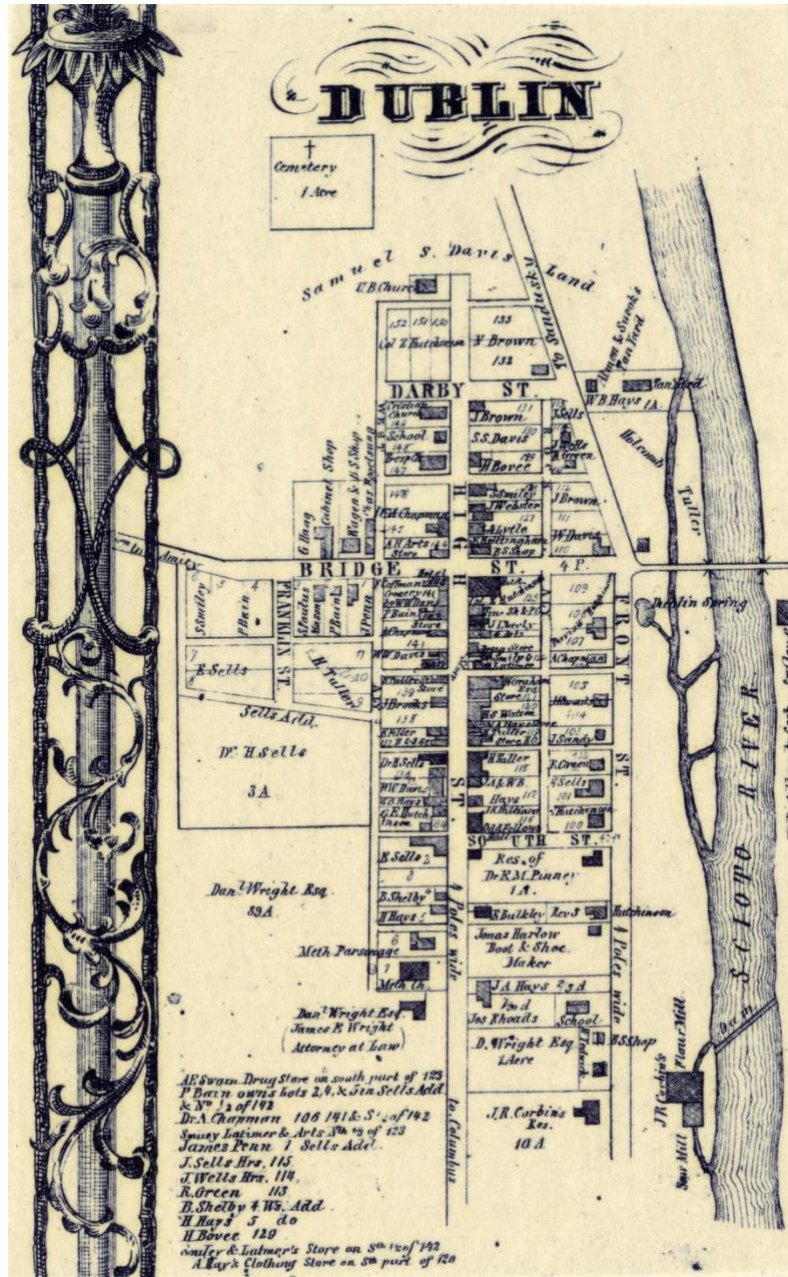


ALTERNATIVE MATERIALS FOR THE DUBLIN, OHIO HISTORIC PROPERTIES (HISTORIC DISTRICT AND APPENDIX G)



ALTERNATIVES TO HISTORIC MATERIALS & RECOMMENDATIONS FOR APPLICATION BY MATERIAL TYPE

August 7, 2023
(FINAL DRAFT)

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Introduction

The following recommendations for application of alternative materials have been developed by the City of Dublin to supplement the [Historic Design Guidelines \(Updated May 2022\)](#) and to further guide property owners in selecting appropriate alternatives to historic building materials. These recommendations, and the term “Historic District”, apply to all buildings in the City of Dublin within [Historic Dublin](#) as well as other outlying properties identified on Appendix G that are under the Architectural Review Board (ARB) purview. These recommendations are based on the following (in order of appropriateness):

1. Preservation and repair of existing materials;
2. Replacement of existing materials with traditional materials; and,
3. Lastly, use of alternative materials.

The priority should be to preserve the historic building fabric, meaning the physical material of a building or structure, where possible. In cases where it is “not practical to retain the original building fabric due to condition, unavailability, safety, or energy efficiency of original materials, then quality, contemporary, substitute materials should replicate the material being replaced in composition, design, color, texture, and other visual qualities” (*City of Dublin Historic Design Guidelines*, 2022, 40). While this document provides additional flexibility, the goal remains that the character of historic buildings and the Historic District be maintained.

For the purposes of this document, ‘traditional’, ‘original’ or ‘historic’ material refers to the original building fabric used at the time of initial construction, usually wood, stone, or brick for the City of Dublin. ‘Alternative’ or ‘substitute’ material refers to the use of a non-traditional, synthetic building material in place of an original material. The alternative material may have the same general appearance of the historic material but offers the benefits of modern technology.



Guidance and Recommendations

This section is meant provide additional information in making informed design decisions. It is meant to augment the [Guidelines](#), not to replace them. Overall, it is best to remember that a property in a historic district is not meant to serve only the occupants and visitors of today, but future generations as well.

Are Alternate Materials “Worth It?”

As stated in the Introduction, maintain before repair, repair before replace, and replace like with like before replacing with an alternate material. Preservationists naturally want to keep as many physical ties to the past as possible, thereby sustaining authenticity to a building or district, but it is also understood that some alternate materials can benefit all stakeholders, meaning the owner, historic district residents, and the public at large under certain conditions. It is important to understand the pros and cons of each material, as traditional construction isn’t always good nor are synthetics necessarily bad, and one manufacturer’s product may be preferred over an equivalent, depending on where and how the material will be used.

The ARB provides a public service by examining and balancing the wants and needs of individuals with the public. Effective historic district review boards work with all interested parties. Often, the materials and their alternates do not present a clear answer on what to do, as broad swaths of data must first be examined. This document is meant to introduce stakeholders to the benefits and disadvantages of alternate material types, with the caveat that different manufacturers of the same material type are not necessarily equal. A preservation district is not and cannot be a museum stuck in time, but by prioritizing its historic integrity, reviewers can guide the area’s evolution to ensure the best possible outcome.

New products consistently come to market; how will they be approved for use?

Manufacturers want you to buy their product, and they may emphasize the alternate material’s up-front cost savings over the traditional material’s purchase and installation price. It is not unheard of for alternate material manufacturers to raise their retail price to benefit from the traditional material’s appearance and reputation. It is highly recommended for design professionals and owners to review all material cut sheets, warranty information, and manufacturer’s recommendations, as well as those from competing material manufacturers and at least one traditional material manufacturer or installer. Compare warranty limitations, note recommended maintenance schedules, and ask questions. As this report can attest, there generally are no true apple-to-apple comparisons between traditional materials and alternate materials, or even other manufacturer’s equivalent alternate materials. Each material has advantages and disadvantages. Providing this information helps inform the cost/benefit ratio, including costs of material and labor over time, and a new alternate material may be approved for use.

What additional information or considerations are important?

The appearance of the material is a major consideration, as is the cost, to the owner. Material cost comparisons will vary depending on the economic climate, the availability of materials and labor, and the quality of the goods and installation, as well as the material’s *useful life* and its *visual longevity*. The Dublin Planning Division indicates any alternates should be of good quality, meaning the proposed material must not only appear almost indistinguishable to the historic material upon inspection, but it must also maintain its appearance and function for a considerable duration. There can be no expected lifetime for all alternate materials; they vary too much even when mimicking the same material. However, with some exceptions, most historic materials have good longevity and will out-compete modern materials regarding appearance and function, pound for pound.

For example, an alternate roofing material imitating slate may claim to last 50 to 75 years, which sounds comparable to natural slate's expected 70 years. However, this doesn't take into account the appearance of the material after even five years. It is possible that the material itself can continue to function, complying with its warranty, but meanwhile its appearance has deteriorated through premature color fading and the curling of its edges, making the material no longer resemble its inspiration. Some manufacturer warranties will not cover appearance-related issues, leaving the owner and neighbors and the district with a discordant roof requiring replacement, not from a loss of function, but from a visual standpoint.

Perhaps a cautious approach to new alternate materials is best; meaning, ***new-to-market materials should not be considered until durability can be proven. Additionally, any installation of new materials should ensure there will be no harm to historic materials.*** Past repairs and renovations can demonstrate the best intentions, but may have caused incontrovertible harm over time. Any modern mason can apply a beautiful mortar to a brick wall, but if they used modern mortar to repoint 19th C brick masonry, the strength of the mortar will break and splinter the softer historic brick over time, leaving a ruin. It isn't just doing the repair or utilizing a compatible material; it takes knowledgeable and experienced preservationists (architects, designers, and/or contractors) to ensure any installation will not cause detriment. That said, some alternates have been on the market for decades, and these materials have a track record that may be acceptable if installed or used in a certain way. It is incumbent upon design professionals to explain the pros and cons of alternate materials to the home owner and ensure adequate construction administration. Ultimately, traditional materials were originally used precisely because they could have decades of useful life with the proper installation and maintenance.

Choosing the Right Architect, Designer, or Contractor for the Job

In the State of Ohio, a licensed architect must prepare documents for all new and existing buildings, with the exception of 1, 2, or 3-family residential where designers, home-builders and others can also provide design services. If you are looking to renovate your historic home or build a new home in a historic district, you may choose any architect, designer or builder; however, each has advantages and disadvantages. An architect may charge more for services, yet they have years of training and practice and can streamline projects while fulfilling client's design requirements. A type of architect called a historic preservation architect specializes in restoration and renovation projects; having this skill-set permits balancing the client's needs while ensuring the proposed design complies with historic guidelines, especially regarding scale, style, and proportion. Designers and/or builders may cost less on paper, but their expertise might not carry over to historic preservation exteriors; however, for some project types, such as an interior bathroom renovation, they may be well-suited. For additional information, please read the [This Old House: Read This Before You Hire an Architect.](#)

Regarding the actual construction work, hiring contractors who have historic building renovation and restoration experience can be beneficial as they are familiar with both modern and historic construction methods. These are the professionals who can navigate knob-and-tube wiring along with the mixing and applying the exact type of mortar for repointing 19th-century solid masonry walls; a less savvy contractor might use modern mortar, accidentally contributing to the wall's destruction.

Where to Find Information

Searching the internet can be good and bad as many websites containing knowledgeable information compete with those that have more opinion than fact. The organizations listed below are commonly used by local historic preservation experts and cultural resource specialists.

Historic Resources

Understanding the history of a building and its site can inform and guide future work.

- The *Dublin Historical Society*, located in the Fletcher Coffman House, is a great resource to find photos and other documentation of what local buildings looked like and what existed previously on an individual site. Please call or email to arrange a visit or to receive information.
<https://www.dublinohiohistoricalsociety.org/>
- *Ohio History Connection*, formerly the Ohio Historical Society, is another great place to start. Multiple entities sit under the large, Brutalist-style building off I-71 and 17th Avenue, a couple of miles north of downtown Columbus. <https://www.ohiohistory.org/>
 - The *Archives & Library* contains a large reading room with local city and rural directories from the 19th and 20th Centuries, large atlases with town plans and maps, historic newspapers and other publications archived on microfilm and microfiche, as well as rare books on local historic figures and primary sources such as personal manuscripts and other information donated to the archive's care. There are also helpful librarians who can help get you started. At the time of this writing, appointments to visit must be made online: <https://ohiohistory.libcal.com/>.
 - The *State Historic Preservation Office* (SHPO) administers the official list of properties deemed "by the federal government as worthy for preservation for their local, state, or national significance in American history, architecture, archaeology, engineering, or culture." Their collection of Ohio Historical Inventory (OHI) forms provides basic property information including a photo taken at the time of the survey. Many of these surveys involve properties potentially impacted by a project involving Federal or State funding. The office also provides various historic preservation educational programs and publications and can consult on how to conserve buildings and sites. See Preservation Resources, below, for further information.
- The *Main Columbus Library* at 96 S Grant Avenue, Columbus, has both physical materials, such as maps, books, and local atlases, and digitized resources.
 - *Local History & Genealogy*: making an appointment online can ensure a librarian is available to assist you when you visit in person: <https://events.columbuslibrary.org/v/assets/270>
 - *MLS Real Estate Cards* are digitized photo collection of local houses listed with real estate agents from the 1950s to the 1970s. General information on the house included as well: <https://digital-collections.columbuslibrary.org/digital/collection/p16802coll36>
 - *Researching House History in Columbus*: Based in Columbus, the website provides good information on locating background information on houses.
<https://www.columbuslibrary.org/house-history/>
 - Scheduling help from a librarian can ensure a librarian is available before you arrive.
- The *Library of Congress (LOC)*. While located in Washington, DC, the library provides a plethora of information with its digital catalogue, including:
 - The *Historic American Buildings Survey/Historic Engineering Record/Historic American Landscapes Survey*, also known as HABS/HAER/HALS. Since 1933, the National Park Service (NPS) was tasked to manage the Historic American Building Survey (HABS) with preserving our nation's architectural heritage. Considered America's first Federal preservation program, the NPS manages the documentation and recordation of buildings and structures of great historical significance, some by volunteers and others by government contractors. These materials are stored in the Library of Congress for the benefit of future generations. <https://www.loc.gov/collections/historic-american-buildings-landscapes-and-engineering-records/about-this-collection/>

- *Cities and Towns*. This collection includes digitized maps, photos, drawings, and books with filters and search terms. While currently limited, more content will become available over time. <https://www.loc.gov/collections/cities-and-towns/about-this-collection/>
- *Sanborn Maps* provide location information of businesses and towns at fixed points in time. These fire insurance maps are arranged by state, then city, and release date. While no maps of Dublin are available currently, more maps are being added to the database. <https://www.loc.gov/collections/sanborn-maps/about-this-collection/>
- The *National Archives* website contains documents and records, including historic photos, which may guide in restoring a building to its original glory. <https://www.archives.gov/research>
- Google Maps includes not just map directions. Utilizing the Google Street View feature (by dragging and dropping the yellow person to the location you want to see), the date of the photo is located in the top left corner of the screen. Selecting 'See more dates' will allow viewers to see what the building looked like over the last decade.

Preservation Resources

Multiple local, state, and national entities can aid and guide in the preservation of your home, providing everything from historic tax incentives to How-To clinics, allowing DIYers to preserve their building themselves.

- The *National Park Service* has managed and preserved scenic, natural, and historic sites since its 1916 founding. As part of this mission, NPS provides guidance and recommendations regarding the treatment of historic properties, ranging from fully restoring an old building to how to design a sympathetic addition to how to fix a historic window.
 - [The Secretary of the Interior's Standards for the Treatment of Historic Properties](#) includes the standards and guidelines for the preservation, rehabilitation, restoration, and reconstruction of historic buildings. This information is the basis for many historic district guidelines, including Dublin's. And while it cannot override local preservation and zoning laws, it can provide more background and detail than can be found in the *Guidelines*.
 - [Preservation Briefs](#) provide information on how to repair or restore historic buildings and parts of buildings, such as windows. This information is vetted by some of the top preservationists. Although architects, designers, and builders generally utilize this information when preparing restoration plans, building owners who wish to restore paint or wallcoverings should also consult these briefs.
 - [Preservation Technical Notes](#) includes weblinks for maintaining and preserving historic resources such as Doors, Windows, Exterior Woodwork, and Masonry presented through case studies, divided into broad topics such as Doors, Masonry, and Historic Interior Spaces.
- The *State Historic Preservation Office* (SHPO) provides multiple online resources including:
 - *Building Doctor*, a series of preservation clinics of free seminars on how to fix historic windows and repair damaged plaster. Please review the website for additional information.
 - *Local History Services* (<https://www.ohiohistory.org/preserving-ohio/history-preservation-where-you-live/local-history-services/>) This group works closely with individuals and small local history organizations to provide continuing education, inspiration and professional development. Per their website, they can help with any aspect of doing local history.
 - *Resources for Caring for Historic Buildings* (<https://www.ohiohistory.org/preserving-ohio/history-preservation-where-you-live/>) provides links to *NPS Preservation Briefs* and *Tech Notes*, and *Fast Facts* where individual topics regarding historic building maintenance are examined.

- *Historic Preservation Planning, and Funding Opportunities* can assist in locating funds and grants to help restore or renovate Ohio historic properties. (<https://www.ohiohistory.org/preserving-ohio/history-preservation-where-you-live/funding-opportunities/>)

Architects/Designers/Builders/Contractors

One of the best methods to find the right person for the job is word of mouth. What nearby projects do you like the look of? Have you posted a question regarding who others would recommend on the NextDoor app? Also, consider contacting local professional organizations by telephone to receive a listing of project-appropriate companies. While professional organization websites may list every company without explaining the differences, hiring an international architectural firm specializing in high-rise construction in Abu Dhabi may not be the best fit for a small house renovation.

- For Architects and Designers:
 - AIA Columbus (local chapter of the American Institute of Architects) 614.469.1973
 - Historic Preservation Consultants (list includes some architects, others are historians)
 - <https://www.ohiohistory.org/preserving-ohio/state-historic-preservation-office/services-fees/>

Disclaimer

While the writers and editors of this document tried to ensure the material provided is accurate and meets preservation standards, one must consider it a product of its time. Between the influx of new materials and continued assessing existing ones, the provided information may become inadequate as preservation thought and material products evolve. Instead, periodically updating this document would go a long way to providing users with timely information. That said, following preservation guidelines where they exist, and following the intent of the preservation guidelines where they do not, can direct stakeholders in making informed decisions ensuring their property's preservation for future generations.



II. Alternative Building Materials

Overview

The practice of using substitute materials has a long history in architecture. In the past, using cheaper and more readily available materials in an imitation of more expensive and less-common materials was widespread. More recently, with advances in technology, new types of synthetic materials have become available, such as aluminum, vinyl, fiberglass, and composite materials, including fiber cement and composite wood products. The use of alternative building materials continues to pose practical and philosophical questions in all historic districts. The following considerations and criteria for the use of alternative materials in Dublin's Historic District are based on current scholarship and practice.

Alternative Material Considerations

The following should be considered prior to deciding to pursue alternative materials:

1. Assess and demonstrate the need for replacing the historic materials;
2. Identify the amount and location of the proposed alternative material; and,
3. Evaluate the appropriateness of an alternative material in regard to the historic significance of the building and the compatibility of the material with the surrounding context.

When deemed appropriate by the ARB, the application of alternative materials, including any repairs, replacements, restorations, or reconstructions, should duplicate traditional, original details and materials as accurately as possible.

Alternative Material Recommendations

The following establishes recommendations to evaluate the appropriateness of the use of an alternative material based on the type of project, realizing that each situation must be evaluated on its merits. The criteria should be used in conjunction with the [Historic Design Guidelines \(Updated May 2022\)](#). Unique criteria are identified for rehabilitation of contributing historic buildings, new construction of additions to contributing historic buildings, and for non-contributing buildings and new development:

1. Rehabilitation

Applicable for Contributing Historic Buildings

1. The removal/replacement of historic materials is a last resort when existing materials are beyond repair.
2. The removal/replacement of incompatible materials installed over time is permitted in exchange for more appropriate materials.
3. Replacement with alternative materials is demonstrated necessary with a professional assessment.
4. The alternative material accurately duplicates the historic materials including design, texture, and color.
5. The application of the alternative material, including its amount and location, is minimized to the greatest extent possible.
6. The detailing of the alternative material matches that of the historic building fabric.

