeliness – of the design detailing principles discussed in this book.

Jason also thanks his family for their abiding love and support in his "chasing of butterflies" that make projects like this one possible.

Jason Miller, AIA
Professor of Building Sciences

INTRODUCTION

This book is about making architectural details. The process of turning architectural idea into constructed reality is built, decision by decision and layer upon layer, amid a landscape of ever-changing circumstances. Details deliver more than mere illustrations of prescriptive or performance-based code requirements. Details provide far more than iconic elements or decorative embellishments. A good detail, and good architectural detailing, reveals a synthesis between creative and critical thinking. They make functional, buildable, and aesthetic solutions, informed by experience, precedent, and research.

Architects design, draw, and document for each building a set of details that clearly describe its assembly. Architects retain primary responsibility for the detailing in buildings, a fact that architectural curricula often underappreciate and underserve. The process and products of detailing should be at least as prominent in architecture curricula as the study of structures and building services: two areas in which consulting engineers often have primary responsibility.

This book is intended as a resource to help students and young professionals become proficient with the principles of architectural detailing by (a) describing ***what*** needs to be considered, (b) demonstrating ***how*** those needs might be met, and (c) explaining ***why*** those needs matter to the creation of quality works of architecture in the built environment.

The act of detailing asks questions of the architect: How does the architect know if a detail, or family of details, will achieve the intended result and perform appropriately? Will the building they depict go together – or come apart – easily and economically? Will it shed and manage water responsibly? Will it be easy and cost-effective to heat and cool? Will the details coordinate with one another? With the overall form and space of the building? Will the building age gracefully? Will it last for the requisite period and adapt readily to changes in technology or use over time? Will the building support the health, safety, and welfare of its occupants? Many more questions of similar importance might be asked. A key skill of detailing is to ask the questions and search for the solutions.

An experienced architect does not leave those solutions to chance. Each detail, no matter how unique or unprecedented, conforms through design with timeless and universal patterns. When coupled with competent execution in the factory or on the construction site, well-developed details virtually guarantee acceptable building performance. ***These detail patterns are the subject of this book***.

Detail patterns are principles present in all successful building details. They represent an accumulation of knowledge about what works in building construction and what does not. Many patterns are firmly grounded in scientific fact. Others are based just as solidly on common sense and the realities of human performance. Patterns evolve and expand with advances in the means and methods of design and construction. An experienced architect employs all these patterns automatically and instinctually when designing details.

Good detailing is an opportunity to advance the concepts and aesthetic strategies of the basic design for a building project. Detail patterns can be used to edit and refine the schematic design, celebrating its strengths and eliminating features that do not contribute to the central ideas.

Detail patterns are tools. ***The patterns present and clarify issues relevant to a particular detail but avoid stating what the specific solution should be. They are meant instead to provoke the designer to consider their potential implications, to discover many possible solutions, and to provide a clear process through which each can be assessed.*** When learning about a new tool, the best teacher is practice.

Architectural details are rarely designed from scratch, as a pure response to a situation, as if it had never existed before. More often, details are built on precedents that model solutions similar to the circumstance or condition needed. The architect uses the detail patterns as a reliable means of analyzing and understanding existing details. They are beneficial when reviewing one's own work, when checking the work of other detailers in the office, when judging the quality of manufactured building components, and when diagnosing problems in existing buildings. The absence of attention to a particular detail pattern or the presence of a feature that contradicts a pattern usually indicates a problem or a potential problem that should be corrected.

The detail patterns are straightforward and easy to learn. This book establishes slightly more than 100 of them. Each is irreducibly simple.

The first part of this book introduces each pattern, explains it, and illustrates examples of its use. These illustrations are drawn purposefully by hand, as sketching maximizes retention of principles and concepts – reinforcing a critical and meaningful skill for architects and designers. Each pattern is given a descriptive name and a graphic icon for visual recognition of its core detailing principle.

The patterns are arranged in three main groups: **Function**, **Constructability**, and **Aesthetics**, corresponding with the three major design concerns of the detailer. The order of presentation of these groups does not imply their hierarchy or their sequence in the design process. Within each group, the patterns are further categorized by similarity of intent. The first category of patterns under Function, for example, is Controlling Water, containing 13 detail patterns that offer a comprehensive strategy for accomplishing this important task.

The second part of this book, Detail Development, demonstrates the use of the detail patterns during the process of designing details for three different – and hypothetical – buildings: one in wood light frame, one in architectural concrete, and one in brick veneer over a reinforced concrete frame.

The third and final part of this book closes with an annotated listing of publications and a list of websites recommended for the detailer's own reference shelf. Exercises for self-study or classroom use are also provided.

Approximately 500 original sketches and drawings by the authors are intended to illustrate the building elements and natural phenomena addressed. These are not and should not be confused with architectural working drawings. Almost all the drawings are freehand sketches because this manual process remains an appropriate one for designers to use as they begin creating details. Designing details is a creative act that begins with sketches that are quick tools for exploring the problem and possible solutions. Like designing the building plan or the elevation, multiple iterations are typically used to get a viable solution.

Some information has been intentionally deleted or added to make the drawings effective instructional tools. For instance, anchors securing a masonry veneer to the backup are drawn in these sections; in practice, they might be identified only in specifications or in a large-scale detail in a set of working drawings. By including them in the sketches, readers can engage the visual reality in more complete terms.

It is assumed that the reader has a general background in the materials and methods of building construction and is familiar with the conventions of architectural drawing.

