

# ARCHITECTURAL DESIGN FOR TRADITIONAL NEIGHBORHOODS



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As advocates of New Urbanism and traditional neighborhood development (TND), designers often face the task of convincing their builder clients that true TND entails more than a few facade details slapped on production models in a suburban plat. *Architectural Design for Traditional Neighborhoods* offers simple concepts that will help developers and builders quickly grasp the basic ideas behind traditional neighborhood platting and block-face design. At the same time, designers must adapt to the methods and materials best suited to production builders, who build most of our nation's housing. Our guidelines help designers and planners work within the limitations of the construction industry while taking advantage of building material innovations that add value to TNDs.

**Andrés Duany**

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Although *Architectural Design for Traditional Neighborhoods* is a relatively concise book, many people were involved in its preparation. The Vinyl Siding Institute (VSI) initiated, paid for, and published it. Without their commitment to New Urbanism and traditional neighborhood design, this book would not have happened. VSI hired Pel-Ona Architects & Urbanists to prepare a pattern book, which, after several brainstorming sessions, evolved into the guide before you. VSI Vice President Matt Dobson trusted us and gave us carte blanche control in developing the content. Katy Hydock, VSI's marketing and communications director, kept our schedule moving forward. Our publisher, Interrupt, helped us with branding and cover design, and Interrupt's Mark Nowotarski helped us brainstorm about marketing the book.

We would also like to acknowledge some of the Pel-Onians who made this book possible by helping organize various aspects of its content and the team's thoughts. Melissa Harrison finalized many of the elevation drawings. Matt Johnson prepared the three-dimensional massing models. Maya Ward-Karet helped with preparation of three-dimensional models. Aly Burkhalter did the first proofreading and provided final touches to some of the graphics. Thank you, Melissa, Matt, Maya, and Aly.

Our sincere thanks to Kathleen McCormick, our editor, for her valuable suggestions, thorough editing, and easy-going friendly attitude. This book, with four authors and many others expressing opinions, needed a talented editor like her.

We are grateful to many urbanists who inspired us through the years – in particular, John Wolff (Wolff of the Wolff Lyon Architects) with whom three of the four authors previously worked, and who developed some of the ideas presented here. We also extend our gratitude to Andrés Duany and Stephen Mouzon, who have been role models through the years and gracefully accepted our invitation to contribute to this book by writing the foreword and the afterword. Thank you, Andrés and Steve.





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# FOREWORD

By Andrés Duany

New Urbanists face the task of convincing developers that a traditional neighborhood development does not consist of traditional façade details slapped onto their standard production models. This practical book will help designers communicate the essential ideas, still adapted to the methods and materials best suited to the builders who, after all, produce most of our nation's housing. This book remains within the limits of today's construction industry while taking every possible advantage of the cost-effective innovations.

This book is a useful addition to the New Urbanist literature because it introduces simple and economical design principles such as: don't clutter the individual façade with articulation and ornamentation; rather pay attention to the whole block face as a unified design. It discusses what to require by code, and perhaps more importantly, what not to code: costly materials will not overcome dismal suburban site plans. Instead, a proper designer will guide developers to invest in what will create the most value, such as a central square with diverse activities around it, or planting larger street trees, which will immediately provide shade, slow down traffic, and protect pedestrians.

This book is sponsored and published by the enormously influential Vinyl Siding Institute. We must applaud the Institute's effort to promote better urbanism. They understand that their increasingly superior products will lead to nothing valued unless the urban setting of the houses they clad is improved in equal measure.



*A bird's-eye view perspective drawing of a common green court.*

# Introduction

Why write a guidebook for production builders about constructing traditional neighborhoods? Because we believe traditional neighborhood development is a sustainable and socially responsible way of building new communities. It is also financially profitable.

Our nation’s sixty-some years of experimentation with conventional suburban development – by which we mean large tracts of low-density, car-dependent, single-family houses – have been proven socially, culturally, and environmentally destructive. It is also an expensive way to build. To provide a better alternative, we offer builders this book, *Architectural Design for Traditional Neighborhoods*, focusing on the design elements needed to create compact, diverse, and walkable neighborhoods – places where healthy communities can thrive. Also, to ensure high-quality aesthetic standards, we suggest how to develop a harmonious architecture for traditional neighborhoods.

We use the word “traditional” to describe what we have learned from the past, focusing on the characteristics that made historic neighborhoods successful. But as we look to the past for insight, we also need to be creative and incorporate recent innovations in construction techniques and materials. We need to address the realities of today’s building industry and the constraints of the market environment, where production builders function, since they are responsible for constructing the majority of homes in which most Americans now live.

Though concise, *Architectural Design for Traditional Neighborhoods* contains knowledge based on decades of practice in designing and developing neighborhoods. Many of the ideas presented, especially our recommendations regarding architectural design, developed from long discussions among Tom Lyon, Korkut Onaran, and Ronnie Pelusio, while they were preparing design standards for various projects, as architects and neighborhood planners for Wolff Lyon Architects in Boulder, Colorado.

Wolff Lyon and Pel-Ona Architects & Urbanists, Korkut and Ronnie’s firm, subsequently collaborated with Calthorpe Associates and AECOM to produce the *Design Book: North Neighborhood Stapleton* (2012) for developer Forest City, to guide the builders of Stapleton, a large new community rising on the site of the former Stapleton Airport in Denver, with New Urbanist principles.

Korkut and Ronnie met Fernando Pagés Ruiz through their mutual work for the board of the Colorado Chapter of the Congress for the New Urbanism. Fernando is the author of two books on lean construction techniques, a longtime contributor to architecture and construction magazines, and has developed affordable housing. This book represents our cumulative knowledge and experience with the overarching design principles of traditional neighborhoods, tempered by the practical lessons learned on construction sites.

This book was commissioned by the Vinyl Siding Institute (VSI). Why would representatives of polymeric materials that have been labeled as “nontraditional” and have been banned in many jurisdictions support a book about the architecture of traditional neighborhoods? And why would we as New Urbanist architects, developers, and authors support vinyl siding in traditional neighborhoods?

The simple answer is that our perception of polymeric materials has changed as we have seen successful applications of vinyl siding to buildings we have designed for prestigious and discerning clients, such as Dartmouth College in Hanover, New Hampshire. We have noted the use of polymeric materials in projects designed by respected colleagues, such as DPZ and Torti Gallas, and in renovations of historic buildings in the neighborhoods in which we live. Some of these examples are included in the following pages (when the sign **PP** appears in the caption it indicates that the building in the photograph employs a polymeric product, such as siding, shakes, shingles, trims, or other embellishments).

In short, our respect for this material and its applications has grown considerably, and we were honored to present this book on behalf of VSI and traditional neighborhood design. This book provides guidance on architecture for traditional neighborhoods and polymeric products’ capabilities as attractive, durable, and sustainable exterior building materials for TND.

*Architectural Design for Traditional Neighborhoods* is intended to be a guide primarily for the production builder. It focuses on basic architectural styles, interpreting them in a way that can be implemented easily and appropriately by today’s builders. Demanding old-world craftsmanship or a high level of ornamentation from a production builder may be impractical, and in many cases, it is unnecessary

to create a harmonious architectural block. We appreciate and encourage exquisite craftsmanship, but our years of experience working with builders have taught us (a) to be realistic about our expectations, and (b) that simple means exist for achieving good quality and stylistic integrity without depending on high levels of craftsmanship. This book distills the lessons we have learned over the years of working with production builders, including the overarching design principle that defines the essence of elegant architecture: simplicity and serenity. In other words, avoiding too many frills.

In neighborhood design, the character of the street defines the neighborhood. Many builders put too much emphasis on the design of a single building while ignoring what happens at the block face where several buildings come together to create the character of the street. Considering the architectural integrity of the block face requires seeing each building not alone but together with others, balancing variety and repetition without overdoing either. The architecture of each building matters as it contributes to the character of the street and public places, which are the essential elements of an attractive and healthy neighborhood.

The book begins with neighborhood design, which for TND means compact and walkable, with attention paid to the public realm. The big picture for neighborhood design is harmony, supported by the design principles of simplicity and quietness. The principles of traditional neighborhood design have been studied elsewhere in detail (see Duany et al., 2000), thus Chapter 1 simply reviews these design principles, especially those closely related to architecture. It will serve as a reminder for builders to pay close attention

to the integrity of their site plans and to advocate, if need be, for certain important site planning principles.

Chapter 2 summarizes the architectural styles that are most popular in the United States. It introduces a classification of styles that is based upon common versus region-specific precedents. It recommends four simple steps for designers and builders to create an authentic architectural look and ways in which architectural styles can be combined to create traditional neighborhoods that feel appropriate in their geographical regions.

Chapter 3 focuses on architectural design and outlines some general design principles that help to create harmonious variety. The chapter provides guidelines for building massing, articulation, primary façade elements, exterior color, material changes, and material specifications. This chapter also covers guidelines and recommendations for specific building elements, such as porches, half-stories, dormers, bay windows, trims, and other embellishments. A brief discussion about green building concludes the chapter.

Chapter 4 summarizes recent innovations in building materials. It focuses on polymeric products as building materials that authentically can reproduce traditional construction elements and patterns while avoiding decay, constant maintenance, and the ecological impact of forest exploitation.

Korkut Onaran, Fernando Pagés Ruiz  
Ronnie Pelusio, Tom Lyon  
May 2019



*A bird's-eye view perspective drawing of two neighborhood parks surrounded by various neighborhood businesses and residential buildings.*

# Chapter 1

## NEIGHBORHOOD DESIGN

### IN THIS CHAPTER

In this chapter, we discuss how strong neighborhoods become places where people want to spend their daily lives. They offer pleasant places for neighbors to socialize, entertain, exercise, garden, run errands, relax, and take an enjoyable walk with their dog. A variety of nonresidential uses and community services, such as parks and retail, make these neighborhoods more complete. A builder can create significant value through a site plan that encourages residents to socialize. After all, good neighbors are one of the most valuable assets in any neighborhood. Here we focus on a few simple design principles that will help developers and builders create significant value through site plans that encourage residents to meet and socialize. We discuss the critical elements of a healthy neighborhood, which include short blocks to enhance connectivity and pedestrian circulation, and a diverse system of plazas, common greens, parks, and well-appointed streets, all of which work together to create a thriving public realm. We also review neighborhood design principles and suggest simple guidelines to address the architecture of a block face, which is an essential factor in creating an attractive and harmonious neighborhood.

## GENERAL NEIGHBORHOOD PLAN

### COMPACT

Compactness refers not only to the density of buildings, but also to how they increase the intensity of social life and encourage neighborly interaction. For example, a high-rise building may have considerable unit density, but if it is surrounded by a sea of parking, it may promote little interaction between residents. By contrast, a green court, well-appointed street, or small plaza surrounded by front entrances and porches can create a strong sense of place and encourage interaction between residents. A well-connected street grid with smaller blocks increases the intensity of neighborly interaction because small blocks create a more appealing and interesting environment for walking. Mid-block green court pedestrian connections, pocket parks, and small plazas enrich the pedestrian experience (see for example figure 1.7). In a traditional neighborhood, deep and narrow lots with narrow houses increase the number of front doors and porches along the sidewalk. Instead of street-facing garages, garages with access from an alley behind the houses can handle cars and encourage pedestrian use of sidewalks. Serving buildings from alleys also eliminates curb cuts so the sidewalk continues uninterrupted. Buildings placed close to the sidewalk provide visual interest and bring neighbors closer to the action. This scheme makes sidewalks safer and more attractive and allows space for on-street parking, which also calms traffic.



Figure 1.1: Buildings placed close to the sidewalk with ample porches, detached sidewalks, street trees, and on-street parking create an appealing walking environment.

### WALKABLE

Strong neighborhoods offer pleasant environments for walking. Walking is an essential daily activity, not only for traveling to destinations, but also for sustaining a healthy level of fitness and social interaction. Residential streets in a healthy community are important amenities, where significant levels of recreation and socialization take place. For a residential street to embrace life and provide a safe place for families and older or physically challenged neighbors, traffic needs to be slowed down or calmed. Designing streets according to the desired speed of traffic is essential. This means providing narrower streets with tighter turning curb radii at intersections. Trees planted at short intervals and close to the curb, in tree lawns separating the street from detached sidewalks, provide shade for pedestrians and help drivers slow down without speed bumps. On-street parking also slows drivers and provides pedestrians a safer and more appealing sidewalk environment, as well as protection from the moving cars. Street furniture such as a bench or a table also can communicate a subliminal message to drivers: People live here, slow down. Buildings placed close to the sidewalk also communicate the presence of people. These are all simple design principles, but they are essential in creating a safe and thriving neighborhood.

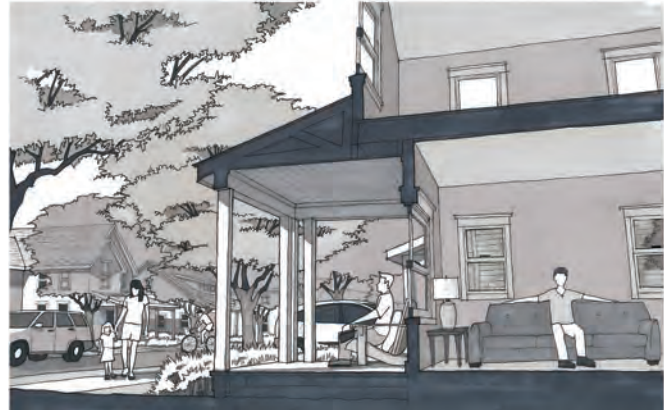


Figure 1.2: “Facing the street” for a house means creating a strong connection between the social parts of the house (kitchen, dining, and living rooms) and the sidewalk.



Figures 1.3, 1.4, and 1.5: Placing buildings close to the sidewalk with the presence of pedestrian activity helps to slow down vehicular traffic and create an appealing walking and socialization environment on the sidewalks. Above are views from Boulder, Colorado (from left to right a view from 8th and Pearl and two views from North Court at Holiday Neighborhood).

## STREET-ORIENTED DESIGN

Just as we face each other to communicate, buildings need to face each other to relate. When buildings face the street, the street becomes a place that accommodates and encourages interaction. The two site plans presented in figure 1.7 (right) show a comparison between a typical suburban pattern designed to isolate homes on large lots and a street-oriented traditional neighborhood plan that encourages community interactions. While suburban neighborhood plans often provide only one entrance and access roads branching from it, traditional neighborhoods offer multiple access points via a street grid. Furthermore, this street grid is overlapped by a grid of pedestrian walkways and greens.

The suburban plan offers a lot of pavement via wide streets and driveways. It is easy and quick to drive through. Sidewalks are attached to the street. The buildings sit back, away from the sidewalk, with ample lawns. Wide driveways and large garages facing the street create distance between homes. The private green space in front of and between homes acts as a buffer providing privacy but little connection. You rarely see people strolling in these neighborhoods, unless they are walking the dog. It is just not that pleasant to walk around.

In traditional neighborhood plans, the street right-of-way is wide but the streets themselves are narrow. The buildings are placed close to the sidewalk to communicate presence of life to the drivers. Figure 1.1 (left) depicts the quality of street and sidewalk environments created via on-street parking, street trees, and large porches placed close to the sidewalk. To further encourage neighborly interaction, the front yard setback illustrated in Figure 1.2 (left) creates continuity between the sidewalk, the front porch, and the social spaces within the house. Finally, in the traditional neighborhood plan, the green spaces take the form of neighborhood parks and green courts. Sited in a central location and celebrated as a gathering place, the neighborhood park shown in Figure 1.7 is embraced by surrounding buildings, encouraging residents to step outside and connect.



Figure 1.6: On the left is a top view of eight people meeting around a table, and on the right is a partial plan of a neighborhood street with houses facing the street. Like the way we need to face each other to communicate effectively, buildings need to face each other to create a street that accommodates and encourages neighborly interaction.



Figure 1.7: A comparison of a conventional suburban pattern (left) with a street-oriented traditional neighborhood site design (right). The conventional plan has a single entrance with branching access roads where parking is provided at the front of homes (either as surface parking or attached garages) and where buildings are located away from the roads. The traditional neighborhood plan provides multiple access points via a street grid, and the civic buildings are highlighted by a centrally located neighborhood park. Alleys provide vehicular access and allow sidewalks to serve uninterrupted as pedestrian pathways. Buildings are placed closer to the sidewalks, shaded by street trees located in the tree lawns.



Figure 1.8: Section-perspective drawing of a three-story apartment building placed close to the sidewalk, creating an urban character that may be proper for certain parts of the neighborhood. From *The Design Book: The Northern Neighborhoods*, Stapleton.

## PUBLIC REALM



Figure 1.9: View of a corner green court with small community gardens located on the corner. Note how the community gardens are contained and celebrated by small entry trellis structures and low fences. When designed well and placed at a visible public location, community gardens encourage neighborly interaction. From Design Book: The Northern Neighborhoods Stapleton.

### NEIGHBORHOOD CENTERS

Living close to neighborhood amenities and services is becoming more in demand as urban areas become increasingly desirable. Many younger and older people now prefer to live in smaller houses on smaller lots if that means they can shop, socialize, eat out, and take care of daily needs in their neighborhood. As research shows (Leinberger, 2009; NAHB, 2019; Nelson, 2013), from 2020 through the mid-century, demographics in the United States will shift with housing preferences toward traditional neighborhoods, favoring walkable communities with easy access to grocery stores, community services, entertainment, and “third places,” such as local coffee houses, cafes, and breweries, where neighbors can relax, socialize, and everybody knows your name. A strong public realm motivates residents to spend more time in their neighborhood.



Figure 1.10: View of a green court from a ground-floor porch. When a diverse set of residential and nonresidential units faces a court, the court becomes a vibrant amenity.

### NEIGHBORHOOD PARKS AND COMMON GREENS

Developers of traditional neighborhoods are aware that they do not just sell houses – they sell the community as well. Green places in a traditional neighborhood are designed to accommodate daily life so the neighborhood becomes a vital place. Parks and common greens are one of the key elements in creating a strong sense of arrival, ownership, and place in residential neighborhoods. Well-designed and well-maintained parks become places where everyone wants to be, and properties facing these parks increase in value. The value of facing a great park actually increases for each unit as the number of units increase. This increased value typically exceeds park construction and maintenance costs and pays for the park overhead. The central park shown in Figure 1.7 is framed by a large number of residential and nonresidential buildings, allowing more residents and businesses to appreciate a view of and direct access to the park.

Retail shops, offices, and other nonresidential uses are not feasible at all locations in a residential neighborhood. Creating gathering places with a strong sense of arrival does not necessarily require the presence of coffee shops and boutiques. Neighborhood pocket parks, common greens, and green courts can create places that are well-used and well-loved by residents. Especially when these open green spaces accommodate community functions, such as concerts and festivals, they become culturally significant for the residents and create fond memories and expectations for the next year’s festival. Providing amenities such as community gardens and park furniture is another way to activate the use of these places without a large investment.



## DIVERSITY ON THE BLOCK FACE

### GRAIN OF DIVERSITY

Strong neighborhoods display diversity in many ways through building types, services, and activities. Diversity of building types is crucial to creating a strong community because when a neighborhood accommodates, for instance, detached homes, duplexes, townhouses, apartments, and mixed-use buildings in varied configurations, it offers residents a wide range of lifestyle choices and economic options. In a neighborhood with social and economic diversity on a single block, synergies develop among demographic groups. For example, an elderly couple may take care of their neighbor's kids. A young couple who travels a lot may appreciate the stay-at-home family next door that can keep an eye on their property. But for these synergies to develop and foster strong community relations, residents need to live in proximity.

The conventional plan (Figure 1.7) shows two building types, detached houses and apartment buildings, on sites separated from each other. This site layout does not encourage interaction between the residents living in these two building types. On the other hand, a well-designed traditional neighborhood plan (Figure 1.7) positions several adjacent building types, in many cases on the same block face. In other words, instead of trying to separate and put distances between various building types, typical for suburban-style zoning and housing development, the traditional neighborhood plan adopts diversity and proximity as design principles. The financial theory behind this approach is that proximity creates value. Especially in urban real estate markets, where value creation is often linked to “location, location, location,” the closer a property is to certain amenities, the higher its value. Well-designed proximity is the most important principle to follow when designing traditional neighborhood site plans.

In addition to parks, common greens, and community gardens, amenities that create value include daily shops and services, community activity and event centers, and most of all good neighbors who can offer support and a sense of community.

### ARTICULATION ALONG THE BLOCK FACE

Builders often think of articulation, or defining parts of architecture so they stand out, in terms of a single building. When located away from other buildings, a single building façade may look balanced and harmonious with multiple articulations and special effects, such as a sculptural awning, columns, a complex roof, or recessed or bay windows. But when this same building is located on a block face, among other buildings with the same amount of articulation, it may be too much, creating clutter rather than harmony. Similarly, a building may look bland alone, but when mixed with other buildings with similar (although not identical) articulation along the block face, the total effect will be harmonious. Harmony is the reason why this book proposes simplicity and quietness as design principles.

The challenge for many builders today is to provide architectural diversity while achieving the cost-effective benefits of repetition. The most successful new communities require each block face to have at least three building models that offer significant variation in floor plan configurations and massing. Not more than two of the same models with identical architectural style should be constructed on the same block. It is also useful to vary color schemes to further differentiate one model from another.

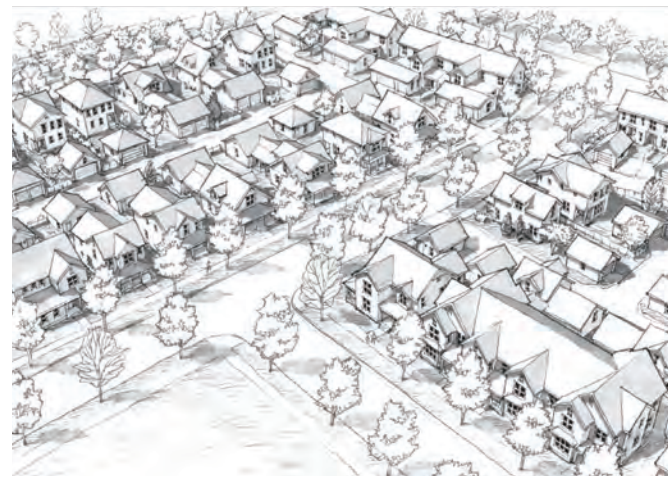


Figure 1.11: A bird's-eye view perspective drawing of a street intersection where several building types come together. From *The Design Book: The Northern Neighborhoods*, Stapleton.



Figure 1.12: A block face that accommodates row homes, duplex units, and detached houses together. Note that row home and duplex buildings have certain elements, such as projections and forward-facing gables, that relate to the scale of the detached homes.

## LOT CONFIGURATIONS



Figure 1.13: A duplex building located on a street corner. Note that the corner-unit porch faces the side street, and the adjacent-unit porch faces the main street. The building thus addresses both sidewalks.

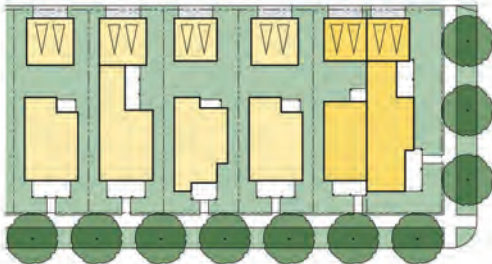


Figure 1.14: Four detached house lots and two duplex lots accommodated on the same block face. Note that some dwelling units employ attached garages and others detached.