2. New Additions

Applicable for Additions to Contributing Historic Buildings

1. The material conveys a similar appearance to materials used on the historic building and does not detract from the historic character of the district.
2. Alternative materials applied to the building addition complement the established fabric of the historic building.
3. The material selection ensures the building addition remains distinct from the historic building.
4. The material selection is consistent in character and quality with materials previously approved by the ARB.

3. Non-Contributing Buildings and New Construction

Alternative materials may be used on non-contributing buildings and new development (commercial and residential) in the Historic District provided the material conveys a similar appearance to materials used on historic buildings and does not detract from the historic character of the district. ***It is important to note that some buildings considered non-contributing may become contributing buildings over time.*** At the time of their original assessment, there may be inappropriate elements such as incompatible additions, modern windows with different methods of operation, or unsuitable materials. These alterations can be reversed or removed, and the building has the potential to become contributing. In addition, an existing non-contributing building may be considered contributing based on new research, such as mid-century modern buildings. Therefore, it is strongly recommended that the Planning Division and/or the ARB consider each building's potential before proceeding with approval of a permitted alternate material when a preferred or original material may add to the historic district's integrity.



Waivers May Be Permitted for Certain Alternate Materials

Waivers may be permitted by the [Historic District Code \(effective March 24, 2021\)](#), depending on if a given material will be applied to an existing historic building listed as contributing to the historic district (HB per below), an addition to an historic building (HA), an existing or a new outbuilding (OE & ON), an existing non-contributing building (EB), or a proposed new building (NC).

To more quickly communicate when an alternate material requires an approved Waiver from the Architectural Review Board (ARB), this report denotes the building types under each alternate material's listing:

X. Alternate Material

HB | HA | OE | ON | EB | NC

Where every subcategory of that material would follow the overall Building Classification requirements, as shown by the six groups of letters on the right side.

or

Alternate Material

HB | HA | OE | ON | EB | NC

Where each material subcategory has its own set of Building Classification requirements, as shown by the six groups of letters on the right side.

Each alternate material label will have all six building types listed. Anytime a building type appears without any emphasis, meaning not written in bold or italics, that alternate material does not require a Waiver for that specific building type. If XX is in **bold** and underlined i.e., **XX**, this means that ARB must approve a Waiver regarding the use of that alternate material for that specific building type. If XX is ~~crossed-out~~ and in *italics* i.e., *~~XX~~*, this means the proposed alternate material is prohibited for that specific building type.

Building Classification	No Waiver Required	Waiver Required	Use Prohibited
Building - Historic	HB	<u>HB</u>	<i>HB</i>
Historic Building - Addition	HA	<u>HA</u>	<i>HA</i>
Outbuilding - Historic	OE	<u>OE</u>	<i>OE</i>
Outbuilding - New	ON	<u>ON</u>	<i>ON</i>
Building – Existing	EB	<u>EB</u>	<i>EB</i>
New Construction	NC	<u>NC</u>	<i>NC</i>



Specific Requirements and/or Recommendations:

In some cases, an alternate material might not require a Waiver under very specific circumstances, or a certain building classification might prohibit an alternate material from any publicly visible elevation. To allow for these items, a number to the right of the building type, separated by a hyphen, will correspond to the text below:

##	Specific Requirements and/or Recommendations for a Building Classification
01	The most current version of the <i>Historic District Code</i> does not require a Waiver for these items. However, review by the ARB is always required.
02	See written description for materials that are allowed and/or are prohibited. See also the "Types of Materials Preferred" descriptions and the "Allowed Use in Historic Buildings and District" at the end of that section's material list.
03	The material is a post-World War II (WWII) material and is allowed if it was the original material used when the building or addition was built, but only on that specific portion of the building.
04	The most current version of the <i>Historic District Code</i> requires a Waiver for these items only if the original material cannot be repaired or restored, and an alternate material is proposed to <i>replace</i> it.



III. Types of Alternative Materials

The following are types of building features for which the ARB may be asked to consider alternative materials. These are common features that are discussed in the Zoning Code and the Guidelines and have readily available alternatives to historic materials. It is not a complete list of alternative materials since new technology emerges, and building practices change. As a result, all replacement features will still have to be reviewed on an individual basis by the City of Dublin and the ARB.

Exterior Wall Materials

Exterior materials on historic buildings include traditional materials such as brick, stone, and wood. Brick and stone are the most common masonry used throughout the Historic District, with a few historic stucco buildings. Wood buildings are in the majority, and usually have beveled siding, shiplap siding, shingles, or board and batten. In a few instances, the wood siding has been finished to resemble cut stone. Many of the historic buildings have retained their original exterior materials or have used suitable replacement materials compatible with the original to retain the building's integrity of design, material, and workmanship. However, there are acceptable alternative exterior materials.

1. Cementitious Siding

HB-02 & -04 | HA-01 | OE-02 | ON | EB | NC-01

Cementitious siding, or fiber-cement siding, is made from cement mixed with sand, cellulose fiber, and other additives. It comes in a variety of forms, including horizontal lap siding, architectural panels, shingle siding, vertical panel siding, soffit material, and trim boards. It is a popular choice among new building construction since it usually costs less than wood, does not attract pests, and resists water absorption to help prevent damage from mold, mildew, rot, etc. It is also non-combustible and hail-damage resistant, unlike vinyl or aluminum. More recently, it has been engineered for specific climates so it can be used in the North, although it is **not recommended** to be applied directly against concrete slabs, roofs, or ground surfaces.

Types of Cementitious Siding:

1. Smooth surface lap siding
2. Smooth surface beaded siding
3. Smooth surface panel and batten boards
4. Smooth surface trim
5. Smooth soffit: vented, non-vented, or beaded porch panel
 - a. Should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and surrounding district
6. Shingles: staggered edge, straight edge, or half rounds
 - a. Should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and surrounding district

Permitted Application of Cementitious Siding:

1. Non-contributing historic buildings
2. New development
3. Outbuildings (garages, sheds, etc.)

4. Non-historic additions to historic buildings
5. Historic buildings on rear- and non-street-facing elevations if demonstrated that the original siding is damaged beyond repair
6. Historic buildings on all elevations if the original siding contains asbestos (like Transite) or other hazardous materials
 - a. The material would need to be cut to match the original
7. Requests for alternative materials on the front- and street-facing elevations of a historic building should be reviewed on a case-by-case basis

2. Composite/Engineered Wood Siding

HB | HA | OE | ON | EB | NC

Composite or engineered wood siding is made from wood pieces mixed with adhesive resins, water-resistant waxes, and zinc borate, after which a water-resistant, resin-saturated overlay is applied to the product to resist water damage, termites and other pests, and fungal decay. Similar to cementitious siding, the product is popular in new construction since the composite material withstands impacts, freeze/thaw cycles, high humidity, and fungal decay.

Types of Composite/Engineered Wood Siding:

1. Smooth finish lap siding
2. Smooth finish beaded siding
3. Smooth finish panel and batten boards
4. Smooth finish trim
5. Smooth finish soffit (non-vented only)
6. Shingles: staggered edge, straight edge, or half rounds
 - a. Should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and surrounding district

Permitted Application of Composite/Engineered Wood Siding:

Non-contributing historic buildings
 New development
 Outbuildings (garages, sheds, etc.)
 Non-historic additions to historic buildings
 Historic buildings on rear- and non-street-facing elevations if demonstrated that the original siding is damaged beyond repair
 Requests for alternative materials on the front- and street-facing elevations of a historic building should be reviewed on a case-by-case basis

3. Vinyl Siding

HB | HA | OE | ON | EB | NC

Any use in the Historic District or on any historic building is **NOT PERMITTED**. Vinyl siding and building products are susceptible to ultra-violet degradation, and their color fades quickly. In addition, these products expand and contract, depending on the temperature, which can cause buckling, warping, or splitting.

4. Metal Siding

HB-03 | HA | OE-03 | OV | EB-03 | AC

Any use of metal (aluminum or steel) siding in the historic district or on any historic building is **NOT PERMITTED** unless the building was originally built with this material, as in a post-WWII period building.

Aluminum Siding

Aluminum siding dents and scratches easily, and the colors baked into the siding tend to fade over time. In addition, exposure to the elements often causes aluminum siding to become chalky and dull its color. It is possible to paint aluminum to renew its finish, provided the material is free of physical damage such as dents and cuts. The material would have to be properly prepared, primed, and painted so chipping or peeling will not occur.

Buildings built after World War II may have used aluminum siding as its original sheathing material. Residential structures such as houses and garages, whether they are Cape-Cods, Split-Levels or Ranches (common building types that are now over fifty years old and are considered historic), may have utilized aluminum siding, hardboard siding, or Transite (an asbestos-based product) for their original cladding (please consider Cementitious Siding as a modern equivalent for this latter material). Aluminum siding is the wood siding alternate of this time-period, and if original to the house, it lends itself as a character-defining feature that helps explain the building's story. However, if the aluminum siding on the house is demonstrated to be damaged beyond all repair, modern alternate material such as cementitious siding or composite/engineered wood siding may be an option if it matches the dimensions of the original siding. Overall, if such materials are requested, it must be reviewed on an individual basis to ensure compatibility with the historic building and surrounding district.

Steel Siding

For steel siding that resembles wood siding, this product dates approximately to WWII, coming in panels (also called boxed) or seamless, where the material was cut to a building's exact length. It comes prefinished, and like aluminum, it requires corner posts (as opposed to traditional wood where the boards can be mitered to wrap the corner). The material's finish should not chip or crack, it repels moisture and is resistant to impact from hail, trees, and debris. And unlike aluminum siding, steel siding does not fade nor become chalky.

Types of Metal Siding:

1. Smooth finish lap siding style
2. Smooth finish colonial beaded siding style
3. Smooth finish panel board style
4. Smooth finish trim and fascia
5. Smooth finish soffit (non-vented only)
6. Shingle panel style
7. Metal panel for Lustron or similar
 - a. Should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and surrounding district

Permitted Application of Metal Siding

1. Historic buildings if it was the **original** to the structure.

Figure 1: Types of Traditional Wood Siding



Beveled Wood Siding (Clapboard looks similar)



Drop or Novelty Wood Siding



Board and Batten Wood Siding



Shingled Wood Siding with alternating rows of Staggered Edge and Straight Edge



5. Stone Alternate Materials

Replicating natural stone has resulted in a multitude of product types. The first consists of concrete cast into molds and applied to the side of a wall or used as part of a grouped panel system. While the grouped system has the appearance of stone, it lacks the strength of concrete, is unable to bear loads, and requires an anchoring system to tie into the structural frame. A third method involves using paint or stucco to create the look of stone masonry.

To ensure the material meets quality standards, special attention must be made to ensure the color will not fade due to sunlight exposure or that a scratch would expose a differently colored material underneath. In addition to form, texture and appearance, other factors to look for are expansion/contraction rates, breathability, and durability. Due to the number of manufactured stone products on the market and the varying degree of size, texture, color, and appearance, these are best reviewed on a case-by-case basis for their suitability and compatibility.

Cast Concrete Stone Alternates

A lot of different terms describe the same material, including *veneer stone*, *architectural stone*, *manufactured stone*, *cast stone*, and *Cultured Stone*, the latter being trademarked by Westlake (formerly Boral). For clarity, this document shall use *manufactured stone* to describe this type of material. Physical damage to the material may reveal an underbody noticeably different from the surface coloration. Limitations include noticeably repeated patterns, color fastness failure, and the manufactured stone may damage more easily than natural stone.

Manufactured Stone & Veneer

[HB-04](#) | [HA-01](#) | [OE-01](#) | ON | EB | [NC-01](#)

There are two methods to make manufactured stone. First is the **wet cast** process. Consisting of cement (usually Portland) mixed with aggregates, it is cast in a mold, and upon release, molded details are visible and individual pigments can be applied to the finished surface to better represent stone. Physical damage to the material may reveal an undercoat noticeably different from the surface coloration. Since this material is softer than natural stone, it is important to consider the color of the core material, not just the exterior finish. Thickness can vary from a few inches thick to approximately ¾" for veneer applications [Carter, Buildipedia, Wallender].

The second is the **dry tamp** method. The manufacturer tamps the dry concrete mix into the mold, dampens the stone, and upon release, the cast stone resembles a sculpted stone with the texture of a fine limestone or sandstone. The surface does not need color treatment as the dry mix would have the selected pigmentation homogeneous through the material. During the tamping and molding, rebar and clips or hooks can be tied inside, allowing for a variety of attachment methods and larger panel sizes [Premier Cast].

For veneer, the ¾" thick wet cast manufactured stones are set into stucco. It is not uncommon for this "lick and stick" method to fail, meaning this method depends greatly on experienced labor [Carter].

Also, good architectural detailing and experienced labor are crucial to ensure the successful use of all products. These materials are **not recommended** for historic structures.

Manufactured Stone Panels

[HB-04](#) | [HA-01](#) | [OE-04](#) | ON | EB | [NC-01](#)

These manufactured panels use wet cast molds that have the appearance of multiple stones or rocks in a variety of patterns where individual pieces can fit next to each other to form either wall cladding or an entire structural wall. On the exterior side, finished materials such as natural stone, manufactured stone and/or veneer can be embedded. It is important to review the repetition of any pattern, as well as how the pattern extends into adjacent panels. Joints between panels may also appear noticeable, in which case

other panel systems would need to be selected. Special concrete stains can also be applied to create faux finishes. This material is **not recommended** for historic structures.

Non-Structural Stone Facsimiles

These materials are best used where physical damage is unlikely, such as at higher elevations.

Glass-Fiber Reinforced Concrete (GFRC)

HB-04 | HA-01 | OE | ON | EB-01 | NC-01

This material consists of concrete with additives and fiberglass that can be cast into a mold, capturing the appearance and texture of stone, but lacking its ability to bear loads. Lightweight, the thin material forms a hollow panel shell and must be anchored to the structure, with larger panels needing additional reinforcement. The material works well for details such as stone relief panels, window hoods, building brackets and cornices. It is acceptable to use this material on a historic building if the material is beyond repair and replacing it with the same material type is not possible; this item is **not recommended** for use at the ground level, for items such as porches.

Epoxies (Epoxy/Polymer Concrete)

HB-04 | HA-01 | OE | ON | EB-01 | NC-01

When used as a molding resin, epoxy, combined with sand or with stone chips, can replicate the detail of carved stone or wood. This non-loadbearing, lightweight material requires its own structural frame. Although durable, the material can be hazardous due to its flammability and off-gassing when curing. This material requires special additives to ensure color fastness unless the material is painted. Experienced fabricators and installers are highly recommended.

Polyurethane Faux Stone Panels

~~HB~~ | ~~HA~~ | **OE | ON | EB | NC**

Made of a low-density foam with a plastic layer on top, this material looks similar to manufactured stone, but has the consistency of Styrofoam, allowing for ease of installation. Quality is variable as some products will appear noticeably false even from a distance; these lesser products should be rejected. While used mostly for interior finishes, only exterior-rated products should be employed. Faux veneer stone can be very easily damaged. This product would work best under a sheltered eave or as a cornice; locations at ground level or anywhere it could be damaged by hail or projectiles such as golf balls should be avoided. There are also concerns regarding this material's durability as the exterior finish layer may be unable to withstand long-term weather conditions. If this product is proposed, a review of similar installations with contact information should be included as part of the review submittal. This material is **not recommended** for historic structures [Wallender].

Concrete Stain

HB | HA-01 | OE-01 | ON-01 | EB-01 | NC-01

Staining concrete can work with molded stone patterns to create reasonable facsimiles. Care should be taken to ensure colors look natural and traditional. See Masonry/Brick Stain for a very similar product.

Historically Used Stone Alternates

These stone alternates date to the 18th C in this country. These should only be used on a historic structure if the material was used previously, and if the original material cannot be repaired. While there is nothing that would prohibit use on a new addition or new building, it is imperative that any ornamentation be of a simple nature to not draw attention.

Paint with Additives

HB-01 | HA | OE | ON | EB | NC-01

Similar to stucco, contractors of yore would apply paint mixed with sand over flush wood siding to emulate stone. Ideally, preservation architects and restoration contractors would be most familiar with this methodology, and they should be utilized for this type of work.

Stucco

HB-01 | HA | OE | ON | EB | NC-01

Historically, contractors of previous centuries utilized stucco as a cheaper alternative to actual stone masonry construction. Stucco can be scored in block patterns to match stone block lines or mortar joints. This works best for architectural styles that emphasize clean lines and forms such as Greek Revival, Neoclassical Revival, and Art Deco. Preservation architects and skilled and experienced crafts people should be utilized for this type of work.

Types of Stone Alternates preferred

1. Molded manufactured stone with color inside, matching the exterior coloration.
2. Stone molds that match the stone used historically in the district (limestone blocks of varying sizes that approximate the stone sizes used historically, laid in a coursed rubble pattern).

Permitted Stone Alternates

1. Historically used stone alternates.
2. Cast Stone:
 - a. Manufactured Stone, ideally dry-tamp



Figure 2: Traditional Stonework and Some Modern Counterparts

Traditional Stonework



Nineteenth Century **random ashlar** pattern of solid limestone. Note the rows have different heights and widths of stones fitting together, shown here with mortar. This is a good model for new construction in Dublin.



Circa 1900 Retaining Wall of local limestone, dry-stacked (meaning no mortar is used) in a **coursed rubble** pattern. This is also a good model for new construction in Dublin.

Modern Stonework



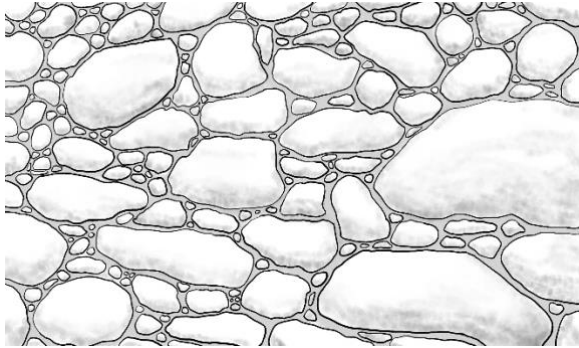
Modern stone facsimile of random ashlar pattern, although the stone isn't fully squared off as it would be in traditional construction. This photo most likely represents a veneer that includes 'L' shaped pieces wrapping the corner.



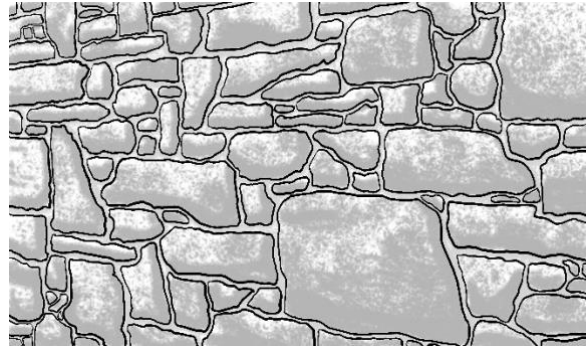
Modern manufactured stone, most likely wet cast, dry-stacked in a squared and coursed rubble pattern. The color here is a little too orange to fit in with the local-quarried stone.

While modern stone alternates can approximate the original stone style, it is important to note that modern equivalents should complement and not detract from historically used stone. The modern examples, the two on the top-right, have varying degrees of success in meeting these guidelines.