In the detail drawings throughout the book, **the exterior is located to the left or top of the drawing.** The number in the lower-left corner of each detail drawing corresponds with the numbered text passage describing a specific example of the detail pattern.

PART

I

DETAIL PATTERNS

SECTION 1

FUNCTION

For a building to function well, its details – all its details – must function well. Each detail must perform individually and collectively with other details. When designing details for a building, the detailer has seemingly endless options to assess and decisions to make with no prescribed pathway toward the most appropriate solution. This section of the book guides the detailer by describing and illustrating factors that affect the functional performance of details.

In architecture, function includes the technical performance of the details that contribute to making a building safe and secure for its occupants. But function also includes features that impact the qualities of the forms, surfaces, and spaces that compose the building. In other words, function affects experience and well-being. For instance, an interior space supported by a solid structure and protected by a well-sealed building envelope – but that allows a reverberating echo or provides glaring light – does not function as well as it could.

The detailer faces many challenges: Controlling the flow of water, air, or heat. Managing sound and accommodating movement. Providing supplemental structural support or passages for building services. Mitigating risks to health and safety. The detailer is challenged to begin by addressing these, and other, functional needs of the building when it is new. But they must also address these needs long into the future and beyond the lifetime of those who designed or constructed it. Buildings change constantly in response to natural forces, such as the daily cycles of temperature and light or because of longer or more extreme seasonal patterns. A fundamental grasp of physics and of biological and chemical processes is an integral part of the architectural detailing process. Other functions concern the people who engage with the building every day, altering it internally, externally, and incrementally through countless actions.

The detail patterns that relate to function address the breadth of these topics. They are organized into thematic groups to focus the detailer's attention on each topic individually. But it is important to note that each topic does not exist alone. Topics connect to and integrate with other topics. Each pattern within a particular topic builds awareness of the issue and includes directions toward possible solutions. The patterns describe the natural processes involved, as well as the codes, standards, and conventional practices that are relevant to discovering appropriate detailing solutions.

Architectural Detailing: Function Constructability Aesthetics. Fourth Edition. Patrick Rand, Jason Miller, and Edward Allen.

CHAPTER 1 Controlling Water

Water must be controlled in order to prevent leakage, which is the penetration of water through a building assembly. Water intrusion is the most common detailing problem encountered in buildings. For water to penetrate through a building assembly, three conditions must all occur at the same time:

1. There must be an opening through the assembly.
2. There must be water present at the opening.
3. There must be a force to move the water through the opening.

If any one of these three conditions is not met, water will not penetrate the assembly. In developing any exterior detail, therefore, the designer can pursue one or more of three strategies:

1. Try to eliminate openings in building assemblies.
2. Try to keep water away from openings in building assemblies.
3. Try to neutralize forces that move water through openings in building assemblies.

Complete success in any one of these three strategies will result in the complete elimination of water leaks, but in detailing it is sometimes necessary to pursue two of these strategies or even all three of them at the same time. This approach gives added security in case one of the strategies fails as a result of poor workmanship or building deterioration. Each of these strategies is considered briefly here with a corresponding list of detail patterns that relate to each. All of the patterns listed are explained later in this chapter.

1. Eliminating Openings in Building Assemblies

Every building is full of openings. A shingled roof has an opening under each shingle. A wall has cracks around windows and doors, and around joints between the units of material from which the wall is made. Additional cracks and holes may form as the building ages and deteriorates. The designer can attempt to eliminate all these openings by using preformed gaskets and sealants; however, this is an unreliable strategy for the life cycle performance of the building. Gaskets may not seal securely if they are the wrong size or resiliency, or if the surfaces they touch are rough or unclean. Sealants may fail to adhere properly if the materials to which they are applied are not scrupulously clean and properly primed, or if the installer does not compress the sealant fully into the seam. Both sealants and gaskets can deteriorate from weathering and from the flexing and stretching they may undergo as the building ages. A building envelope that relies on sealants and gaskets alone for watertightness will leak sooner or later. Even a small defect in a sealant or gasket that is exposed to the weather can leak very large amounts of water, just as a small hole in a bathtub can create a very large puddle.

Sealants and preformed gaskets are still extremely useful as components of an overall strategy for making a building envelope watertight. Therefore, it is important to know how to detail sealant joints and gasket joints correctly and how to incorporate them into more complex schemes for controlling water penetration. The detail pattern that relates to eliminating openings in building assemblies is:

Sealant Joints and Gaskets (p. 36)

2. Keeping Water Away from Openings in Building Assemblies

There are a number of effective ways to keep water away from openings. Often it is useful to keep most water away from an opening simply to reduce the volume of water that must be dealt with at the opening itself. In many cases we can easily and securely keep all water away from an opening.

The detail patterns that relate to keeping water away from openings in building assemblies are the following:

Wash (p. 7)
Overlap (p. 12)
Overhang and Drip (p. 15)
Drain and Weep (p. 18)
Ventilated Cold Roof (p. 22)
Foundation Drainage (p. 24)

3. Neutralizing Forces That Move Water through Openings in Building Assemblies

There are five forces that can move water through an opening in a wall or a roof: (1) gravity, (2) surface tension, (3) capillary action, (4) momentum, and (5) air pressure differentials. In most cases, it is surprisingly easy to detail a building assembly so that all five of these forces are neutralized, and the most secure strategies for keeping water out of a building are based on this approach.

