



# Township of Cheltenham

## Board of Historical and Architectural Review

### GUIDELINES FOR ROOFING



*The roof slates at this church are varied in color, size and thickness. Larger slates are located at the roof eaves with smaller slates at the ridge. This graduating pattern makes the roof appear visually larger. The gable dormers break up the continuous eave line.*

These guidelines were developed in conjunction with Cheltenham Township's Boards of Historical Architectural Review [BHARs]. The BHARs review Certificate of Appropriateness [COA] applications for proposed exterior alterations to properties within the historic districts that are visible from a public way. The applicant is responsible for complying with the provisions of the Zoning and Building Codes at the time of application. The applicant must obtain a Certificate of Appropriateness [COA] as well as all necessary permits prior to proceeding with any work. For more information, or to obtain permit applications, please call the COA Administrator at [215] 887-6200 ext. 213.

Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

#### PURPOSE

These guidelines were prepared to assist property owners with information when considering the repair, alteration or installation of roofing. They are not intended to replace consultation with qualified architects, contractors and the BHAR.



*The terra cotta roof tiles are a distinctive and dramatic feature of this Tudor Revival residence. Also note the overhanging eaves, gable roof dormers and stone chimney protruding at the roof ridge.*

#### ROOFS

A building's roof provides the first line of defense against the elements and its design greatly affects the overall appearance of a building. Therefore, the following functional and aesthetic concerns should be considered when considering roof alteration.

- Weather-tight roofing preserves a building
- Provide shelter from rain, wind, sun and snow
- Affected by temperature variation and building movement
- Help define the building's character and silhouette
- Form, color and texture of roof and roof penetrations affect scale and building massing of the building
- Relate to a building's architectural style
- Add visual interest to the streetscape

## ROOF FORMS

There are six general roof forms in Cheltenham. The roof forms can have various pitches and be combined in different manners to provide numerous roof types.

- **Gable Roofs** include front, side and cross-gable configurations. Gable roofs generally have two equally angled inclined planes that meet at a central ridge and represent one of the most common roof forms for their ability to shed water and relative ease of construction. Most vernacular or traditional buildings in the area utilize this roof form.

In the side gable configuration, the primary entrance is located below the sloping side eaves of the roof. In the front gable configuration, the main entrance is located at a gable end. A cross-gable roof refers to a combined front and side gable form that intersect perpendicularly, with the primary entrance at either the front or side gable.

- **Shed Roof**, also known as a pent roof or lean-to, is a roof with a single slope, essentially forming a half gable, with rafters spanning between one exterior wall and a secondary wall. Shed roofs are typically utilized for additions to existing buildings.
- **Gambrel Roofs**, also known as Dutch roofs, include a pair of shallow pitched slopes above a pair of steeply pitched roofs on each side of a center ridge.
- **Hipped Roofs** slope inward from exterior walls, either meeting at a ridge or a point, as in pyramidal roofs.
- **Mansard Roofs** include a steeply pitched lower slope beginning at the building cornice, and a nearly flat upper slope that might not be visible from the ground. The lower slope can be straight, concave or convex.
- **Flat Roofs** might be a true horizontal plane or have a low pitch to allow for drainage. Flat roofs often terminate at a parapet, generally an extension of the building's exterior walls.



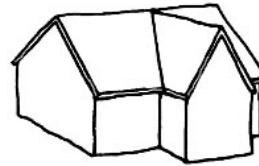
*This shallow sloped roof terminates at a decorative parapet.*



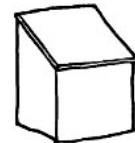
*Front Gable*



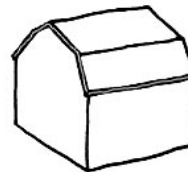
*Side Gable*



*Cross Gable*



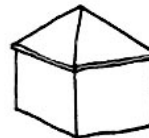
*Shed*



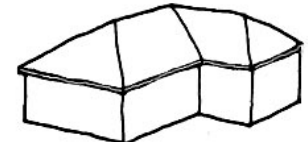
*Gambrel*



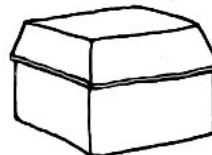
*Ridged Hip*



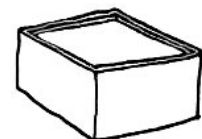
*Pyramidal Hip*



*Cross Hipped*



*Mansard*



*Flat with Parapet*

### ROOF PITCH AND MATERIALS

The pitch or slope of a roof helps define the appropriate materials for the roof. Low-pitched to flat roofs depend on a continuous or nearly continuous roof surface to minimize moisture infiltration. Material options for low-pitched roofs include built-up hot tar roofing, roll roofing, and soldered flat seam metal. Possibilities for moderately to steeply sloped roofs include unit materials such as slate, wood shingles, standing seam metal and asphalt shingles.