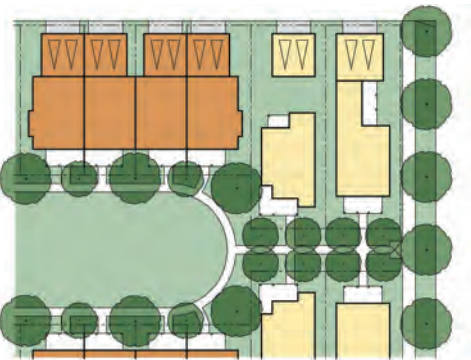


Figure 1.15: A partial plan showing how shallow lots (row houses) and deep lots (detached houses) can come together to shape a common green court.

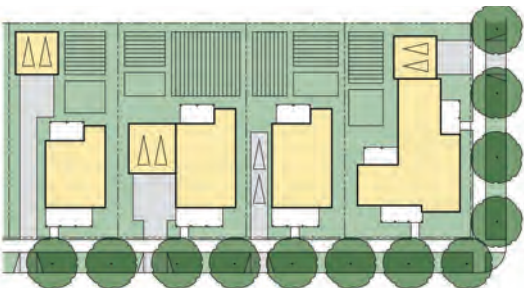


Figure 1.16: Four street-accessed lots: Although it is not ideal, if homes are street-accessed, garages should sit back on the lots with driveways narrowed where they cross the sidewalk to provide safe passage for pedestrians. This layout provides gardening opportunities at the rear.

### PRESENTATION AT CORNERS

Laying out a traditional neighborhood requires special attention to configuring lots, especially at corners. Buildings at street corners have the unique opportunity and responsibility of facing two sidewalks. A building type that can address both streets is ideal. A duplex building, such as the one shown in Figure 1.13, or a row home with an end-unit porch facing the side street, represent good choices. For a corner lot with a detached house, a porch that wraps both street façades or a porch that is visible from both sidewalks provides proper address to the streets. Corner building façades should always present appealing fronts at both street faces.

### MIXING DETACHED AND ATTACHED GARAGES

Figure 1.14 shows six lots, of which four have detached houses and two have duplex dwelling units on the corner, like the building shown in Figure 1.13. Note that two of the units have their garages attached. The convenience of an attached garage and the appeal of a larger back yard is a choice related to lifestyle. They both have their place and people desire one or the other. A well-designed block can offer more than one choice. Mixing detached and attached garages offers architectural flexibility and allows better solar access for the backyards. Repeated detached garages tend to create a corridor effect, which can be interrupted by an attached garage for one or more homes.

### MIXING LOTS WITH DIFFERENT DEPTHS

Mixing lots with different depths is harder than mixing lots with different widths, and thus is not typical in traditional neighborhoods. However, unique street layouts, uneven park boundaries, and commonly shared green courts present opportunities for varying lot depths. The partial plan shown in Figure 1.15 exemplifies how both deep and shallow lots can come together to create a narrow entrance to a wider green court. Shallow-lot building types with attached garages and no back yards make sense along the green court because the lack of back yard is compensated by the presence of a generously sized shared green space.

### STREET-ACCESSED LOTS

For locations that require garages to be accessed from the street, it is important to minimize the impact of the garages from the sidewalk. The garages should be set back behind the front line of the building, and the driveways should be narrow where they cross the sidewalk to minimize pedestrian disruption. The perspective presented on Figure 1.1 shows a lot with a side drive accessed from the street, like the third lot from left in Figure 1.16. Since the driveway is narrow and the parking is set back, the sidewalk provides a pleasant walking experience.

# Chapter 2

## ARCHITECTURAL STYLES

### IN THIS CHAPTER

The inventory of architectural styles in the United States is rich, complex, and voluminous. This chapter guides developers and builders in creating authentic architectural style compositions for traditional neighborhoods that will fit in with their geographic regions. To do this, this chapter suggests: (1) identifying the region's architectural heritage, (2) considering massing and presence on the street when composing buildings for a block face, (3) considering building height (verticality), width (horizontality), and roof pitch in compositions, and (4) creating a consistent level of ornamentation.

The classification system that follows ranges from common to region-specific architectural styles, starting with Craftsman, one of the most common styles found in many regions of the United States, followed by Folk Victorian and Farmhouse. We also discuss Italianate, Foursquare, and Prairie as a group of styles that are compatible with each other and easily combined in a single neighborhood. Finally, we address region-specific styles for the Eastern, Southern, and Southwestern regions of the United States.

# COMPOSING AN AUTHENTIC ARCHITECTURAL RESPONSE

## ARCHITECTURAL STYLE: A DEFINITION

An architectural style is a set of building forms, materials, and construction techniques that evolved in response to the local climate, geography, and cultural constraints of a region. It represents a specific relationship between people, their environment, and their building techniques. It becomes a kind of architectural grammar, to use language as a metaphor, that is an adaptive response to its environment. As such, architectural styles resemble the development of regional dialects, integrating expressions from diverse immigrant groups into a new common language.

Architectural styles also evolve and change over time. Throughout its history, the United States has been a melting pot of various cultures that introduced a wide variety of architectural traditions and adopted these traditions into their regional adaptations. These architectural traditions were combined and adjusted to adapt to the New World's

geography, climate, and cultural mix. Thus, the rich, voluminous, and complex inventory of architectural styles in the United States.

Traditional neighborhoods throughout the United States display various combinations of unique American styles. Creating an authentic and regionally appropriate architecture for a new community begins by looking at the architectural heritage of the region and asking: How did this specific mixture of styles and style variations evolve? What climate conditions caused builders to design and construct buildings in this way? Are the styles and techniques used in the past still relevant and used in the region? These are essential questions to consider when deciding the architectural composition of a new neighborhood.

It has become common practice among production builders to treat an architectural style as an off-the-shelf tool that can be applied to buildings in a superficial way: Just sprinkle

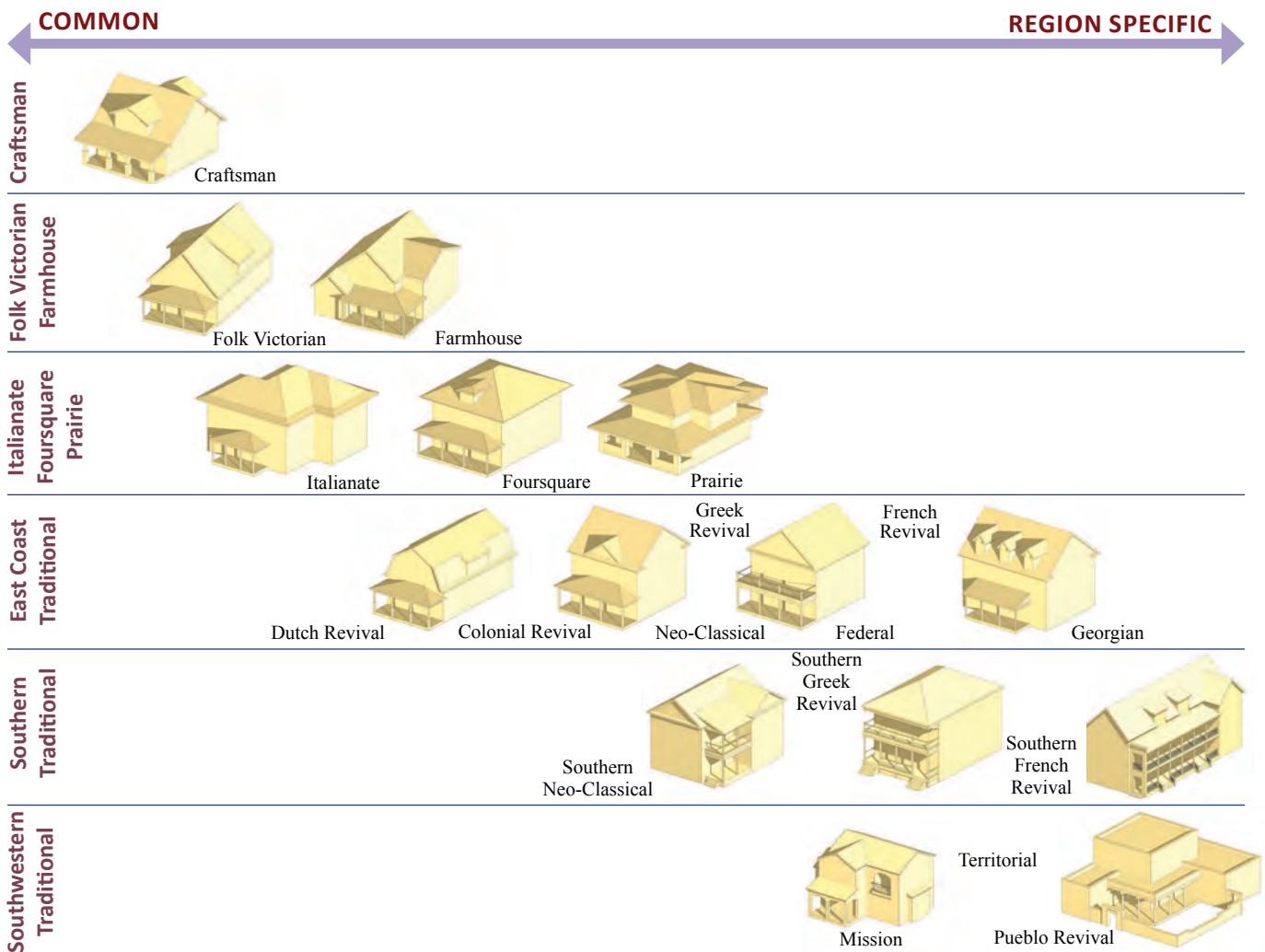


Figure 2.1: This book's architectural-style classification system is based on a continuum from common styles to more region-specific styles. This chart includes the most popular styles. There are numerous other revivals and variations of the styles shown here, and various modern interpretations of these styles. Note that not all styles in the graph correspond to a massing model; some are listed for reference only.

a few trims, window types, eave and rake details, some embellishments, such as brackets and column capitals, and the architecture is complete. This approach results in builders repeating the same floor plan many times, on lots with similar dimensions, attempting to mitigate the monotony by applying a handful of assorted architectural details. This does not produce diversity; it only creates a collection of often-clashing architectural expressions applied to monotonous building forms. We recommend another approach: an in-depth and context-based way to compose a more authentic architectural response.

## DECIPHERING THE REGIONAL HERITAGE

While many American cities incorporate a wide variety of architectural styles in their neighborhoods, others, such as Santa Fe, specify one predominant style, with a few variations, such as the low-slung, earth-toned adobe buildings synonymous with Santa Fe style. Distinctive and identifiable architecture that is unique to a certain region usually demonstrates a response to the region's climate and geography. It is essential for designers to determine architectural styles and building types in a holistic way, considering history, geography, and climate. An architectural style comes with a set of building massing features,

materials, and variations, not just a fixed set of façade characteristics. Also, while some styles are generic – that is, we observe them in many regions with the same stylistic features, such as Craftsman style – others, such as Spanish and Southwestern styles, are very region-specific, and generally appear only in those regions.

To help builders decipher the architectural heritage of their area, we classify styles according to how common versus region-specific they are (see Figure 2.1). Craftsman, Folk Victorian, and Farmhouse are common styles. The Foursquare, Italianate, and Prairie represent a family of building styles that, although initially from a specific regional context, have also become commonplace across the country. We have classified region-specific groups of architectural styles under three headings. (1) East Coast Traditional refers to a family of styles and their variations commonly found along the Atlantic Coast. (2) Southern Traditional includes style variations that we observe mostly in the hot and humid climate of the American South. (3) Southwestern, which refers to a group of styles including Pueblo Revival, Territorial, and Mission, represents a more focused response to the hot and arid climates of the desert and high-desert regions of the Southwest.



Figure 2.2: A composition of six residential buildings with similar sizes. The low-sloped hip roofs of the Foursquare and Prairie-style buildings create a harmonious ensemble with the low-sloped gables of the Craftsman-style buildings. Large overhangs and a design emphasis on horizontality contribute to the balance.



Figure 2.3: A composition of five buildings in different interpretations of Farmhouse style, including a more “neighbor friendly” modern interpretation. The varying building sizes and architectural details are united by similar massing proportions and roof slopes. Note that the three-unit townhouse (second from left) relates well to the other buildings because of its forward-facing large gable and the flat dormer.



Figure 2.4: A composition of five buildings in varying sizes that employs East Coast styles such as Georgian, Neo-Classical, and Colonial Revival. Simple forms, large gabled roofs that run parallel to the street, and occasional street-facing pediments create a plain yet diverse composition.

## BUILDING MASSING AND PRESENCE ON THE STREET

The kind of building massing and presence created by a continuous wall of row houses in Philadelphia is very different from the one created by highly articulated buildings on a street in Denver, or by the buildings, courtyards, and colonnades of streets in Santa Fe. These differences matter. For the appearance of the whole neighborhood and the experience of pedestrians on the street, the composition formed by the massing characteristics of buildings on each block is an important factor to consider when determining which building archetypes and architectural styles to use in a new neighborhood.

The following pages present building style compositions that will create harmony on the block face. The style choices become more challenging in contexts where a greater number of styles are commonplace. In these cases, the designer must strike a balance between the various styles and avoid elements that are not compatible.

## VERTICALITY, HORIZONTALITY, AND ROOF PITCHES

Some styles, such as Prairie, emphasize width or horizontality and some, such as Southern styles, height or verticality. These styles usually are not compatible with each other, and we advise against mixing them on a single block face. The roof pitches also provide important clues about compatibility. Introducing a building with a low-pitched roof (4/12 or 6/12) on a block face that employs predominantly high-pitched roofs (10/12 and 12/12) can create a clash. The block face elevations provided on the previous page (Figures 2.2, 2.3, and 2.4) underline the importance of this principle.

Figure 2.5 shows the five architectural styles recommended by *Design Book: The Northern Neighborhoods Stapleton*, a design standards book developed to guide the builders of Stapleton in Denver (Forest City, 2012). The book identifies these as the prominent styles used in Denver's traditional neighborhoods. However, not all five styles shown in Figure 2.5 are compatible with each other on a single block face. Certain styles work well together by accentuating and highlighting each other's unique characteristics, whereas another grouping might clash because of their different roof pitches and emphasis on width rather than height.

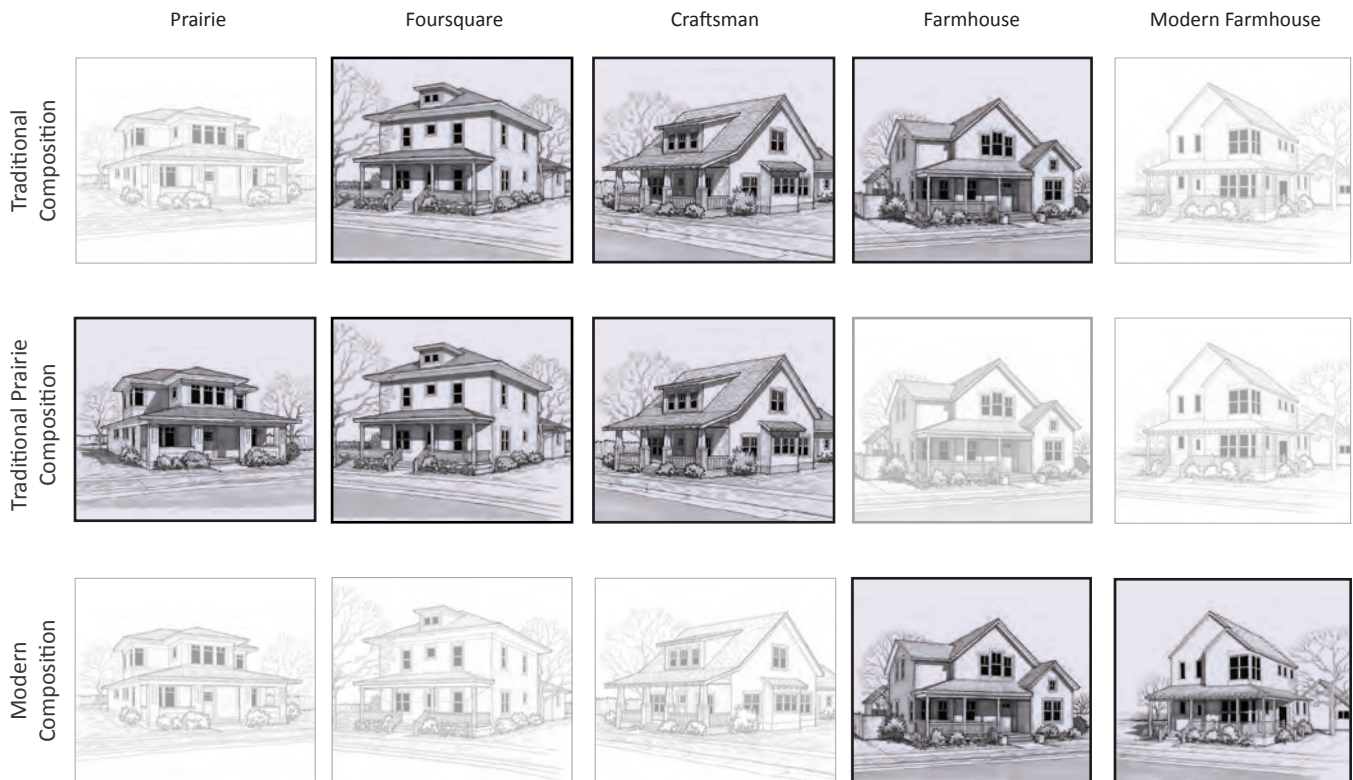


Figure 2.5: A composition diagram from *The Design Book: The Northern Neighborhoods Stapleton*, a design guideline and standards book produced by developer Forest City to guide the many builders involved in creating Stapleton in Denver. Note that while the Traditional Prairie composition emphasizes horizontality and low-pitched roofs, the Modern Composition highlights high pitches and verticality.



Figure 2.6: Traditional Composition with buildings in Craftsman, Farmhouse, and Foursquare styles. From *The Design Book: The Northern Neighborhoods, Stapleton*.



Figure 2.7: Traditional Prairie Composition with buildings in Craftsman, Foursquare, and Prairie styles. From *The Design Book: The Northern Neighborhoods, Stapleton*.



Figure 2.8: Modern Composition with buildings in Farmhouse and Modern Farmhouse styles. From *The Design Book: The Northern Neighborhoods, Stapleton*.

*Design Book: The Northern Neighborhoods, Stapleton*, identifies three stylistic subgroups within the five architectural styles. The composition diagram shown in Figure 2.5 demonstrates how five architectural styles can be broken down into sets of composition groups. These groups have compatible characteristics that help to create a harmonious streetscape.

The Traditional Composition group uses historical building styles with traditional forms, details, and windows. The Traditional Prairie composition group uses lines that emphasize the horizontal aspect and roof overhangs. Modernist composition applies to building styles with similar roof forms and an emphasis on the vertical aspect. The book provides eye-level perspectives of a group of buildings facing a common green in each of the three compositions (Figures 2.6, 2.7, and 2.8).

## LEVEL OF ORNAMENTATION

We usually advise our production builders to use great restraint in ornamentation, though for some style groups, ornamentation is an integral part of their identity. Our recommendation is to employ a consistent level of ornamentation throughout a block face. As a rule, do not mix ornamented styles with plain ones. If it is done subtly it can be appropriate. However, inconsistent ornamentation creates clashes and clutter, especially if each building has unique embellishments. A rule of thumb: Ornamentation makes it harder for different styles to be compatible. However, some style sets, such as the variations for Southern Traditional, feature a consistent level of ornamentation, with balustrade details, brackets, and cornices that repeat and create a cohesive and harmonious composition.



Figure 2.9: A composition of six buildings of similar sizes in the Southern French Colonial, Neo-Classical, and Italianate styles. Verticality is emphasized, together with a strong sense of horizon line via cornices, repeating pediments, and deep overhangs. The consistent level of ornate window headers, eave brackets, and operable shutters creates balance.

# CRAFTSMAN

## BACKGROUND

The Craftsman style derived from the Arts and Crafts movement of the late 19th and early 20th centuries. The Arts and Crafts movement addressed design on many levels, ranging from architecture to furniture and pottery. The Craftsman style focuses on the expression of structural members and attention to wood joinery. It features medium-to-low-sloping gable roofs with wide overhangs and large porches with substantial columns and bases. The Craftsman style flourished in the early 20th century, and it is possible to observe successful examples throughout the United States. More modest versions of Craftsman style are often referred to as bungalows.

The foundations of Craftsman style began with William Morris, a British textile designer, poet, novelist, translator, and activist who was a tireless proponent of the Arts and Crafts movement and made many products himself, hoping to educate and elevate the ordinary person. In the United

States, Gustav Stickley became the champion of this new design approach. Well-known for his furniture designs, Stickley also published a magazine called *The Craftsman* from 1901 to 1916. The magazine advocated a fully integrated approach to house design and furnishings and provided architectural plans for a new breed of homes. In California, architects Greene and Greene and Bernard Maybeck devised new ways to express a building's structure through exposing beams, columns, and joists. The movement influenced middle-class Americans seeking solid, simple, affordable, and handsomely designed housing. In addition to *The Craftsman*, numerous pattern books and periodicals like *Ladies' Home Journal* and *House Beautiful* provided plans for Craftsman home designs, which were built widely throughout the United States. After 1905, it became the dominant style for smaller houses and continued to be popular through the 1930s. It remains a significant style in many traditional neighborhoods throughout the United States.



Figures 2.10, 2.11, 2.12, and 2.13: Four buildings in Craftsman style present a single-story scale to the street. The primary roofs can be parallel to the sidewalk (upper left and lower right), perpendicular to the street (upper right), or crisscrossed (lower left). Note how the porch roofs are an integral part of the primary roof geometry. Large overhangs, brackets, and window trims express a balanced Craftsman style. On the lower right is a one-and-a-half-story building with a shed dormer.