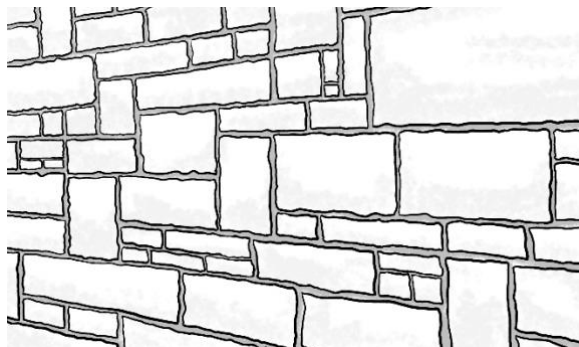
Figure 3: Additional Stonework Shaping and Patterning



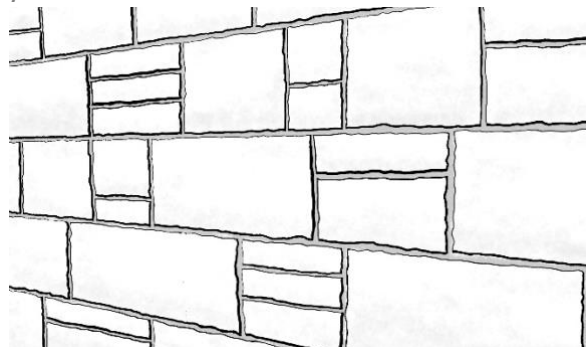
Uncoursed Stone Rubble



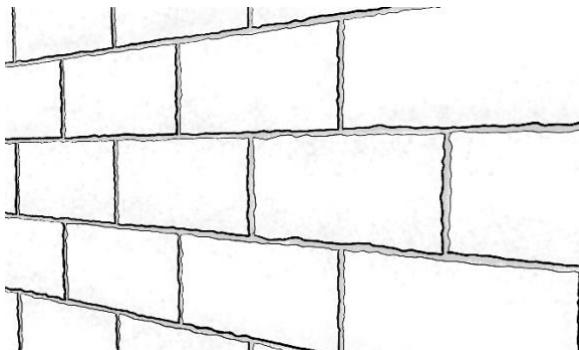
Coursed Stone Rubble



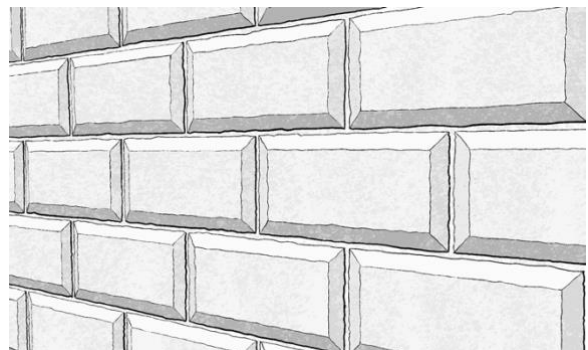
Stone Square and Coursed



Random Ashlar Stone

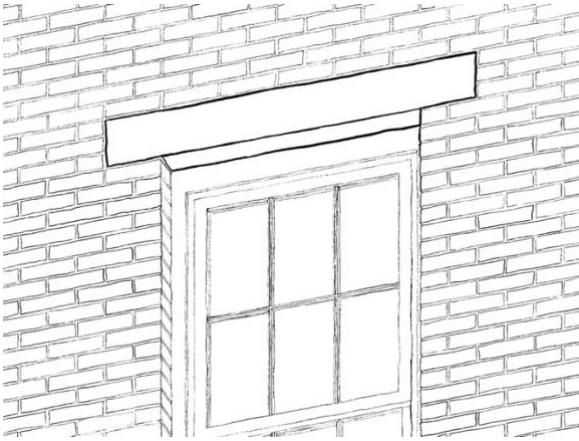


*Ashlar stone has been used for centuries. Its simplest form, **plain ashlar**, consists of large, rectangular stone blocks of the same size laid in running bond pattern (where the row above starts its pattern from the middle of the stone in the row below).*

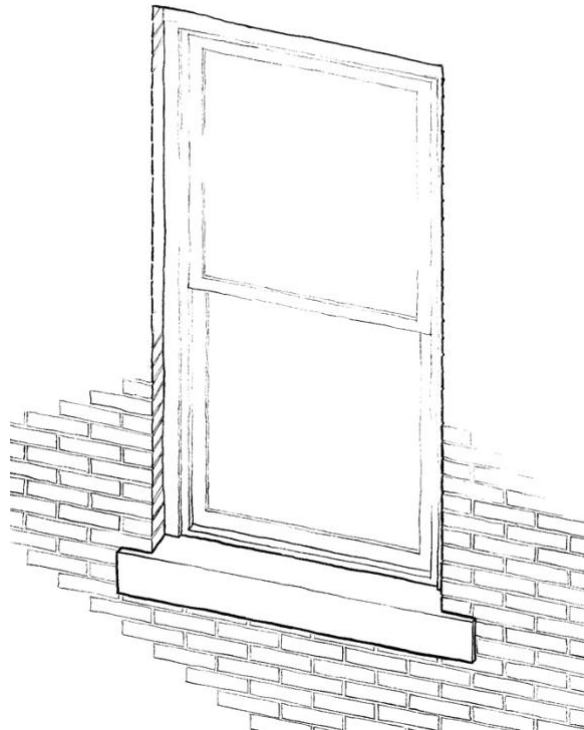


Rusticated ashlar stone pattern. This is common with classical- and renaissance-leaning architectural styles, as well as Queen Anne and Second Empire. This would commonly belong to richer more-prominent structures; as such, it needs justification for use in new construction.

Figure 4: Common Stone Details



Stone Lintel found in typical brick masonry wall opening



Stone Sill found in typical brick masonry wall opening



6. Brick Masonry Alternate Materials

Before defining alternate materials for brick masonry, traditional brick construction requires a bit of an explanation.

Traditional Brick Masonry

Early 19th central Ohioans utilized clay-brick masonry for more durable houses, churches, and mercantile buildings. These constructors utilized local clay bodies and river sand for mortar, creating mass walls of several wythes (meaning the width of a single brick) thick, supporting the floors and the roof. Sometimes darker bricks or bricks fired at higher temperatures could be used on the façade, providing the benefit of better moisture resistance but at an increased cost. The exterior brick walls would remain unpainted, allowing water vapor to work its way to the outside. In the later 1800s, brick and mortar of a single wythe were tied to smaller wood frame structures, and later to cheaper structural masonry such as terracotta block and concrete block, termed *brick veneer* where a single wythe of brick is tied or anchored to a structural element, being either concrete, concrete masonry blocks, wood studs, or even another single wythe of brick. If there is no gap between the bricks and the structural element, this is called a *composite wall*. Where there is a gap, or an airspace of 2" to 3.9" between the brick and the structure, metal ties or anchors transmit the lateral loads to the opposite side, strengthening the wall laterally. The airspace also allows for drainage of moisture that penetrates the brick, as well as giving it its name, *cavity wall*. The brick is self-supporting, but the ties keep it in line with the structural element as well as resisting wind and other loads. This construction type continues into the present day; however, earlier brick masonry and its mortar perform differently than modern construction methods. Architects, engineers, and construction contractors should utilize recommended historical practices and research prior to starting repair or rehabilitation of older structures or they risk damaging original materials.

Alternate Materials for Brick

Alternate materials for brick masonry have been on the market for centuries, ranging from painted wood siding with embossed mortar lines, and stucco. Today, a variety of materials attempt to replicate brick, some approximating traditional construction methods while others capitalize on using rapid construction methods such as panel construction or utilizing thin brick veneer. Brick stain, while it is not an alternate material, provides an *alternate color* to existing masonry. It is recommended that only non-contributing existing structures or new construction utilize brick stains, and these stains should complement the existing historic fabric and use a more traditional palette.

Stucco

HB | HA-01 | OE | ON | EB | AC-01

Stucco has historically been doctored to appear as brick or, more often, stone masonry; see the section under "Stone Alternate Materials: Historically-Used Stone Alternates" for more information.

While this is a historic alternate material, it is *only applicable* for use as an *alternate* for brick or masonry if it has been used historically on the building in such a manner. Its proposed use should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and the surrounding district.

Thin Brick Veneer

HB | HA | OE | ON | EB | AC

Thin brick veneer involves taking bricks of ~5/8" thickness and attaching to thin set mortar or stucco, not unlike applying tile to a bath surround; this material requires good architectural detailing and installation by trained specialists to best prevent loss of adhesion. Since this material is not load-bearing, the thin set mortar should be applied directly to a structure (such as a concrete block masonry wall) or to the substrate of the structure (such as sheathing -- ideally with a weep system -- on wood or metal studs); the thin bricks can now be placed, with spacers between them, and after drying, grout can then be applied. Special

attention to detail must be made to ensure the finished wall mimics traditional construction; special 'L'-shaped corner and edge pieces can help carry the illusion that traditionally-sized modules were used. Attachment methods do vary in quality. This material is **not recommended** for historic structures or their additions; it is also **not recommended** for any new work within a historic district.

Brick Panel Systems

HB | **HA-01** | **OE-01** | **ON-01** | **EB-01** | **NC-01**

Brick panel systems show a group of bricks, usually in a running bond pattern. Unlike traditional construction, where masons use individual bricks and specific-use mortar to build up the wall, the panels are made off site under controlled conditions, and unskilled labor can install the panels in less time. There are two types of panel construction: high-density polyurethane or plastic (called Faux Brick), or precast concrete. The polyurethane or plastic panels are light and easy to install over existing surfaces or substrates, but this material is not unlike vinyl siding material. Precast concrete panels can be molded with a running bond brick pattern on one side, or with thin bricks or standard bricks embedded across the panel in a running bond pattern (see Stone Alternate Materials: Cast Concrete Stone Alternates, Manufactured Stone Panels). Both materials are better at resisting moisture than traditional masonry, but only the precast concrete has the durability of concrete. Both panel systems lack the authenticity of a hand-built wall, as the pattern will have perfect bricks at the same row height, lacking that slight variation, yet large joints between panels may be visible, and repeated patterns may call attention that this is not a traditional material. Due to these variables as well as the manufacturer's quality, panel systems are **not recommended** for historic buildings. For new buildings, individual review is highly recommended.

Brick Stain

HB | **HA-01** | *OE* | *ON* | **EB-01** | **NC-01**

For existing brick, it is not uncommon for today's designers to consider changing the brick's color via paint or stain. Painting previously unpainted brick should be avoided as this traps moisture and damages the masonry. Brick stain avoids this pitfall provided all manufacturer guidelines are followed, including, but not limited to, substrate testing the existing brick and application by product-approved applicators (usually the stain company itself). Options range from full opaque coverage over brick and mortar to stains that cover the brick in one color and the mortar in another. It is also possible to provide additional stain to some bricks, creating a mottled look. Since brick stain can have a high visual impact and greatly varies among products, it is highly recommended that the City of Dublin and the ARB individually review each brick stain project. In addition, it is **not recommended** for historic buildings since it permanently alters the look of historic brick and mortar.

Types of Preferred Masonry

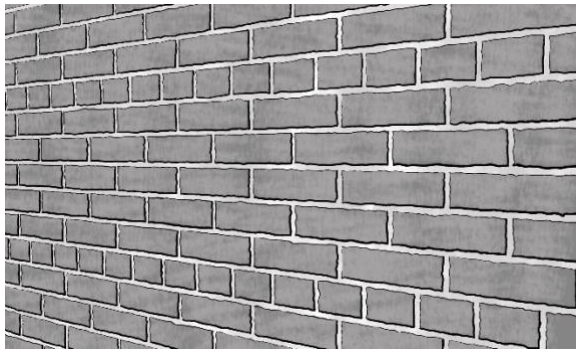
- 1) Original Stone Masonry Foundation—Pre-WWII
- 2) Rock-Faced Concrete Block – Late 19th and early 20th century Historic Buildings Only
- 3) Concrete Masonry Units (CMU)—Post- WWII Historic Buildings only
- 4) Historic Stucco Faux Masonry

Allowed Use in Historic Buildings & District

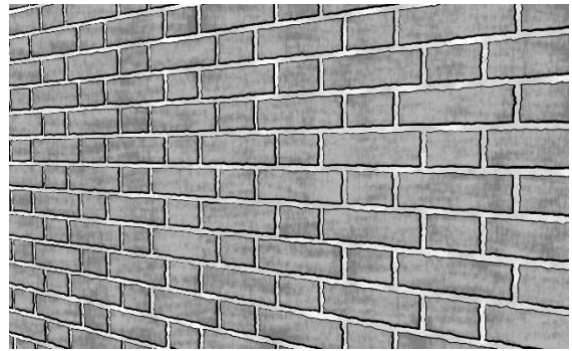
- 1) Outbuildings (Garages, Sheds, etc.)
- 2) Non-historic additions to historic buildings
- 3) Historic buildings dating from after WWII
 - a) Requests for alternative materials on the front- and street-facing elevations of a historic building should be reviewed on a case-by-case basis

- 4) Historic Stucco Faux Masonry
- 5) Brick Panel System for New Construction
 - a) Should be reviewed and approved on a case-by-case basis to ensure compatibility with the historic building and surrounding district

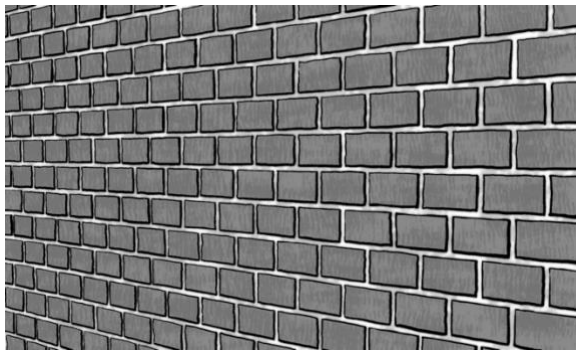
Figure 5: Common Brick Patterns



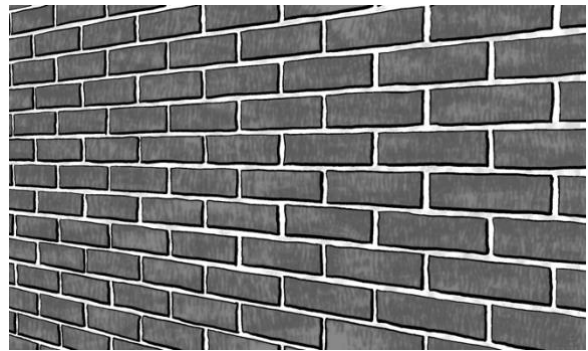
Common Brick Bond, also known as American Bond



Flemish Brick Bond

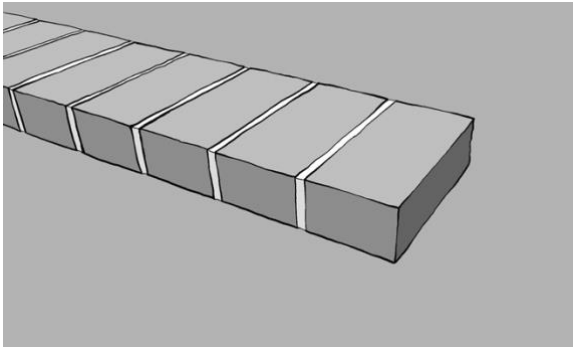


Header Brick Bond

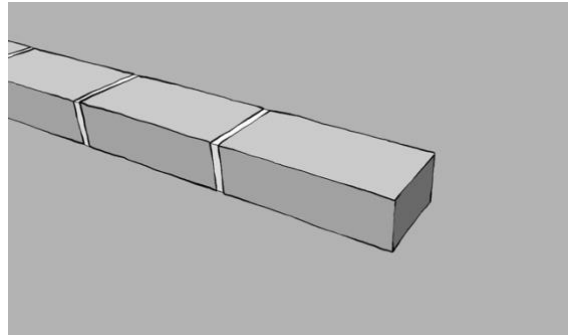


Stretcher Brick Bond, also known as Running Bond

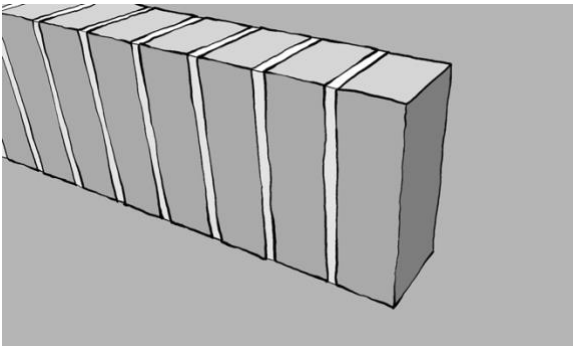
Figure 6: Common Brick Courses



Single Header Course

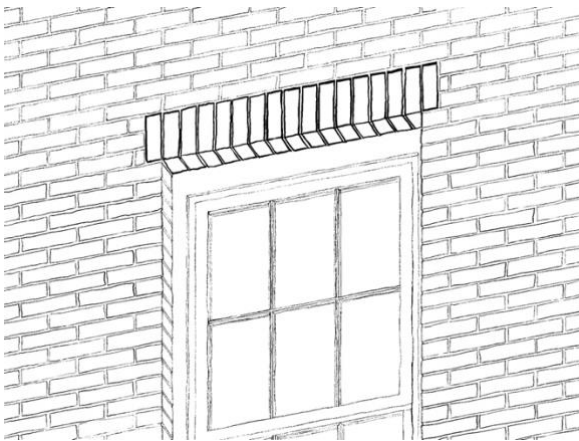


Single Stretcher Course

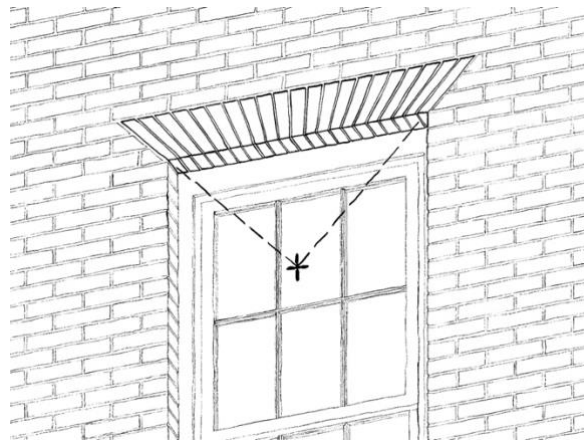


Single Soldier Course

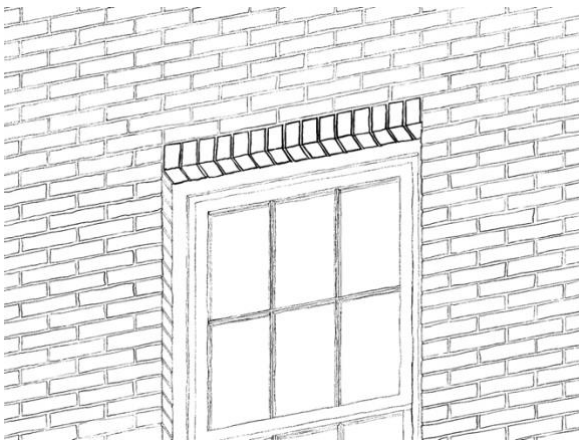
Figure 7: Common Brick Masonry Opening Lintels



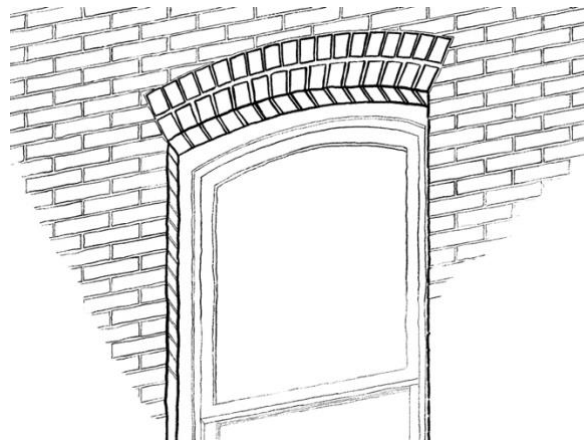
Flat Arch, Soldier Course



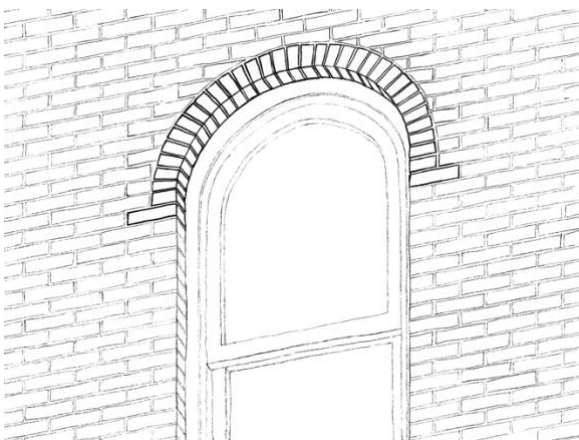
Flat Arch, Soldier Course with Flair on Sides



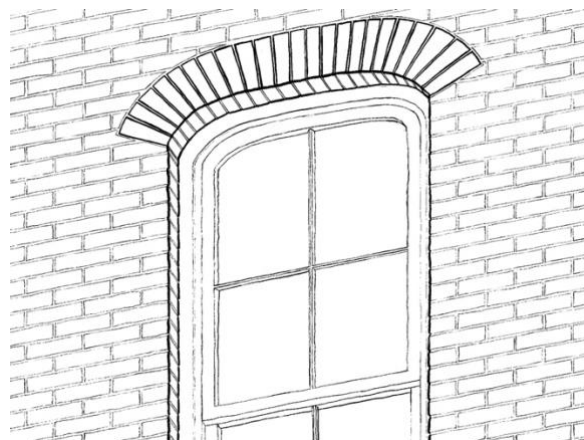
Flat Arch, Rowlock Course



Low Arch, Double Rowlock Course



Full Arch, Rowlock Course



Segmented Arch



7. Concrete and Concrete Masonry

HB-03 | *HA* | **OE** | *ON* | **EB-01** | *AC*

In the early 19th century, building construction first utilized dry-tamp cast stone and poured concrete as an alternate material for quarried stone (see Stone Alternate Materials: Manufactured Stone & Veneer section for an explanation).