Architectural Detailing: Function Constructability Aesthetics. Fourth Edition. Patrick Rand, Jason Miller, and Edward Allen.

The force of gravity is neutralized by two previously encountered detail patterns useful in keeping water away from openings in buildings:

Wash (p. 7)
Overlap (p. 12)

Surface tension, a force that causes water to cling to the underside of a surface where it can run into an opening, is neutralized by:

Overhang and Drip (p. 15)

The patterns for neutralizing the other three forces are the following:

Moisture Break (p. 25)
Capillary Break (p. 26)
Labyrinth (p. 28)
Rainscreen Assembly and Pressure Equalization (p. 29)
Upstand (p. 34)

The capillary break neutralizes capillary action. The labyrinth neutralizes momentum, and the rainscreen assembly and the upstand neutralize air pressure differentials. By combining these seven patterns in each exterior joint of a building, we can make a building entirely waterproof.

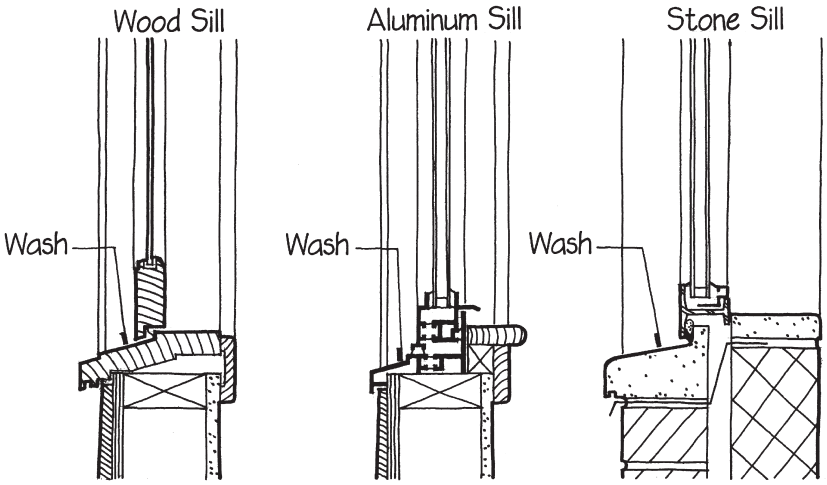
When conceived as a well-coordinated group, these features combine to form the water control layer of the building envelope. The designer should be able to draw an uninterrupted line in plan and section representing the water control layer. A building with a continuous water control layer is entirely waterproof.

Wash

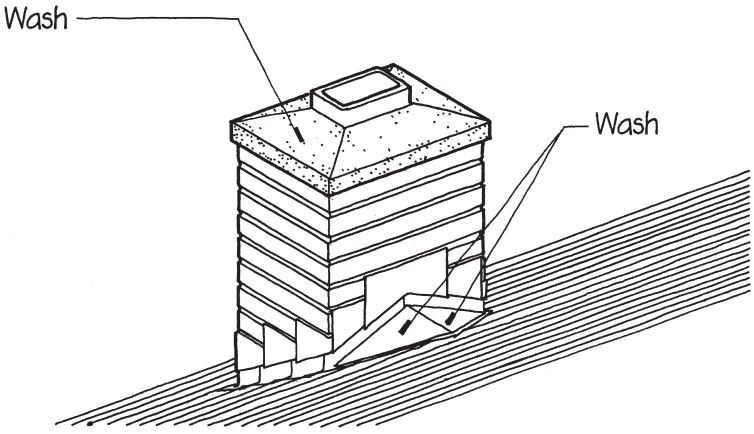
A *wash* is the slope given to a surface to drain water away from vulnerable areas of a building. In general, every external, nearly horizontal surface of a building should have a wash. More permeable materials should have a steeper slope to shed water more quickly.

1. A window or door sill, whether made of stone, concrete, wood, or metal, always has a wash to keep water from accumulating next to the door or sash. A minimum slope for this type of wash is about 1 in. per foot (1:10 or 1:12). A steeper slope drains water faster and is more secure, because the more quickly water is removed from a surface, the less time it has to leak through. It is also more difficult for wind to drive water up a steeper slope.

2. The wash on this concrete chimney cap keeps water away from the vulnerable crack between the clay flue tile and the concrete. The slope should be at least 1:12. The outer edge of the cap should have a thickness of at least 3 in. (75 mm) to discourage cracking of the concrete, not the feather edge that is commonly used (see ***Clean Edge***, Chapter 12). The cricket on the upslope side of the chimney consists of two washes that divert water around the shaft of the chimney. ▷



1. Washes on Window Sills



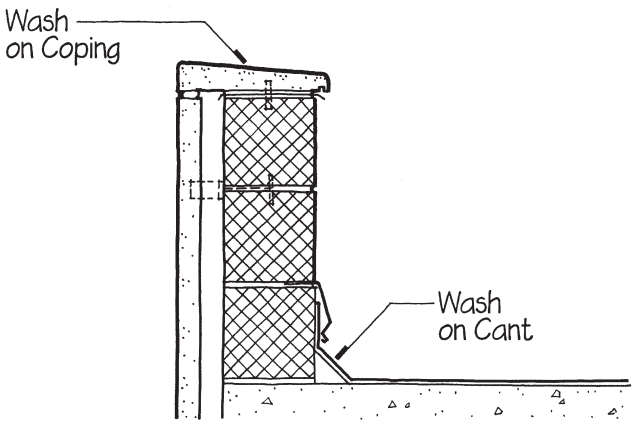
2. Wash on Chimney Cap and Cricket

3. The coping on a building parapet has a wash to keep standing water away from the seams in the parapet. Usually, the wash drains toward the roof to minimize water staining of building façades. The cant strip at the base of the parapet slopes steeply toward the roof membrane to direct water away from the joint between the parapet and the roof deck.