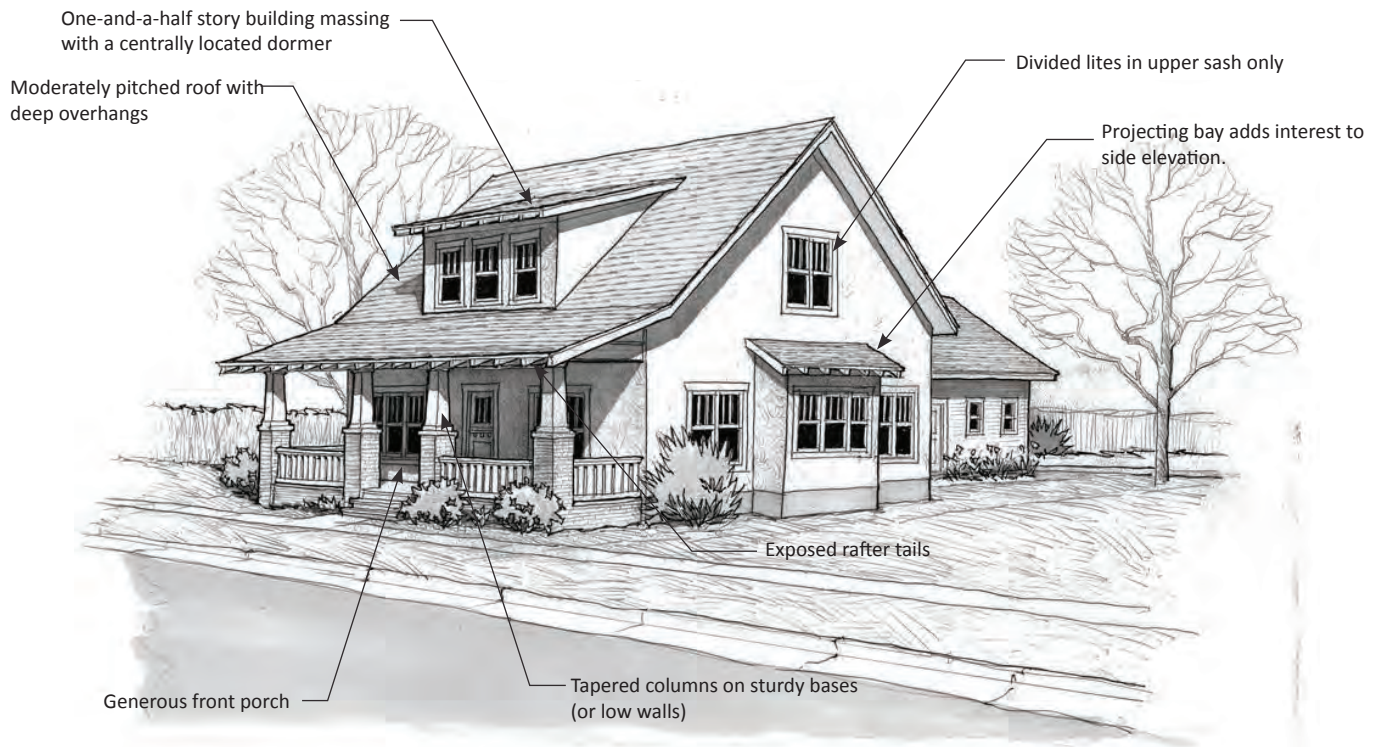


Figure 2.14: A prototypical building in Craftsman style. From *The Design Book: The Northern Neighborhoods*, Stapleton.

## CHARACTERISTICS AND VARIATIONS

The Craftsman style focuses on the expression of structural members and attention to joinery. It features low-to-moderate-sloping gable roofs with wide overhangs of 18 to 24 inches and exposed rafters. Rafter end ornaments, such as notches or rounding, are common. Large porches with substantial columns and bases are usually an integral part of the building mass. For instance, when the primary roof pitch is parallel to the street, it often continues to cover the porch (Figure 2.14). It is common to see tapered columns sitting on boxy masonry bases that are 3 to 5 feet tall. Dormers are typical on 1½-story buildings. Exterior wall materials include stone, brick, stucco, shingles, and horizontal siding. Ornamentation is restrained. Structural members, such as

beams and braces, are exposed where possible. Half-timber trusses or stick work in the gable ends, porches, and dormers are common. Brackets, belly bands, tapered window and door trims, and wide fascia boards of 10 or 12 inches are typical (Figures 2.30 and 2.31).

A general emphasis on building width creates affinities in building massing and articulation with the Foursquare and Prairie Styles. As such, it is possible to compose a block face expressing features from all three styles in a balanced way. It is important to include the massing characteristics, especially low sloping roofs with large overhangs, and not just superficial façade elements to design a harmonious composition in Craftsman style.

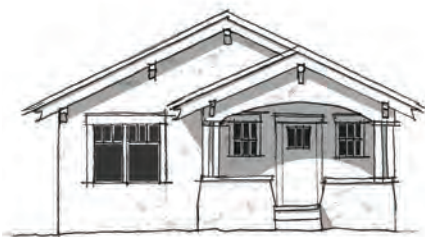


Figure 2.15: A single-story bungalow with a primary roof ridge that is perpendicular to the street. The porch covers half of the façade.



Figure 2.16: A single-story example with a hip roof. Note that the porch roof is an integral part of the primary roof form.

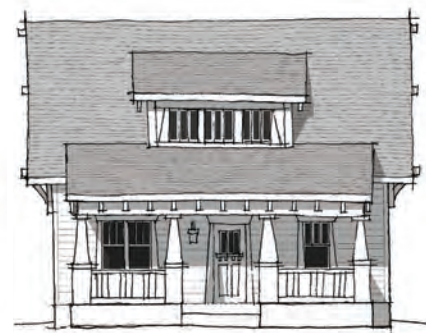


Figure 2.17: A one-and-a-half-story example with a flat dormer that is very common in Craftsman-style bungalows.

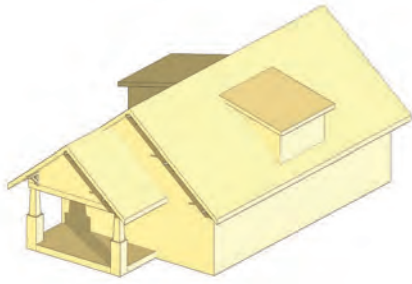


Figure 2.18: Single-story bungalow with a primary roof ridge that is perpendicular to the street.

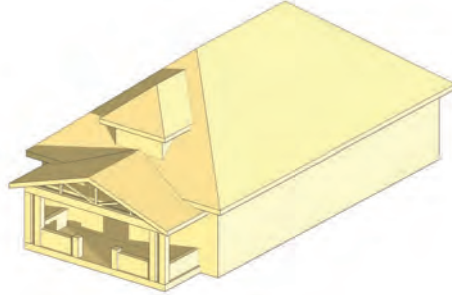


Figure 2.19: Single-story bungalow with a hip roof. Note that the porch truss is expressed.

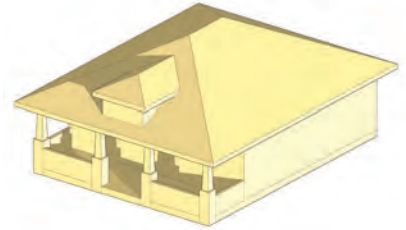


Figure 2.20: Another single-story bungalow with a hip roof. Note that the porch roof is an integral part of the primary roof form.

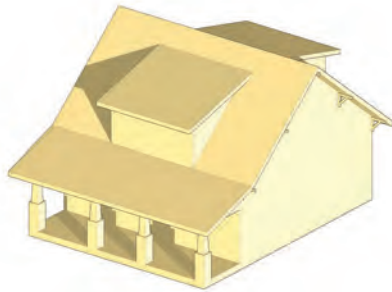


Figure 2.22: One-and-a-half story building with shed dormers. The way the porch roof is integrated with the primary roof is common in this style.

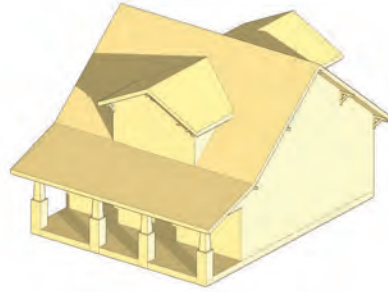


Figure 2.23: One-and-a-half story building with pitched roof dormers.

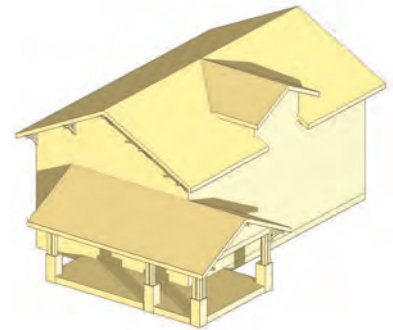


Figure 2.24: A two-story building with a large single story porch added in the front. This form is appropriate for a corner location.

## BUILDING MASSING

Large gable or hip roofs with street-facing dormers are typical for Craftsman-style buildings. The low-to-medium-pitch roofs with large overhangs are among the most character-defining features. Figures 2.18 through 2.24 depict a series of the most common building massing examples. In all cases, the primary building form is a simple one, and articulations follow a clear hierarchy. The porches are usually ample with large spans, as shown in Figure 2.19.

It is also common to see the porch roof as an extension of the main roof, as it appears in Figure 2.20. The primary roof slope skirting to a lower pitch above the porch is another common building massing feature, as shown in Figures 2.22 and 2.23. It is essential to accommodate these massing characteristics into the design and not to depend on only certain building elements, such as brackets, porch columns, and window trims, to design a building in Craftsman style.



Figure 2.25: A two-story example with a unique porch articulation. Note the low plate height of the second floor.



Figure 2.26: A full two-story example with a porch covering the full length of the façade width. The affinity with Foursquare style is visible.

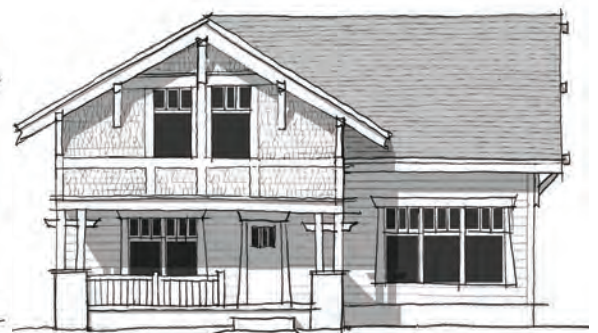


Figure 2.27: Here the exposed beams, double columns, and wide fascia elements underline an interpretation of a style that is common in the mountain communities of the West.



Figure 2.28 (PP)

Deep eaves and rakes, exposed rafters and brackets are among the characteristics of the Craftsman style. Note thick horizontal band trim that creates a harmonious ensemble with the finely spaced siding.



Figure 2.29

Shed dormers and exposed rafters are common. Note that there is no fascia covering the rafter ends. The sawtooth-like shadow cast by the exposed rafters is a character-defining feature for the Craftsman style.

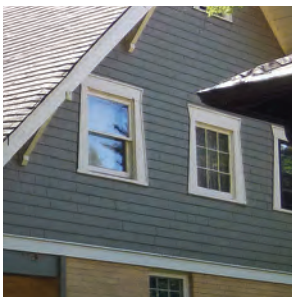


Figure 2.30

Tapered side trims together with the tapered head trim (6 to 10 inches wide) are typical. Note that the sill does not have a trim. Craftsman style has a diverse set of variations in its vocabulary regarding window and door trims.

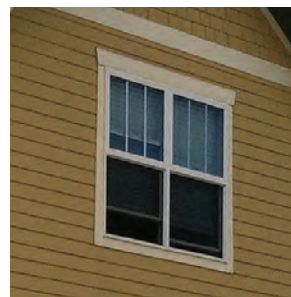


Figure 2.31

A more modest trim composition shows the taper only at the head trim. The vertical dividers on the upper panes are also common in Craftsman style.



Figure 2.32

Tapered columns sitting on masonry bases are most typical in Craftsman style, though full-length brick-porch columns, shown here, are also common. Notice the way the rake fascia is ornamented.



Figure 2.33 (PP)

Tapered columns sitting on 30-to-60-inch-high bases are common in Craftsman style. This example employs polymeric products in column wraps, balustrades, and siding.



Figure 2.34: A two-story duplex building example. Note the way the full two-story elements create a harmonious composition with the one-and-a-half-story elements.



Figure 2.35: A two-and-a-half-story example accommodating two units. The full porch is an integral part of the primary building form, which is common in large Craftsman-style buildings.

## FOLK VICTORIAN / FARMHOUSE

### BACKGROUND

The Victorian style became prevalent for residential buildings in the United States from about 1860 to 1910. Over time, variations of Victorian architecture evolved, including Richardsonian Romanesque, Shingle, Queen Anne, and Folk. Regional differences of these styles developed, as well as combinations of elements from all of them blended into eclectic compositions. Richardsonian Romanesque buildings feature masonry and high-style features such as Romanesque arches and cylindrical towers. The Shingle style became popular and prolific for resort architecture along the East Coast. The Queen Anne style dominated residential building designs from 1880 to 1910. Folk Victorian, a more straightforward and modest variation of the Victorian style, resulted from the application of Victorian building massing to modest residences. This style flourished when railroads spread across the country and began providing a steady supply of intricate millwork. Local builders and carpenters applied their skills based on their understanding of the style.

Pattern books containing illustrations and details marketed the millwork and became sources of instruction and inspiration. These forms were simplified, and ornamentation was applied chiefly to porches, gable ends, and cornices.

The Farmhouse style is an even further stripped-down version of the Folk Victorian style. As such, it has affinities with the modest and practical architecture of the early colonial era. The explicit expression of simple building forms mirrors the early interpretations of modern architecture, especially those of the Scandinavian architects, such as Alvar Aalto, Eero Saarinen, and Otto Von Spreckelsen. The clean lines of modernism gained popularity in Northern Europe and Scandinavia, where a strong culture of democracy emphasized collective values as opposed to individual expression. With the influence of modern architecture, the Victorian style became further refined, and much of the ornament was simplified or deleted in the 20th Century.



Figures 2.36, 2.37, 2.38, and 2.39: Four examples of Folk Victorian and Farmhouse styles. Upper left: a small house with a major gable roof that runs parallel to the street and a small bay with a gable facing the street. Upper right: simple houses with subtle variations in porch roofs, window types, and color. Lower left: a large house with cross gables. The porch is an important element that scales down the building (PP). Lower right: An apartment building with the small bay with forward-facing gable creating a strong character and reducing the perceived size of the building.

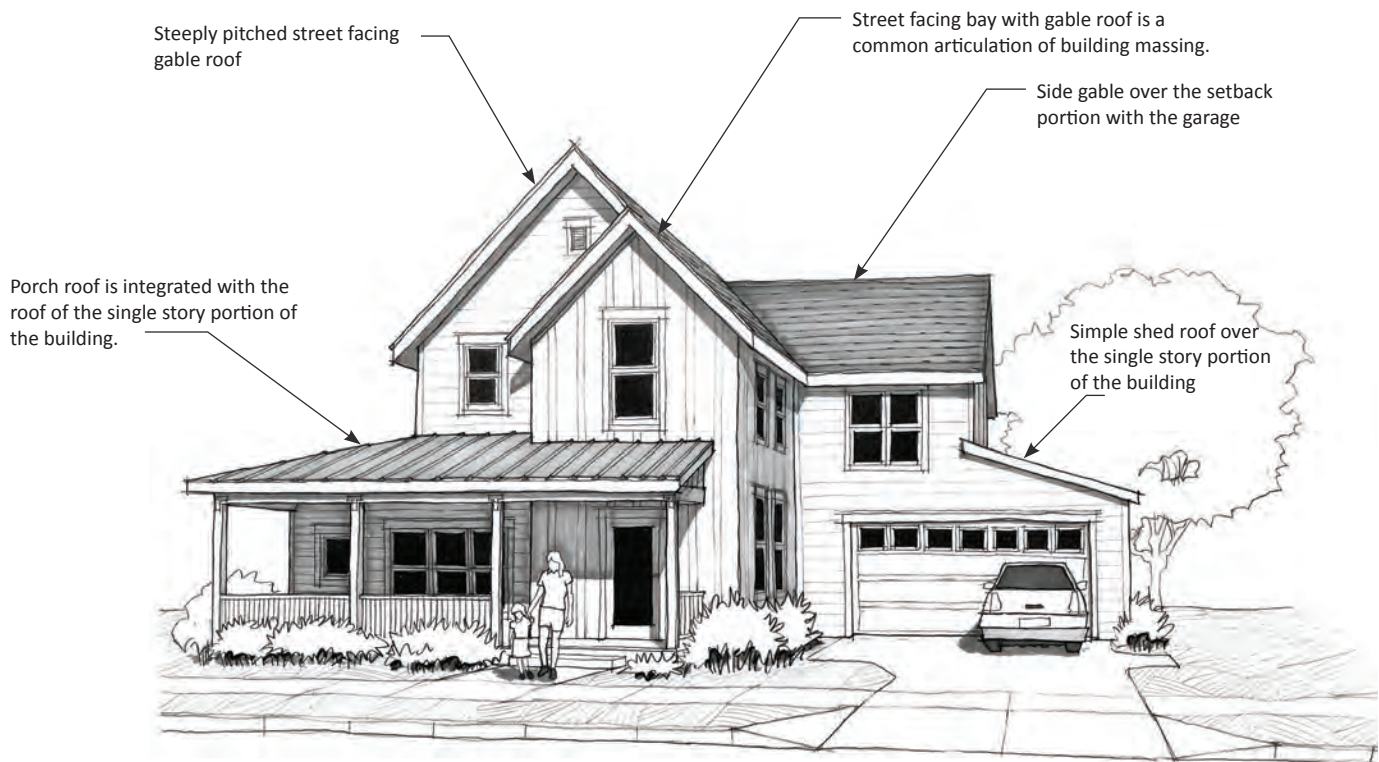


Figure 2.40: A prototypical building in Farmhouse style.

## CHARACTERISTICS AND VARIATIONS

Because of their simplicity and their ability to complement other styles, Folk Victorian and Farmhouse are popular among production builders. When articulated well, buildings in these two styles can create a diverse and appealing block face. The primary characteristics of these styles include simple building forms and steeply pitched gable roofs facing the street. The main gable usually combines with wings on one or two sides.

A generous one-story porch, integrated into the front façade, is also a standard feature. Since the steeply pitched gable roof provides a large interior volume, creating usable attic spaces through half-stories is also common. Gable, hip, shed, or special dormers typically are used to provide additional floor area, daylight, and architectural interest. Overall,

compositions usually feature a set of symmetrically placed and vertically proportioned double or single-hung windows. These features, along with the steep gables, emphasize the height of the style.

Simplified ornamentation usually occurs at porches, gable ends, and special features such as bays. Even though brick was used occasionally in Folk Victorian, these styles are best expressed with horizontal lap and vertical board and batten siding, without any use of masonry. The Farmhouse style is compatible with modern buildings that employ similar massing and articulation. Generously sized porches encourage compatibility along the block face. The occasional flat roof can blend into the composition well, as illustrated in Figure 2.60.



Figure 2.41: A single-story Folk-Victorian building with a modest presence. The double-hung windows emphasize vertical lines.



Figure 2.42: A one-and-a-half-story Folk-Victorian house with a full porch. Half-stories are common in this style.



Figure 2.43: A full two-story building with a forward-facing gable over a bay. The gable-end ornamentation is well-balanced.

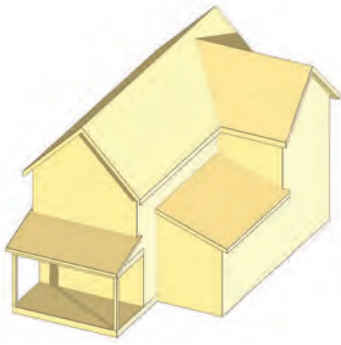


Figure 2.44: A modest building with a two-story section with steep-sloped gable roofs and a single-story section with a low-sloped shed roof.

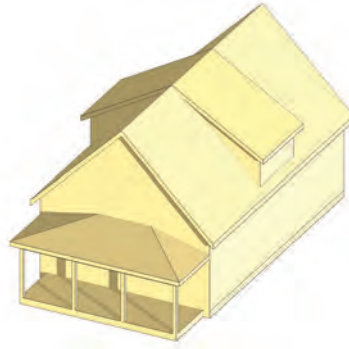


Figure 2.45: A one-and-a-half story building with a forward-facing gable roof and flat dormers facing the side yards.

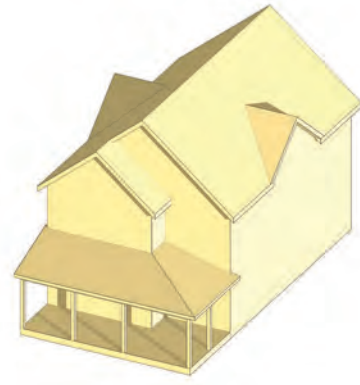


Figure 2.46: A two-story building with main gable roof and a forward-facing smaller gable.

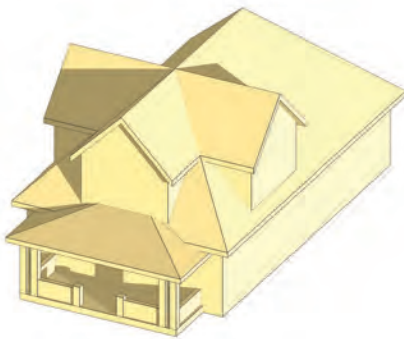


Figure 2.47: A building with a hip roof and a second floor with cross gables. This level of massing articulation is common.

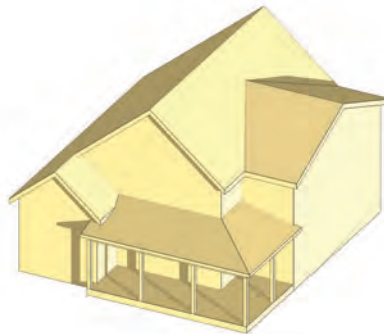


Figure 2.48: One-and-a-half story building with a large gable facing the street. The changing height along the periphery is typical.

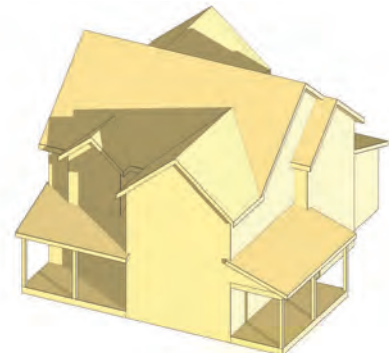


Figure 2.49: A duplex building with a large central gable roof and secondary gable emerging from the central gable.

## BUILDING MASSING

Simple building forms with steep gable roofs facing the street are the common unifying characteristics of Folk Victorian and Farmhouse styles. Ground floors are usually larger than the second and third floors. This difference allows for rich variations in massing articulation that can be unified by the geometry of the roofs. Articulation for Folk Victorian and Farmhouse-style buildings can also appear to “hide” or reduce the actual size of the buildings. It is also

common to observe a single-story section of a building integrated with the rest of the roof form (Figure 2.48). Half-stories with dormers are common (Figure 2.45). However, it is rare that buildings in these styles present their full width and height on the sidewalk. Significant parts of the building usually remain set back, with a small portion of the structure presented to the street. Generously sized porches become another element that reduces the perceived scale of the building.



Figure 2.50: A plain and modest building in the Farmhouse style, one of the more affordable-to-build architectural styles.



Figure 2.51: A three-unit townhouse building with articulation that reduces the intensity of the building mass, avoids repetition, and unifies the façade. Note the setbacks on the second floor and the simple rectangular footprint of the building.



Figure 2.52 (PP)

Intricately ornate gable pediments are common in Victorian and Folk Victorian buildings. Note the way the pediment provides a contrasting shadow, and the sunburst motif also common to Folk Victorian style.



Figure 2.53 (PP)

A two-layer pediment ornamentation with the simpler front pediment casting shadows on the finer-detailed pediment behind it. These architectural details are examples of polymeric products, which are more durable and easier to maintain compared to wood.



Figure 2.54 (PP)

Half-stories are common in Folk Victorian and Farmhouse styles. Note the way the belly-band trim, placed close to the plate height, is used to change the house color, reducing the perceived height of the building.