Types of Concrete/Concrete Masonry

- 1) Cast-in-Place Concrete
- 2) Precast Concrete/Concrete Panel
- 3) Masonry
 - a) Cinder Block – Pre-WWII
 - b) Rock-Faced Concrete Block – Late 19th and early 20th century
 - c) Concrete Masonry Units (CMU)—Post-WWII

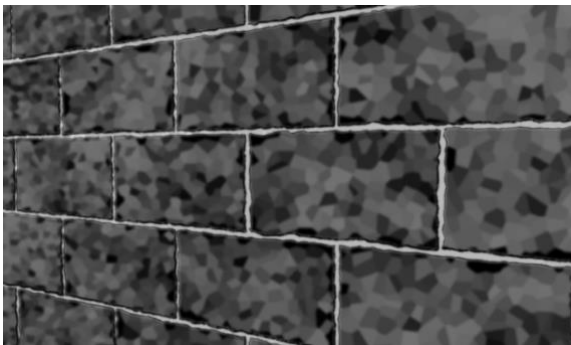
Types of Concrete Masonry Preferred

- 1) Cast-in-Place Concrete
 - a) Ensure color/texture match to historic
 - b) Casting from the original is preferred
- 2) Concrete Masonry Units (CMU)
 - a) Ensure color/texture match to historic
- 3) Paint/Finishing

Allowed Use in Historic Buildings & District

- 1) Outbuildings (Garages, Sheds, etc.)
- 2) Non-historic additions to historic buildings
- 3) Historic buildings dating from after WWII
 - a) Requests for alternative materials on the front- and street-facing elevations of a historic building should be reviewed on a case-by-case basis

Figure 8: Common Concrete Masonry Examples



Rock-faced Concrete Block



8. Stucco & Its Alternate Materials

While stucco has already been included as an alternate material (see the section under Stone Alternate Materials: Historically Used Stone Alternates), alternate materials for stucco are commonly used nowadays. First, it is important to understand what defines traditional stucco before addressing modern alternatives.

Traditional and Modern Stucco

Originally plaster and stucco were the same material with the former used inside of a building and the latter outside. This material consisted of a paste made of lime, sand, water, often with animal hair or plant fibers added to increase strength. Builders used a three-coat (or layer) process, with the first coat, or scratch coat, usually applied to horizontal wood lathe or masonry, with a middle, or brown, coat, followed with a finish coat. Towards the end of the 19th C, contractors added Portland cement to improve durability. Since World War II, the combination of Portland cement, sand, water, and lime are applied to exterior metal wire mesh, usually in either a single coat application or a traditional three-coat application. It is not uncommon for stucco mix additives to include fibers and synthetic acrylics (the modern take on animal hair). Instead of limited to a light gray color, today’s stucco manufacturers can integrally mix in a wide range of finish coat colors or use an acrylic finish coat (see stucco alternates, acrylic stucco).

Stucco Alternates

Since traditional stucco requires skilled and experienced laborers, the construction industry has looked for alternatives, including acrylic stucco and the exterior insulation finish system or EIFS.

Acrylic Stucco	HB HA OE ON EB NC
Sometimes called Synthetic Stucco, it is not EIFS. Rather, this material contains acrylic resins with sand added. Unlike traditional stucco, this material has greater elasticity, minimizing the probability of cracking. It also comes in a greater variety of colors; however, the palette for the historic district should be referenced for proposed building colors. The material lacks the breadth of traditional stucco’s finish texture.	

Exterior Insulation Finish System (EIFS)	HB HA OE ON EB NC
Pronounced <i>EEF-ess</i> , this material can be applied directly to the building’s exterior sheathing, such as masonry walls that are in poor condition or to wood frame and sheathed walls. It consists of insulation board with reinforcing mesh, a base coat, and finish coat providing a stucco-like weather seal [Terraco]. Considered a post-World War II material, commercial buildings started using this cladding in the 1960s, followed by residential in the early 1980s. The concerns with EIFS are more to its placement and that it is installed and maintained properly. It requires trained laborers, and it should be installed above ground level to avoid damage from lawnmowers or vehicles. It also requires regular cleaning and re-application of paint every seven years. Repairs can be expensive.	

There are two main types of EIFS systems: Barrier EIFS systems and EIFS Wall Drainage systems. Barrier EIFS systems rely on the base coat portion of the exterior skin, along with sealants and flashings, to resist water penetration. A wall drainage system, sometimes referred to as a water-managed system, has a drainage cavity between the insulation and the substrate, providing a channel to direct condensate out at the bottom. Acrylic stucco can then be applied to the exterior.

Types of Stucco Replacement Preferred:

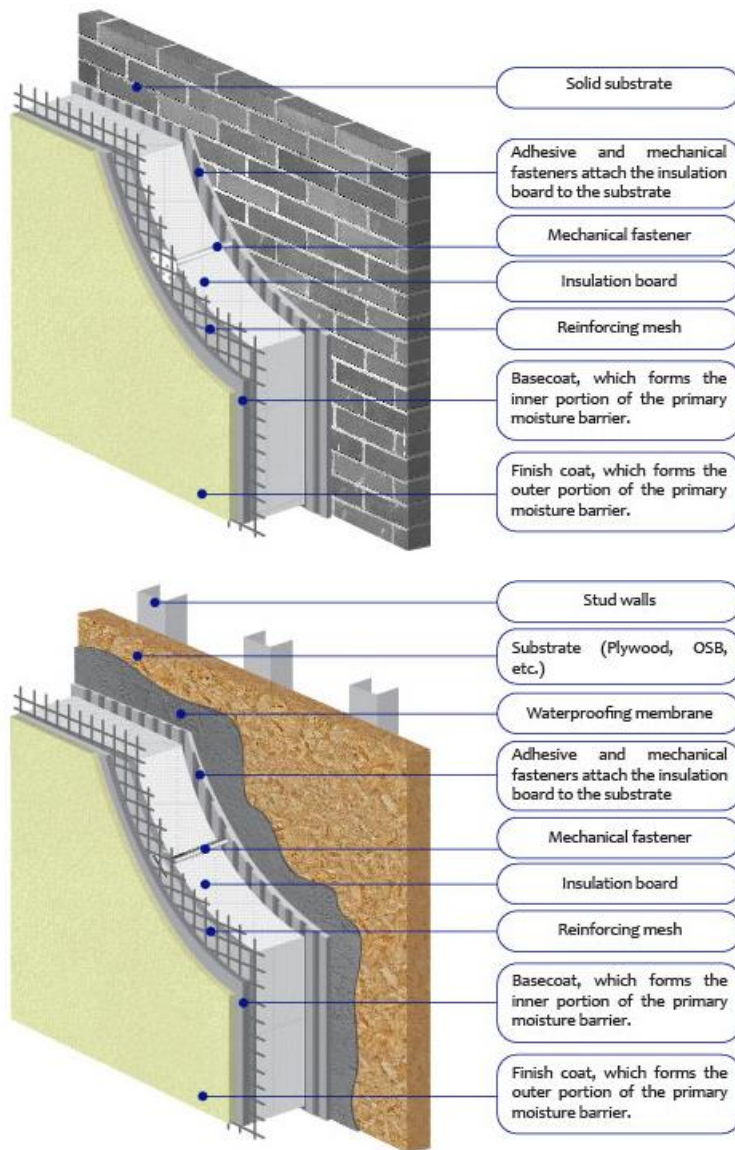
- 1) Traditional stucco should be used where traditional stucco exists.
- 2) Acrylic Stucco applied in a manner similar to traditional stucco would be second, with colors and texture in keeping with the applicable architectural style

- 3) EIFS should not be allowed except on new construction. If used, it should be above 96 inches above the ground plane (at all locations around the building).

Permitted Application of:

- 1) Non-contributing historic buildings, at least 8 ft above grade.
- 2) New development:
 - a) Acrylic Stucco
 - b) EIFS
- 3) Non-Historic additions to historic buildings (side and rear).
- 4) Requests for alternative materials on the front and street-facing elevations of a historic building should be reviewed on a case-by-case basis.

Figure 9: Details of EIFS Applications



Application of EIFS against a solid structure such as Brick Masonry. 3) EIFS can be used in new construction if above 8'-0" and approved.

Courtesy of Terraco

Application of EIFS against a framed structure such as Metal Wall Studs. EIFS can be used in new construction if above 8'-0" and approved.

Courtesy of Terraco



Windows

Windows are a character-defining feature in a historic building and reflect the style of a building and the period in which it was built. In Dublin, the earliest buildings date to the Federal period (early 1800s) and have typical six-over-six or nine-over-nine divided light sash windows, typical of the era. As technology evolved, glass panes became larger, and windows had one-over-one or two-over-two divided lights from the mid-nineteenth century on into the twentieth century. In the early twentieth century, window patterns began to reflect those of the colonial era, usually six-over-six or nine-over-nine light sash windows. By the 1950s with the rise of the ranch house and mid-century modern architecture, the wood sash windows of the past could be replaced by modern aluminum windows—either sliders, casement, hopper, awning, or fixed picture windows. Today, homeowners often request to remove and replace original windows with more energy-efficient ones. The most common window replacement materials are steel, aluminum clad, vinyl clad, vinyl (not permitted), and composite materials. In all cases, replacement windows should follow the recommendations of the *Guidelines*.

However, the profiles created by the different components of a historic window create shadow, depth, interest and complexity that modern windows usually cannot replicate. And while many homeowners replace historic windows for more energy-efficient modern ones, a properly weatherized repaired window is at least as energy efficient as a modern replacement window, particularly if a compatible storm window is added. Thus, it is important to explore repair or partial replacement before considering whole window replacement on a historic building. For example, window craftsmen can keep original wood window sashes and muntins while installing new insulated glass for better energy efficiency. Where parts of the window sash or muntin may suffer complete deterioration, craftsmen can build replacement parts. Alternate wood materials such as an engineered composite wood could also be utilized. Any alteration or replacement of windows should be discussed with the ARB. Ideally, the first choice is window repair, then replace in kind, and lastly, a replacement window matching the style, dimensions, and operation of the original.

Types of Alternative Window Materials

Alternate window materials refer to using a modern material that mimics the original, in addition to having the same window type, style, operation, and dimensions. Engineered composite wood makes for a good alternate material for wood. And one metal window could be substituted for a different metal window, provided it meets all other type, style, dimensions, and ideally operation type. It is also possible to have hybrid window types that use a combination of alternate materials in their construction. For example, the Andersen A-series window has a fiberglass frame, a wood interior, and an external frame composed of ground wood and vinyl [Baker]. Other window manufacturers such as Jeldwen, Marvin, and Pella, also offer a variety of wood, clad wood, composite, fiberglass, aluminum, and vinyl windows. Any submittal for review should include replacement window information with materials, type, style, dimensions, and operation as well as profile and materials of the various parts.



Window Cladding

Windows with cladding usually have natural wood or an engineered composite wood core left exposed to the interior, providing a surface ready to receive stain or paint. The exterior of the window is clad, or wrapped, in a material such as aluminum, vinyl, or composite fiberglass to protect the wood and provide weather resistance.

Aluminum Cladding

HB-04 | HA | OE | ON | EB | NC

Aluminum-clad windows have been approved by the National Park Service for tax certification projects where the original windows are beyond repair.

Aluminum-clad windows have aluminum material as a facing over the wood frame for the trim, sash units, and muntins, and usually have an anodized or baked enamel finish. They can be either extruded aluminum of 1/8" thick and resistant to dents or scratches, or roll-formed, being thinner and its surface can chalk or fade with time. They can come in double- or triple-glazing with integral muntins for energy efficiency.

Vinyl Cladding

HB-04 | HA | OE | ON | EB | NC

Vinyl-clad windows are similar to aluminum-clad in that the vinyl is wrapped over the wood frame. Like aluminum-clad windows, they come in a variety of designs and often have double or triple glazing for energy efficiency. Also like aluminum clad, the lower-end vinyl cladding can suffer deformation or chalk over time. The lifespan of this window is ~30 years with maintenance. The original finish will be bright and shiny, not matte.

Fiberglass Cladding

HB | HA | OE | ON | EB | NC

Fiberglass cladding offers a weatherproof covering over the wood frame, similar to vinyl cladding. They also come in a variety of designs and can have double or triple glazing for energy efficiency. The lifespan of this window is ~50 years with good maintenance. See Fiberglass, Windows, Non-Cladded regarding finish limitations.



Windows, Non-Cladded

Windows traditionally were made of solid materials such as wood, steel, or aluminum, depending upon the era of construction. Modern solid (non-clad) window materials primarily consist of fiberglass, vinyl, or aluminum—all weather-resistant materials. While a traditional material such as aluminum may be a suitable replacement material for an original aluminum or steel window that has greatly deteriorated and cannot be repaired, any window replacement should be discussed with the ARB.

Fiberglass

HB | HA | OE | ON | EB | NC

Fiberglass is a material consisting of extremely fine filaments of glass that are embedded in various resins to make doors, windows, porch columns, and other building elements. Using fiberglass frames and sashes provides greater durability than wood and vinyl, as well as excellent rigidity. It also provides better rate of thermal expansion as the window sash and frame contracts and expands at the same rate as the glass it holds. The number of window sizes and factory finish color are still limited, more options are coming onto the market each year. Some manufacturers now produce stainable Fiberglass that has the look and grain of wood. Fiberglass can be painted, but some suppliers' warranties will only cover the factory-finish provided. **It is important to note that unpainted Fiberglass finishes can become chalky after years of sun exposure; using a factory finish with a durable UV-blocking coating is highly recommended.** Unlike the bright, shiny appearance of vinyl or vinyl-clad windows, the exterior fiberglass will have more of a matte finish. Smooth surface options are strongly preferred. While a better option than vinyl, we do **not recommend** the use of fiberglass windows within the boundaries of the historic district. This would have to be reviewed on a case-by-case basis.

Vinyl

HB | HA | OE | ON | EB | NC

Solid vinyl windows are **not permitted** in the boundaries of Historic Dublin per Appendices F and G of the City of Dublin's Zoning Code.

Fiberglass Composite

HB | HA | OE | ON | EB | NC

Another new alternative building material for windows are composite materials such as fiberglass and wood (see Fiberglass). These composite windows usually use recycled materials and have more of a matte finish than the bright, shiny appearance associated with vinyl or vinyl-clad windows.

Metal (Steel & Aluminum)

HB-03 | HA | OE-03 | ON | EB | NC

Steel and aluminum windows can be proposed as alternate materials for wood windows. Both materials are very durable, and work well where there are security concerns. Steel is known for its strength and small sight lines, where frames, mullions and muntins can have narrow widths. Where steel windows are heavy, aluminum, a lighter metal, can install more easily than steel. However, aluminum lacks steel's strength, requiring wider frames, mullions and muntins over steel. Generally, steel works better than aluminum for large size windows with narrow frames, mullions, and muntins.

This material needs a Waiver from the ARB if it is proposed to replace original wood window(s) on a historic building. However, it might be the best choice for a Mid-Century Modern structure.



Types of Alternative Window Material Preferred:

For all windows, the original material is the *preferred* material. In addition, special attention should be paid to making sure the window frame, sash sizes, muntin sizes and placement, and the style of the window closely match the original. Also, windows should only be considered eligible for replacement if they are unable or it is unfeasible to repair them. Peeling paint and broken glass are not evidence that a window needs replacement.

Original Material:	Wood Window	Aluminum Window (Post WWII)	Steel Window (Hot Rolled)
Alternates Preferred, in order:	1. Aluminum Clad 2. Fiberglass Clad* 3. Vinyl Clad 4. Composite/Fiberglass* 5. Fiberglass*	1. Steel Cold formed 2. Fiberglass*	1. Fiberglass* 2. Steel Cold formed 3. Aluminum

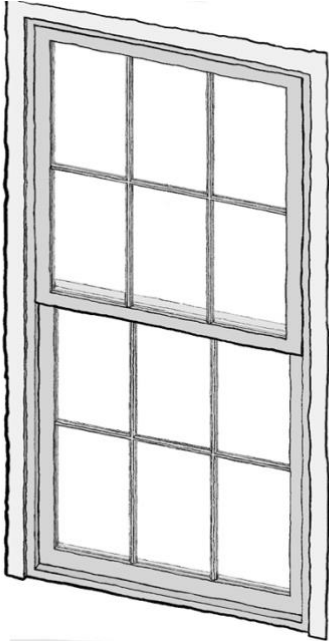
*Material requires a Waiver from the ARB due to Zoning Code; smooth surface finish preferred.

Permitted Application of Replacement Windows:

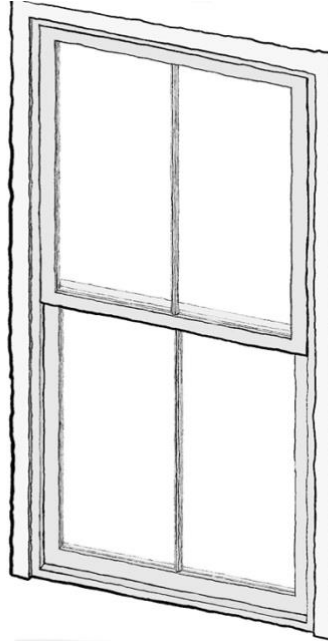
1. Non-contributing historic buildings
2. New development
3. Outbuildings (garages, sheds, etc.)
4. Non-historic additions to historic buildings
5. Historic buildings on rear- and non-street-facing elevations
 - a. Requests for alternative materials on the front- and street-facing elevations of a historic building should be reviewed on a case-by-case basis.