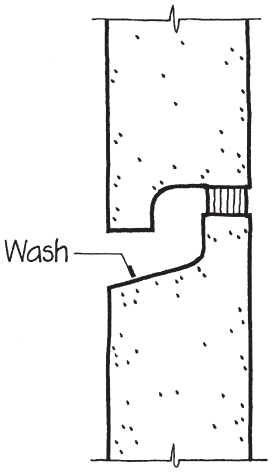
4. The bottom surface in a horizontal joint between wall panels should have a wash to drain water to the outside. Even if the joint will be closed at the outside face with sealant, the wash should be provided to discourage leaking if the sealant should fail.

5. The sloping roof is a special case of the wash. A shingled roof will not shed water unless it has a considerable slope. If the slope were too shallow, water would linger on the roof, flow around and under the shingles, and penetrate the gaps beneath. Each type of shingle material has its own recommended minimum slope. A slope steeper than the minimum is advisable on exposed sites where rain is often driven against the building by wind. A good rule of thumb is to avoid roof slopes less than 4:12. Wood shingles, asphalt shingles, and unsoldered metal roofing can function on a slope as shallow as 3:12 with a special underlayment (consult appropriate literature from trade associations or manufacturers for more information). Steeper slopes shed water faster and thus are less prone to problems; however, they may be more expensive because the roof area is increased, and workers will have greater difficulty moving about the steeper surface. Many roofing materials can be installed at a very steep slope, even on vertical surfaces.

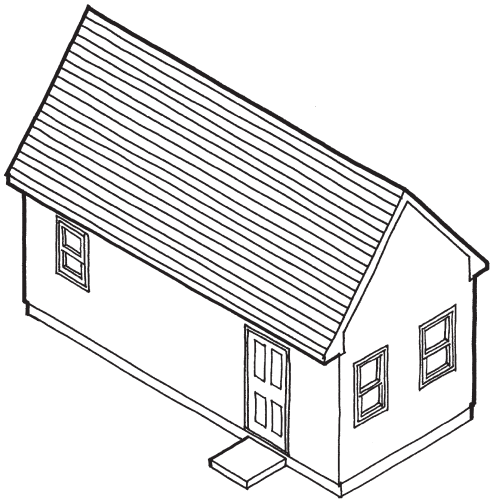
6. So-called flat roofs are seldom flat. They are given a positive slope toward points where water is removed by roof drains or scuppers, because standing water on a roof can cause deterioration of the roof membrane and even structural collapse. The correct name for "flat" roofs, in fact, is "low-slope" roofs. These roof membranes may be exposed to the sky or may be covered with pavers, vegetated roof treatments, solar panels, and other permeable or discontinuous coverings. Drains in a low-slope roof should be located either at points of maximum structural deflection (usually the midspan of a beam or joist) or



3. Washes at Parapet



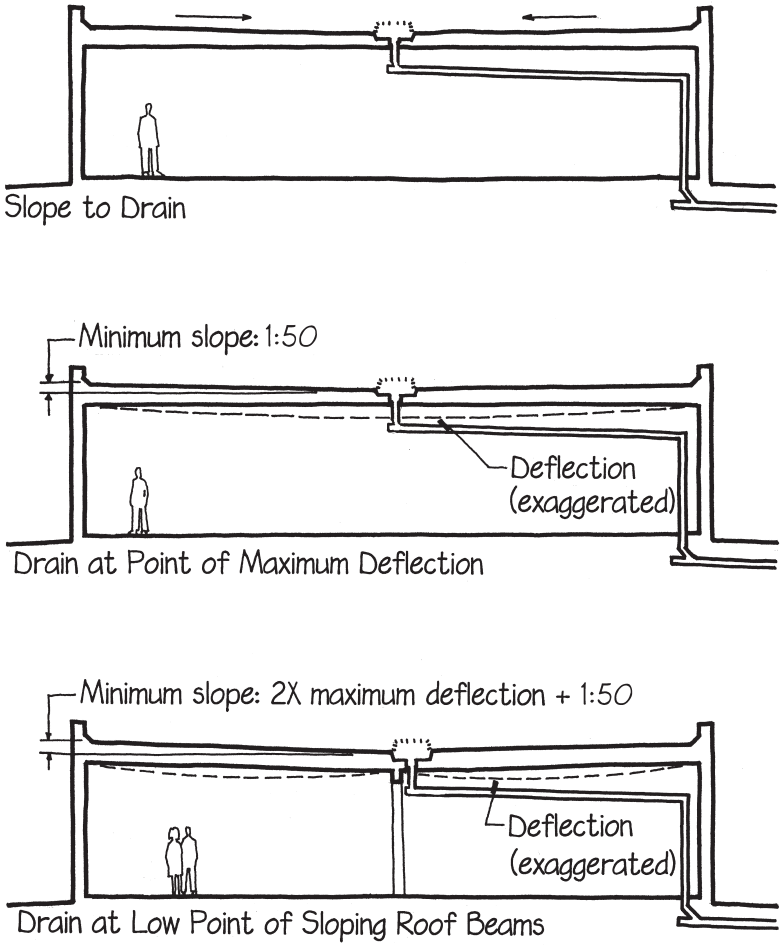
4. Horizontal Panel Joint


5. Sloping Roof

at low points purposely created by sloping the structure that supports the roof.