## ROOF FORM, PITCH AND STYLE

The following table can be used as a general guideline to better understand how a roof's form and pitch can provide an indication of its style.

Roof Form	Pitch	Possible Style
Side-gable	steep pitch	Queen Anne, Gothic Revival, Stick
	moderate pitch	Georgian, Adam, Colonial Revival, Neoclassical, Shingle, Vernacular
	low pitch	Greek Revival, Italianate, Craftsman, Adam
Front-gable	steep pitch	Queen Anne, Gothic Revival, Stick
	moderate pitch	Shingle, Vernacular, Neoclassical
	low pitch	Greek Revival, Italianate, Craftsman
Cross-gable	steep pitch	Queen Anne, Gothic Revival
	moderate pitch	Shingle, Vernacular
	low pitch	Greek Revival, Craftsman
Gambrel	n/a	Dutch Colonial, Colonial Revival, Shingle
Hipped [with ridge]	steep pitch	French Eclectic
	moderate pitch	Georgian, Adam, Colonial Revival, Neoclassical, Vernacular
	low pitch	Greek Revival, Italianate, Adam
Hipped [pyramidal]	steep pitch	French Eclectic
	moderate pitch	Colonial Revival, Neoclassical, Vernacular
	low pitch	Italianate
Mansard	n/a	Second Empire
Flat	n/a	Town House, Row House, 19 <sup>th</sup> -20 <sup>th</sup> c. Commercial
Pent	n/a	Colonial Revival, Georgian
Hipped with cross gables	n/a	Queen Anne, Shingle

## ROOFING MATERIALS

Historically, roofing materials were selected based upon practical and aesthetic criteria including pitch, weather conditions, and availability of materials and craftsmen.

In Cheltenham, historic roof materials were generally slate, tile, wood shingles, metal roofing, and later asphalt shingles. Each material provides a specific color, texture and pattern to a roof surface. Slate and wood shingles provide a modulated surface with variations in color, texture veining or graining and thickness. Decorative slate shingles were also utilized, particularly in the second half of the nineteenth century, to add additional colors or shapes to roof surfaces. A standing seam metal roof provides distinct shadow lines that establish a rhythm or scale to the building.

With industrialization at the turn of the century, new roofing materials were introduced including asbestos and asphalt based shingles, as well as varieties of rolled or built-up roofing for flat installations. The variety of metal roofing was also expanded including copper, galvanized sheet steel and aluminum. More recently, a larger variety of substitute roofing materials intended to simulate historic materials have been developed, with some being more successful than others. These include “dimensional” or “architectural” asphalt-composition or fiberglass shingles intended to evoke the appearance of wood or slate and recycled rubber faux slates.

### INVESTIGATING HISTORIC ROOFING

Some investigation is needed to determine the historic roof material for a building. A good place to start is in the attic space. New roofs are often laid atop older roof surfaces. By looking between rafters, older roofs can sometimes be seen. Another area of review is the roof framing, lath and sheathing. Because of their weight, slate requires more substantial roof framing, tending towards larger rafters with narrower spacing than wood shingle framing. If the original lath is visible, there are variations in lath spacing that relate to standard sizes for slate and wood shingles. Finally, wood sheathing was often needed in metal roof installations while lath was utilized in wood and slate shingle installations.

If physical evidence is not available, documentary evidence such as historic photographs, speaking to neighbors or looking at similar buildings in the community might provide clues about original materials.



*The banded slate shapes and the addition of a color pattern enhance this simple twin house.*

## SLATE AND TERRA COTTA TILE

Slate was a popular roofing material at the turn of the century, providing a durable, fireproof and attractive surface, and in certain conditions, capable of lasting for centuries. It was often used in Victorian architecture where the variety of shapes and colors for slates, including gray, black, red, green and purple made the roof surface a visually important feature of the building. Similarly, terra cotta tile was popular in this area in the early 20<sup>th</sup> century with a natural or glazed finish.