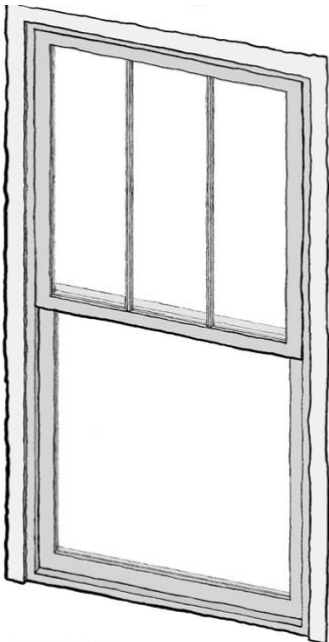
Figure 10: Common Window Lite Arrangements



Six-over-Six

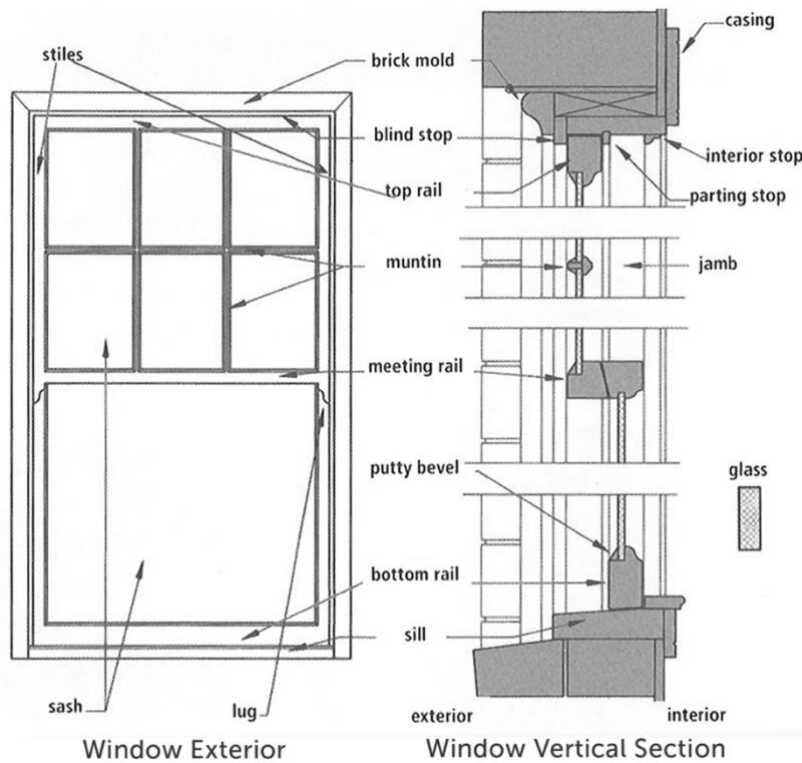


Two-over-Two



Three-over-One

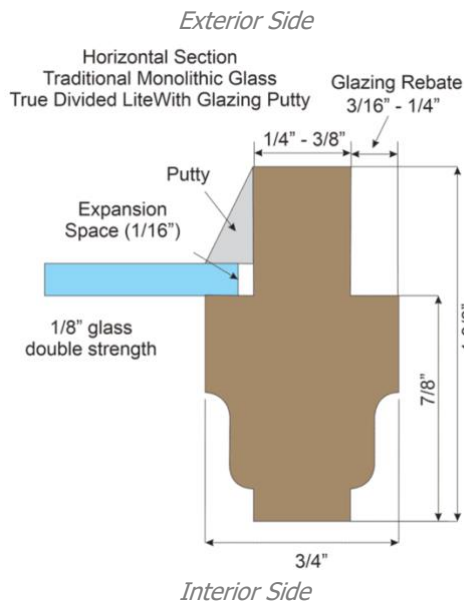
Figure 11: Window Diagram showing Traditional Wood Double-Hung



Traditional Wood Window Design showing True Divided Lites (TDL) in the top sash. Your window style may be different, depending upon the period in which your building was constructed.

Graphic courtesy of National Park Service, via McIntosh

Figure 12: Traditional Window Muntin Diagram



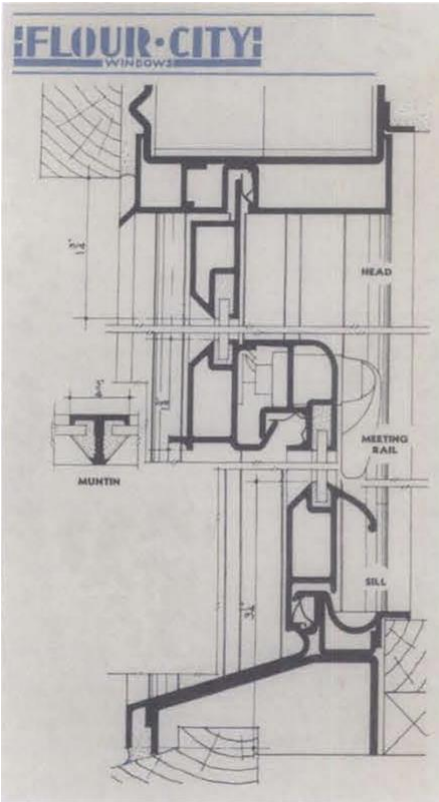
Note that the putty does not enter the "daylight" of the glass but its edge aligns with the interior of the wood muntin. Also, note that the dimensions and shape of the muntin varies, depending upon the architectural style and form and its associated period. See [Appendix C, 4. Windows](#) for more detailed information.

Traditional Wood Muntin with single pane of glass. Both sides would have glass with glazing compound, but the one on the right is not shown for clarity.

Traditional Wood True Divided Lite (TDL) Detail

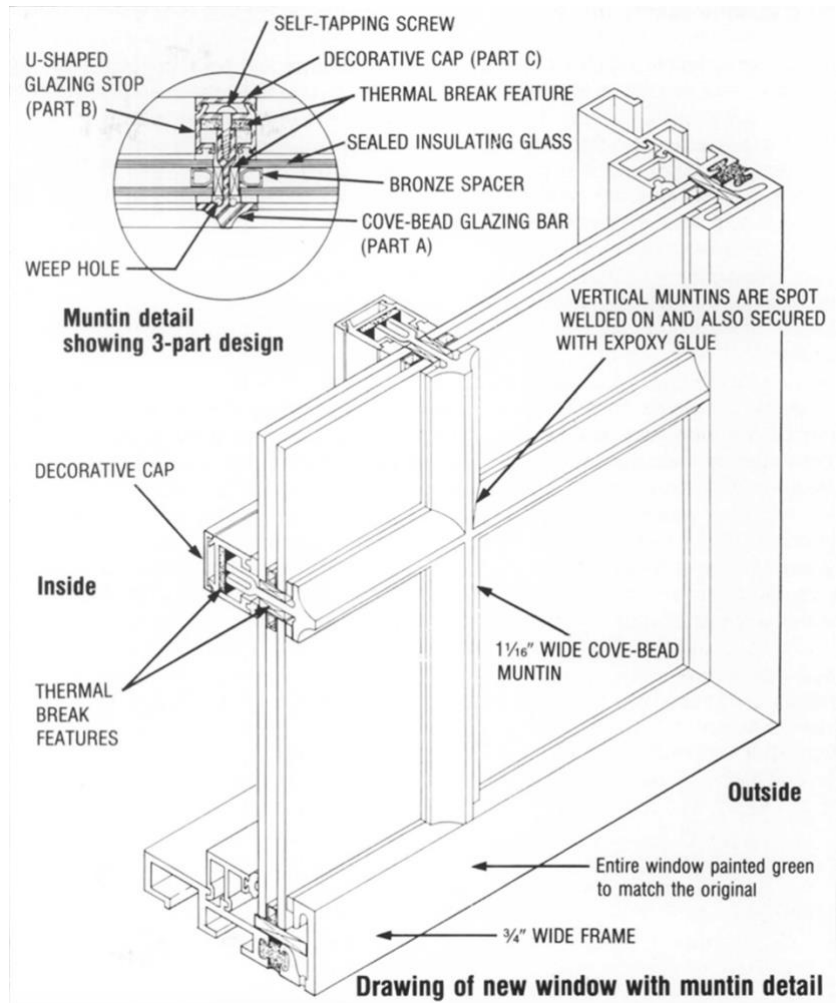
Graphic courtesy of William Hepburn of Heirloom Windows

Figure 13: Window Diagrams of Aluminum showing Traditional and Modern



a) Aluminum Double Hung Window: Vertical Section with Muntin Detail. This image shows the first use of an aluminum bevel in 1938; future windows omitted the glazing compound and used this instead. The most common finish from 1920-1950 was 'mill finish' also known as 'nonfinish.'

Graphic courtesy of Kaaren R Staveteig and the National Park Service.



b) Aluminum Fixed Window: Isometric Section This image shows a modern replacement window where Insulated Glass (also known as double-glazed due to having two panes of glass with an air space or void between them) is placed into replacement muntins with dimensions and style closely matching the original, a preservation standard. The spacer between the glass panes should not extend beyond the muntin, even if the dimension is slight as what is shown here. This replacement window would have worked better as a Simulated Divided Light (SDL) with spacer bar corresponding to each muntin.

Graphic courtesy of Charles E Fisher and the National Park Service.

Figure 14: Modern Divided Lite Options



a) True Divided Light This type shows the traditional solid wood muntin wrapping a cut panel of glass. Note that there are no spacers as the glass is cut to fit inside the muntins. **RECOMMENDED**



b) Simulated Divided Lite (SDL) with a Spacer Bar This type has insulated glass with a spacer between the panes, simulating the look of a solid muntin. **RECOMMENDED**



c) SDL without a Spacer. This type, when used with insulated glass, lacks a spacer bar between the panes, making it unable to maintain the illusion of a quality window. **NOT RECOMMENDED**



d) Grilles-between-the-Glass (GBG). This type is a cheaper option that is not uncommon in late 20th Century and 21st Century windows to create the appearance of divided lights for the least cost. It is not historic and should not be used in a historic district. **NOT RECOMMENDED**

Modern Window Divided Lite Options: **Options a and b are acceptable** provided the muntin width matches the historic window used or of that architectural style for form. Also, if a spacer is used, it must not expand beyond the profile of the interior and exterior grilles.

Graphics courtesy of Marvin Windows

Exterior Doors

Exterior doors includes Entry Doors (usually located on the front elevation) and Garage Doors. As a reminder, doors are a main element of a historic building and should be retained unless damaged beyond repair or not original to the historic structure. Replacement doors should have the same style, trim, profile, glass lights, transoms or sidelights, and features of the original.

Entry (Pedestrian) Doors

These are the doors providing entry into and egress from a building, most often opening by a series of hinges on one side. As architectural styles changed over the decades, the appearance of the main entry varied as well, and any replacement door needs to reflect the style of the historic building. While traditional doors were made of wood, doors today come in a wide variety of alternative materials such as aluminum, steel, or fiberglass. Composite doors are comprised of wood and vinyl, wood and fiberglass, and similar materials. Steel doors are often used for rear doors where safety is an issue or for code reasons.

Door Cladding

Like cladded windows, doors with cladding usually have natural wood veneer or an engineered composite exposed to the interior, providing a surface ready to receive stain or paint. The exterior of the door is wrapped in a material such as aluminum, vinyl, or composite fiberglass to protect the wood and provide weather resistance.

Metal (Steel or Aluminum) Cladding	HB-01 HA-01 OE ON EB NC
Metal-clad doors wrap a door with either a honeycomb structure or a solid core. The exterior finish consists of either baked enamel finish or is primed for paint; the interior is often wood or wood veneer ready for stain or primer/paint. The exterior and interior may have decorative panels, some solid, while others may have glass i.e., lights, usually towards the top of the door.	
Fiberglass Cladding	HB HA OE ON EB NC
Fiberglass cladding offers a weatherproof covering over the frame, similar to vinyl cladding. They also come in a variety of designs and can have double or triple glazing for energy efficiency. Like vinyl clad doors, these are commonly sold at home improvement stores. Details should match the original style of the building. Grid muntins without simulated divided lights are not acceptable for the historic district. See Fiberglass, Windows, Non-Cladded regarding finish limitations.	
Vinyl Cladding	HB HA OE ON EB NC
Vinyl-clad doors are similar to aluminum-clad in that the vinyl is wrapped over the frame. These are stock doors, usually sold at home improvement stores, many with glazing, i.e. lights, either as a full panel or at the top. Some may have muntins, usually a vinyl grid mounted on the interior side of the glass. This option is NOT appropriate for the historic district and an internal grid that simulates a divided light should be used instead. And like aluminum cladding, the lower-end vinyl cladding can suffer deformation or chalk over time.	
Composite	HB HA OE ON EB NC
These doors are synonymous with Fiberglass clad doors or vinyl clad doors.	

Doors, Non-Cladded

Traditionally made solid wood, steel (hollow metal with insulation), or aluminum (hollow metal with insulation) doors are usually the most expensive options but are the best for quality and longevity. (However, plain steel doors without molding, panels and lights can be the cheapest option, but this door type might only be applicable for utilitarian situations where security is the primary concern and the door is not visible from the public way.) All can come factory finished or primed, or ready to receive stain if applicable. The best quality doors are made of solid wood, with thicker and wider styles, rails and panels.

Solid Wood

HB-01 | HA-01 | OE | ON | EB | NC

Solid wood doors are the most expensive, especially if made of hardwood and not pine. The exterior finish is either untreated for stain or primed for paint; the interior is also ready for stain or primer/paint. Doors come with or without panels, with and without glazing i.e., lights, in a variety of architectural styles. Selecting a door for a historic replacement should match in terms of measurements (overall and details), panels, and finish. Where the original door is unknown, choosing a simple design compatible with the building's architectural style is highly recommended.

Hollow Metal (Steel or Aluminum)

HB-01 | HA-01 | OE | ON | EB | NC-01

Hollow metal doors are usually of commercial quality, and would be installed in one of the more recent architectural styles, or where security is a concern and the interior has a wood veneer option. The exterior finish consists of either baked enamel finish or is primed for paint; the interior is often wood or wood veneer ready for stain or primer/paint. The exterior and interior may have decorative panels, some solid, while others may have glass i.e., lights, usually towards the top of the door or in the middle of the door.

Types of Alternative Door Material Preferred:

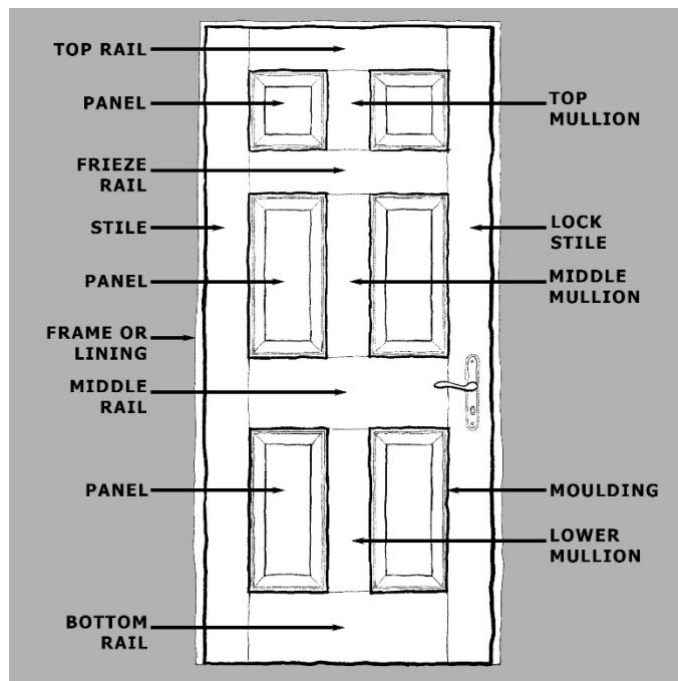
1. Solid Wood = best solution with appropriate details
2. Wood Veneer
3. Metal
4. Fiberglass with smooth surface
5. Composite

Allowed Use in Historic Buildings

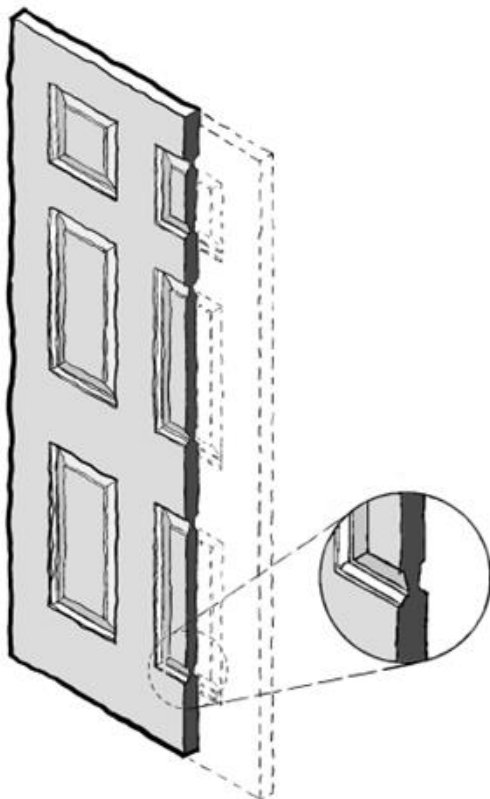
1. New infill construction
 2. New additions to historic buildings
 3. Existing non-historic additions to a historic structure
 4. Non-contributing structures in the Historic District
 5. Replacement door on historic buildings: on the rear and non-readily visible side elevations
- Replacement doors on historic buildings on the façade (primary elevation) must be reviewed on an individual basis to ensure compatibility with the historic structure and district.



Figure 15: Door Diagram



a) *Traditional Wood Door Construction, here showing a typical colonial door with six panels. Your door may be different, depending upon the period in which your building was constructed.*



b) *Section of a traditional wood door*



Garage Doors

First considered luxury vehicles, the first cars lacked dedicated buildings to store them. Instead, owners converted existing carriage houses. Dedicated outbuildings for single cars came next, and these buildings resembled carriage houses, either wood frame or masonry (brick or cinderblock), with a gabled roof. The car opening consisted of double doors, similar to barn doors with strap hinges, swinging outwards; unfortunately, this door type could be blocked by snow in the winter. For a while, sliding doors were used, but these forced doubling the garage’s width [Marples]. In 1921, mass manufacturing of sectional doors began, with several panels folding up and sitting just below the ceiling when opened [Wadsworth]. Sectional doors soon became popular, and after WWII, these became the most common along with attached garages [Wadsworth]. Starting in the 1960s, homes started to include two car garages, most with wood sectional doors, but new materials such as thin fiberglass entered the market. Steel doors became the material of choice in the 1980s, with raised-panel steel, molded with woodgrain, pushed out wood and fiberglass doors almost completely from the market.

Types of Alternative Garage Door Materials

Since traditional garage doors were wood, most alternate materials resemble wood. Ideally, traditional wood doors would be preferred, but can be expensive. Metal, usually steel, is the most popular option. Fiberglass and vinyl can circumvent the maintenance issues wood and steel doors have. Both materials will suffer from cold weather and UV damage, but both can be painted or stained. Vinyl, however, will require a special primer.

Metal clad (Steel or Aluminum)

HB-01 | HA-01 | OE | ON | EB | NC-01

These garage doors are good for security, and more expensive doors can mimic wood to varying degrees. Factory finishes are usually more durable. Metal can be damaged, so dent-resistant 24-gauge sections are preferred. And metal clad doors can include interior foam to better insulate from temperature extremes.

Solid Wood/Wood Clad/Composite

HB-01 | HA-01 | OE | ON | EB | NC-01

This type of garage door usually contains engineered wood, wood fiber boards, and some may have natural wood veneer. To have a stainable finish requires solid wood. Regular maintenance is highly recommended.

Fiberglass or Vinyl

HB-01 | HA-01 | OE | ON | EB | NC-01

This type of garage door is on the lower end of the market but is lighter and easier to operate. Painted or stained finishes are preferred. Design options and details may be limited, and there are concerns about degradation in cold weather. Test data and testimonials from central Ohio should be included with the ARB review submittal.