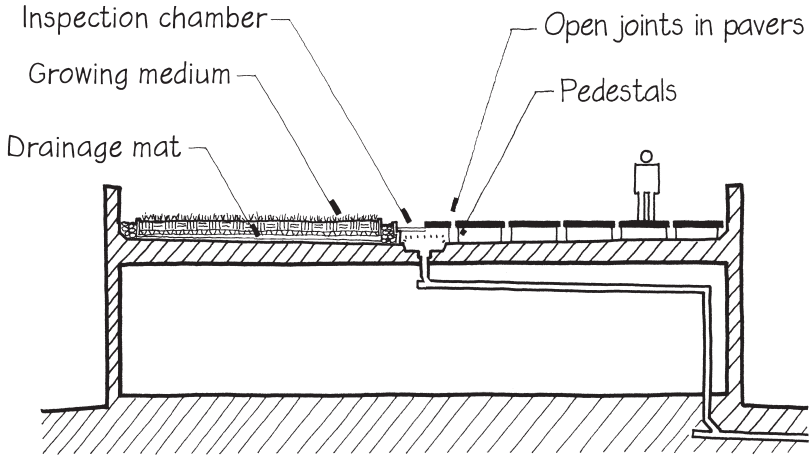
Tapered insulation or roof fill should be used if necessary to create an additional slope that will cause water to drain properly from a roof. If a drain is located at a point of maximum structural deflection, the minimum recommended slope for membrane roofs is ¼ in. per foot (1:50), and more slope than this is desirable. If a drain is located at a low point created by sloping a beam, the overall rise along the length of the beam should be at least twice the expected maximum deflection in the beam, plus another ⅛ in. per foot (1:100) of the length of the beam, to be sure water cannot be trapped by the curvature of the beam. The detailer should work closely with the structural engineer to design a system of roof drainage that complies with these guidelines. This is especially important if the roof is composed of cambered elements such as precast concrete planks or beams.

It is desirable (and mandatory under some building codes) to provide a complete, independent set of auxiliary roof drains or scuppers to take over in case the primary drains become clogged with debris. The auxiliary drains or scuppers are usually located 2 in. (51 mm) higher in elevation than the primary drains and must be served by their own network of piping.



6. Low-Slope Roofs

7. A rooftop terrace is usually drained through open joints between its dead-level paving stones or tiles. The water drops through the joints and is funneled to a system of roof drains by the low-slope roof membrane below. The same recommended slopes apply to this membrane as to any low-slope roof. The terrace paving is held level by small, adjustable-height pedestals that stand on the roof membrane and support the paving units at each intersection. These pedestals are marketed in several proprietary designs and are usually made of plastic.



7. Vegetated Roof and Rooftop Terrace

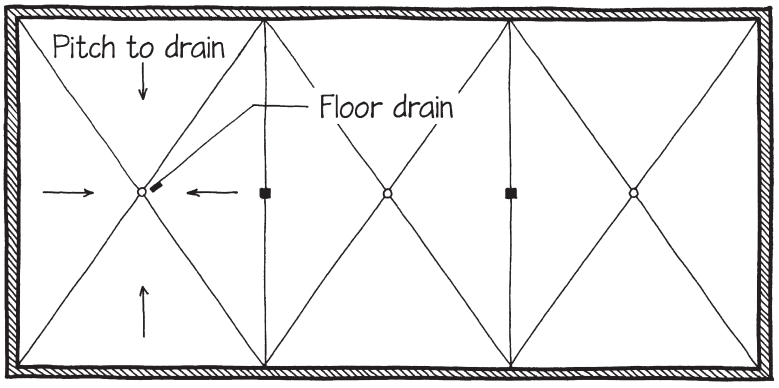
Vegetated roofs – either extensive or intensive assemblies – are designed to retain some water and drain excess water slowly. The slope and drain considerations are similar to other low-slope roofs; however, the installation application is different. Because the roof or parapet drain serves an overflow function, the drain access is located above the prescribed water line of the drainage and retention mat that serves as the vegetation substrate in the assembly. The drain is protected by a band of gravel – which is itself separated from the vegetated areas by a profiled strip – and capped with an inspection chamber for routine maintenance operations. ▷

8. Another special case of the wash is indicated on architectural drawings by the note "pitch to drain." The rain gutter at the eave of a roof is usually pitched (sloped) to drain water toward the nearest downspout. Common slopes used for gutters are ⅛ in. or ¼ in. per foot (1:100 or 1:50). A steeper slope gives a greater capacity to handle water in a heavy rainstorm, and is recommended where precipitation volumes are large. Rainwater collected by gutters can continue to flow by gravity toward cisterns, planters, or vegetated surfaces, or it can be discharged into a stormwater collection system.