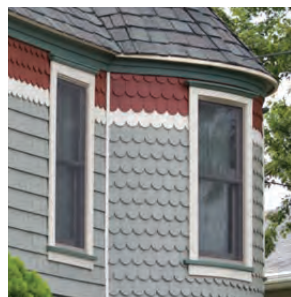


Figure 2.55 (PP)

Applying contrasting colors to bands of shingles is common in this style. It is now easier to achieve this look with colorfast polymeric products.



Figure 2.56 (PP)

A corner window composition maximizes daylight in the interior space, and tall double-hung windows emphasize vertical lines.



Figure 2.57 (PP)

Ornate porch columns, balustrades, spandrels, and brackets are common in Folk Victorian style. Ornamentation usually is intensified at the porch where the details are closer to eye level.



Figure 2.58: A one-and-a-half story building with a dormer that is integrated with the building's massing.



Figure 2.59: A single-story part of the building integrated to the two-story section via the roof form. This example is a more modern interpretation of the style.



Figure 2.60: Occasional flat roofs with modern-style window composition may add interest to the mix on a block face.

## ITALIANATE / FOURSQUARE / PRAIRIE

### BACKGROUND

As the section title suggests, the Italianate, Foursquare, and Prairie refers to a set of three styles that are compatible with each other. The Italianate is the oldest of the three, originating in England as British architects adopted the simple Italian farmhouse architecture to the climate and geography of Great Britain. The style traveled to North America in the mid-to-late 1800s and reverted to its plain and simple origins in terms of building massing, but also included some ornamentation that was more in line with the carpentry available in America.

The Foursquare style appeared in American cities during the 1890s. The buildings were efficient to build and moderately priced. The simple square plan created generous interior space with a minimal exterior wall surface. Initial interpretations of the boxy shape tended to be plain and unadorned. Builders soon embellished the Foursquare with stylistic variations ranging from Romanesque Revival to Gothic.

The Prairie style was originated as an architectural response to the flat, expansive, and serene characteristics of the prairie landscape. Developed in the Midwest by the American architect Frank Lloyd Wright in the early decades of the 20th century, the Prairie style was further expressed as a unique architectural style by many designers. In the early 1900s, at a time when various historic revivalist styles were popular, Wright's office was exploring a unique approach to the Midwestern prairie landscape, which today we call a "regionalist response." Synthesizing regionally appropriate characteristics with elements of the Art Deco movement and even Japanese vernacular (thanks to his visits to Japan), Wright created what is now known as the Prairie style. Its defining characteristics include plain detailing blended with a unique interpretation of Art Deco's abstract ornamentation. Many other American architects embraced the style and developed unique interpretations. Prairie style spread throughout the country due to the use of pattern books and various articles in popular magazines.



Figures 2.61, 2.62, 2.63, and 2.64: Four examples in Italianate, Foursquare, and Prairie styles. Upper left: A well-composed Italianate style building with the common characteristics of wide overhangs and many ornate braces (PP). Upper right: A Foursquare-style house with a simple rectangular plan. Lower left: An ornate Foursquare building with a dormer. Note the braces under the eaves create an affinity with the Italianate building. Lower right: A more modern interpretation of the Prairie style.



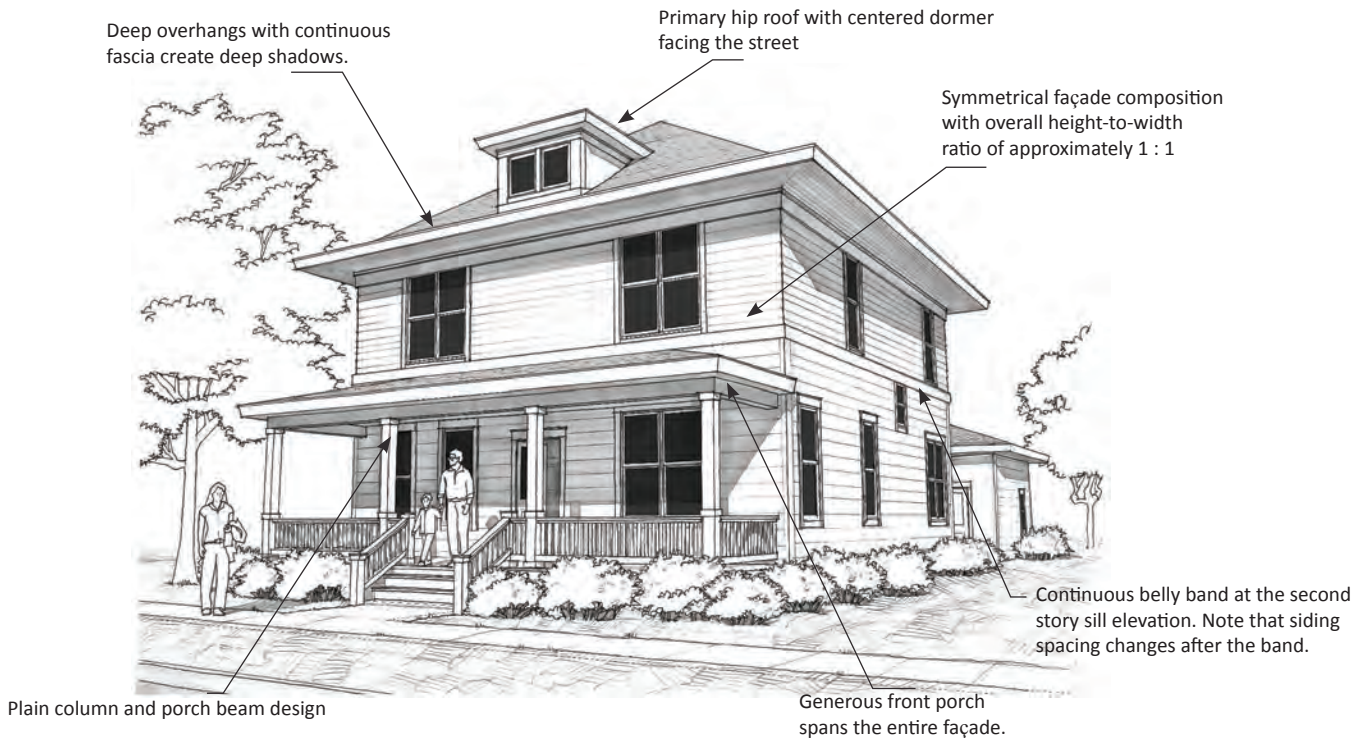


Figure 2.65: A prototypical building in Foursquare style.

## CHARACTERISTICS AND VARIATIONS

One of the most significant features shared by Italianate, Foursquare, and Prairie styles is a low-sloping hip roof (4/12 to 8/12) that ends in large overhangs. It helps these three distinct styles to appear highly compatible. Both Italianate and Foursquare typically provide a box-like appearance, typically with two-story or two-and-a-half story height. Although not common, the more affordable one-and-a-half story Foursquare urban house sometimes appears in traditional neighborhoods. The unique characteristics of the Prairie style – low flat building massing with an emphasis on horizontality – and the use of continuous bands on the façade are compatible with Italianate and Foursquare styles. It is common to see continuous bands, especially at the second-story window-sill elevation, in Foursquare-style buildings.

Generously sized porches are common for Italianate and Foursquare buildings, and they can be added to Prairie-style buildings in a traditional neighborhood. Porches usually span the entire façade in Italianate and Foursquare-style buildings, whereas smaller porches are as common as the full-façade porches in the Prairie style. Ornate brackets spaced three to four feet apart that support oversized eaves are common in Italianate style. Sometimes brackets also show up in Foursquare buildings, although not as frequently. The Prairie style, on the other hand, focuses Art Deco ornamentation on the windows, doors, and columns.

Successful applications of all three styles work well with the careful use of lap siding. Masonry is appropriate for all three styles, but it is not required. In Prairie-style buildings, masonry is a good choice to create a strong building base.



Figure 2.66: A modest Foursquare-style building with a plain and simple façade arrangement.



Figure 2.67: A Foursquare-style building with a setback that reminds us of some of the characteristics of Prairie style.



Figure 2.68: A duplex building with symmetrical façade arrangement. The continuous bands, window and door types, and column ornaments are typical of Prairie style.

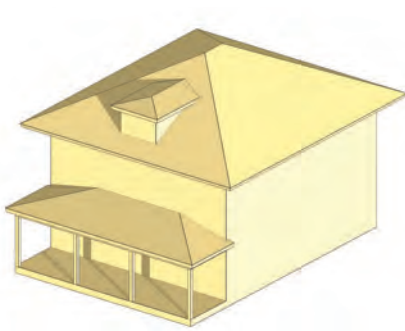


Figure 2.69: A two-story building with a simple rectangular plan, hip roof, and boxy presence is a prototypical Foursquare.

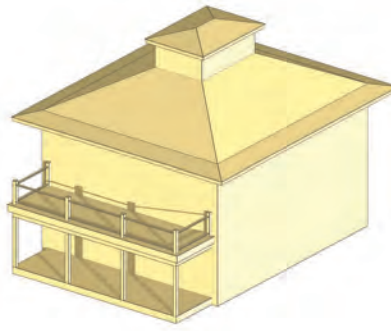


Figure 2.70: A simple boxy form, hip roof with skirts, and tower are typical characteristics of the Italianate.

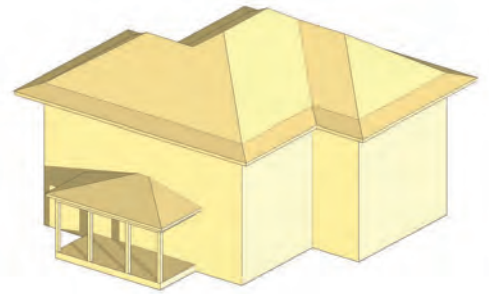


Figure 2.71: Another Italianate-style building with more articulated building massing.

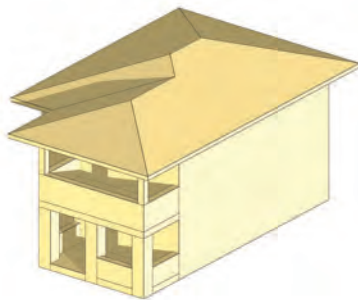


Figure 2.72: A modest two-story building in Prairie style with deep porches and covered balconies, which are common in this style.

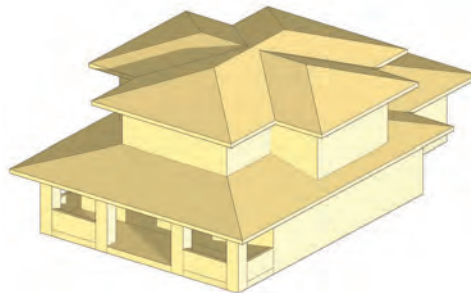


Figure 2.73: Shallow hip roofs, a massive porch roof integrated to the house form, and horizontal lines are common characteristics of the Prairie style.

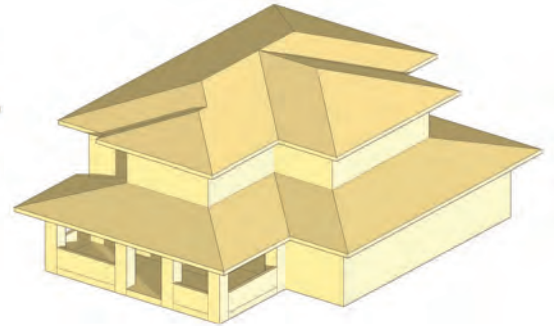


Figure 2.74: Another building in the Prairie style shows a wrapping porch roof that continues over the interior space to create an uninterrupted fascia.

## BUILDING MASSING

Boxy building massing with a simple hip roof is widespread both in Italianate and Foursquare styles. If it is repeated too many times on a block face, however, this building form may be overwhelming. Introducing more articulated Prairie-style buildings into the mix helps create a balanced composition. When using Prairie style on traditional neighborhood lots, use compact building forms with a narrow façade facing the

street. Broad overhangs, continuous fascias, and low hip roofs remain standard for all three styles. The skirted hip of the Italianate may add interest to the block face. In building compositions created by these three styles, use masonry carefully and mostly at the base and porch of the Prairie-style buildings. In residential applications, we recommend creating a sense of lightness by applying masonry in a limited way.

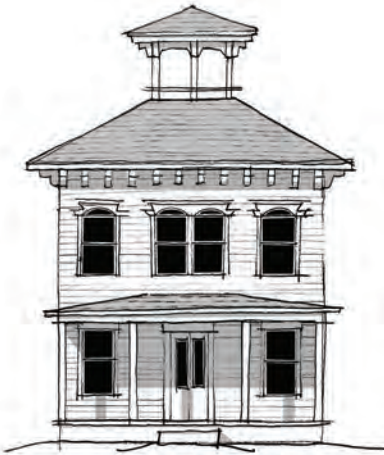


Figure 2.75: An ornate two-story building with a clerestory tower in the Italianate style.



Figure 2.76: A hip roof with skirts, ornate eave brackets, and simple boxy building massing are common features of Italianate style.



Figure 2.77: A three-story Italianate building shows that the cornice at the third-story windowsill elevation reduces the perceived height of the building.



Figure 2.78

Large overhangs with ornate and frequently spaced eave brackets are common in the Italianate style. The hip roof with the skirt accentuates the size of the overhang.



Figure 2.79

A corner window is placed right under the eave. The continuous bands at window sill and header elevations are common in Prairie style. To place the header right under the eave and still have a place for heel height, we recommend over-framing the eave.



Figure 2.80

A corner of a building in Foursquare style has matching eave and porch eave brackets. Double-hung windows with mullions on the upper sash are common.

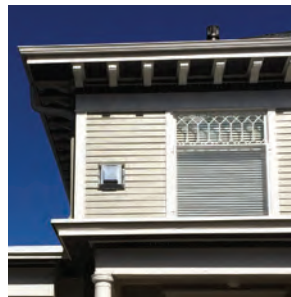


Figure 2.81

The eave brackets create an affinity between Foursquare and Italianate-style buildings. The ornate windows, on the other hand, create an affinity with the Prairie style.



Figure 2.82 (PP)

The porch of an ornate building in the Italianate style includes common details such as widened window trims and small crown molding on the headers. The ornate porch columns create a sense of lightness, recalling a British influence.



Figure 2.83 (PP)

A symmetrical façade for a building in the Foursquare style uses brick as the porch base to create an affinity with neighboring Prairie-style architecture.



Figure 2.84: When the second-story window sill is a continuous band, Foursquare and Prairie styles look alike.



Figure 2.85: A symmetrical façade arrangement in the Prairie style with window ornaments reserved for the central bay.



Figure 2.86: A two-story modest building in the Prairie style with a second-story balcony that emphasizes horizontal lines.

## EAST COAST TRADITIONAL

### BACKGROUND

Up to this point, we have reviewed common building styles that do not have clear regional identification. These consisted of singular styles with variations, as opposed to multiple styles grouped under one heading. In this section, our classification becomes region-based. East Coast Traditional is not a single style but rather a family of styles that evolved in eastern parts of the United States. As European populations started to settle in the New World, they brought with them their building traditions and established the first generation of what we call Colonial Architecture. Later, in the late 1700s and early 1800s, the Georgian, Federal, and Classical Revival styles evolved in response to the challenge of creating a stately architectural image for the new federal government buildings. Since then, these styles have appeared in traditional neighborhoods in more modest and stripped-down versions.

The third wave of architectural styles, called revivals, emerged during the 1800s. The most popular revival styles are Greek, Gothic, French, and Colonial. Among these, the Colonial and French Revivals have evolved to become strong urban styles employed widely in many traditional neighborhoods, along with the more modest versions of Georgian, Federal, and Neo-Classical styles. We call this mixture of styles East Coast Traditional. The reason for this classification is not only historical but also because of their similar urban design characteristics: The massing and roof forms within this family of styles are compatible with each other, and buildings have equal degrees of public presence along the sidewalk. Although these styles evolved along the East Coast, some also traveled to other parts of the United States.



Figures 2.87, 2.88, 2.89, and 2.90: Four examples of East Coast Traditional buildings. Upper left (PP) and upper right (PP): Typical block faces include boxy buildings with gable roofs that are parallel to the street and occasional street-facing gable ends that create interest along the sidewalk. Lower left (PP): Changing heights, materials, and colors create a diverse block face despite the boxy buildings with limited massing articulation. Lower right (PP): A foreground civic building with elements in Greek Revival style, usually used for the foreground buildings in traditional neighborhoods.



Figure 2.91: A prototypical building in a simplified Georgian style, which is common in the East Coast.

## CHARACTERISTICS AND VARIATIONS

Strong building presence along the sidewalk and boxy building forms with limited massing articulation are among the most common characteristics of East Coast Traditional styles. It is common to see uninterrupted building walls of two, two-and-a-half, or three-stories along the sidewalk, with the only articulation being the porches or some modestly sized dormers. The façades emphasize verticality. Roof pitches in these styles generally run steep to moderate, varying between 10/12 and 8/12, except for the low-pitched full pediments in classical proportions. Typical block face compositions feature gable roofs that run parallel to the street with the occasional forward-facing gable.

Each of these styles has unique embellishments and ornaments. In the most attractive examples, including some of the nation's best-known historic neighborhoods, buildings display restraint in ornamentation. Among the common embellishments are simple cornices, wide window and door header trims with small crown moldings, and functioning shutters. Porch columns and balustrades typically include some details that express the style, but these embellishments do not compete with the dominant “boxy” presence of the building along the sidewalk.



Figure 2.92: A simple single-story building with classical proportions and posture.



Figure 2.93: A modest two-story building with Neo-Classical and Georgian features and a typical street-facing full pediment.



Figure 2.94: A three-story building in the Georgian style with the third story built into the attic. Gable roofs with repeating small dormers are among the common features of this style.

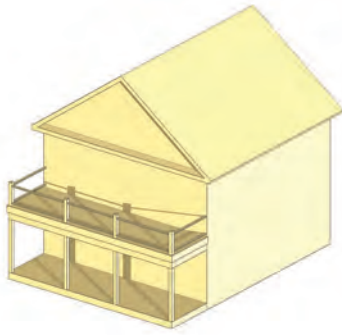


Figure 2.95: A two-story building with street-facing pediment. Second-story balconies are common in East Coast compositions.

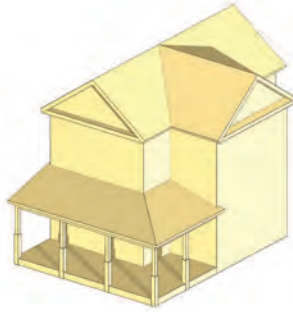


Figure 2.96: A cross-gable, two pediments, and a wrapping porch are elements of a building that can work well on a street corner.



Figure 2.97: A two-story building with a gable roof parallel to the street. A hip-roofed porch that spans the entire façade is common.

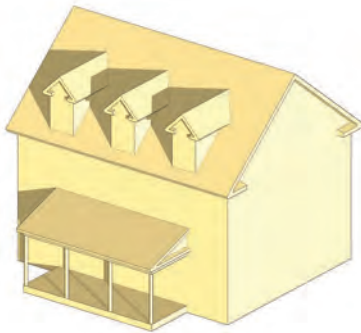


Figure 2.98: A three-story building with a gable roof parallel to the street and the third story located within the attic.

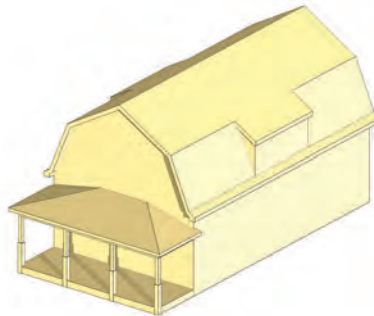


Figure 2.99: A two-story building with a gambrel roof, typical in Dutch Revival style.

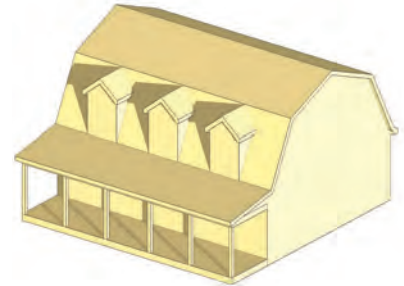


Figure 2.100: A two-story building with a gambrel roof that is parallel to the street. The second story is located within the attic.

## BUILDING MASSING

Strong building presence, boxy building forms, and limited articulation are among the most common characteristics. Large gable roofs running parallel to the street (Figures 2.97, 2.98, and 2.100) usually create the general urban character of the block face, combined with occasional smaller buildings with street-facing gables (Figures 2.95, 2.96, and 2.99) that

add visual variety along the sidewalk. Half-stories with repeating dormers are common. Roof pitches may vary, but the shallower slopes of less than 8/12 usually are built as full classical pediments (Figures 2.95 and 2.96). Porches with different details can mitigate the monotony of a continuous building wall along the sidewalk.



Figure 2.101: A simple two-story building with a full pediment facing the street and proportions that emphasize verticality.



Figure 2.102: A plain and simple two-story building underscores the functional qualities of the Colonial Revival style.



Figure 2.103: A modest two-story building with a gambrel roof facing the street, a typical feature of the Dutch Revival.



Figure 2.104 (PP)

Repeating small dormers placed on large gable roofs that are parallel to the street are common in Georgian style and East Coast block-face compositions. Note that the eaves and fascia of the dormer are plain and simple.



Figure 2.105 (PP)

Varying roof slopes, cornices, and tall headers with crown molding are common in East Coast styles such as Georgian, Neo-Classical, and Federal. Divided double-hung windows are an important part of the composition.



Figure 2.106 (PP)

Porches (and ground floors) located 3 to 4 feet above the sidewalk are common in East Coast compositions. Note the plain character of the porch columns and the porch beam.



Figure 2.107 (PP)

Boxy building massing, strong building presence, and plain and simple façade arrangements are among the primary characteristics of East Coast block-face compositions. Note that the header trim details vary from floor to floor.

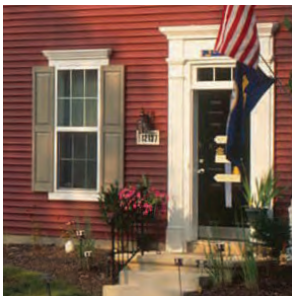


Figure 2.108 (PP)

Classical ornamentation is focused on the entry door, trims, and window header details. Operating shutters, column pilasters, and transom windows over the entry doors are common in East Coast compositions.



Figure 2.109 (PP)

Double-story corner-column pilasters, wide cornice trims, and headers abutting the cornice trims are common characteristics of Greek Revival and Federal styles. Foreground buildings in these styles are commonly embellished.



Figure 2.110: A four-unit townhouse building displays large gable roofs that are parallel to the street and occasional forward-facing classical pediments, common in East Coast block-face compositions.

## SOUTHERN TRADITIONAL

### BACKGROUND

Like the East Coast Traditional, Southern Traditional does not refer to a single style, but to a group of styles that are compatible with each other. The urbanization of the American South took a similar course to the North: The first-generation of European settlers established several colonial styles. However, from the mid-1800s to the Civil War, following the Napoleonic wars in Europe, the South witnessed a second wave of European immigrants, which resulted in particularly striking architectural cityscapes of unique character in cities like Savannah and New Orleans.