Composite

HB | HA | OE | ON | EB | NC

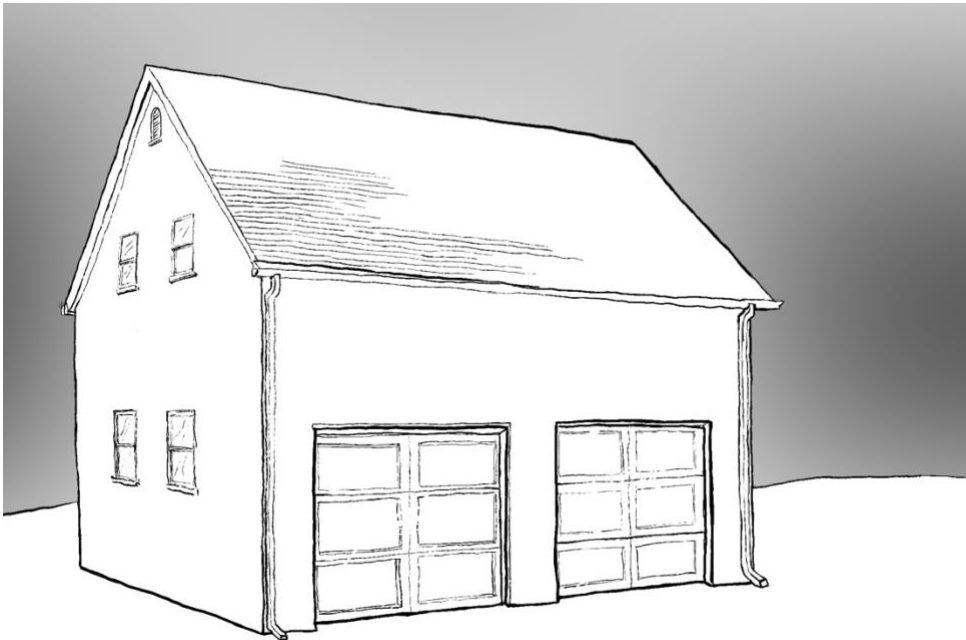
These doors are synonymous with Fiberglass clad doors or vinyl clad doors.

Types of Alternative Door Material Preferred:

1. Solid Wood or Wood Clad/Composite preferred.
2. Metal (Aluminum or Steel)
3. Fiberglass
4. Composite

Allowed Use in Historic Buildings and District

1. New infill construction
2. New additions to historic buildings
3. Existing non-historic additions to a historic structure
4. Non-contributing structures in the Historic District
5. Replacement garage doors on historic buildings on rear- and non-readily visible side elevations
6. Replacement garage doors on historic buildings on the primary façade must be reviewed on an individual basis to ensure compatibility with the historic structure and district.

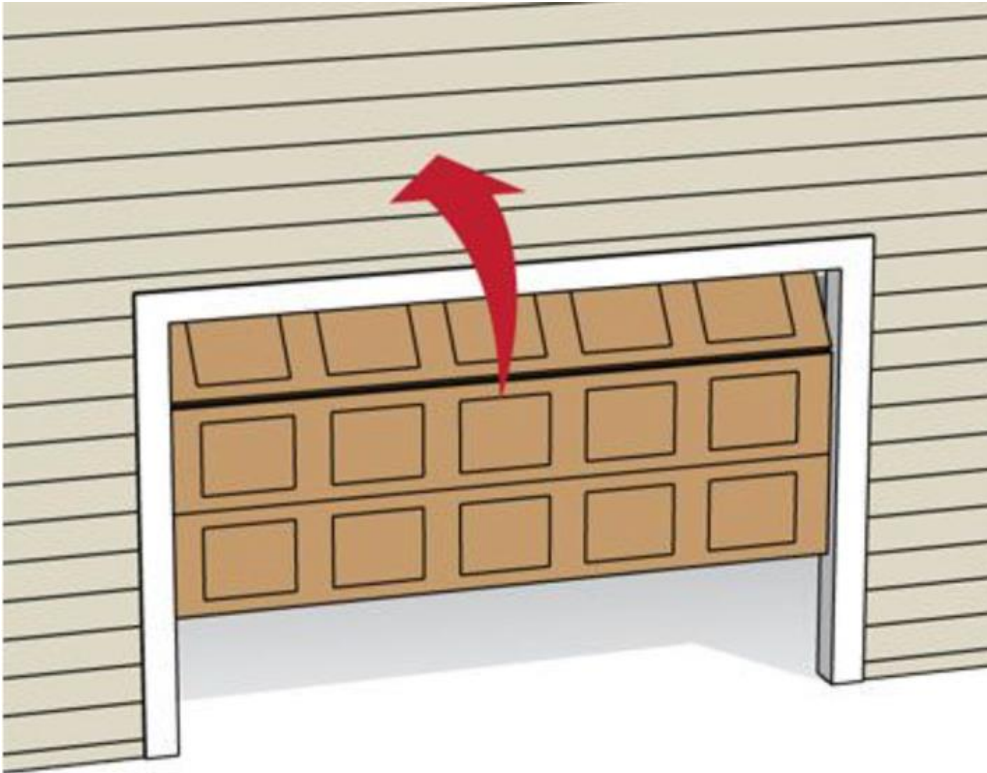


One-and-a-half Story Garage Out-Building, Double Bay with Traditional Paneling on the Section Doors.



Figure 16: Sectional Garage Door

a) Garage Door Section.



Jason Lee, This Old House

b) Sectional Garage Door. This type of garage door is currently the most common and is also very good for insulating the garage. It is not uncommon to see hardware and design elements based on the other garage door types applied to this door type. Your garage door style may be different, depending upon the period in which your building was constructed.

The information above provided from Gorman, Whitaker, and Wadsworth. Not pictured: **Swing Out, Sliding, Bifold, Up-and-Over, and Roll-Up garage doors.** See the "Garage Door" Introduction for more information regarding the history of the garage door, starting with abandoned Carriage Houses. The alternative styles listed above, as well as alternate glass patterns, will need waivers approved by the ARB.

Porch and Deck Materials

Original porch materials were generally wood, brick, or stone, although concrete and concrete block were also widely used starting in the early twentieth century. Wood elements on porches include columns, railings, floors, valences, and friezes. Starting in the late nineteenth century with the rise of the lumber industry, mass-produced millwork in a variety of shapes—including square, round, and chamfered posts—appeared on Victorian-era homes. Other common details included ornate brackets, spindles, and railings. Early twentieth century porches, inspired by the Colonial Revival movement, featured classically derived designs such as Tuscan, Doric, Ionic, Corinthian, or Composite columns. Later, Prairie and Craftsman-style homes had porches with tapered wood posts on brick, concrete, or stone pedestals.

Alternate Materials for Porches and Decks

Flooring & Railings

While alternative materials such as PVC or composite porch floors and railings are a popular choice for new construction, traditional building materials should be used to replace historic building fabric on old buildings. However, since traditional tongue-and-groove porch decking was milled from old growth lumber with a very tight grain, it is much more durable and more moisture resistant than modern wood. As a result, some new tongue-and-groove porch decking is much less durable than its historic counterpart (although old-growth wood is available from select sources). As such, alternative materials have become more acceptable in some historic districts (City of Hopewell, Virginia, 4-10 and Thomason & Associates, 6-11). Composite porch flooring is one such product—made of recycled plastic and wood in a variety of textures and colors. The most well-known manufacturer of these products is Trex, although most home improvement stores offer an equivalent material.

Porch Columns

Like porch flooring and railing, porch columns now come in a variety of materials, including fiberglass and PVC. The use of these alternative materials is popular in new construction and has become more common in historic districts throughout the country. Fiberglass columns are composed of very thin glass fibers which are combined with a plastic material to produce a rigid material. Fiberglass reinforced polymer (also known as FRP) is one of the most commonly used fiberglass composite materials used for modern columns. Vinyl columns, like vinyl siding, are made from polyvinyl chloride (PVC) and are manufactured to be both stand-alone columns and a “wrap” around wood columns or posts. Although vinyl can be easily molded into a variety of column shapes and forms, its exterior surface and texture has difficulty resembling wood. While both fiberglass and vinyl columns are allowed in some historic districts, their use is generally restricted to new construction or rear elevations.



Alternate Materials for Wood (Porches & Decks)

The term decking applies to the boards used for the walkable finish of a porch or deck. For some items, such as PVC Decking, these boards are sufficient when used as decking, but may require a separate material to structurally support the decking, such as pressure-treated wood joists or rectangular steel beams.

Cementitious Wood

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

This material is **not recommended** for use at this time due to concerns regarding its integrity and durability, color-fading, mold growth, and limited use-life. *New* products that may enter the market would need to be reviewed and approved on an individual basis.

Composite/Engineered Wood

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

This material is similar to the description in *Engineered Wood Siding* except it comes as dimensional lumber (nominal sizes such as 1x8s). This material requires special blades for cutting and regular maintenance. Special capped boards, meaning they are wrapped in special sealant, will last longer than uncapped (meaning cut in the field or unsealed) but they become more slippery when wet. Darker colors may fade with UV exposure and are **not recommended**. Composite decking containing wood flour can receive mildew and mold stains, although capped composite is more resistant [Gorman, Sokol].

Vinyl/PVC Decking

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

This material comes in sizes and shapes to match that of wood but lacks wood's strength. The material can be susceptible to degradation from UV. While vinyl/PVC decking can be painted, it requires experienced contractors using a special primer. Unpainted vinyl/PVC decking will appear initially shiny if extruded but more matt if cut. If different wood textures are offered, smooth surface is preferred. Like composite, capped boards will last longer than uncapped (meaning cut in the field or unsealed) but become more slippery when wet. Some manufacturers might not continue the exterior color all the way through, making a noticeable color change when cut. (Note: some manufacturers use the term 'vinyl' to denote extruded PVC plastic shapes and others describe 'vinyl decking' as a vinyl membrane protecting plywood or wood deck boards from moisture; while 'PVC decking' boards contain a cellular high-strength plastic [Gorman, Sokol]).

Stamped Concrete

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

See Stamped & Decorative Finish Concrete in the next section regarding the use of wood-decking patterns cast and colorized into concrete. This material needs to be reviewed and approved on an individual basis.

Fiberglass Reinforced Polyester (FRP)

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

This material comes in customizable sizes and shapes to best accommodate custom decorative porch elements and column covers; however, due to its construction, the material consists of a thin, moldable material of glass fibers. Depending on the materials and its manufacturer, sometimes the FRP shells are filled with Styrofoam. Being relatively lightweight, this material can be installed easily. A variety of finish options include factory-installed textures and gelcoat finishes. Installation can result in a potentially noticeable vertical joint. Painting post installation is *highly recommended* [Architectural Fiberglass].

Fiberglass Polymer Composite

~~HB~~ | ~~HA~~ | ~~OE~~ | ~~ON~~ | ~~EB~~ | ~~NC~~

Also known as Centrifugal-spun Cast Fiberglass Reinforced Polymer, this material consists of a spun Fiberglass polymer shell of some strength usually cut in half to encase a primary load-bearing structural element. This shell is greatly resistant to scratches or damage, and the shell can resist loads between 6k-20k pounds, but larger sizes may require additional labor to manage installation due to its weight. This material must be painted on site [Architectural Fiberglass].

Alternate Materials Using Concrete (Porches)

Manufactured Stone

HB-04 | HA-01 | OE | ON | EB | NC-01

This material consists of manufactured stone (see “Exterior Wall Materials / 5. Stone Alternate Materials / Manufactured Stone” for a description of the material). Porches can be built with stone masonry or stone masonry veneer walls. Manufactured stone can also be used for steps and treads or as patio pavers. This material can be dry-laid or utilize mortar, depending on the architectural details and manufacturer’s product.

Molded Concrete, Precast

HB-01 | HA-01 & 02 | OE-01 | ON | EB | NC-01

Not unlike the “Exterior Wall Materials / 5. Stone Alternate Materials / Manufactured Stone”, this material is cast off site and installed either as pavers or as a manufactured stone veneer to exposed porch foundation walls. These materials are **not recommended** for historic structures.

Stamped & Decorative Finish Concrete

HB-01 | HA-02 | OE | ON | EB | NC-01

Stamped concrete and decorative finishes can be applied to patios, porches, and other walkable surfaces, usually as a finish coat with texture worked to match a traditional material’s appearance. Commonly used for stone and tile, good facsimiles of wood decking and brick paving are also possible. It is highly recommended that these materials should appear as close to traditionally used materials as possible, and integral color (not surface-applied color) is highly recommended.

Types of Alternative Porch Materials Preferred:

Original Material:	Wood	Metal	Stone
Alternates Preferred, in order of top (best) to bottom (least desired, secondary elevations):	<ol style="list-style-type: none"> 1. Composite Engineered Wood 2. Composite/Fiberglass 3. Vinyl/PVC (not visible to public) 4. Fiberglass 	<ol style="list-style-type: none"> 1. Fiberglass 2. Composite/Fiberglass 3. Vinyl/PVC (not visible to the public) 	<ol style="list-style-type: none"> 1. Manufactured Stone 2. Manufactured Stone Veneer 3. Glass Fiber Reinforced Concrete - GFRC

Allowed Use in Historic Buildings and District:

1. New infill construction
2. New additions to historic buildings (rear only)
3. Existing non-historic additions to a historic structure
4. Non-contributing structures in the Historic District
5. Any use on historic buildings on any elevation is **not recommended**. If such use is requested by a property owner, it must be reviewed on an individual basis to ensure compatibility with the historic structure and district.



Architectural Details & Trim

Overall, significant architectural details that have deteriorated should be repaired rather than replaced. In addition, significant details should not be removed or covered, and non-historic details or ornamentation should not be added. There are times, however, when a detail is so deteriorated that it cannot be repaired and must be replaced due to location, code issues, or lack of original craftsmanship. There are several options for replacement materials for trim and other decorative details, including polyvinyl chloride trim (PVC), fiber-reinforced polymers (fiberglass), and extruded polystyrene (high density Styrofoam, commonly known as Fypon). In general, PVC trim, such as Azek, has been approved in some historic districts on new construction, new additions, and new outbuildings such as garages. Painted PVC features such as balusters, columns, capitals, cornice brackets, etc. have been allowed under certain conditions as a substitute material for deteriorated wood. The National Park Service has allowed the use of fiberglass replacement details such as cornices, brackets, etc. in high, inaccessible locations where maintenance of historic materials can be an issue. It is easily molded and versatile, making it a suitable alternative to ornate, carved building elements such as column capitals, bases, spandrel panels, belt courses, balustrades, window hoods, or parapets.

Fiber Cement Alternates for Wood

HB-02 & 04 | **HA-02** | **OE-01** | ON | EB | NC

This material is the same material as defined under Exterior Wall Materials/Cementitious Siding. Fiber cement boards and trim can arrive with a variety of textures (smooth is strongly preferred for historical applications). Some manufacturers provide prefinished colors while others will provide a pre-primed surface ready to accept paint. Special equipment such as carbide saw blades will be required. A ground contact installation may be problematic and is **not recommended**.

Fiberglass trim & moldings for wood

HB-02 & 04 | **HA-02** | **OE-02** | **ON-02** | **EB-02** | **NC-02**

Fiberglass, or Fiberglass Reinforced Plastic (FRP) is a material system consisting of a plastic resin matrix, glass fiber reinforcement and suitable additives. It allows for greater design flexibility previously prohibited by the limitations of traditional building materials. Fiberglass is non-corrosive, strong, lightweight, and relatively maintenance-free. It can be used in balustrades, columns, cornices, finials, pilasters, brackets, and moldings. [Architectural Fiberglass].

Polyurethane Trim & Moldings for Wood

HB-02 & 04 | **HA-02** | **OE-02** | **ON-02** | **EB-02** | **NC-02**

Commonly known as Fypon, polyurethane trim can come in brackets, corbels, dentils, etc. and are primarily used on porches, cornices, and gable end decoration. It is lightweight, insect- and moisture-resistant, and will not warp, crack, rot, or split. It comes primed and can be painted or stained [Fypon].

Polyvinyl Chloride (PVC) for Wood

HB-01 & 02 & 04 | **HA-02** | **OE-02** | ON | EB | **NC**

PVC boards (including skirt and corner boards) and moulding should come in a variety of sizes where the chosen product should match the width and depth of any original material. Depending upon the manufacturer, the trim may arrive matte white, or it can be painted in the field with acrylic latex, but only with lighter colors (meaning having a Light Reflective Value (LRV) of 55 or greater). This material has the tendency to yellow with UV exposure, although higher end materials are more resistant [Azek]. While this material can be cut and fastened like wood, it can only be used as surface decoration, not structurally. Internal structural components can be incorporated for structural applications if requested. Custom forming by heat treatment may deform shaped details or dimensions; this would be applicable where shaping molding to match a curve) [Azek].

Types of Alternative Trim Materials Preferred

1. Fiber cement
2. 2.PVC (vinyl), most commonly known as Azek
3. Fiberglass – allowed on a case-by-case basis after review by the City of Dublin
4. Polyurethane - most commonly known as Fypon. Allowed on a case-by-case basis after review by the City of Dublin

Allowed Use in Historic Buildings & District

1. New infill construction
2. New additions to historic buildings (rear only)
3. Existing non-historic additions to a historic structure (rear only)
4. Non-contributing structures in the Historic District
5. Any use on historic buildings on any elevation is **not recommended**. If such use is requested by a property owner, it must be reviewed on an individual basis to ensure compatibility with the historic structure and district.



Roofs

This section is divided into roof materials, based first on their aesthetic traditional material, followed by the relevant alternate material(s). It should be noted, if replacing a roof with a different material, great care should be taken regarding selecting the new material(s). For example, a roof originally designed for standing seam metal, a light material, would require additional reinforcement if it were to receive a heavier material such as tile or slate. The original material also can have depth and character that can be lost if replaced with a modern material; great care should be taken to select materials that provide the same textural interest. Additionally, some existing materials such as metal flashing that remain in good condition may be incompatible with a different roof type (Sweetser).

Types of Alternate Materials

As noted in the *Guidelines*, roof materials on historic buildings include traditional building materials such as standing seam metal, wood shingles, and slate tiles. Wood shingle roofs were common historically, but most have been replaced with metal roofs, asphalt shingles, or fiberglass shingles. Standing seam metal roofs are extremely durable and have been in use in Ohio since before the Civil War. While some metal roofs may be early replacements for other building materials such as wood or slate, they were nonetheless quite common in Dublin and its environs. Patterned slate was also a common roof type in Ohio from the mid-nineteenth century on, but there are only a few known examples in Dublin (Historic Dublin Design Guidelines, 2005, 65-67).

In general, most historic districts recommend repairing and retaining existing traditional roof materials such as standing seam or slate. Slate roofs, however, are generally three- to four-times the cost of asphalt or fiberglass shingles, and some historic districts now allow the use of synthetic slate shingles. Synthetic slate is made from a variety of materials, including slate, clay, fiberglass, resins, ceramics, rubber, or plastic. Popular synthetic slate roof manufacturers include DaVinci roofing, Brava Old World Slate, Ecostar Slate, Slate Select, and Ludowici Slate Tile [Thomason & Associates, 2013, 12-13].

Wood Roofs and its Alternates

Traditional wood roofs exist either as shingles or the more rustic shakes. Originally hand split, shaved smooth and tapered, wood shingles are smooth sawn with the less-thick end directed up the roof slope. Generally thicker than wood shingles, wood shakes appear more rough, due to splitting to reveal the uneven natural grain of the wood. Wood species are typically cedar or redwood, while historically local species of wood would have been used in the first half of the 19th C, ideally using heartwood for greater durability. Concerns for traditional wood roofing include the need for regular inspection and maintenance, fire protection regarding local building codes and house insurance, and vulnerability to impact from hail. Some wood shingles and shakes may be treated with fire retardant, making the shingles/shakes more brittle. Both wood preservative and fire-retardant applications cannot be installed on the same roof.