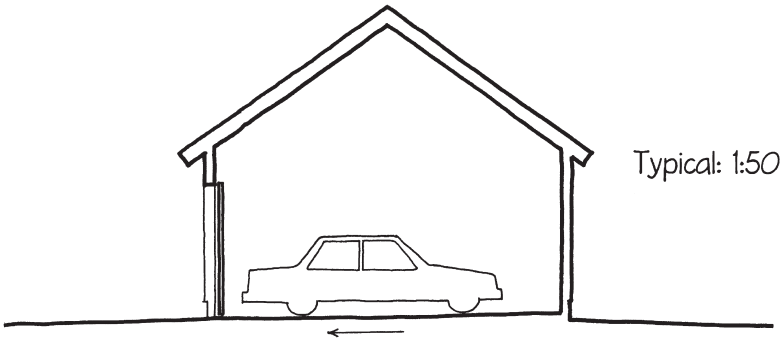
9. An industrial or basement floor slab is often pitched toward floor drains to eliminate puddles of standing water. A rule-of-thumb pitch for slab drainage is ¼ in. per foot (1:50), but to prevent puddles, this should be increased for surfaces that are not very flat, and can be decreased for very smooth surfaces. In the case of a floor or paving, however, pitches should not become too steep, or they will be awkward for pedestrians and vehicles to navigate.

10. If there is no interior floor drain, a residential garage floor is usually pitched so water dripping off a car will run under the garage door and out. Minimum pitch recommendations are the same as for industrial and basement slabs.

8. Pitched Gutter



9. Floor Slab Pitched to Drain

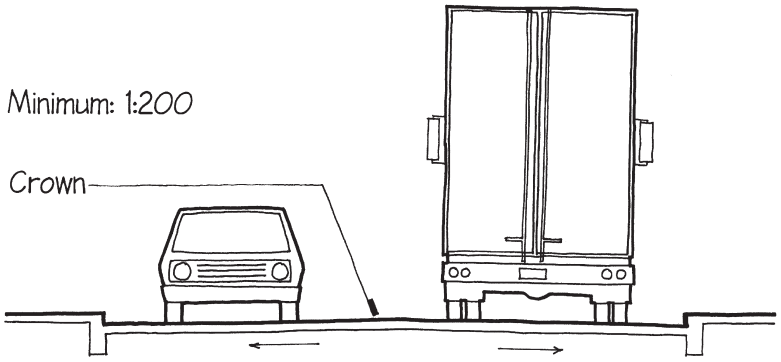


10. Slab Pitched to Drain

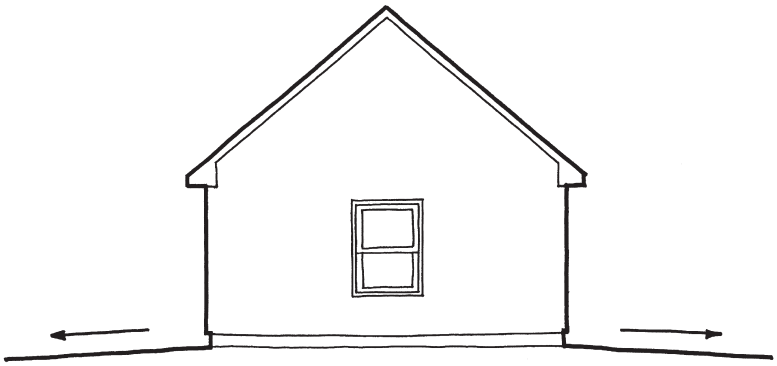
11. Roads, driveways, and walks are usually crowned, to shed water in both directions and to avoid puddling. The slope on each side of the crown should be at least 1:200. Parking lots should slope at least 1:100 to shed water, but not more than 5:100.

12. The ground surrounding a building should slope away from the building at a rate of at least 2:100 for at least 6 ft. (1.83 m). This helps keep water from puddling against the foundation and leaking into basements and crawl spaces.

A wash ensures that gravity will act to keep water away from an opening, but its action can be overcome by strong wind currents. Thus, a wash that is contained within a joint is often combined with an air barrier and a pressure equalization chamber to form a rainscreen joint (see ***Rainscreen Assembly and Pressure Equalization***, later in this chapter). ■



11. Crowned Roadway



12. Slope Away From Building

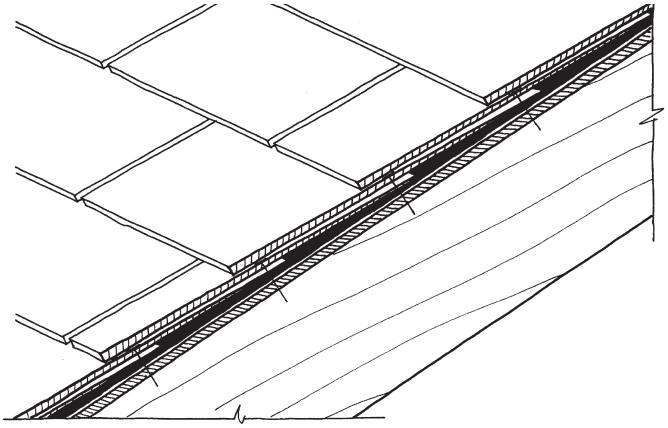
Overlap

In an *overlap*, a higher surface is extended over a lower surface so water moved by the force of gravity cannot run behind or beneath them. For an overlapping detail to work, the surfaces must be sloping or vertical. Porous materials need a greater overlap and steeper slope to be effective. The overlap detail pattern is useful to consider when applying off-site panelized and volumetric elements to on-site assemblies.