A slate or tile roof can last 60 to 125 years depending on the material properties, fabrication, installation quality and regularity of maintenance. A failing slate slowly delaminates, chips and absorbs moisture, causing the deterioration process to accelerate over time. A failing tile surface will craze and spall from the effects of freeze thaw cycles on their porous surfaces.

Problems with slate and tile roofs are typically the result of localized failure since many of the roof accessories and fasteners do not have the same 100-year life span as the slate or tile itself. To extend the serviceable life of a roof, property owners are encouraged to address localized problems as they become apparent, using a qualified slate or tile roofer.

*Typical localized problems and possible repairs for slate or tile:*

- Loosening or corrosion of fasteners for slate, tiles or accessories – *Reattach or replace fastener*
- Split or cracked slate or tile – *Install sheet metal under shingle, fill split or hole with roofing cement*
- Missing or damaged slates, tiles or roof accessories – *Replace to match original*

If over 20% of the slates or tiles on a roof slope are damaged or missing, replacement of the roofing might be warranted, although applicants are strongly encouraged to make every attempt to match decorative colors and patterns with replacement materials. Ceramic tile, rubber and other materials are used to simulate slate and tile, although many have not been on the market for very long.

## METAL

Metal was popularized for roofing after sheet metal production was expanded following the Civil War. Traditional sheet roofing metals include lead, copper, zinc, tin plate, tern plate and galvanized iron. Many metal roofs require painting with traditional colors including red, silver, green or black. On shallow pitch roofs like porches, cupolas or domes, small rectangular pieces of flat seam metal roofing were installed with edges crimped together and soldered to form a weather-tight surface. On steeper pitched roofs, long continuous seam were used, either in a standing seam or batten seam configuration, providing regular ridges down roof slopes.

A well-installed and maintained metal roof is very durable and can last well over a century. However, metal roofing is subject to expansion and contraction with changes in temperature, resulting in buckling and warping if not properly installed. Similar to slate roofing, metal roofing should be undertaken by a specialist.

Deterioration of the metal surface tends to occur from wearing of the protective painted or galvanized surface, chemical action, pitting or streaking, airborne pollutants, rain or material acids, or galvanic action. Galvanic action occurs when dissimilar metals chemically react against each other and corrode. It is possible from adjacent metals, such as fasteners and non-adjacent metals, such as roof cresting via rainwater.

*Typical localized problems and possible repairs for metal:*

- Worn paint, galvanizing or coating – *Repaint*
- Slipping sheet, open seam or solder joint – *Refasten and re-solder*
- Isolated rusting or holes – *Replace to match original*

If the roof is generally rusting, splitting or pitted, severely buckled or warped, or many of the seams or edges are open or disfigured, replacement of the roofing might be warranted, although applicants are encouraged to make every attempt to match seam patterns and color with the replacement material.



*Standing seam metal roofing can be found at steeply pitched roofs, while flat seam metal roofing is more typical at shallower roofs.*



*The slates on this Mansard roof were replaced with dimensional asphalt shingles to replicate the color and pattern of the original.*

## ASPHALT

Asphalt became a popular roofing material at the turn of the century providing a relatively inexpensive and easily installed roofing material. Early roofing was generally made of asphalt-saturated felts in a variety of shapes, styles, textures and colors. Today, asphalt shingles are made with fiberglass, generally as 3-tab or “architectural” or “dimensional” shingles, which include multiple layers of material with simulated shadows generally suggesting wood or slate.

If property owners are replacing an existing slate or wood roof with asphalt, they are encouraged to choose a style and color that appears similar to the original material, installed with similar colors and patterns.

An asphalt shingle roof can be expected to last from 15 to 25 years with “architectural” or “dimensional” shingles lasting longer due to their multiple layers. Over time, asphalt shingles can curl, lose their mineral coating, be dislodged by wind or ice, or become brittle.

*Typical localized problems and possible repairs for asphalt:*

- Split or puncture – *Install sheet metal under shingle, fill split or hole with roofing cement*
- Moss or fungi on surface – *Trim back adjacent trees allowing sun to dry-out roof surface*
- Missing or damaged shingles or roof accessories – *Replace to match original*

If over 20% of the asphalt shingles on a roof slope are damaged or missing, replacement of the roofing might be warranted. Some historic styles and colors for asphalt shingles are still available. Property owners are encouraged to replace historic asphalt in-kind.

## WOOD SHINGLES

Wood shingles are typically made from cedar, cypress, redwood, oak, elm or white pine. They represented a common historic roofing material in Cheltenham due to availability of material and relative ease of installation.