Asphalt Alternates for Wood & Slate

[HB-02](#) | [HA-02](#) | [OE-02](#) | [ON-02](#) | [EB-02](#) | [NC-02](#)

Traditional asphalt shingles are an alternate material for wood and slate shingles. Colors and patterns try to give the impression of individual shingles or shakes, yet traditional asphalt shingles, now called 3-tab shingles, lack the dimensionality or texture of a true wood shingle. Standard asphalt shingles are NOT APPROVED for use per the Historic Zoning Code but may be applicable to buildings originally constructed with asphalt shingles.

In the last few years, architectural shingles improved on the traditional asphalt shingle by laminating layers, adding thickness and a more natural variation to the shingled pattern. Asphalt shingles consist of multiple materials, generally paper or fiberglass mats, stone/silica/sand, and asphalt. While not as thick or

dimensional as some other alternates, small shadow lines are present. Colors should reflect those of naturally weathered wood.

Metal Alternates for Wood

HB-01 & 04 | HA-01 | OE-04 | ON | EB | NC-01

Metal roofing shingles can simulate wood roofing. Consisting of aluminum or steel panels, these materials can receive a high-quality factory finish along with simulated texture of wood shingles or the more rustic wood shakes. Advantages include low weight, low maintenance, and good shadow lines. Products vary in how well they simulate the original material, generally working better from a distance. Concerns include fastener locations (should be hidden) and colors, as traditional wood roofs would have been left the color of natural wood weathering to a natural gray, strongly suggesting solid and/or bright colors should be prohibited.

Fiber Cement Alternates for Wood

HB | HA | OE | ON | EB | NC

While fiber cement shingles can be used on the exterior walls, they become more problematic regarding roofs. Consisting of cement mixed with sand, cellulose, etc., the material requires frequent maintenance to prevent degradation, including cleaning and/or repainting. The product also requires structural reinforcement, unlike metal and asphalt shingle roofs. If proposed, it is highly recommended to review product data, and case studies (of 10 to 20 years of actual projects' longevity).

Composite Tile Alternates for Wood

HB | HA | OE | ON | EB | NC

This material consists of polymers mixed with composites. Factory finishes can provide a good facsimile of new and weathered wood shakes and shingles. Texture should replicate the sawn look of shingles or the rough-hewn look of shakes. Good shadow lines with product thickness of approximately $\frac{3}{4}$ " are recommended. Benefits include less maintenance and greater durability regarding impact from hail and tree branches. Brava provides a good facsimile of cedar shakes.

Metal Roofs and its Alternates

A variety of metal roof types have existed over the past 220 years. Early metal roofs consisting of lead and copper were predominately used where other materials couldn't work effectively, such as with low slopes. Standing seam or flat seam metal roofs were, and are, common, especially tin plate roofs, painted commonly in red or a green reminiscent of copper patina. Tin plate could also form shingles, usually embossed with patterns to mimic tile or carved wood (see Metal under Wood Roofs). Terne plate, consisting of iron coated in a lead/tin alloy, appears similar to tin plate yet has a duller finish. After 1820, zinc could be used as a substitute for lead, but it never received wide use in the US.

Today, you can find standing seam metal roofing, featuring seams running up the roof slope, made from galvanized and galvalume steel, aluminum, zinc, copper, titanium, or stainless steel. Metal roofing shingles still exist as well, simulating concrete and clay tile roofing, as well as wood roofing. These aluminum or steel panels receive a "stone coating" to better simulate the traditional material.

Any replacement metal roof must match the original in seam style and spacing, as well as in embellishments such as snow guards, finials, lighting rods, etc.

Fiberglass Alternates for Metal

[HB-02 & 04](#) | [HA-02](#) | [OE-02](#) | [ON-02](#) | [EB-02](#) | [NC-02](#)

Corrugated metal roofing (commonly used historically for small outbuildings like sheds and hen roosts), can be replaced with fiberglass roof panels (FRP) consisting of a 7/8" high wave or ridge panel or a flat panel. Generally translucent, these panels help direct daylight into a structure. Heavy duty panels would better withstand harsh weather conditions. Advantages include better durability than PVC and resistance to corrosion. Disadvantages include yellowing over time, and appearance. Review by ARB is required, and a Waiver would be necessary.

Stone Roofs

Slate was an early roofing material brought to North America, but its use remained limited until the mid-1800s after improved in-land transportation permitted high-quality slates market access. Slate roofs provide a highly durable material in red, green, purple, and blue-gray. It was not uncommon for 19th Century buildings to arrange differently colored slate shingles into patterns. Slate is still used today where a long-lasting, fireproof roof is desired.

Metal Alternate for Stone

[HB-04](#) | [HA](#) | [OE](#) | [ON](#) | [EB](#) | [NC](#)

Stone-coated roofing is a metal roof shingle or tile that has a stone finish and the dimensionality of slate. This product has a long lifespan and is more durable than traditional metal roofing, resistant to heavy wind and small projectiles like hail. Little to no maintenance may be required to maintain its function, however the stone finish may not be sustainable over time, potentially revealing an undercoat or the metal itself. Each manufacturer and their products will require an individual review by the ARB to ensure a quality product.

Architectural Shingles Alternate for Stone

[HB-04](#) | [HA](#) | [OE](#) | [ON](#) | [EB](#) | [NC](#)

Architectural shingles are a modern substitute for slate shingles. Multiple colors and varying thicknesses create a dimensionality that provides a texture less like the modern asphalt shingle and more like wood or slate. See Wood Roofs and its Alternates/Shingles.

Synthetic Slate

[HB & HB-04](#) | [HA](#) | [OE](#) | [ON](#) | [EB](#) | [NC](#)

Synthetic slate can describe a myriad of materials that are unlike one another. Some materials resemble rubber while others use a polymer (plastic) tile. Due to great variation, it is **highly recommended** that the ARB should individually review each material.

Tile Roofs

Clay tile was used for roofing due to its fire-inhibiting properties. Flat tiles and pantiles (S-curved tiles) date to the colonial era on the east coast, but in the first half of the 19th century plain or flat rectangular tiles predominated. After 1850, sheet metal roofs replaced many tile roofs due to their ease of maintenance, but tile returned to fashion with Romanesque Revival and Mission style buildings after 1900.

Metal roofing, usually aluminum or steel, can imitate the dimensionality and appearance of a tile roof while utilizing metal roofing characteristics such as light weight and durable material. Factory baked finishes are more durable, but it is important to examine the materials shine; it should be matte finish. Little to no maintenance may be required to maintain its function, however the tile finish may not be sustainable over time, potentially revealing an undercoat or the metal itself. Each manufacturer and their products will require an individual review by the ARB to ensure a quality product.

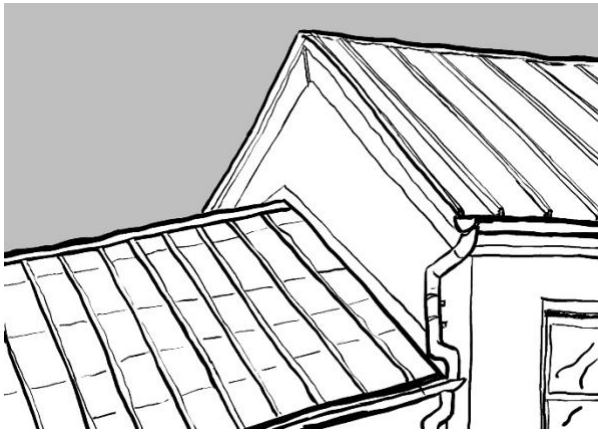
Types of Alternative Roof Materials Preferred:

1. Standing seam metal (must match profile of historic building)
2. Architectural Shingles (dimensional & traditional colors)
3. Fiberglass Shingles (dimensional & traditional colors)
4. Synthetic Slate (dimensional & traditional colors, as well as individual product review)

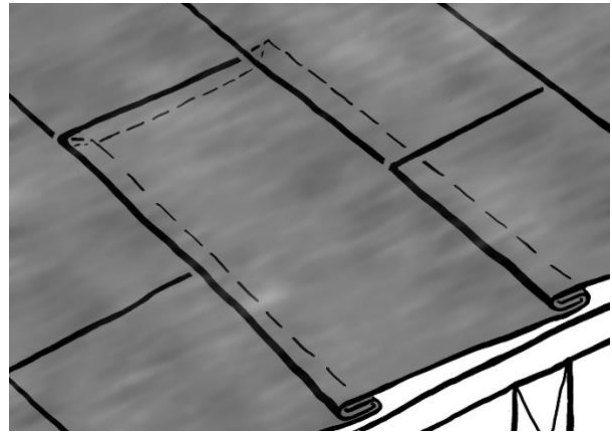
Allowed Use in Historic Buildings and District:

1. New infill construction
2. New additions to historic buildings (rear only)
3. Existing non-historic additions to a historic structure
4. Non-contributing structures in the Historic District
5. Any use on historic buildings on any elevation is **not recommended**. If such use is requested by a property owner, it must be reviewed on an individual basis to ensure compatibility with the historic structure and district.

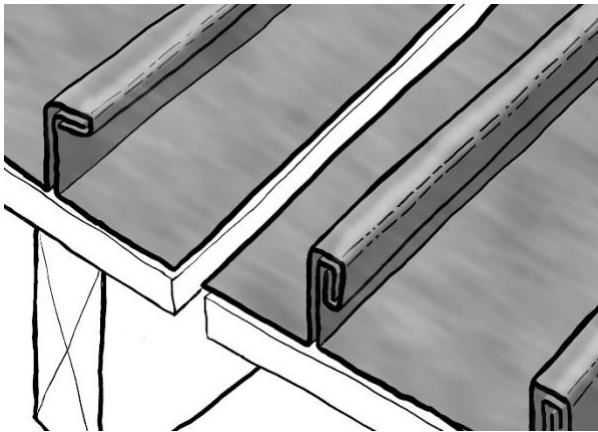
Figure 17: Traditional Metal and Slate Roof Construction



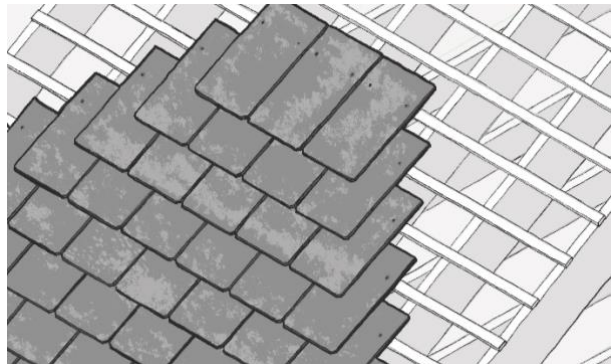
Traditional Metal Roofs



Flat seam metal roof.



Standing Seam Metal Roof, two types of locking systems: Single Lock (Left) and Double Lock (Right). The double lock is more commonly used and is considered more secure (Risotto).



Slate Roof Construction.



Miscellaneous

New construction materials and new environmentally friendly options regularly enter the market each day. While the existing Zoning Code and Guidelines require review of all new products to ensure they meet the quality expected, at some point in the future, new alternates may need to be presented here.

Patios and Drives

Paved materials traditionally consisted of stone, brick, sand, gravel, or even wood planks. Concrete and asphalt have overtaken these traditional materials in terms of economy, but private yards may look to the traditional materials for inspiration. Concrete is a diverse material and can be molded and shaped to resemble not only stone, tile, or even wood. While concrete is permitted per the Zoning Code (ZC), some of the alternate materials outlined for a building's exterior walls, such as Cast Concrete Stone Alternates, might also be considered an alternate material here.

Walls and Fences

Alternate materials for stone and for wood have varying degrees for approval in other portions of this report, but at some point, these materials may be pre-approved and then listed here.

Awnings

Currently awnings in other jurisdictions permit the use of metal awnings or that look similar to fabric but are instead made of acrylic, vinyl, or fiberglass. Since these materials have varying degrees of approval elsewhere in this report, it is likely that a material up for individual approval now may one day be added here.



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Willbee, Martha

2007 *Alternative Roofing Materials: A Guide for Historic Structure*. U.S. Forest Service, San Dimas Technology & Development Center, San Dimas, CA.



V. Appendices

Appendix A: Product Brand Names for Items Requiring a Waiver

The items listed below are possible alternate materials requiring a Waiver for the traditional and quality materials recommended for use in the Historic District, including Appendix G, by the City of Dublin per its codes and standards. *Including an alternate material's manufacturer here does not constitute approval or acceptance of that manufacturer or its products.* Instead, this list is meant as a guide or starting point. For any alternate material, it is highly recommended that the owner and contractors follow all manufacturer instructions and comply with all necessary requirements to receive the manufacturer's full warranty. These listed items do not (and cannot) identify every issue that may be of concern to the City of Dublin and its various review boards. As always, the final determination of these issues lies with the City of Dublin.

1. Siding and/or Trim Wood Facsimiles

TruExterior Siding & Trim (Westlake Royal Building Products, Formerly Boral)

1. Product Type: Cementitious/Cement Fiber
2. Contact Information:
 - a. Web: <https://truexterior.com>
 - b. Phone: 1.800.521.8486
 - c. Address: TruExterior
29797 Beck Rd
Wixom, MI 48393

Fypon

1. Product Type: Polyurethane (Trim & Moldings)
2. Contact Information:
 - a. Web: <https://fypon.com>
 - b. Phone: 1.800.446.3040
 - c. Address: Fypon
1750 Indian Wood Cir
Maumee, OH 43537

JamesHardie Siding & Trim

1. Product Type: Cementitious/Cement Fiber
2. Contact Information:
 - a. Web: <http://www.jameshardie.com>
 - b. Phone: 1.888.542.7343
 - c. Address: JamesHardie (US Headquarters)
26300 La Alameda
Mission Viejo, CA

Azek

1. Product Type: PVC Trim
2. Contact Information:
 - a. Web: <http://azekco.com>
 - b. Phone: 1.877.275.29935
 - c. Address: The AZEK Company
1330 W Fulton St
Suite #350
Chicago, IL 60607

VersaText

1. Product Type: PVC Trim
2. Contact Information:
 - a. Web: <https://versatex.com>
 - b. Phone: 1.742.857.1111
 - c. Address: Versatex Building Products
400 Steel St
Aliquippa, PA 15001

2. Exterior Wall Stone and/or Brick Facsimile

Creative Mines

1. Product Type: manufactured stone veneer
2. Contact Information:
 - a. Web: <https://creativemines.us>
 - b. Phone: 1.800.453.7040
 - c. Address: Creative Mines
5840 El Camino Real Ste 106
Carlsbad, CA 92008

2. Window & Door Manufacturers

Andersen Windows & Doors

3. Product Type: Wood, Composite, Vinyl, Aluminum, Fiberglass
4. Contact Information:
 - a. Web: <https://andersenwindows.com>
 - b. Phone: 1.888.888.7020
 - c. Address: Andersen Corporation
100 4th Avenue North
Bayport, MN 55003

Pella Windows & Doors

1. Product Type: Wood, Vinyl, Fiberglass, Steel (Doors Only)
2. Contact Information:
 - a. Web: <https://www.pella.com>
 - b. Phone: 1.877.473.5527
 - c. Address: Pella Corporation
102 Main St
Pella, IA 50219

Therma-Tru

1. Product Type: Fiberglass (Doors, Sidelights, Transoms)
2. Contact Information:
 - a. Web: <https://www.thermatru.com>
 - b. Phone: 1.800.843.7628
 - c. Address: Therma-Tru Doors
1750 Indianwood Circle
Maumee, OH 43537

3. Decking and Railings/Wood Facsimile

Trex

1. Product Type: Composite (Decking, Railing)
2. Contact Information:
 - a. Web: <https://www.trex.com>
 - b. Phone: 1.800.289.8739
 - c. Address: Trex Headquarters
160 Exeter Dr
Winchester, VA 22603-8605

Fypon

1. Product Type: Polyurethane (Rail Systems)
2. Contact Information:
 - a. Web: <https://fypon.com>
 - b. Phone: 1.800.446.3040
 - c. Address: Fypon
1750 Indian Wood Cir
Maumee, OH 43537

Fiberon

1. Product Type: Composite (Decking, Railing)
2. Contact Information:
 - a. Web: <http://www.fiberondecking.com>
 - b. Phone: 1.800.573.8841
 - c. Address: Fiberon Decking
181 Random Dr
New London, NC 28127

TimberTech

1. Product Type: Composite (Decking, Railing)
2. Contact Information:
 - a. Web: <https://www.timbertech.com>
 - b. Phone: 1.877.275.2935
 - c. Address: TimberTech Limited
894 Prairie Rd
Wilmington, OH 45177

NewTechWood

1. Product Type: Composite (Decking, Railing)
2. Contact Information:
 - a. Web: <https://www.timbertech.com>
 - b. Phone: 1.866.876.6287
 - c. Address: NewTechWood America, Inc.
15912 International Plaza Drive
Houston, TX 77032

4. Roofing

Brava Roof Tile

1. Product Type: Synthetic Slate and Wood Shake
2. Contact Information:
 - a. Web: <http://www.bravarooftile.com>
 - b. Phone: 1.844.290.4196; 417.214.4426
 - c. Address: Brava Roof Tile
915 E Tyler St.
Washington, IA 52353

5. Pavement Facsimile of Stone, Brick, Tile

Nicolock

1. Product Type: Cast Concrete Stone Alternate
2. Contact Information:
 - a. Web: <https://nicolock.com>
 - b. Phone: 631.669.0700
 - c. Address: Nicolock Paving Stones
612 Muncy Avenue
Lindenhurst, NY 11757



	ARCHITECTURAL STYLES or ELEMENTS of STYLES										
	No Academic Style - Vernacular										
	Federal (1800-1840)										
	Greek Revival (1835-1860)										
	Gothic Revival (1835-1870)										
	Romanesque Revival (1850-1880)										
	Italianate (1850-1880)										
	Queen Anne (1880-1905)										
	Colonial Revival (1895-Present)										
	Craftsman/Arts & Crafts (1900-1925)										
	French Colonial/Norman Revival (1910-1940)										
	Art Deco (1927-1940)										
	Modern (1945-1990)										
BUILDING TYPES											
Hall and Parlor (1800-1870)	X		X								
I-House (1820-1890)	X	X	X								
Saltbox (1830-1900)	X										
Four-Over-Four (1825-1870)/(1910-1925)	X							>	X		
Gabled Ell (1865-1885)	X			X	X						
Bungalow (1905-1930)								X	X		
Cape Cod (1920-1950)	>							X			
Ranch (1940-1970)	X										
Split Level (1950-1980)	X										

Symbol or Abbreviation:	Meaning:
<	Early Portion of that Range
-	Middle Portion of that Range
>	Later Portion of that Range
X	Crossover

Architectural Styles and Style Elements:

An architectural style includes not just a building's ornamental character, but also its overall shape, proportion and materials used. Buildings can exemplify an individual architectural style where its ornamentation, building shape, proportions and materials all correspond with that individual style, thus termed "high style." However, some buildings may lack stylistic elements, perhaps one or two, or even most of them. If only a few element exist, a building may be said to be vernacular with elements of a certain architectural style. Additionally, elements from two or more architectural styles may exist on the same building. Depending on the proportion of one style over another, a building can have an eclectic mixture of styles, different stylistic elements of two or three styles, or be considered vernacular with a sprinkling of a couple of stylistic elements, or fully vernacular, lacking any stylistic elements.

Building Types:

A building's function, floor plan, overall shape combined with the placement of architectural components such as windows and doors defines its building type. A building type is independent of architectural style, but some building types can be associated with one or more architectural styles just as multiple building types can have the same architectural style.