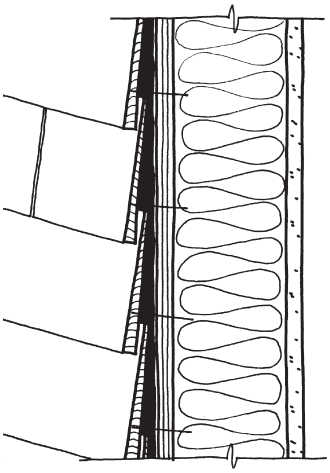
1. Roof shingles and tiles keep water out by overlapping in such a way that there is no descending path through or between them. Each unit covers a joint between units in the course below. The overlap only works if the roof surface slopes steeply enough so that water runs off before it can find its way around the reverse side of the shingles or tiles to the open cracks beneath.

2. Wood bevel siding sheds water by overlapping each board over the one below. The weak spots in wood siding are the end joints, which should be caulked and flashed to prevent water penetration.

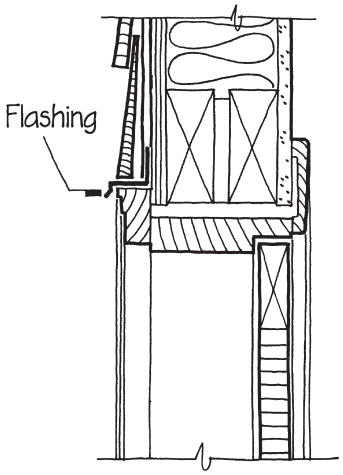
3. Flashings keep water out and protect other materials in a building assembly by overlapping. Flashing is used to create overlap wherever the overlap or slope of base materials is insufficient to prevent water intrusion. This simple Z-flashing of sheet metal or thin plastic keeps water from coming through the crack above a window or door frame.



1. Wood Shingle Roofing



2. Wood Bevel Siding



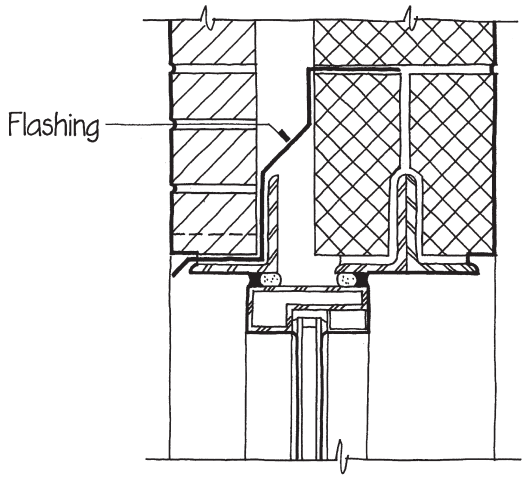
3. Z-Flashing Over Door

4. This lintel flashing in a masonry cavity wall is another example of overlapping. Any water that penetrates the outer brick facing is caught by the metal or synthetic flashing sheet and is conducted through weep holes to the outdoors. Notice the overhang and drip on the outside edge of the flashing. These keep water out of the crack between the flashing and the steel lintel (see ***Overhang and Drip***, later in this chapter).

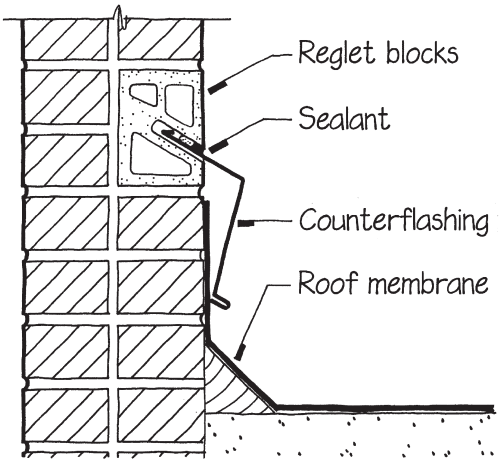
5. A reglet is an upward-sloping slot in a vertical surface into which a flashing or the edge of a roof membrane may be inserted. The slope (wash) acts to prevent water from being forced into the vulnerable joint by gravity, and the overlap of the upper lip of the reglet over the flashing keeps water from reaching the joint between the two components. The reglet shown in this drawing is a traditional type that is largely obsolete, but it may still be encountered when older buildings are renovated. It is molded into glazed terra-cotta tiles that are built into a parapet wall by masons. Shims and/or a sealant bead must be inserted into the reglet to hold the flashing or membrane in place.

6. This contemporary reglet is created in a concrete wall or spandrel beam by using a preformed strip of metal or plastic that is nailed lightly to the formwork before the concrete is poured. The opening in the reglet is usually closed temporarily with an adhesive tape or a strip of plastic foam to prevent its being accidentally clogged with concrete. A variety of patented profiles for this type of reglet are intended to interlock securely with a folded edge on the top of the flashing. Careful inspection is needed just prior to concrete pouring to be sure that the reglet is installed right side up.