A wood shingle roof can last 30 to 60 years depending on the roof pitch, quality of materials and installation. However, like all exterior wood installations a shingle roof is subject to deterioration including rot, splitting, warping and eroding.

In many cases, wood shingle roofs are replaced at the first indication of a localized problem when regular maintenance or a less intensive repair would be sufficient. Common locations of failure are the roof accessories including the fasteners, flashing and gutters, which might have a shorter life span than the roofing surface. To extend the serviceable life of a roof, property owners are encouraged to address localized problems as they become apparent.

If over 20% of the wood shingles on a roof slope are damaged or missing, replacement of the roofing might be warranted.

**Wood Shingles vs. Wood Shakes:** A wood shingle is sawn while a wood shake is split, historically by hand, resulting in more variable thickness. In this brochure, the term wood shingle is utilized to refer to either wood shingles or shakes.

## ALTERNATE MATERIALS

When considering installing alternate roofing materials, it is important to balance installation costs with the roof's design, long-term durability and aesthetics.

*The BHAR encourages:*

- Maintaining historic appearance of roofs when replacing with an alternate material, including size, shape, texture, pattern, color and other visual characteristics of original
- Installing a variegated or blended color
- Visiting a completed installation rather than relying on brochure photographs
- Verifying proposed material is appropriate for the roof pitch
- Understanding the substrate and attic ventilation appropriate for each material
- Understanding some artificial materials might fade or change appearance over time

## ROOF ACCESSORIES

In addition to the roofing surface, roof accessories are also functional and influence a roof's appearance. Roof accessories include flashing, gutters, downspouts and snow birds.

**Flashing** is made of thin sheet metal formed to prevent water from entering a building at joints, intersections and changes of pitch. It is typically installed around chimneys, parapet walls, dormer windows, roof valleys, vents, and intersections of porches, additions or bays windows.

Flashing often fails before roof surfaces, particularly with more durable roofing such as slate, resulting in interior leaking. If the flashing deteriorates, it is possible to replace it without replacing the entire roof.

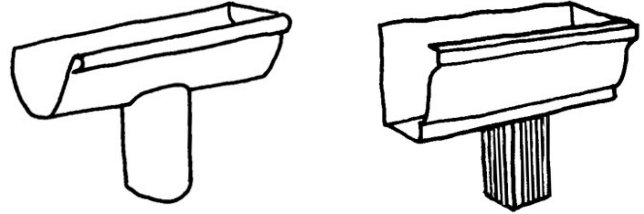
When replacing flashing or installing a new roof, it is important to select a flashing material that has an anticipated life span similar to or longer than the roofing. Copper, terne, steel, lead and aluminum are all used for flashing. The longevity of each material is based upon its thickness and whether it is galvanized, treated or coated. Generally speaking, copper has the longest life span, followed by steel, with aluminum being highly susceptible to punctures, tears and a galvanic reaction to other metals and some roofing materials. It is important to verify flashing materials are sympathetic to existing roofing materials.



*The arrows indicate typical flashing locations.*

**Gutters** are typically located near or along the bottom edge of a roof slope to collect rainwater. Built-in gutters are hidden from view from the ground within or behind architectural features such as cornices or parapets. Pole gutters are located near the bottom edge of a roof slope and project perpendicularly to the roof surface. Both built-in gutters and pole gutters are formed of flashing materials. Hanging gutters are attached to the building just under the roof slope edge and are half-round or profiled in cross section. Hanging gutters have been made of wood, copper, galvanized metals, aluminum and recently vinyl.

Similar to flashings, gutter materials have different longevity. Generally, copper has the longest potential life span, followed by steel, with aluminum being highly susceptible to punctures, tears, dent and galvanic reaction to other metals, and vinyl can become brittle, fracturing in low temperatures.



*Half-round gutters with round or rectangular downspouts are preferred to decorative gutters with corrugated downspouts.*

**Downspouts**, also known as rainwater conductors, are generally surface mounted to a building's exterior to conduct a gutter's water down the face of the building to the ground or an underground drainage system. Similar to gutters, downspouts can be fabricated of copper, galvanized metal, aluminum and vinyl with similar characteristics, in a round or rectangular profile.