When the East Coast Traditional styles traveled south, they adapted to the geography and the climate of the region. Among these, French Revival became one of the most common styles; another was Folk Victorian. The mixture of these styles evolved to create a distinct Southern feel as they responded to the challenges of hot-humid climates. Georgian, Neo-Classical, and Greek Revival also became common

in the South, but they became more popular in plantation architecture and less so in urban neighborhoods compared to the other styles. In response to the climate, homes were built with large verandas, high crawlspaces, breezeways, and tight courtyards, creating new building archetypes and expressions in urban neighborhoods. These building prototypes included the Shotgun House, Creole Cottage, Creole Townhouse, and Charleston Side Yard Building.

It is important for builders to understand that a neighborhood plan using building prototypes that respond to the hot-humid climate of the South will look significantly different from the building styles popularized in the North that need to accommodate a very different climate. (For an in-depth study of Southern building prototypes, see Korkut Onaran's 2019 book, *Crafting Form-Based Codes: Resilient Design, Policy, and Regulation*.)



Figures 2.111, 2.112, 2.113, 2.114, and 2.115: Four examples of Southern architectural character. Covered balconies encroaching over the sidewalk (upper left), single-story plain vertical shop windows and doors (upper middle), buildings with deep overhangs and large brackets located right at the sidewalk (upper right), generously-sized ornate verandas facing side yards (lower left), and raised porticoes (lower right) are among the character-defining elements of Southern architecture.



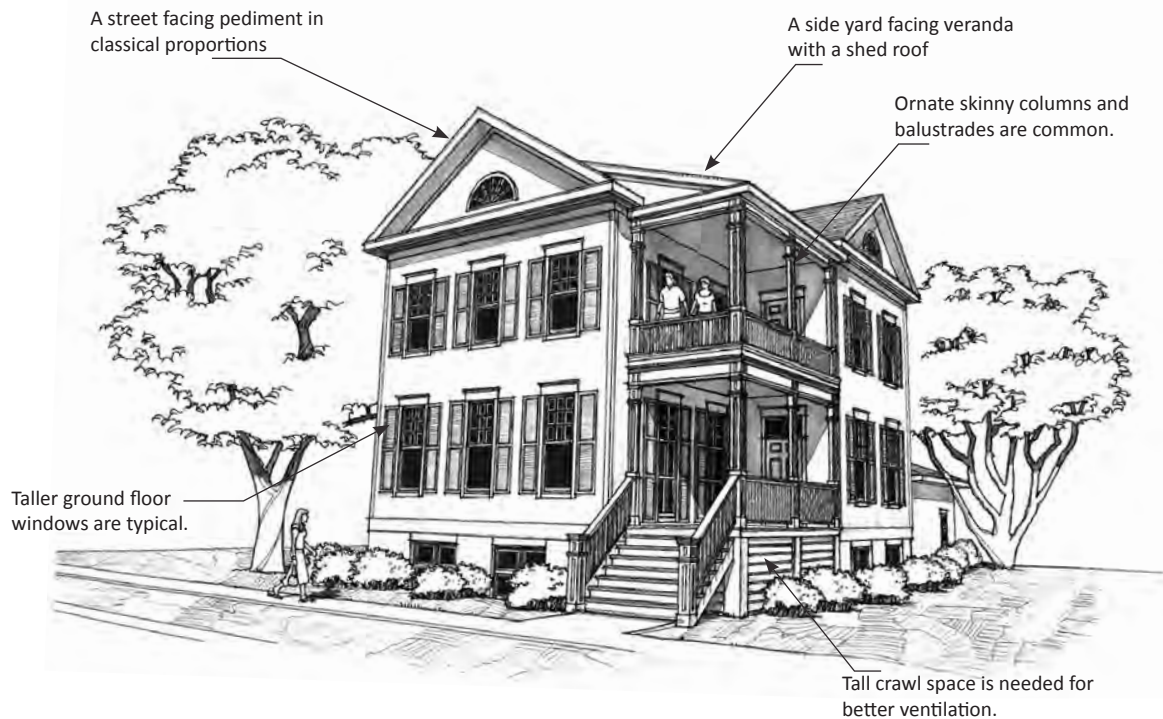


Figure 2.116: A prototypical building in Southern French Revival style.

## CHARACTERISTICS AND VARIATIONS

The introduction of large verandas, double galleries, and balconies (in front of the second, and sometimes even third stories) took away the “boxy” character of the buildings found in the northern parts of the East Coast. These elevated outdoor spaces created a composition where a significant portion of the building “skin” or exterior remains shaded, an aspect that is desirable in a hot-humid climate. High ceilings and tall crawlspaces also respond to the climate by promoting ventilation under the building and through living spaces. This arrangement results in building façades that emphasize height.

Another design element that emphasizes verticality is porch columns spaced at narrower-than-usual intervals. Unlike Craftsman porches where a single beam may span 24 feet, it is common to see 5- to-7-foot bays in Southern-style porches

and verandas. Southern styles also suggest an appearance of lightness. Porch columns usually are slender, and detailing is lace-like. There is no heavy masonry to obstruct the ventilation, nor a heavy base for the building to sit on, but rather stilts and trellises that allow air to pass through. Roofs are mostly high-pitched. However, lower-pitched classical pediments are common (Figures 2.116 and 2.118).

Shade-providing colonnades and cantilevered balconies over sidewalks along the street right-of-way offer another climate-appropriate adaptation, especially along urban streets. Large overhangs with braces sometimes create a structure resembling a porch without columns. Of all the styles discussed so far, Southern Traditional architecture utilizes the highest level of ornamentation, but this ornamentation is expressed in details and usually does not compete with the primary building forms.



Figure 2.117: A one-and-a-half story Creole Cottage with a gable roof and a dormer facing the street.



Figure 2.118: A two-story Neo-Classical building with street-facing pediment in classical proportions.



Figure 2.119: A two-story building in Southern French Colonial style. The deep overhangs with large brackets are common in the South.

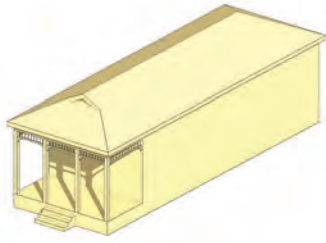


Figure 2.120: Single-story Southern Shotgun house with a simple porch with spandrels under the porch beam.

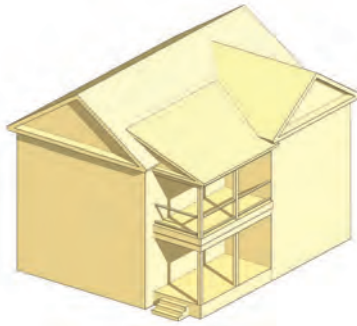


Figure 2.121: A two-story side porch house with two pediments. This form would be proper for a street corner.

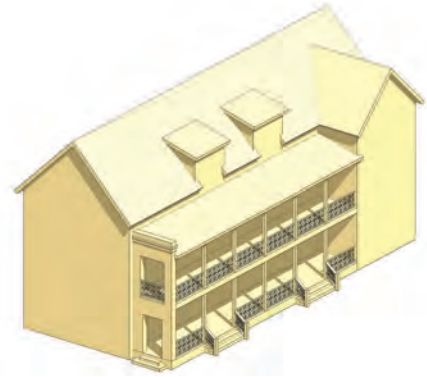


Figure 2.122: A Charleston Side Yard building with a two-story veranda. Note that there are three accesses to the veranda – one from the street and two from the side yard.

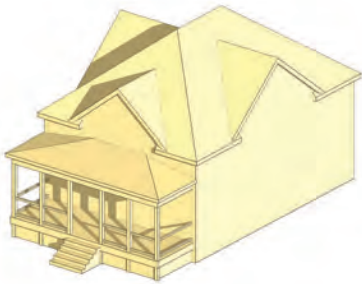


Figure 2.123: A one-and-a-half-story Creole Cottage with two gable dormers and a porch that spans the front façade.

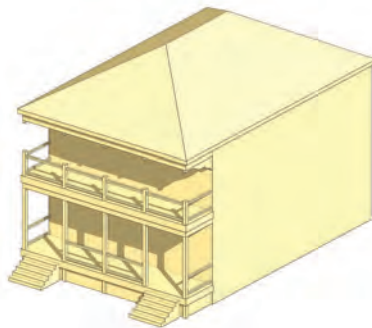


Figure 2.124: A two-story Creole duplex with a second-story balcony that is covered by a deep overhang and large brackets.

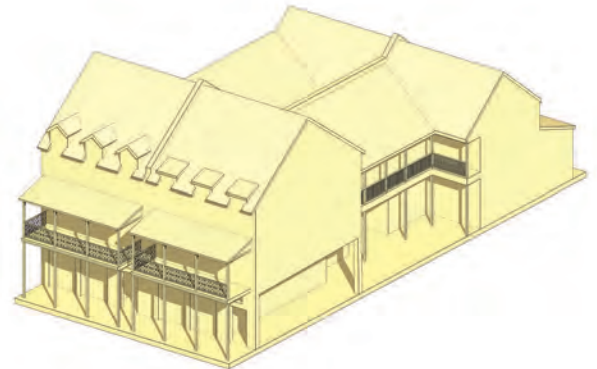


Figure 2.125: Two Creole Townhouses with small courtyards connected to the street via breezeways. Note that the colonnades and balconies encroach over the sidewalk.

## BUILDING MASSING

Slender building forms, such as the Shotgun-style house shown in Figure 2.120, are typical for small buildings. Porches that span the whole front façade (Figure 2.123), balconies over the porches (Figure 2.124) and two-story porches (Figure 2.121) are also typical. In urban areas, larger buildings employ breezeways, verandas, and courtyards. The Charleston Side Yard building type that accommodates generously sized verandas (Figure 2.122)

and the Creole Townhouse that uses small courtyards connected to the street via narrow breezeways (Figure 2.125) are among building prototypes that evolved in response to the hot-humid climate of the South. The closely spaced porch and veranda columns and their slender sizes, together with the high ceilings, create a sense of lightness in building facades and again emphasize height.



Figure 2.126: A narrow single-story Shotgun building with a steep gable roof perpendicular to the street.



Figure 2.127: A one-and-a-half-story Creole Cottage with two small dormers. Note that the porch columns are closely spaced.



Figure 2.128: A two-story side-porch building with a low-sloped gable and a classical pediment facing the street.

## SOUTHERN TRADITIONAL



Figure 2.129

Large overhangs supported by large ornate brackets are common in Southern architecture. Large porches, verandas, and balconies create a sense of lightness along the sidewalk.



Figure 2.130

A corner of a classical pediment is shown in the foreground and operable shutters and a veranda at the back. High ceilings and transom windows over doors are common in the South.



Figure 2.131

Raised stoops, ornate balustrades, operable shutters, and transom windows over the doors are among the typical characteristics of Southern architecture.



Figure 2.132

Skinny veranda and porch columns with accented column capitals and bases, ornate balustrades, and eave brackets create a sense of delicate presence, which is common in Southern architecture.



Figure 2.133

A raised portico located 6 or 7 feet above the sidewalk. Note the tall windows indicating high ceilings. Operable shutters create a simple rhythm on the façade.



Figure 2.134

A single-story Southern Shotgun building with large overhangs supported by ornate brackets. This composition is region-specific.



Figure 2.135: A four-unit townhouse building. The three-window composition repeats on all façades, and diversity is achieved via balconies and colonnades in different configurations. Tall ground and second floors with uppermost floors built into the attic are common in Southern compositions.

## SOUTHWESTERN TRADITIONAL

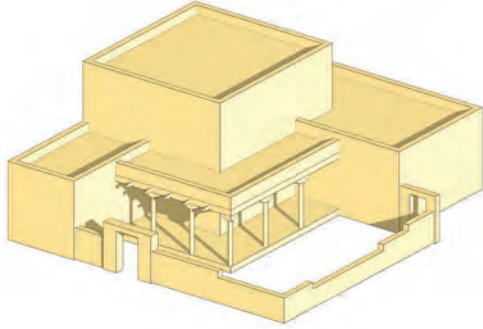


Figure 2.136: A two-story building in Pueblo Revival style. The building form is shaped to create a well-proportioned courtyard.

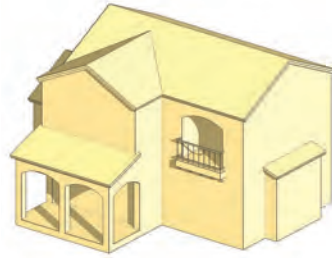


Figure 2.137: A modest building in Mission style. Simple articulations such as forward-facing low gables are common in Mission style.

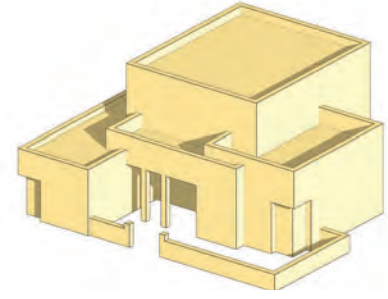


Figure 2.138: A more modern interpretation of the Pueblo Revival style. Large footprints and limited second floors are common.

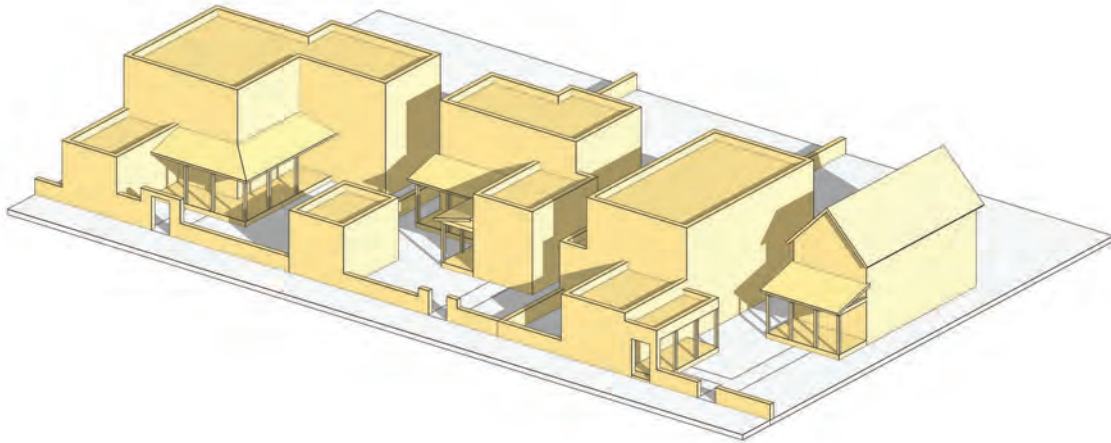


Figure 2.139: A group of four buildings creating a block face. Note that the parts of buildings in various setbacks and heights create a building presence along the sidewalk that is very different than the kind created by a continuous building wall common in other regions. The courtyards are an essential element in Southwestern architecture.

Pueblo Revival, Territorial, and Mission styles are the most common architectural styles found in many historic centers and traditional neighborhoods of the Southwest. The origins of Pueblo architecture and adobe building techniques go back centuries to ancient villages built by the native peoples of the Southwest. The building types that evolved are well-designed for the climate. The region-specific Pueblo Revival style includes primary characteristics such as well-scaled courtyards, flat roofs, “wedding cake” stepping of building forms, and thick walls manufactured with materials that have high thermal mass to hold daytime warmth through the cold desert nights. Territorial style arrived as a later interpretation of Pueblo architecture. The term refers to the era between 1848 and 1912, after New Mexico became a territory. The

Territorial style incorporates limited masonry to create more durable structures. Simple, rectilinear, three-dimensional forms dominate. The origins of the Mission style date to early Spanish Colonial architecture. Settlers of the Spanish colonies brought their building traditions from Southern Spain, which has a dryer version of the warm Mediterranean climate, like parts of California and the Southwest. Common elements include low-pitched hip roofs with tiles, limited openings, stucco details, and eave brackets. The subtleties in composition with Southwestern traditions would take another book to discuss completely. Southwestern building archetypes are discussed in greater detail in Wilson and Polyzoides’s 2011 book, *The Plazas of New Mexico*. See also Onaran (2019).



Figure 2.140: A two-story building in Pueblo Revival style.



Figure 2.141: A two-story building in Mission style.



Figure 2.142: A two-story building in Territorial style.



Figure 2.143: A modern interpretation of Southwestern style.

# Chapter 3

## ARCHITECTURAL DESIGN

### IN THIS CHAPTER

The architectural design of a traditional neighborhood starts with the composition of the block face. Each architectural element needs to be considered not just for how it works for a single building but also how it is repeated by a group of buildings to create the street. This chapter introduces simple recommendations for building massing and articulation of a block face to: (1) provide the right amount of articulation, (2) create a strong hierarchy of forms, and (3) employ simple and familiar forms.

We also introduce the concept of half-stories and provide design guidelines for building elements such as dormers, eaves and rakes, porches, trims, and embellishments. The emphasis is on respecting building traditions of the past while designing in a way that considers the realities of today's construction industry.

Lastly, we focus on exterior building materials, providing recommendations about the selection and application of common materials such as stone, brick, stucco, and siding, and providing tips for using them in traditional neighborhoods. The chapter concludes with a brief discussion about green building, energy efficiency, and efficiency in resource consumption.

## MASSING AND ARTICULATION

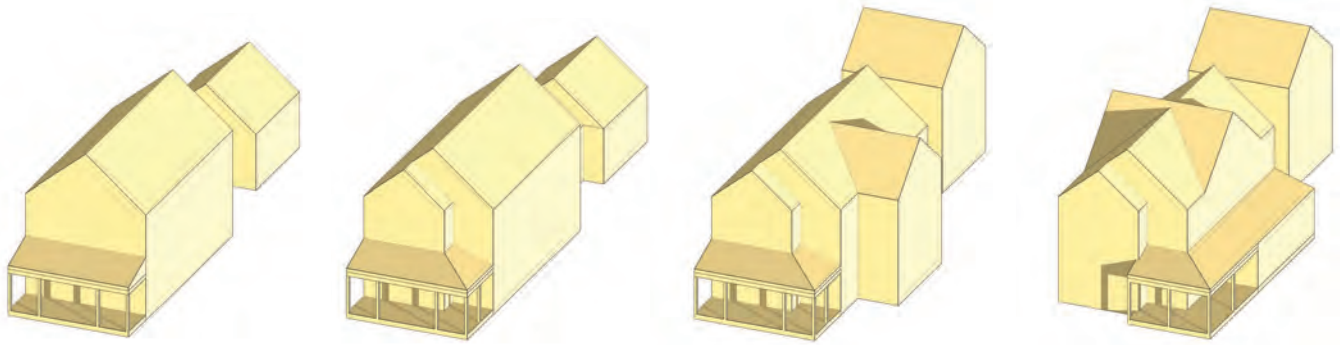


Figure 3.1: Four building examples of massing and articulation: The size and amount of articulation increase in building examples flowing left to right. When the building is small it does not need a lot of articulation. But as it gets bigger, it needs building elements that are similar in size and scale to relate to the smaller building, especially if they are placed on the same street.

Articulation of massing is an important tool to control the perceived intensity of the building. Even if two buildings accommodate the same amount of floor area, they may look very different depending on how they are articulated. Thoughtful design of indentations and projections of the building walls and breaks in the roof lines created by dormers and gables can make buildings look shorter or narrower. Porches and other single-story elements can help the building relate to the pedestrian scale. Especially when buildings of different sizes are mixed on a block face, elements in similar proportion and scale can help these buildings relate to each other. For instance, porches and forward-facing gables (Figure 3.1) can help larger buildings look smaller and create a balanced composition on a block face.

Three design principles can guide a balanced composition on a traditional neighborhood street: (1) the right amount of articulation, (2) applied in the hierarchy of primary, secondary, and tertiary forms, (3) that are all simple and familiar forms.

### THE AMOUNT OF ARTICULATION

A building without any articulation may look bulky and overwhelming. On the other hand, if the amount of articulation is excessive, the articulation will not help to reduce the perceived intensity of the building and might create an overly-busy block face. Therefore, determining the amount of articulation is an important design decision. Articulation refers to (a) horizontal or vertical offsets of at least 2 feet in the building wall and a minimum of 4 feet in

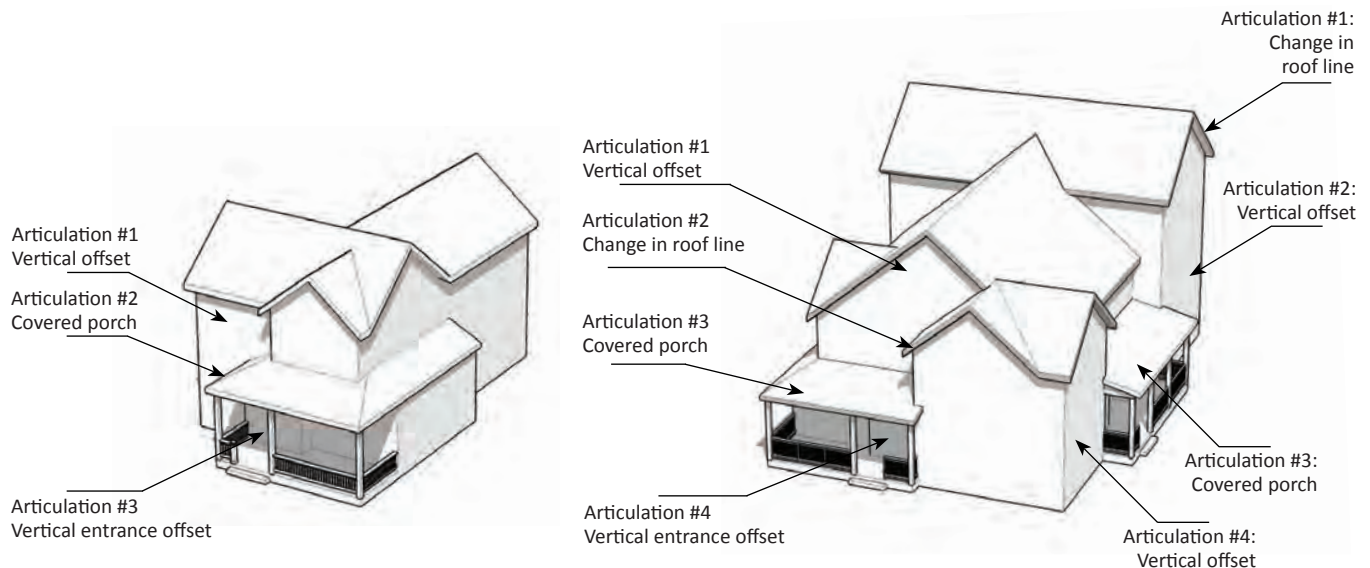


Figure 3.2: Two examples of well-articulated buildings. Left, a small building with three articulations on the front façade. On the right, a larger building appropriate for a street corner has four articulations on the front façade and another four articulations on the side that faces a side street. Note these articulations are not two-dimensional elements attached to the façade, but integral features of the building form. This level of massing articulation is common, especially in the Midwest and West.