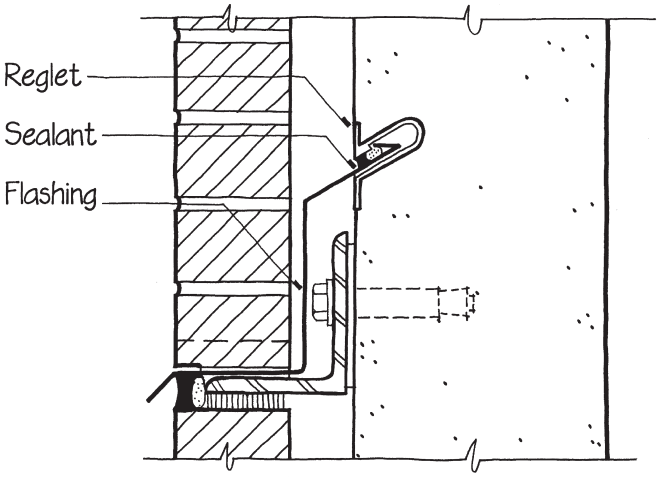
If a reglet is wetted, water may find its way through by *capillary action*. (see ***Capillary Break***, later in this chapter). Capillary action is associated with surface tension, meaning water can travel horizontally or vertically against the force of gravity in spaces within or between materials. A continuous bead of sealant between the flashing and the reglet can be helpful in preventing this water movement. ▷



4. Lintel Flashing



5. Traditional Terra-Cotta Reglet



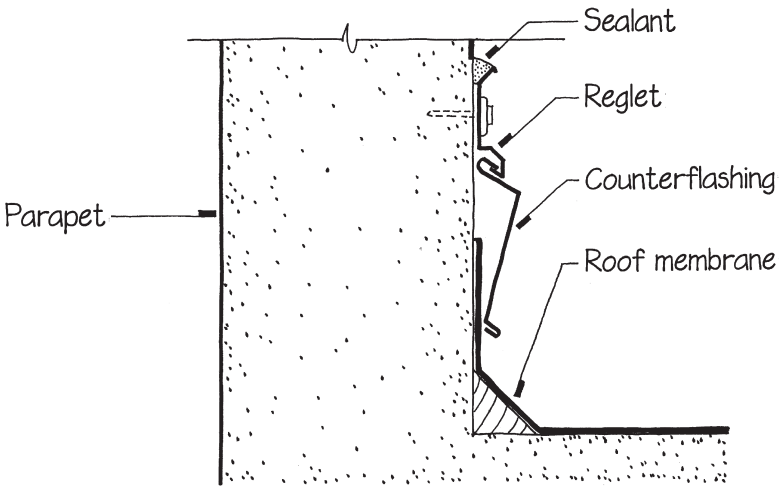
6. Preformed Reglet in Concrete

7. There are also a number of patented designs of surface-mounted reglets made of plastic or metal. A bead of sealant is intended to keep water from behind the reglet. This is somewhat risky, because the success of the detail is entirely dependent on perfect workmanship in installing the sealant and perfect adhesion of the sealant to the wall.

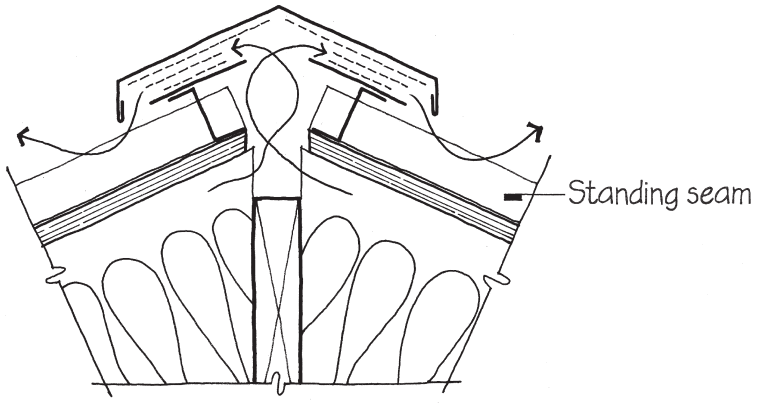
8. The ridge of a standing seam metal roof uses a continuous cap assembly to overlap all of the standing seams, producing covered openings through which water cannot enter, but hot air can escape.

An overlap is generally very effective in preventing entry of water driven by the force of gravity. If wind is allowed to blow through an overlap, however, it may carry water with it. An overlap is useless against standing water, so it cannot be used on a level surface.

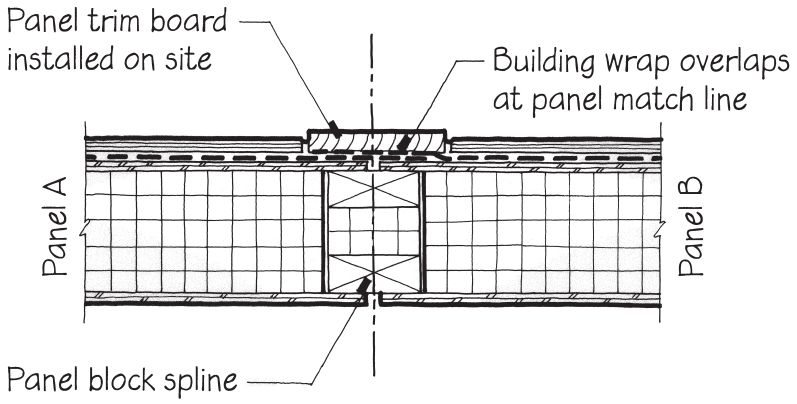
9. Panelized wall assemblies provided by off-site fabricators can use substrate and trim materials to overlap and cap the vulnerable seam between individual panels. A prefabricated wall panel – including primary structure, sheathing, insulation, fenestration, and exterior finish materials – simplifies the construction process (see Chapter 13) and reduces potential points of weakness in the building envelope. ■



7. Surface-Mounted Reglet



8. Continuous Ridge Vent with Standing Seam Metal Roof



9. Panelized Wall Assemblies