*The BHLAR encourages:*

- Regular cleaning and maintenance of gutters and downspouts
- Retaining original drainage system and appearance
- Half-round gutters rather than a profiled K-gutter, which would compete with building features
- Plain round or rectangular downspouts which are more appropriate for use at historic buildings than corrugated downspouts



*Snow birds provide protection and a visual pattern at the edge of this roof. Note the half-round gutter installation.*

**Snow birds**, also known as snow guards, are typically a cast metal or bent wire devices attached in a staggered pattern near the eave of the roof utilized to prevent masses of snow from sliding off a roof. They were typically installed to protect eaves, cornice and gutters, and to take advantage of the insulating effect of snow.

## ROOF FEATURES

Roof features are decorative and sometimes functional elements that help to define the profile of a roof against the skyline. Historic rooftop features include chimneys, dormers, cupolas, bell towers, turrets, finials, cresting and weathervanes.



*The pair of fluted gable end brick chimneys is a characteristic of the Tudor Revival style, as is the central shed roof dormer.*

**Chimneys** were typically designed to compliment the style of a building and period of construction. In Cheltenham, many are constructed of brick with some stone, some of which have been covered with stucco. Early Federal style and Colonial Revival buildings tend towards square or rectangular chimney shafts, sometimes with molded caps. Victorian chimneys can include decorative detailing including corbelling, varied patterns, undulating and molded surfaces and decorative terra cotta chimney pots.



*The dormers, tower and chimney punctuate this Victorian roof.*

**Dormers**, also known as dormer windows, protrude from the roof surface with a window at the downward slope, providing light and additional headroom under roof eaves. Dormers can have various roof shapes including gables, shed, hipped, eyebrow, segmented pediment and other shapes.



*Paired jerkin roof dormers provide additional inhabitable space at the upper level and interrupt the unifying side gable roof of these twin residences.*

**Cupolas**, also known as monitors or belvederes, are structures that project up from the roof, utilized for ventilation with louvers or as lookouts with windows.



*The cupola is a defining feature of this building.*

When addressing roof features, it is important to remember they are part of the stylistic composition of the roof and building, and are often difficult to replace.

*The BHAR encourages:*

- Maintaining and repairing of roof features
- Replacing damaged or missing materials with new to match the material, size, shape, texture, color and other visual characteristics of the original

*The BHAR discourages:*

- Removal of rooftop features without appropriate replacement



*The steeply pitched slate roof, large chimney and the ridge cresting add visual interest to this building.*



*Property owners are encouraged to maintain roof edge features like decorative cornices and trim, and not enclose them in siding.*

## **ROOF REPAIR OR REPLACEMENT**

*The BHAR encourages:*

- Maintaining, cleaning or repairing of roofing, roof accessories and rooftop features
- Cleaning of gutters and downspouts regularly, generally every spring and fall
- Inspect attic periodically after a storm or freeze to catch small leaks early to minimize interior damage
- Selectively replace damaged or missing materials with new materials to match the material, size, shape, texture, color and other visual characteristics of the original
- If the level of damage or deterioration is beyond repair, completely replace damaged or missing materials with new materials to match the material, size, shape, texture, pattern, color and other visual characteristics of the original
- If replacement in original material is not possible, replace the damaged or missing materials with new material of similar size, shape, texture, pattern, color and other visual characteristics of the original
- Installation of fasteners and flashings with a similar expected life span to the roofing material

*The BHAR discourages:*

- Removal of roof features such as chimneys, dormers, cupolas, weathervanes, finials, etc.
- Removing or altering drainage system
- Adding or altering rooftop features at areas visible from a public way that change roof configuration including skylights, television antennas or dishes, solar collectors, mechanical equipment, roof decks, chimney stacks and dormer windows
- Adding rooftop features that create a false historical sense without supporting documentary evidence such as weathervanes or wood shingles on an originally slate roof
- Adding new features that are out of character, scale, materials or detailing to the historic building
- Covering, enclosing or removing eaves or cornices

## **ADDITIONAL AREAS OF CONSIDERATION**

- Roofing work is potentially dangerous and should be left to professionals
- All roofers are not experienced in all materials
- Verify extents of warranty and company history
- Verify whether removal of existing roofing is required prior to installation of new roofing; too much weight can damage structural elements
- Verify the condition of substrate for rot or decay and make necessary repairs, including the sheathing or lath, and structural elements
- Use substrate appropriate for roof material and provide adequate ventilation under roof surface
- Limit use of building paper under wood and slate surfaces
- Use a single type of metal compatible to roofing at fasteners, flashing, gutters and downspouts to avoid galvanic action
- Select a flashing material with a comparable life span to the roofing material

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