Figures 3.3 and 3.4: A comparison of two buildings that emphasize the importance of creating a legible hierarchy of primary, secondary, and tertiary forms in designing a well-articulated façade. The example on the left (PP) has a simple forward-facing gable (the primary form) with a porch (the secondary form) added and a balcony subtracted on the second floor. The example on the right (PP), on the other hand, employs five forward-facing gables that are competing, making the whole composition too crowded.

width, (b) a covered porch or balcony (c) a dormer, (d) a well-defined entry element including stoops or awnings. This definition enables us to count the number of articulations at any façade that is visible to the public. The appropriate number of articulations depends on the architectural style. We generally recommend three articulations for front facades that are 24 feet wide or narrower, and an additional articulation for every 12 or 14 feet of width.

### HIERARCHY OF FORMS

For articulation to create a balanced façade composition, it is important to differentiate primary forms from secondary and tertiary forms. The building shown in Figure 3.3 has a simple primary form: a crisscrossed forward-facing gable. Secondary elements are added by a porch, some ground floor area, and a balcony subtracted on the second floor. The building shown in Figure 3.4, on the other hand, has elements that compete with each other. If we imagine this building placed on a street next to buildings with a similar level of articulation, the building looks crowded and demands a simpler form.

### SIMPLE AND FAMILIAR FORMS

Buildings with simple and familiar forms are neighbor-friendly; they can easily be placed among other buildings and create harmonious compositions. Buildings with unusual or complex forms, on the other hand, want to stand alone and be in the foreground. It is also important to differentiate the simplicity of the building form from ornamentation. The building shown in Figure 3.5 has some ornate cornices and window and door trims, yet the building form is very simple, and thus it has a balanced façade. The buildings in Figures 3.6 and 3.7 have simple forms and some tasteful ornaments.

Buildings in all three of these examples show how simple elements such as dormers, balconies, stairs, and porches create just the right amount of interest along the sidewalk. Without these elements, the block face would look monotonous. These elements are limited in number, they do not compete with the major architectural forms, and they are simple enough that they do not overwhelm the façades. The overall effect is dignified and quiet.



Figures 3.5 (PP), 3.6, and 3.7 (PP): Three examples for thoughtful articulation. The number of articulations is just right in all three examples (less would create monotony, more would be too crowded). The building forms are simple and familiar, and articulations do not compete. These buildings are neighbor-friendly; that is, they can be placed among similar buildings to create harmonious compositions.

## HALF-STORIES



Figure 3.8: Four examples of buildings with half-stories. The first building has a gable that is perpendicular to the street with a shed dormer that provides light and air to the half-story concealed in the primary roof form. The second building from the left has a forward-facing gable with a half-story in the attic truss. The third building uses three small gabled dormers and provides a half-story on the third floor. The fourth building uses a low third-story plate and conceals habitable space beneath the hipped roof.

Half-stories provide an effective way to reduce the perceived height and overall intensity of a building. They are a common feature of a well-balanced and pedestrian-scaled block face and can be found in many successful traditional neighborhoods. Many recently updated zoning codes include half-stories to encourage compatible design. For half-story regulations, some codes restrict floor-plate heights while others restrict the floor area.

The most significant aspect of a half story is that it is built into the attic and thus has a lower ceiling at the building edges and increasing ceiling heights towards the center of the roof. A half story often will have less floor area than the floor below. The ceiling plane of half-stories typically takes the shape of the roof form, which offers creative opportunities for configuring the interior space.

## DORMERS



Figure 3.9: Three of the most common dormer types are illustrated on the building above: from left to right, a shed roof dormer, hipped roof dormer, and a forward-facing gable dormer. Note that the dormers in all examples qualify as articulations that increase interest and make the buildings more friendly.

Dormers are often used to increase the usable floor area of a half story. Dormer roof forms are subordinate to the primary roof and typically their width and spacing is compact. Dormer dimensions historically were based on the standard spacing of rafters and the simple spans that could be embedded within them using standard dimensional lumber. Regarding width, it is hard to call it a dormer if it is wider than 12 feet; and if it is narrower than 4 feet wide, it becomes nonfunctional. We recommend a separation between the corner of a building and the dormer of at least 3 feet (Figure 3.10). A dormer roof may be gable, hip, or shed (Figure 3.9), but they are never flat or reverse-sloped in traditional architecture. These simple dimensional rules are important in designing a well-proportioned dormer.

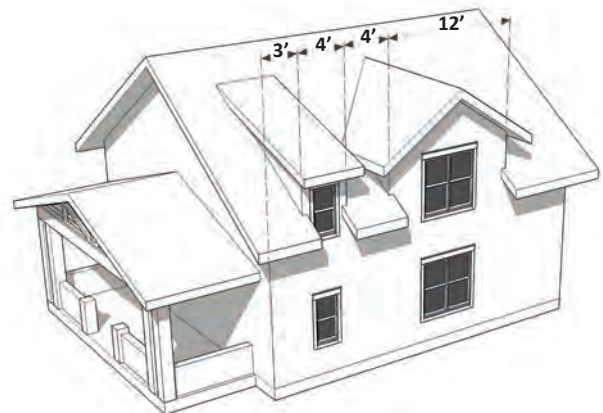


Figure 3.10: Proper dormer proportions and dimensions. Two dormer styles are shown here for representation purposes. It is standard to employ one dormer type per building.



## EAVES AND RAKES



Figure 3.11: Variations that contribute to defining a building's architectural style include (left to right) enclosed soffits with plumb-cut eaves, minimal overhangs with square-cut eaves, exposed rafters, and soffit materials.

The terminating edges of roofs play an important role in defining the character of a building. Many edge details originate from climatic responses to water and sun. Roof orientation and eave length can be designed to sensitively control passive heating and lighting throughout the year. Longer eaves, for example, can reduce solar gain next to windows. In Figure 3.11, the two examples on the right demonstrate how the upper sashes of the windows are shaded by the eave. The third example (second from left) with a window shows how a shallow eave and rake does not shade the interior space.

Elongated eaves also can convey water further from a building's face. In climates with heavy volumes of rain, eaves often are long with shallower pitches than the primary roof to allow for water velocity to slow as it flows from the steeper pitch and to help runoff clear the foundation below.

Eaves often play a role in roof ventilation. Coordinating the area of permeability at an eave with passive venting near the roof peak can create positive air flow that draws air and moisture out of an attic. This helps to regulate the temperature of the building and prevents mold from developing.

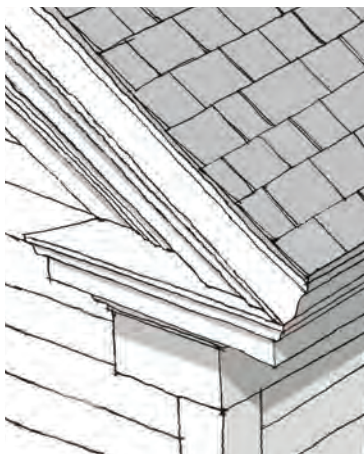


Figure 3.12. A roof return at a building corner creates an elegant detail.

This traditional approach to environmental considerations clearly can improve building performance and help define architectural style.



Figure 3.13 (PP): A dormer demonstrates traditional detailing: Eaves project in the direction of the roof pitch, and the rake projects forward. An ornated molding is incorporated into the trim work at the rake and echoes the subtle curves of the half-round gutters.



Figure 3.14 (PP): A continuous vent is tastefully incorporated into the design of the soffit for a hipped roof. The vent provides ventilation to the attic and has been designed to accent the molding and trim work.

## PORCH CHARACTERISTICS



Figure 3.15: The front porch offers shelter before entering the home and a place for casual social interaction. A wrap-around porch addresses both streets and allows for residents and neighbors walking by to greet each other.

### GENERAL DESIGN DECISIONS

Community design must include the thoughtful layering of spaces from the street, to tree lawn, to sidewalk, to front yard, to front porch, and to the living spaces within a home (figure 1.2). The need for privacy increases across this spectrum, while the speed at which people move decreases. Often, the most rewarding social experiences occur at the interface between the semi-public and semi-private realm of the front porch. A generous front porch provides a transition from the outdoors to the indoors and offers shelter from the elements before entering a home.

Some cultures remove their shoes at the porch before entering, and other cultures use the porch as a place to sleep on hot summer nights. In every case, a porch is an extension of the house that can be considered an outdoor room. Traditional neighborhoods rely on porches to provide an opportunity to interact with neighbors. Porches should be large enough to accommodate both seating and circulation. The experience at the sidewalk and front porch should allow for adequate visibility so that someone sitting on the porch can see and be seen by someone on the sidewalk.



Figure 3.16: Front porches in various styles. In certain styles, such as Craftsman (left), the porch form is an integral part of the building's roof form or can be added. Column, beam, and balustrade details typically are essential elements that express the architectural style. From *The Design Book: The Northern Neighborhoods Stapleton*.



Figures 3.17, 3.18, and 3.19 (PP): Appropriately sized porches can function as an extension of interior space, as an outdoor room that provides a transition between the private spaces of the house and the neighborhood.



Figure 3.20: Generously sized porches facing a pocket park. Porches can create a relatable human scale for the block face and a comfortable walking environment on the sidewalk.

## COLUMNS AND BEAMS

Columns and beams come in many shapes and sizes. They provide the structural framework for most wood-frame construction. While columns and beams are often concealed behind the building's interior and exterior skins, they are the primary character-defining elements of porches.

A traditional porch demonstrates that form follows function: The roof is supported by a system of joists or trusses which are supported by beams through the columns to the ground. The size, quantity and material of columns and beams should be scaled to the size of the porch, overall massing of the building, and its architectural style. The attachment techniques of these elements can be concealed or exposed. Materials may change to add ornament or to convey grandeur.

## BALUSTRADES AND RAILINGS

Balustrades and railings are sometimes required to prevent people from falling when porches are elevated above the adjacent grade. They can vary from open metal rails and common vertical pickets to masonry half walls, with varying degrees of enclosure and privacy, depending on the level of desired transparency. Thoughtful railing designs can also incorporate comfortable surfaces for sitting.

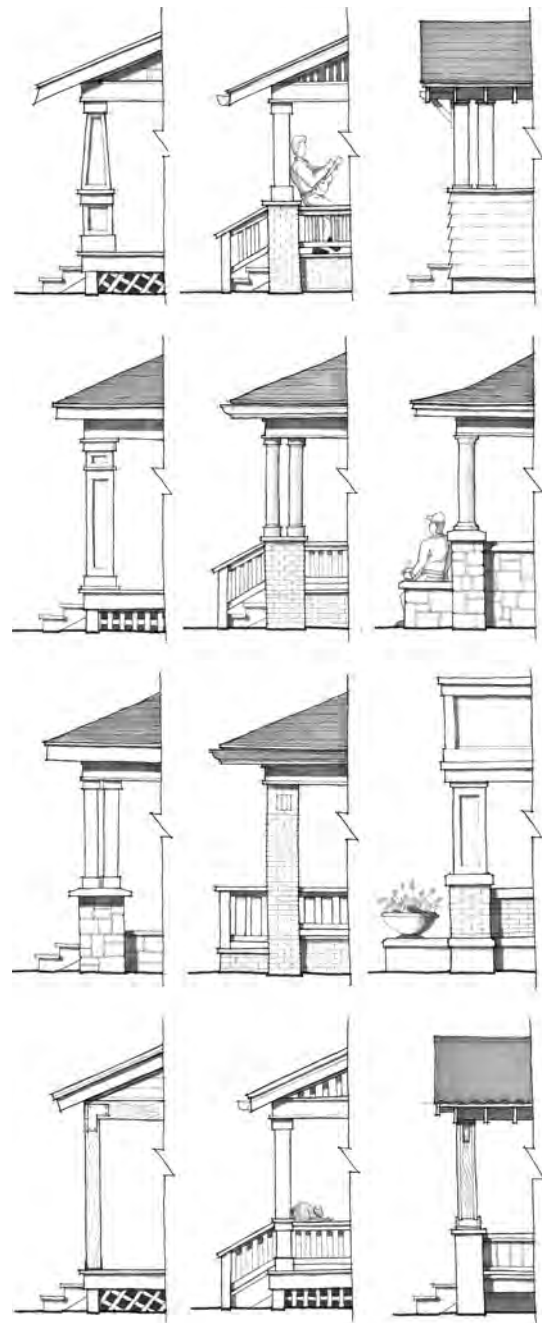


Figure 2.21: Examples of porches in various characters. Porch details can compliment and define a building's architectural style. From *The Design Book: The Northern Neighborhoods*, Stapleton.



Figures 3.22, 3.23 (PP), and 3.24 (PP): Three examples of amply-sized porches that express the character of their architectural styles. The primary elements to consider are column sizes, bases, and capitals.

## CEILINGS

Porch ceilings can be constructed in many ways and should be coordinated with the architectural style. Exposing the structural system of a roof adds visual interest and makes porches feel taller and lighter. When the rafter system is exposed, rafter tails are exposed also, and all surfaces typically are stained or painted. Careful consideration should be given to the fasteners, which will be visible from below. Roof nails, for example, should be sized or aligned with trusses, so they are not exposed from the underside. The overall feel of these exposed roof structures should convey simplicity and a rustic character.



Figure 3.25: Exposed rafters and simple column and beam details create a pleasant porch with interesting textures.

Soffit boards can be used to enclose the bottom surface of the roof system to create a horizontal plane. While not necessary, it is common to enclose the eave, especially when using roof trusses, since truss tails do not afford the look of rafters. Adequate and balanced ventilation should be provided when enclosing roofs to avoid overheating the roof sheathing, which prematurely deteriorates roofing materials. Tongue and groove wood was traditionally used for such ceilings, while other panel materials are often used today.



Figure 3.26 (PP): A traditional porch provides space large enough for seating and a gracious entry area. Many traditional homes have painted porch ceilings, using light blue to match the sky.

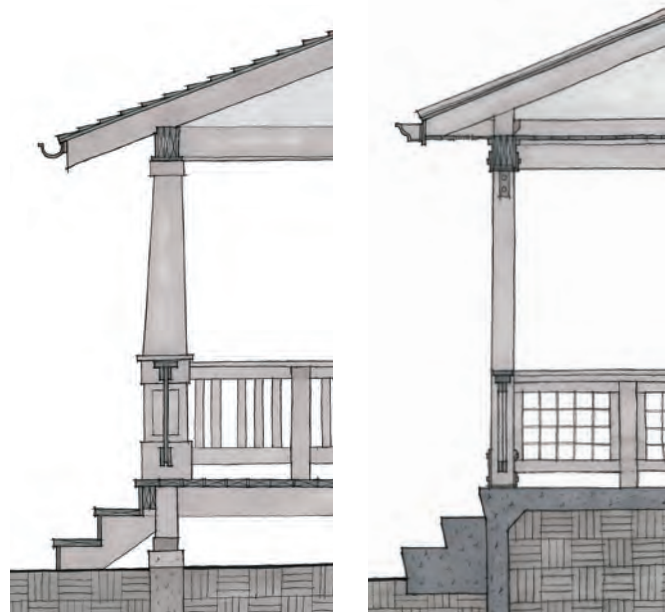


Figure 3.27: On the left, a tapered column with an enlarged base that sits on a wood-framed porch. Exposed rafters and beams are accented by a railing system of vertical pickets with varied spacing. Right, a simple square-column detail with exposed hardware, an enclosed ceiling, and a concrete floor with a railing system of a framed mesh-wire grid.

## FLOORS AND BASE

Porch floors are built to be either permeable or solid. A permeable floor, such as wood framed with open decking, allows for water to drip through. Solid surface floors, such as concrete slabs, are pitched to shed water. While drip-through decking often creates a more pleasing environment, both applications are common today. When using concrete, take care to conceal areas of exposed concrete surfaces on the vertical face of the foundation wall.

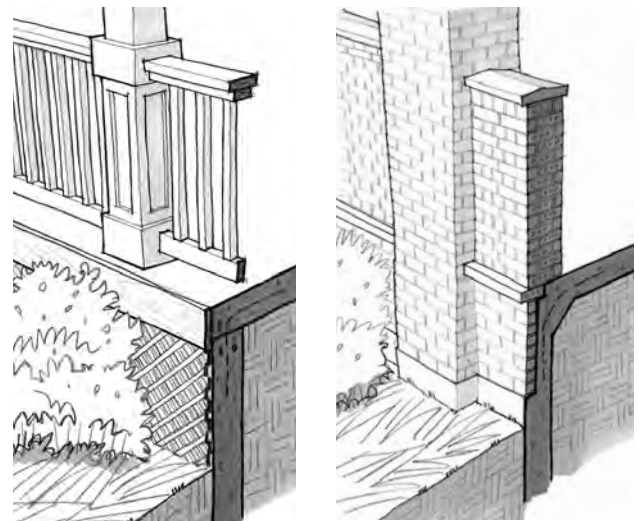


Figure 3.28: Two examples of ways to screen exposed concrete porch foundation walls when the porch is built as slab-on-grade: Provide a trellis (left) or continue the brick as veneer (right). From *The Design Book: The Northern Neighborhoods*, Stapleton.

## TRIMS AND EMBELLISHMENTS



Figure 3.29 (PP): Trim and embellishments give this simple rectangular building interest and a sense of nobility.

Trim is traditionally used at the interface of building planes and materials. It allows for the rougher installation of larger areas of materials and can conceal the joints at intersections. Trim elements and embellishments contribute to a building's expression of style and quality, and through creative detailing they can add playful character to a building. Such details and the composition of smaller parts can reduce the perception of the building's overall scale. They are often accented by different paint colors and provide shadow relief to the building's facade. Structural elements such as brackets come in many shapes to support horizontal surfaces; they should align with structural elements below to properly communicate their intended purpose. Window and door trim design should complement the architectural style of a building. Along with the shapes of windows and doors, they can express the horizontal and vertical aspects of a building's form. These details have brought specific styles to the simple and common building shapes found across the nation. They are often regional and specific to the taste, wealth of a community, and craftsmanship levels of their time. Careful coordination of these elements can elevate a building's style from the rustic to ornate.



Figure 3.30: Brackets can be both structural and ornamental. Scrollwork adds interest to a building's character.

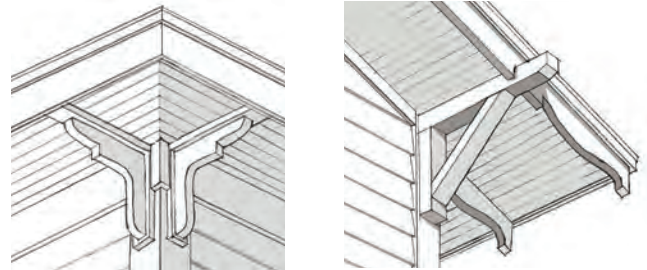


Figure 3.31: Brackets beneath large roof overhangs support eaves and transfer the load of the roof back to the building face.



Figure 3.32: The trim accents the vertical nature of the windows and doors. Head and sill trims are tall in nature and side trims are narrow.

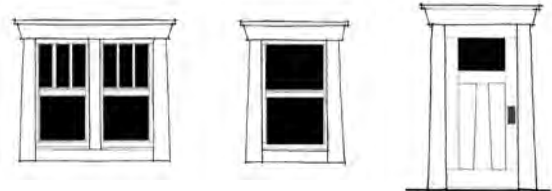


Figure 3.33: Tapered trim can give a sense of stability and call attention to the top and bottom of windows and doors.

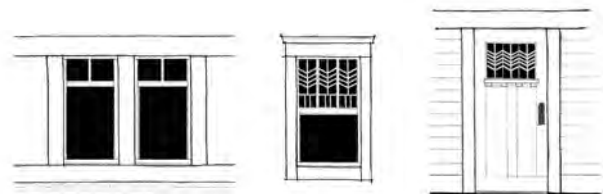
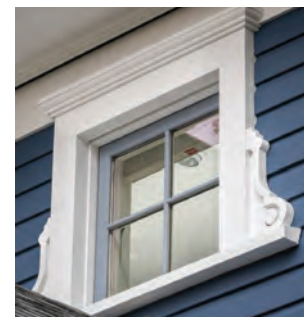


Figure 3.34: Continuous horizontal trim can accent the width of the overall massing. Window embellishments highlight key exterior features or the rooms behind them.



Figures 3.35 (PP), 3.36 (PP), 3.37 (PP), and 3.38 (PP): Various trims and embellishments can include ornate gable-end pediments, porch-column brackets, ornate columns, balustrades, and window trims (all examples are polymeric products).

# MATERIALS

## MATERIAL SELECTION

Materials play a key role in defining architectural styles and creating visually appealing building facades and neighborhoods. The material palette for each building and neighborhood should be selected to complement the region's architectural styles, natural setting, and climate. Durability and compatibility with current construction methods are essential criteria in material decisions (see Chapter 4 for details).

Harmony generally is achieved by limiting the number of materials. Some materials simulate historic or natural products, and when they are used in nonhistorical ways they can create dissonance in the look of a building. Careful consideration should be taken in designing building faces with multiple materials, to avoid a "showroom of materials" appearance. Traditional applications of materials should be followed unless the design intent is to break with those traditions.

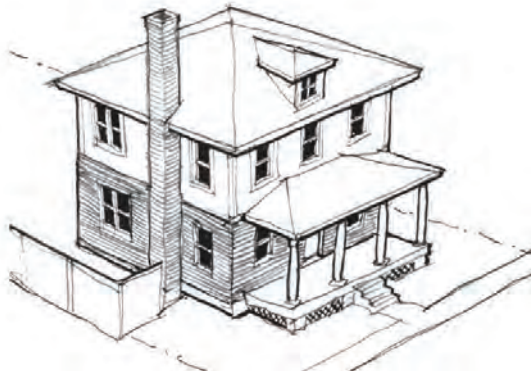


Figure 3.39: Employing masonry only up to the ground-floor plate is a very common practice for buildings in traditional neighborhoods. From *The Design Book: The Northern Neighborhoods*, Stapleton.

## MASONRY AND ITS APPLICATION

Masonry is a heavy material that takes many forms. Local municipalities often require masonry in architectural designs to try to elevate a building's perceived quality. While well-intentioned, this type of regulation often results in disturbing applications where the masonry ends before it reaches the ground, ends at exterior building corners, or only partially wraps around building corners. In the worst cases, poorly applied masonry is located above materials that appear lighter and could not carry the load of heavy materials (even if the masonry material is a lighter weight synthetic material).

To maintain a sense of stability, structural support, and definition of base, masonry applications should follow traditional principles to create a balanced and harmonious design that meets the expectations of the natural world and therefore resonates visually.



Figure 3.40: Material and color change should occur at interior (concave) corners as opposed to exterior (convex) corners of a building. From *The Design Book: The Northern Neighborhoods*, Stapleton.

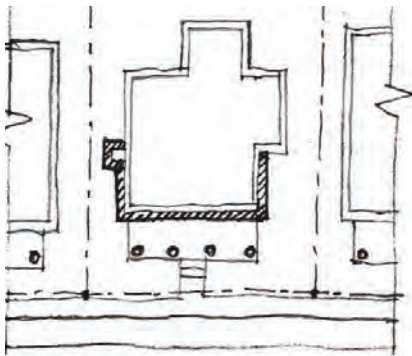


Figure 3.41 : A building plan showing masonry veneer. Even when limited to the front of the building, the veneer should turn the corner and end in a place that provides an inside corner. From *The Design Book: The Northern Neighborhoods*, Stapleton.