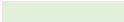

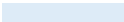
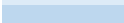

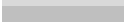
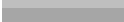
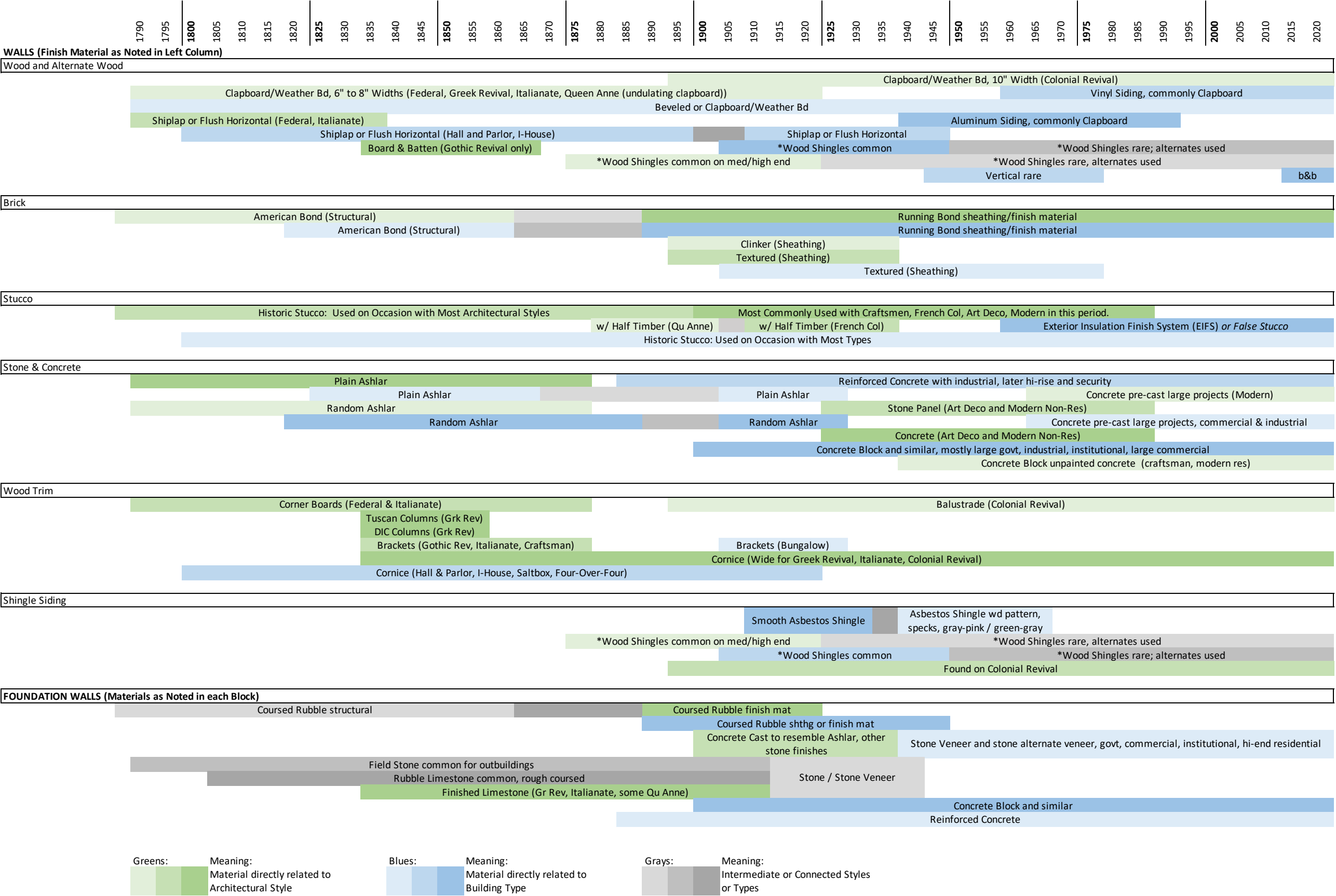
Colors:	Meaning:
	Architectural Styles
	(Shading meant to differentiate between them)
	Building Types
	(Shading meant to differentiate between them)
	Architectural Styles <u>or</u> Building Types (Shading meant to differentiate between them)
	
	

TABLE: Crossover of different Architectural Styles with various Building Types

Architectural Styles, Building Types, and Definitions based on Stephen C. Gordon's "How to Complete the Ohio Historic Inventory", 1992.



Before 179017901795180018051810181518201825183018351840184518501855186018651870187518801885189018951900190519101915192019251930193519401945195019551960196519701975198019851990199520002005201020152020

ROOF: Materials

Metal

Tinplate, commonly used, painted red (Lead) or green (to match Copper Patina)

*Embossed Tin Shingles, painted red (Lead) or green

Copper-Not Painted. Standing Seam for Sloped Roofs and Flat-Seamed for Cupolas, Domes; more often used on important civic, institutional and religious buildings

Sheet Iron (rolled sheet metal)

*Galvanized Sheet-Metal Shingles, ideally painted

Tin-Plate Iron, Standing Seam

Galvanized Iron (while more common than lead or tin, used on Non-Residential)

Cast Iron (more commonly used)

Sheet Zinc: Standing or Batten Seam

Stainless Steel

Galvanized Steel in sheet form(see Galvanized Iron)

Flat Roof Materials

Copper or Lead

Soldered Flat Seam Metal Roof

Tin Roofs

Asbestos Rolled Roofing

Built-Up Roofing aka BUR (Italianate, Art Deco, Modern, and others)

Thermoplastic Polyolefins (TPO)

Modified Bitumen

Ethylene Propylene Diene Monomer (EPDM)

Shingles & Tile

Composite Roofing aka Asphalt Shingles (mixture of tar, paper, and gravel; later versions utilize fiberglass, plastics, and rubber)

Cement Tiles (Natural Gray to Red, Blue & Black)

Wood Shingles (used less often in urban areas as fire-resistant roofing is introduced)

*Galvanized Sheet-Metal Shingles

Slate Shingles; rectangular, diamond and hexagonal; natural colors include gray, red, green.

Slate Shingles, rect.; used selectively for religious, govt. and inst.; high-end res.

Clay Tile (Rare if in Ohio at this time)

Clay Tile, terracotta (Italianate Style, Bungalow Building Type); not commonly used in Central Ohio except for Churches, Libraries, Government Buildings

*Embossed Tin Shingles, painted red (Lead) or green

ROOF: Elements

Dormers

Shed Dormer (Hall and Parlor at rear elevation)

Gabled Dormer DH 6/6, 9/6(Federal)

Shed Dormer (Four-Over-Four, Bungalow)

Gabled Dormer (ColRev, FrCol; 4/4, Bungalow, Cape Cod)

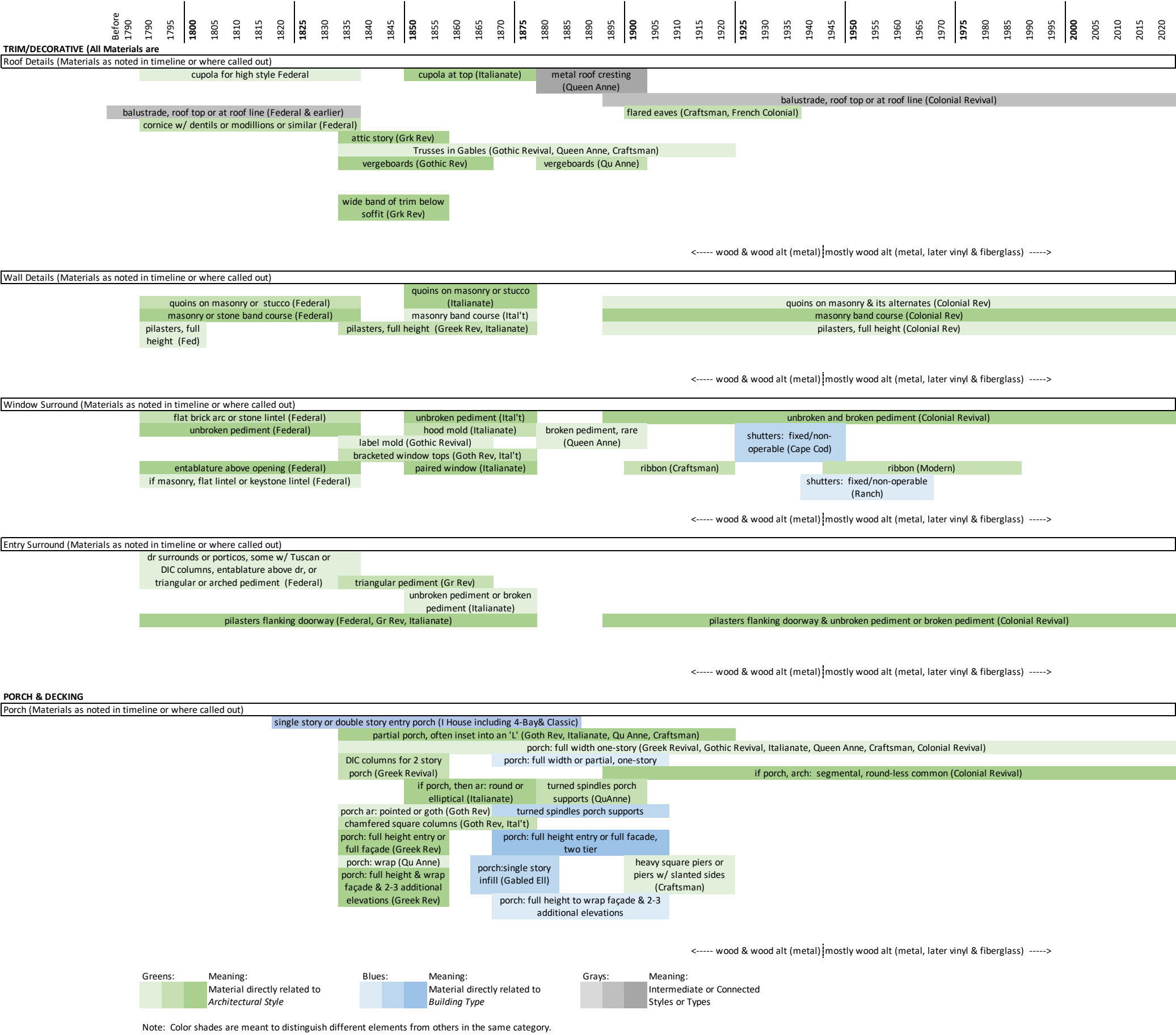
Hipped Dormer (French Colonial; Four-Over-Four)

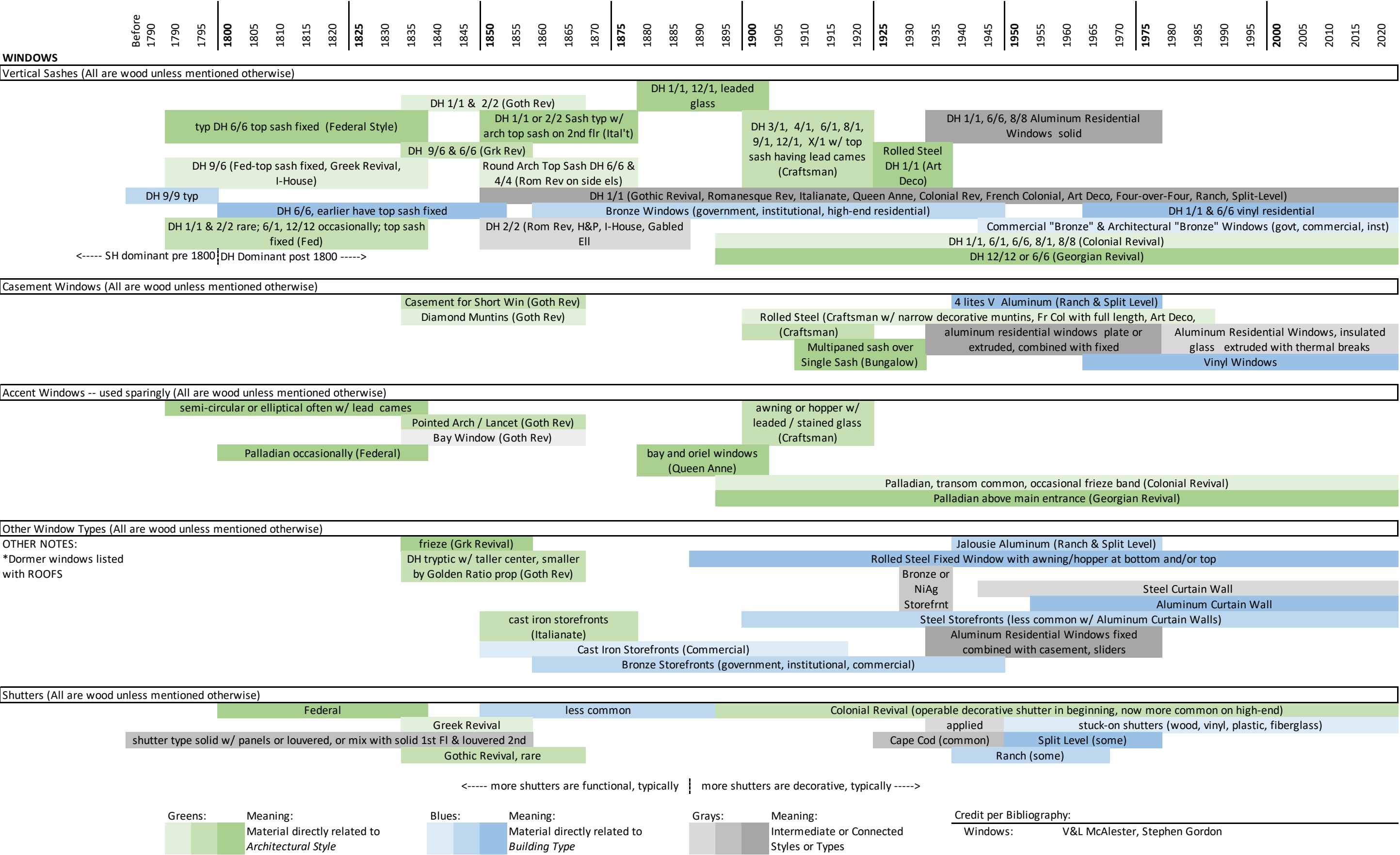
Shed or Gable (Craftsman)

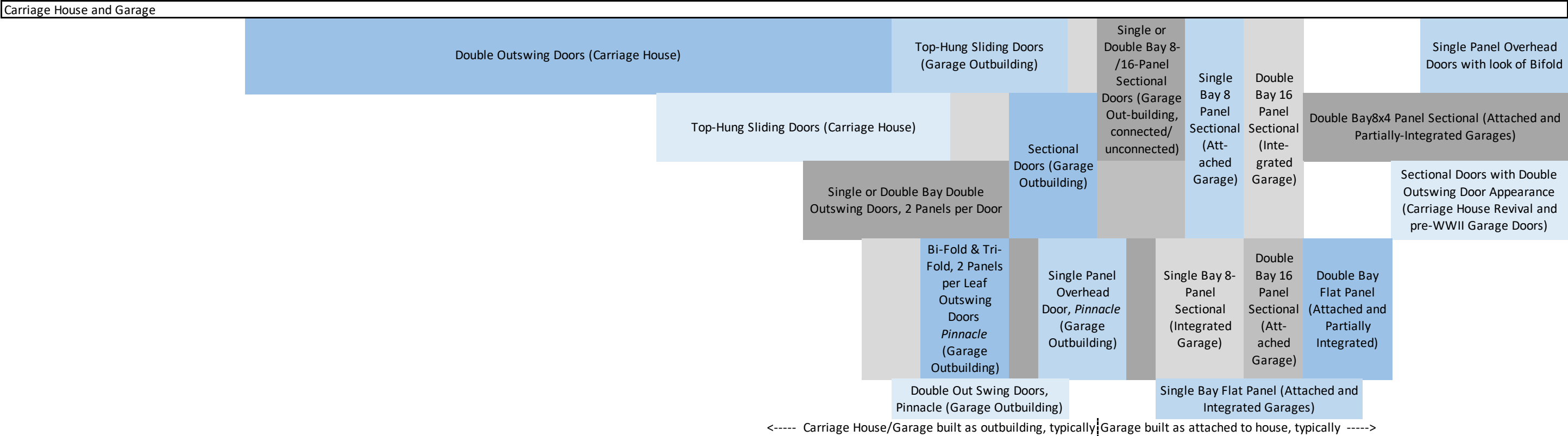
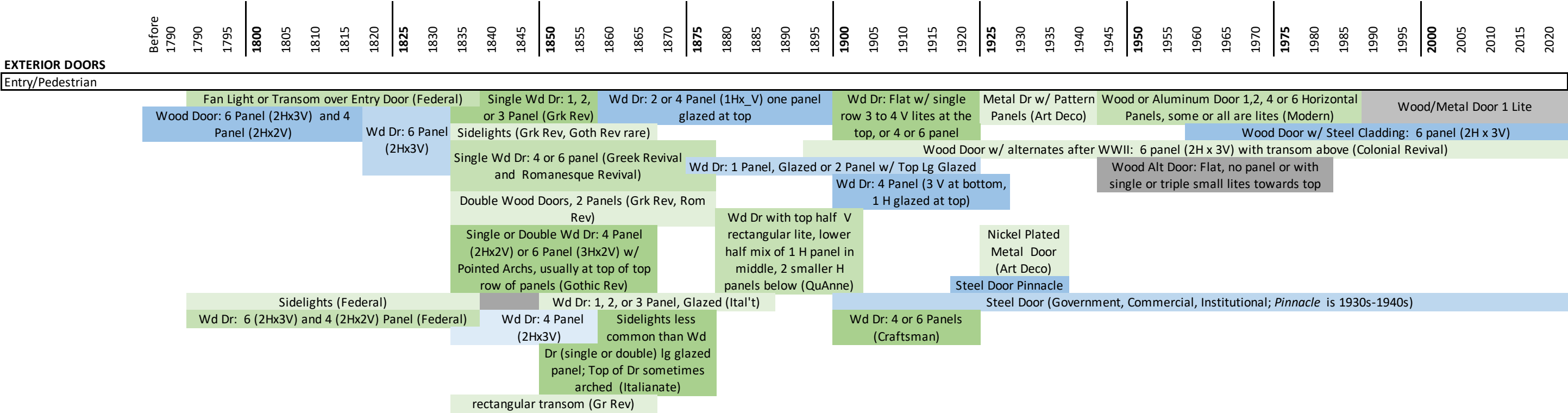
Gabled Dormer DH 6/6 (Col Rev)

Note: Color shades are meant to distinguish one element from other elements. Since these materials exist outside of Architectural Styles or Building Types, the color scheme does not need to be greens and blues.

** Material intentionally listed in multiple categories*







Greens: Meaning: Material directly related to Architectural Style

Blues: Meaning: Material directly related to Building Type

Grays: Meaning: Intermediate or Connected Styles or Types

Credit per Bibliography: Exterior Doors/ Entry: Steve Hendricks, Carl F Schmidt, V&L Exterior Doors/Carriage House & Garage J Sager, G Marples, Wadsworth

Note: Color shades are meant to distinguish different elements from others in the same category.

Abbreviation	Meaning:
#/#	Number of Lites in each Window Sash: First # = Top Sash; Second # = Bottom Sash
alt/alt's	alternate/alternates
ar	arch
b	brick
b&b	board & batten
c	common(ly)
ColRev	Colonial Revival
d	double
DH	Double Hung
DIC	Doric, Ionic, Corinthian
dr	door
ea	each
els	elevations
Fed	Federal
fl	fluted
flr	floor
fnsh	finish
Fo	foundation
FrCol	French Colonial
FT	Front/Façade typically
Fu	full length
Goth Rev	Gothic Revival
govt	government
Grk Rev	Greek Revival
H	horizontal
inst	institutional
Ital't	Italianate
lg	large
m	metal
mat	material
med	medium
n	narrow
NiAg	Nickel Silver
Non-Res	Non-Residential
prop	proportion
pan	panel
QuAnne	Queen Anne

Abbreviation	Meaning:
r	round
rect	rectangular
Rev	Revival
Rom Rev	Romanesque Revival
sdl	sidelight
shthg	Sheathing
strfrnt	storefront
typ	typical(ly)
V	vertical
w/	with
wd	wood