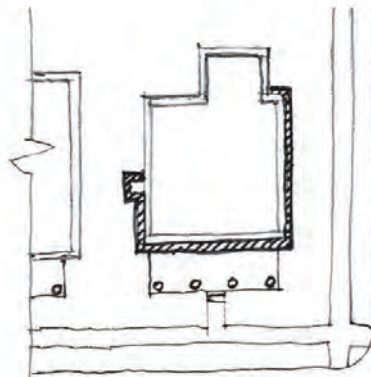


Figure 3.42: A building plan showing masonry veneer on a street corner. The veneer continues at the side street elevation to provide a more complete composition for the street corner. From *The Design Book: The Northern Neighborhoods*, Stapleton.

## STONE

Stone has been used throughout the ages as a construction material. Boulders and rubble have been refined as technology has changed. Although anything is now available anywhere, use local stone types and shapes; nonnative stone creates dissonance with the surrounding context of the natural environment.

## BRICK

Brick construction has been scaled to the human hand: A mason holds a brick in one hand while applying mortar with the other and then places one brick after another to build a wall. Building with bricks can create monolithic surfaces while still giving a human scale to construction.

Bricks can vary greatly in size, color, and installation patterns. While traditional load-bearing brick walls are less common now, they explain patterns still used in construction today. Bricks turned on end in the middle of walls were used to tie the exterior wythe, or wall, to the interior wythe. This created rigidity and locked the assemblies together. The frequency of these turned bricks was driven by the need for stable structure but also to provide aesthetic interest. Brick is more ubiquitous than stone and offers many options in design. Regional variations in brick colors and patterns should be considered in building and neighborhood design.

## STUCCO

Stucco can be found in regions across the United States. Its traditional application helped to conceal less visually appealing materials that formed the structure of buildings.



Figure 3.43: A corner of a building in the Prairie style, for which using masonry at the porch and ground floor is a common approach.

Stucco is a malleable material during its application that then hardens to create a durable exterior finish. It also provides opportunities for sculptural forms that are challenging to achieve with other masonry products.

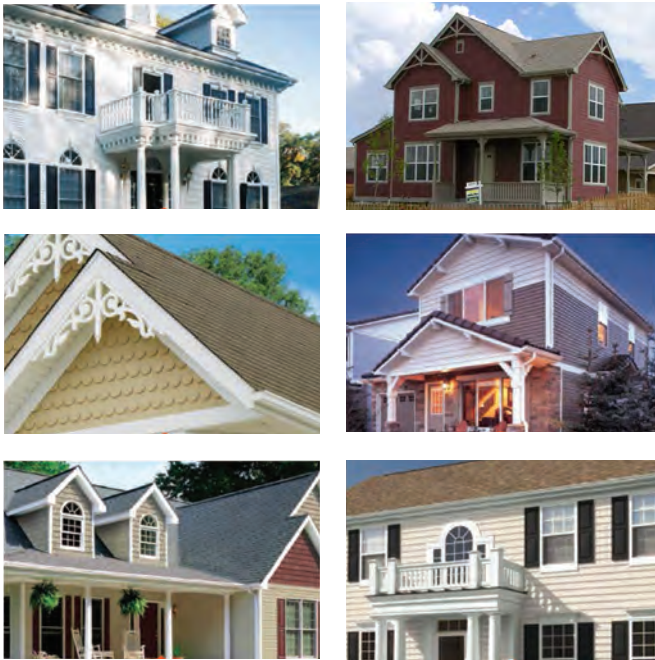
The Southwest traditionally has relied on stucco for a building material as it performs best in hot dry climates. Stucco has created an architectural identity specific to this region that is explained in greater detail in Chapter 2.



Figure 3.44, 3.45, and 3.46 (PP): Brick veneer, stucco, and siding (shown in vinyl) are common exterior materials in traditional neighborhoods.

## SIDING

Siding is used prolifically as an exterior building material in the United States today. Most production builders use it because of its ease of installation, low cost and ability to perform in many climates. Siding is the primary building material for traditional neighborhoods, not only because it is the most common across many architectural styles, but also because there are now more environment friendly siding options available in the market (particularly the polymeric products that we will review in Chapter 4). Unlike stone and brick, it requires less skill to install. Like stucco, it offers plasticity in design and application as it can be easily



Figures 3.47 (PP), 3.48, 3.49 (PP), 3.50 (PP), 3.51 (PP), and 3.52 (PP): Examples for diverse siding and shingle applications on buildings with various architectural styles.

modified on site. The images below showcase sidings versatile nature and demonstrates its application on various building types and architectural styles.

## SIDING AND ITS APPLICATION

While most masonry is horizontal in character and stucco is omnidirectional, siding comes in many shapes and can be installed in almost all orientations. The selection of the type of siding can accent the desired character of a home. While not necessary, more than one siding type can be included in a single building. This offers opportunity to highlight key features and to add interest through texture.



Figure 3.53 (PP): A historic landmark building with horizontal siding in the East Side Historic District, Longmont, Colorado. Note the dormer-face shakes are a polymeric product.



Figure 3.54: The creative design of shingle patterns highlights a gable end.



Figure 3.55: Board and batten on a tower element emphasizes verticality.



Figure 3.56: Narrow horizontal siding transitions to a wider horizontal siding below, a texture change that emphasizes the building's base and its horizontal appearance.



## SIDING AT CORNERS

The way that siding comes together at corners also contributes to key character defining features. The images below demonstrate two examples of how horizontality can be expressed.

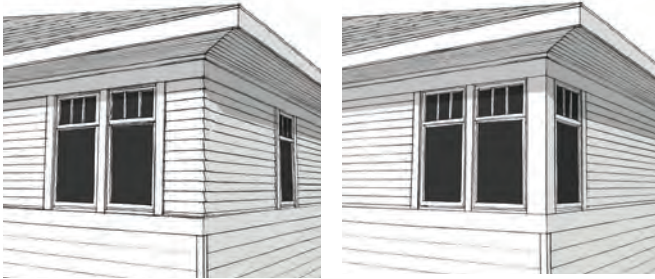


Figure 3.57: Two examples of siding applications at a building corner with a horizontal band at window-sill elevation to mark changes in the spacing of the siding: narrower at the top, wider with a corner board at the bottom. Left, mitered corners emphasize the horizontal lines; right, windows close to the corner express the lightness and expansiveness of the building's edge.



Figure 3.58 (PP): Various horizontal siding examples include (left to right) traditional clapboard, Dutch lap, and beaded siding, popular in the South.

## COMMON TYPES OF HORIZONTAL SIDING

Horizontal siding profiles have varied historic and geographic roots. Figure 3.57 shows two examples of how horizontality can be expressed through siding. Clapboard siding originally was made by Native Americans with the timber from the land on which they built their dwellings. This tradition continued for centuries until modern industry, economics, and mass home building techniques took over. Clapboard (called weather-board abroad) was also used in certain parts of Europe where wood-framed construction was more dominant.

Dutch lap siding was popularized in the Mid-Atlantic region of the United States during early settler days, although its origin dates to northern Europe in areas where wood construction was most popular. Dutch lap siding provides strong shadow lines and is a popular alternative to the standard clapboard façade.

Beaded siding was developed to provide even more dramatic shadow lines by adding a rounded bead at the bottom of a single clapboard course. This attractive variation on traditional clapboard siding originated in the South and was commonly used on buildings that pre-date 1800.

## SIDING TRANSITIONING BETWEEN MATERIALS

Because of its array of shapes and sizes, siding works well in composition with many other materials.

Figure 3.59: Siding next to brick is delineated by a jog (setback) in the building face where these materials change. The siding width is equal to two brick coursings, a subtle relationship that aligns shadow lines and creates a harmonious transition. This approach integrates different siding types when building an addition to a historic structure.



Figure 3.60 (PP): Various vertical siding examples include (left to right) vertical panels, board and batten, and beaded soffit.

## COMMON TYPES OF VERTICAL SIDING

Vertical siding has been used on many different architectural styles dating back to the Middle Ages. Vertical siding has gained in popularity throughout the United States and Canada because of its traditional use in the Midwest, Mountain States, and the West Coast. Architectural styles using vertical siding include Folk Victorian, Farmhouse, and Craftsman.



Figure 3.61 (PP): Two common shingle examples: Shakes (left) and scallops (right).

## COMMON TYPES OF SHINGLES

Shingle siding gained popularity in the late 19th century, mainly in the Northeastern United States. This type of profile is now widely used in areas where certain architectural styles, such as Folk Victorian and Craftsman, are dominant. Shingle siding is used in whole-house applications or as an accent, most commonly on gables and dormers. These profiles add distinction to a design and enhances the architecture.

## GREEN BUILDING

The design principles that shaped many traditional neighborhoods minimized the environmental impact of the built environment and made those communities more resilient. The Green Building Council's LEED-ND (Leadership in Energy and Environmental Design for Neighborhood Development) criteria are, by and large, based on the principles outlined in Chapter 1 of this book. These principles include compactness, connectivity, and walkability – access to services such as grocery stores, restaurants, bars, and coffee shops, as well as to amenities such as community parks and green spaces. The LEED-ND program looks beyond the performance of individual buildings to the sustainability of a well-connected community. In fact, community density and connectivity offer the highest point scores available in the LEED-ND criteria.

At the building scale, green building has focused on energy efficiency and sustainable materials. These remain essential, although the architecture of buildings also has a substantial impact on sustainability. In *The Original Green: Unlocking the Mystery of True Sustainability*, Stephen A. Mouzon points the way toward an integrated approach to what he calls the “sustainability our ancestors knew by heart.” In this book, Mouzon shows how the design of windows can provide ventilation through convection, shading to moderate the summer sun, and window orientation to maximize or minimize sunlight and wind. These were among the basic architectural strategies that provided comfort long before the thermostat ruled our indoor environment.

### ENERGY EFFICIENCY

Traditional buildings were designed for resiliency and energy efficiency and did not depend on high energy consumption to heat or cool living spaces. Today, however, we expect a higher level of comfort in indoor temperatures, especially in regions with extreme cold and hot temperatures. Improving a building's energy efficiency now often involves installing an airtight and highly insulated exterior shell, coupled with high-efficiency heating and air-conditioning equipment. To achieve a sealed envelope, builders use methods such as taped insulated sheathing on exterior walls, rim joist cavities filled with insulating foam, and plugging air leaks in wall and ceiling penetrations, electrical outlets, and stud joints with caulk and expanding foam.

Chapter 4 discusses some siding products that provide integrated insulating foams to cladding in one step to add R-value, which represents the capacity of an insulating material to resist heat flow (higher R-value scores indicate greater insulating power) (Figure 4.8 on page 54) These integrated siding products reduce the need for one trade from the construction process, and if they come with a durable finish and permanent color, this eliminates the painting step and ongoing maintenance.

### RESOURCE EFFICIENCY

The best way to measure the resource efficiency and sustainability of building materials is a life cycle analysis, which evaluates a product's environmental impact from manufacture through installation, operation, maintenance, renovation, and demolition. To accurately compare building material performances on a life-cycle basis, a builder can use analytical software such as BEES (Building for Environmental and Economic Sustainability). This software, developed by the National Institute of Standards and Technology (NIST), measures the environmental impact of building products using the lifecycle assessment approach specified by the International Organization for Standardization's (ISO) standard 14040. The program combines environmental impact with economic performance to develop an overall operation measure using the ASTM standard for Multiattribute Decision Analysis (E1765), in other words, a cradle to grave analysis of a building material's environmental cost.

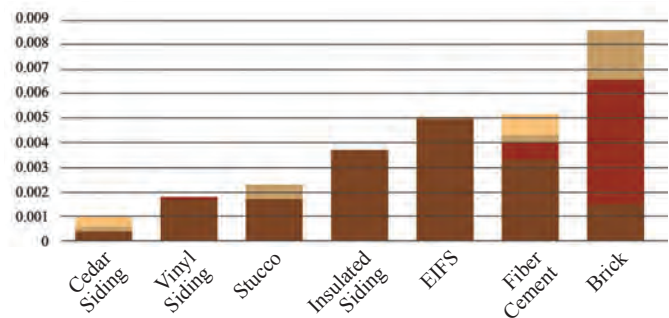


Figure 3.62: BEES Environmental performance comparison chart. The colors represent, from dark to light and bottom to top: raw materials, manufacturing, transportation, and use considerations. Source: BEES online database, National Institute of Standards and Technology.

The BEES life cycle comparison chart presented in Figure 3.62 compares seven common building materials' environmental performance ratings. The lower the score, the better the rating. As shown in the table, the best performing materials are cedar and vinyl. Cedar is best, but expensive and not permitted in certain areas due to its combustible nature. Brick and mortar are responsible for almost 300 times the environmental impact of vinyl siding, and fiber cement is responsible for more than 200 times the impact of vinyl.

Compared to other cladding, vinyl siding uses modest amounts of energy for manufacturing. Vinyl siding requires less water and energy to manufacture than fiber cement. Analysis with BEES software confirms that vinyl siding manufacturing consumes less than half of the energy and fuel necessary to manufacture brick and mortar. Vinyl siding's lighter weight requires less fuel consumption for transportation. Given these measures of sustainability and other qualities discussed in Chapter 4, we recommend that developers and builders consider polymeric siding for cladding in traditional neighborhoods.

# Chapter

# 4

## NEW HORIZONS IN BUILDING MATERIALS

### IN THIS CHAPTER

This chapter aims to integrate the traditions of authentic traditional neighborhood architecture with innovative materials that reproduce historic construction patterns with added durability and resource efficiency, thus helping traditional neighborhood developers combine modern technology with urban environments that attract the eye, please the soul, and stand the test of time.

The chapter begins with a description of the characteristics of polymeric materials, which are organic compounds made of natural substances. We then provide product selection and use tips and technical information about the environmental performance, code concerns, and classes of polymeric materials.

## CONTINUITY AND EVOLUTION

### TRADITIONAL ARCHITECTURE AND MATERIALS

Although we associate classical architecture with the famous stone monuments of Greece and Rome, the vernacular architecture, expressed in homes and other buildings, has been lost over time. Stone provided durability for those structures that mattered, such as religious and civic buildings, while homes and other buildings generally were made of wood and clay. In the United States, we are living a similar transition, with our wood building tradition adapting to more durable, though often artificial, materials that can avoid decay, do not require constant maintenance, and can reduce the ecological impact on forests.

A challenge for today's designers and builders is finding durable modern materials that authentically reproduce the intent and detail of the classical materials used in traditional architecture. Enter industrial polymers and composites that can replicate virtually any architectural shape, from siding profiles to classical trim. These products also provide labor-saving benefits for the builder, as these products combine the tasks of multiple trades into a single application. Polymeric cladding, for example, incorporates a rainscreen, water barrier, finished surface, and insulation in a single-step product. Over time, these synthetic materials reduce maintenance requirements for building owners and avoid the negative air-quality and health effects associated with caulking and paint.

### TODAY'S POLYMER CLADDINGS

Polymeric claddings include a variety of materials, from traditional vinyl to solid polyash claddings that cut like wood. The category consists of recent introductions, including injection molded polypropylene shakes and insulated siding that provides significant R-value. Vinyl siding includes hundreds of fade-resistant colors and shapes that reproduce almost all the traditional siding profiles, including beaded and vertical, with complementary trims contained in a millwork catalog of patterns ranging from window sills and pediments to the moldings of classical architecture. Polymeric claddings come with the material manufacturer's warranties, the longest



Figure 4.1 (PP): A corner of an ornate Italianate building with trims and embellishments in polymeric materials.

available in exterior cladding. Many polymeric claddings provide lifetime, transferable warranties, including guaranteed color fastness. Innovative manufacturing techniques have opened the door to vinyl siding that resists ultraviolet radiation, prevents fading and remains impact resistant, thus avoiding fractures.

### PRODUCT SELECTION

As with most products, architectural polymers range in quality. Premium siding products range in thickness from .048 inches to 0.050 inches, with builder's grade siding ranging from 0.040 inches to 0.045 inches. The thinner materials (0.040 inches and thinner) are also the least costly and lowest quality. They may telegraph defects in the substructure, such as bowed framing and swollen sheathing. The thicker and more rigid materials provide a smooth finish. Due to high flexibility and durability, they also increase life expectancy. Thicker grades of vinyl siding do not crack in frigid weather or when struck or bumped. To assure a product is manufactured to the highest industry standards, choose the material with ASTM labeling for the siding, color, and insulation (if applicable). ASTM D3679-17 for vinyl siding, ASTM D7856-17 for color retention, ASTM D7254-17 for polypropylene siding, or ASTM D7793-17 for insulated siding.



Figure 4.2 (PP): A tapered post constructed with cellular PVC.



Figure 4.3 (PP): A mitered corner using polypropylene shake.



Figure 4.4 (PP): A mitered corner using Polyash siding.

## POLYMERIC MATERIAL CATEGORIES

Polymeric claddings and trims encompass a wide range of material types. Major categories include the following.

### CELLULAR PVC

A great variety of cellular-PVC trim, including stable profiles designed to reproduce the look and feel of traditional millwork, integrate with vinyl and other polymeric sidings without requiring special flashing or even caulk. Cellular-PVC siding profiles also provide a hard wood-like appearance. Cellular PVC trim is manufactured by many of the large vinyl siding companies, as well as third-party manufacturers, providing a varied selection of products to combine with various siding types. You will also find cellular-PVC siding that offer butt-joints and J-channel-free trim.

### POLYPROPYLENE

Polypropylene siding uses an injection molding process that enables the final product to have a highly defined three-dimensional pattern. In its most popular application, the characteristics of this injection-molded plastic allow thick panels that accurately duplicate the deep fissures and sharp edges of cedar shake. Polypropylene provides an exceptional representation of the original siding because manufacturers cast their molds over actual shakes (see figure 4.3).

### POLYURETHANE

Siding manufacturers have introduced high-end, polyurethane and fly ash composites that provide several advantages. As a thermoset plastic, polyurethane composite cladding offers the same superior moisture resistance of other polymeric sidings, as well as thermal stability that minimizes expansion and contraction. Lighter and more flexible than fiber cement or natural wood, polyurethane panels do not require a J-channel; instead, they are butted together tightly. They cut like wood and do not wick moisture like fiber materials (figure 4.4). Polyash sidings and trim can weather ground contact and scribe alongside masonry without blistering through freeze-thaw cycles.

### VINYL

As material science and manufacturing technology advanced, the vinyl siding industry developed polymer blends based on newly available compounds that improved their product's performance. The formulas varied by individual manufacturers, but today all share the characteristics that make today's polymeric siding more durable than before. Many improvements to exterior polymer materials came with the introduction of co-extrusion in the mid-1980s. The method involves fusing a thin layer of acrylic or proprietary vinyl blends on the surface of siding and trim, allowing manufacturers to use costlier plastics while keeping the overall product price in line with consumer expectations.

To the naked eye, vinyl siding appears to be one solid piece



Figure 4.5 (PP): The PATH Concept House designed by Torti Gallas and Partners features a 75-year exterior shell with insulated vinyl siding. This LEED-Silver-certified home won the NAHB 2008 Green/Sustainable Project Award.

of plastic made of the same material and color. However, it combines a thin layer of enhanced PVC or acrylic that is fused—not painted—onto a PVC substrate. This sturdy, hard-wearing “cap stock” on the exposed face of the siding comprises some 10 to 15 percent of the thickness of the cladding and cannot be peeled or scraped off, nor will it wear, flake, or chalk. Some manufacturers use acrylate styrene acrylonitrile (ASA) polymers, which are plastics with the mechanical properties of acrylonitrile butadiene styrene (ABS) resins, but are affected far less by outdoor weathering than ordinary PVC or ABS. These innovative acrylics represent a family of plastics that are especially desirable when high color definition and UV resistance are needed, such as in the manufacture of eyeglasses, brake lights, and road signs. They also provide the impact resistance and mechanical toughness of plastics used in automotive bumpers, protective headgear, and whitewater canoes.

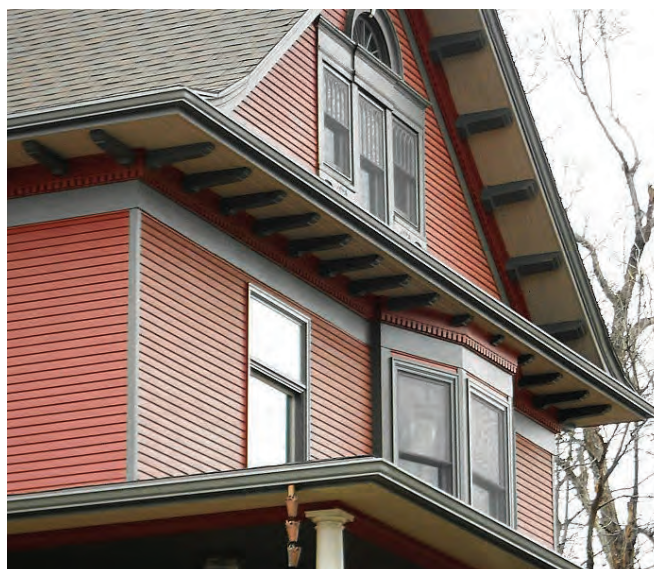


Figure 4.6 (PP): Vinyl siding used in historic structure in Lincoln, Nebraska.

## ADVANTAGES OF POLYMERIC MATERIALS

### ENVIRONMENTAL PERFORMANCE

Some in the green building community reflexively reject polymeric cladding, variously believing that polymeric siding is made of petroleum, releases dioxin during manufacture, and contains phthalates. None of these objections have any truth, frustrating manufacturers of architectural polymers, who must deal continually with these inaccurate objections. The essential raw materials for polymeric siding come from salt (57%) and ethylene from natural gas (43%). The electrolysis of salt water produces chlorine, which is combined with ethylene (obtained from natural gas) to form polyvinyl chloride.

The material remains inert and does not off-gas, like paint. While some consider the release of chlorine when the cladding burns to represent a health hazard, the chlorine released is an irritant but less toxic than the carbon monoxide produced by burning wood. As you read the fire safety section of this chapter, note that the high temperatures required to ignite vinyl siding exceed the temperatures encountered in most house fires, so the release of chlorine remains a rare occurrence.

Vinyl siding satisfies the requirements listed in the International Green Construction Code and the California Green Construction Code. Vinyl siding supports certification through the LEED for Homes2 and LEED for New Construction rating systems from the United States Green Building Council (USGBC). Polymeric claddings are recyclable; the material is broken down into small chips, impurities are removed, and the material is refined to make pure white PVC. It can be recovered roughly seven times and has a lifespan of around 140 years. Moreover, vinyl siding production emits significantly lower levels of toxic chemicals, including mercury and silver, than other cladding options (Figure 4.7). Lastly, Insulated siding can contribute additional points for energy efficiency by creating a better thermal building envelope.

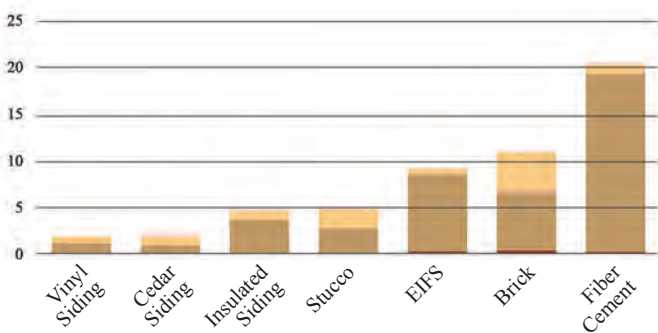


Figure 4.7: BEES Ecological toxicity comparison chart. The colors represent, from light to dark and bottom to top: carbon monoxide, dioxins, mercury, nitrogen oxides, silver, and others toxic materials. Source: BEES online database, National Institute of Standards and Technology.

### HEALTH

Unlike soft plastics, including luxury automobile interiors and some flooring, vinyl siding contains no phthalates. The material is nontoxic and hypoallergenic. Vinyl siding skeptics often claim that the siding produces smoke when it burns and that vapors are highly toxic. Even with a fire lapping at vinyl siding with a temperature of 700°F (371.111°C), the temperature at which vinyl siding ignites, the toxic potency of vinyl is no greater than that of burning wood. The most critical toxic product in any fire is carbon monoxide (CO), which is produced by all-organic compounds as they burn. Vinyl releases less CO than wood products. As such, its contribution to overall toxicity in a house fire is negligible (according to NIST Radiant Toxicity Test Results). For a complete discussion on the actual toxicity of vinyl siding, see Casarett & Doull's *Toxicology: The Basic Science of Poisons*, to see that polymeric claddings are no more toxic than other building materials, and are generally safer.

### FIRE

Vinyl siding's chlorine base (the "C" in PVC) makes it hard to ignite and easy to extinguish. PVC will not ignite, even from another flame, until it reaches about 730°F (387°C) and won't self-ignite until about 850°F (454°C). Those ignition temperatures are significantly higher than common framing lumber, which ignites from a flame at 500°F (260°C) and self-ignites at 770°F (410°C). The innate fire resistance of PVC plastics explains why sheathing for electrical wiring is made of vinyl, ensuring that an electric spark does not ignite the cable wrapping. The same goes for PVC fire sprinkler pipe. The material was invented to provide the industry with a fire-resistant plastic. Vinyl siding carries an A-rated flame-spread index, meeting the fire safety requirements of the International Building Code, and some brands of vinyl siding can even be applied over ASTM E119 fire-rated assemblies in Wildland Urban Interface zones because they would not contribute to the growth of the fire.

### COLORFASTNESS

One criticism of polymeric claddings is that they fade; that the material may chalk and wane over time, turning a pale version of the original color. Because the material is not paintable, some say, it fails catastrophically requiring replacement, calling into question the low or no-maintenance claims. This too, is wrong. Although manufacturers do not consider painting polymeric siding necessary, paint manufacturers provide specific products for this purpose – you can indeed paint vinyl siding. On the other hand, manufacturers of polymeric siding provide the most extended color warranties in the exterior cladding industry, and they are the only products that back these claims with ASTM color certifications.

Of course, all products exposed to enough weathering and sunlight will eventually fade. How much and how soon are the real questions to ask with any product. The polymeric siding industry guarantees that their ASTM certified colors perform “within acceptable parameters for the life of the product.” The scientific testing and certification industry defines “acceptable” for all kinds of products, from automobile finishes to window awnings.

Using a spectrophotometer to measure color differences and reflectance, scientists describe color in three distinct considerations: dark to light (L-value), green to red (a-value), and yellow to blue (b-value). The colors can be assigned an “L-a-b value” and plotted in three dimensions as a baseline for color testing. The amount of color change in a weathered sample is measured in the L, a, and b directions and used to calculate an overall color change “score.” Using general studies of human perception and specific industry research on how much color change homeowners would find acceptable, numeric limits exist to guide manufacturers on the acceptable degree of measured color change. These limits, which are quite narrow and strict, along with the process of measuring and calculating color change, are incorporated into specific standards published by ASTM International. Manufacturers must comply with these standards to certify colorfastness.

To make sure any siding specified complies with the strictest industry standards, choose siding with an ASTM International (formerly American Society for Testing and Materials) label stamped on the box. This label references one of three colorfastness standards, depending on the siding, including ASTM D6864-17 or D7251-17, or the new standard, ASTM D7856-17.

## INSULATED SIDING

Although the use of insulated siding is only now becoming widespread, insulated vinyl siding was introduced in 1990, first as a contoured insulating sheathing used by siding installers to level old sheathing or existing siding before overlaying with new. Later, foam manufacturers developed contoured sheathing as backing that helped to stiffen both vinyl and aluminum siding, improving its appearance and improving impact resistance while providing a modicum of insulation.

Today, insulated siding incorporates a substantial thickness of foam that is laminated directly onto the back of the siding, becoming an integral part of the finished product. Manufacturers employ specific cutting and profile-shaping techniques to marry the foam to the siding, as well as permanently flexible adhesives that allow the two materials to move independently without delamination occurring. Progressive Foam, the only manufacturer of this siding insulation, uses expanded polystyrene and BASF’s Neopor®(EPS), which is graphite-enhanced foam insulation

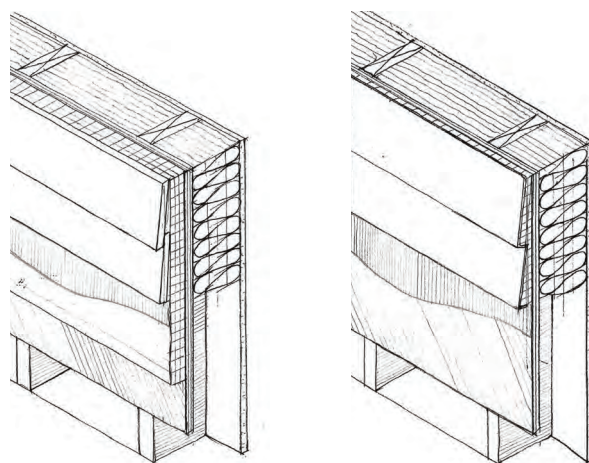


Figure 4.8: A conventional exterior wall assembly with continuous exterior insulation (left), and an assembly that employs insulated vinyl siding (right).

that provides higher R-value per inch than standard EPS. The R-value claims on any insulation product label must satisfy the R-value rule enforced by the Federal Trade Commission (FTC). For insulated siding, the ASTM C1363 Standard Test Method for the Thermal Performance of Building Materials and Envelope Assemblies employing a Hot Box Apparatus represents the standard for determining the R-value of insulated siding. All of which merely means a designer can rely on the R-value stated on the packaging when the ASTM C1363 label is on the box. The IBC and IRC accept ASTM C1363 certified insulated siding as an exterior insulating material.

## BUILDING SCIENCE

The primary function of cladding, beyond esthetic considerations, comes with water and moisture management, and in some cases, continuous exterior insulation. Unlike traditional wood products and fiber composites, polymeric claddings are designed to work as a system, combining siding, opening trims, horizontal and vertical moldings to provide a continuous drainage plane, and, in the case of Insulated Siding, a continuous layer of insulation permanently laminated to the cladding.

By design, polymeric cladding hangs loosely on the surface of a structure allowing air circulation and drying. Polymeric claddings and trim incorporate rain screen (drainage) elements that allow moisture to migrate from behind the siding or onto the surface of the cladding where moisture evaporates off the face, allowing the wood sheathing under the siding to dry.

Polymeric siding does not draw moisture, as wood and cement fiber-composites do, and hence will not suffer spalling and other common defects caused by freeze-thaw cycles. Polymeric products can weather direct ground contact.

## ARCHITECTURAL CONSIDERATIONS

When reproducing traditional construction patterns, it pays to know the limitations of the materials and to choose materials that deliver the desired pattern. For example, if you want to run siding to a mitered corner (Figure 4.2), most of today's cladding, including wood fiber, fiber cement, cellular PVC, and vinyl sidings, do not offer a mitered corner, relying instead on terminating at a post.

Polypropylene shake siding offers a mitered corner endcap, which looks like traditional wood at a distance, but not up close (Figure 4.3). Polyurethane siding, often called polyash, has the durability of a polymer and handles like wood, so a carpenter can cut a nice mitered corner on site. Knowing the characteristics of materials avoids unexpected errors in the finishing details. Our recommendations for working with polymeric materials follows.

### CLAPBOARD SIDING

Carpenters once made siding on the construction site by splitting logs lengthwise with an ax. The plank made a clapping sound against the trunk, and hence the name. Both wood and fiber cement siding offer a realistic interpretation of traditional clapboard.

Fiber cement has two sides, a wood-grain, and smooth face. Choose the smooth face for exterior cladding, as it more accurately reproduces milled boards. Vinyl siding and some brands of wood fiber siding now offer a smooth-faced option, also.

Traditional vinyl clapboard profiles have two significant limitations. The lower-grade material (thinner than 0.040-inch) has a cupped appearance, and vinyl siding typically comes in multi-plank sheets, which create a stacked joint two or three courses high. Consider choosing insulated siding, since this material has a rigid, straight-plank face without the cupping or convex silhouette of vinyl siding from years past. Insulated siding also comes in wide planks, some as a single board that avoids the stacked joints of multi-course profiles (see Figure 4.9).



Figure 4.9 (PP): Insulated siding presents a flat profile, without the convex shape of traditional vinyl clapboard.



Figure 4.10 (PP): An example for dark, vinyl-siding shiplap.

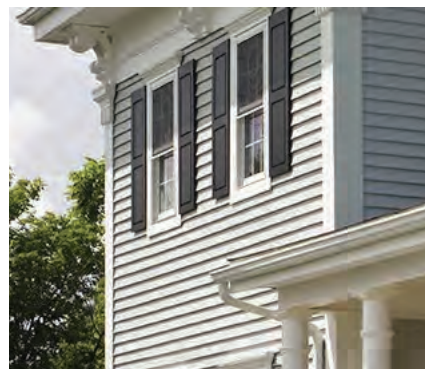


Figure 4.11 (PP): Southern front with beaded siding, creating strong shadow lines.

### DUTCH-LAP SIDING

One of the more popular profiles in vinyl siding is Dutch Lap (also called German or Cove Lap). Because of its shape, this siding yields a more rigid pattern than clapboard and tends to lay flat, without telegraphing imperfections in the framing. The pronounced bevel along the top of the plank projects a deep shadow line. Moreover, the face of the bevel angles skyward and reflects light, so this siding subtly combines a reflective horizontal line topped with a deep shadow. The reflective line works well when using dark colors, since it preserves the horizontality of the cladding, whereas dark-colored siding without this reflective line sometimes looks like a solid surface (Figure 4.10).

### BEADED SIDING

Popular in the South, especially in Virginia, the Carolinas, and Louisiana, beaded siding is like clapboard, but with a broader reveal and a pronounced, molded drip-edge along the bottom. Available in vinyl siding, this material lays flat on the wall and thus becomes less evident. Because beaded siding comes in single courses, stacked joints do not occur (Figure 4.11).

### SHAKES

Like clapboard, shakes have an ancient tradition, historically split on the building site from short lengths of cedar logs. Because carpenters could readily make this cladding, it became widespread for all types of traditional architecture, from Cape Code to Craftsman. Today's wood and cement-fiber products do a poor job of replicating shake because these materials are too thin to represent the deep rough grain, checks, and girth of the hand-hewn original. Here polymeric materials shine, especially polypropylene. As an injection-molded plastic, polypropylene shake is molded on real cedar shake, so the resulting shapes are an accurate facsimile. With improved color blending technology, today's shake colors, both solid-body stained and gray patina have become difficult to distinguish from the real thing (Figure 4.12).





Figure 4.12 (PP): Shakes in various shapes employed in a historic building, Longmont, Colorado.



Figure 4.13 (PP): Vinyl shingle shapes on a historic house.



Figure 4.14 (PP): Polypropylene shakes on upper floors of an ornate house.

## SHINGLES

Shingles represent an evolution of shake, manufactured at a mill with a smooth or lightly textured surface. Faithful reproductions of square and scalloped shingles are available in all cladding types, from wood fiber to vinyl. Polymeric shingles offer the most extensive variety of colors and shapes. Installed on gable ends and half-stories, whimsical shingle shapes in flamboyant colors provided an opportunity for the self-expression of creative Early American carpenters. This playful use of shingles has made the varied and often quirky shapes offered by polymeric producers a popular choice even in historic neighborhoods that otherwise frown on plastic cladding. In many historic districts you are likely to find it on gable ends, but it's often hard to tell apart from real wood shake (Figure 4.13).

## COLORS

Polymeric cladding offers a broad and eclectic palette of colors, from deep reds to flat whites. This palette becomes advantageous when using different colors on a building facade or along a block face. A designer can use one color

for all the trim – we generally suggest white – with an assortment of siding colors. This creates variety and avoids having to change materials or factor in a costly painting schedule. Certain vinyl trims have snap-in options for accent colors, such as snap-in quarter round, plinth blocks, and rosettes that make articulation easy, especially for Victorian-style homes. To avoid a plastic look, select flat paint finishes (Figure 4.6).

## MILLWORK

The most comprehensive selection of trim comes with cellular PVC moldings. Major polymeric cladding manufacturers offer a full line of profiles that resemble and sometimes improve upon available wood products. Many independent providers augment the assortment, providing crowns, casings, fluted columns, pediments, and brackets. Look online for options, some unique and others offering easy-to-install versions of complex traditional shapes that would require master artisans to fabricate with wood (Figure 4.17).



Figure 4.15 (PP): An example for the use of vertical vinyl siding as accent.



Figure 4.16 (PP): A building employing cellular PVC trims and insulated siding.



Figure 4.17 (PP): An example of cellular PVC trim and siding.

## BUILDING CODES

Building codes established by the International Code Council (ICC) require vinyl siding, polypropylene siding, and insulated vinyl siding to be certified and labeled by an approved quality control agency to show it conforms to ASTM D3679-17, ASTM D7254-17, or ASTM D7793-17, respectively. Polymeric materials that are not addressed explicitly by the code can be used in code-compliant structures by approval through the ICC Evaluation Services, or the Vinyl Siding Institute's Code Evaluation Report that lists the ASTM standards applicable to the specific material.



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# AFTERWORD

## By Stephen A. Mouzon

Detailed resources such as this book lay out a wealth of information. This afterword highlights a few of the most important traditional neighborhood principles and explains why people resonate so strongly with places that embody these principles.

Traditional neighborhood design has flourished in recent decades for two interrelated reasons: It provides places as well-loved as excellent historical neighborhoods, but with modern plumbing and electrical systems and a roof that does not leak. And the lovability of these places tends to create levels of value not seen theretofore in their markets.

### MIX OF USES

Neighborhood Centers on page 6 points out what is arguably the most important aspect of traditional neighborhoods: having some places to walk to that meet some or all your daily needs. Do not underestimate this foundational principle, because without it, a residential development is not a real neighborhood, but only a housing subdivision.

In the early years, a robust mix of uses primarily was a sign of freedom from automobile domination. “You have not really been to Seaside until your car keys have been hanging on the hook on the wall for several days” was an early refrain of traditional neighborhood design.

In recent times, this mix of uses has become so much more. We now realize the public health benefits of 10,000 steps per day, which come naturally in a place that locates daily needs within walking distance. We are also now beginning to understand the mental wellness benefits of healthy steps. The economic benefits of walking and burning fat versus driving and getting fat are incontrovertible, as are the environmental benefits of driving a lot less. In short, every aspect of human and environmental health benefits from places where we can walk to our daily needs.

My personal high standard is this: I never again want to live in a place where I cannot walk to the grocery store and the pharmacy, or where I cannot make a living where I’m living. Good transit is good; not needing to take transit because all my daily needs are within walking distance is far better.

### COMMUNITY

Diversity on the Block Face on page 7 gets at some of the core issues of building community. In a conventional subdivision, people often do not know others living much beyond their next-door neighbors and the neighbor across the street. In traditional neighborhoods, people know neighbors from blocks around. This tends to create close-knit neighborhoods where people act like real neighbors again rather than just as subdivision co-habitators. This occurs because the design of neighborhood streets and public spaces (parks, greens, squares, plazas, and playgrounds) sets the stage for people who were heretofore strangers to get acquainted as neighbors. Ask anyone who has lived in a traditional neighborhood what they like most about the place, and one of the top answers will be “the sense of community.”

### STYLE SELECTION

Chapter 2 Architectural Styles deals with several different stylistic approaches. In general, the two most important stylistic questions are these: Is the community a first-home community? If so, then the style or styles of the place are best calibrated to the most-loved communities of the region so the place will feel like it is a regional hometown community. If the community is not a first-home community but rather a resort community, then it is best to select an architecture that seems exotic to the region because few people love staycations. In most cases, they want to vacation in a place that feels very much not like home, therefore affording an escape from the everyday.

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In either case, consider editing the “main ingredient” styles down to a much smaller list than what you might first consider. The best places on earth tend to have great variety, but within a very narrow range. The great variety gives a place life; the narrow range gives it character. Achieving both in the same place is difficult but will reward you richly if you pull it off.

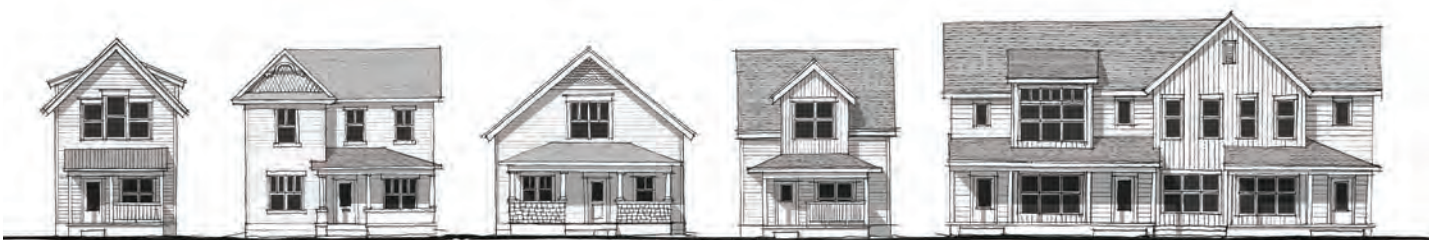
## **DESIGN QUALITY**

Chapter 3 Architectural Design deals with many issues of design quality. In the early years of modern-day traditional neighborhoods, beginning with Seaside in 1980, design quality set those developments apart from pretty much everything else built in the region. In the beginning, this was easy because of the abysmal quality of most of what was built during the Dark Ages of Architecture (1945-1980). This was not originally an explicit aim, but rather a side-effect of building authentic traditional places again.

The value-building equation became clearer in the second decade of traditional neighborhood design and led to the advent of architectural pattern books based on historical styles, beginning famously with the Celebration Pattern Book. A decade later, the living tradition pattern books arose, leading to architecture that could take on a life of its own again and spread, long after the departure of the originators.

## REFERENCES

- Casarett & Doull. 2019. *Toxicology: The Basic Science of Poisons*. McGraw-Hill Education.
- Duany, A., E. Plater-Zyberk, & J. Speck. 2000. *Suburban nation: The rise of sprawl and the decline of the American Dream*. North Point Press, A division of Farrar, Straus, and Giroux.
- Forest City. 2012. *Design book: The north neighborhoods, Stapleton*. Forest City Stapleton.
- Leinberger, C. B. 2009. *The option of urbanism: Investing in a new American dream*. Island Press.
- McAlester, V. S. 2014. *A field guide to American houses: the definitive guide to identifying and understanding America's domestic architecture*. Alfred A. Knopf.
- Mouzon, S. 2010. *The original green: Unlocking the mystery of true sustainability*. New Urban Guild Foundation.
- NAHB. 2019. *What home buyers really want. Economics & Housing Policy Group*. Builder Books.
- National Institute of Standards and Technology. BEES online database. <http://ws680.nist.gov//Bees> (accessed August 2012).
- Nelson, A. C. 2013. *Reshaping Metropolitan America: Development trends and opportunities to 2030*. Island Press.
- Onaran, K. 2019. *Crafting form-based codes: Resilient design, policy, and regulation*. Routledge.
- Pages Ruiz, F. 2005. *Building an affordable house: Trade secrets to high-value, low-cost construction*. Taunton Press.
- Vogt, L. 1992. *New Orleans houses: A house-watcher's guide*. Pelican Publishing Company.
- Wilson, C. & S. Polyzoides. 2011. *The plazas of New Mexico*. Trinity University Press.



## FIGURE CREDITS

- Figure on page ii: View of Prospect New Town in Longmont, Colorado.
- Figure on page vi: A bird's-eye-view perspective prepared for Superior Town Center in Superior, Colorado. Courtesy of Pel-Ona Architects and Urbanists (drawing by Ronnie Pelusio).
- Figure on page 2: West End Village, a mixed-use neighborhood proposal, Palisade, Colorado. Courtesy of Pel-Ona Architects and Urbanists (drawing by Ronnie Pelusio).
- Figure 1.1: Drawing prepared for Barefoot Lakes Architectural Guidelines, Firestone, Colorado. Courtesy of Pel-Ona Architects and Urbanists (drawing by Ronnie Pelusio).
- Figure 1.2: Drawing prepared for Barefoot Lakes Architectural Guidelines, Firestone, Colorado. Courtesy of Pel-Ona Architects and Urbanists (drawing by Ronnie Pelusio).
- Figure 1.3: 8th and Pearl in Boulder, Colorado, designed and developed by Wolff Lyon Architects.
- Figures 1.4 and 1.5: North Court at Holiday Neighborhood in Boulder, Colorado, designed and developed by Wolff Lyon Architects.
- Figure 1.6: Courtesy of Pel-Ona Architects and Urbanists (drawings by Korkut Onaran).
- Figure 1.7: Courtesy of Pel-Ona Architects and Urbanists (drawings by Korkut Onaran).
- Figure 1.8: Courtesy of Forest City Stapleton (drawing by Ronnie Pelusio).
- Figure 1.9: Courtesy of Forest City Stapleton (drawing by Ronnie Pelusio).
- Figure 1.10: Drawing prepared for the City of Westminster, Colorado / 72nd and Meade Redevelopment Studies. Courtesy of Pel-Ona Architects and Urbanists (drawing by Ronnie Pelusio).
- Figure 1.11: Courtesy of Forest City Stapleton (drawing by Tom Lyon).
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The Vinyl Siding Institute (VSI) is the trade association representing the manufacturers of polymeric siding and trim products in North America. The VSI and its members are committed to the principles of New Urbanism and traditional neighborhood development (TND) and to furthering these concepts. They are involved in the Congress for the New Urbanism and work toward innovations that meet the needs of new urbanists, town founders, and architects involved in this vital movement. For more information on VSI, please visit [www.vinylsiding.org](http://www.vinylsiding.org).

**"This book is a useful addition to the New Urbanist literature because it introduces simple and economical design principles such as: don't clutter the individual facade with articulation and ornamentation; rather pay attention to the whole block face as a unified design. It discusses what to require by code, and perhaps more importantly, what not to code: costly materials will not overcome dismal suburban site plans. Instead, a proper designer will guide developers to invest in what will create the most value."**

**Andrés Duany**

**"Detailed resources such as this book lay out a wealth of information ... Traditional neighborhood design has flourished in recent decades for two interrelated reasons: It provides places as well-loved as excellent historical neighborhoods, but with modern plumbing and electrical systems, and a roof that doesn't leak. And the lovability of those places tends to create levels of value not seen theretofore in their markets."**

**Stephen A. Mouzon**

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