38TH CRCA TRADE SHOW & SEMINARS

JANUARY 19-21, 2022
DRURY LANE, OAK BROOK TERRACE, IL

WWW.CRCA.ORG
Roofing technical issues update

Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association
Mark Graham
Topics

• Lumber concerns
• Wood roof deck concerns
• Synthetic underlayment
• FM Global-insured roofing projects
• Construction-generated moisture
• Material availability
• Questions... and other topics
Lumber concerns
N.C. Building Code Council warns of the use of European lumber in North Carolina

RALEIGH

Jun 15, 2021

North Carolina Insurance Commissioner Mike Causey today has issued an alert about the use of European lumber in the construction of homes and buildings throughout the state. The N.C. Department of Insurance regulates the state's building codes and oversees the N.C. Building Code Council.

The council has determined European lumber, which is being imported to help with the nation's lumber shortage, does not meet N.C. building code requirements and, in some cases, could cause catastrophic failures in walls, floor and roof framing.

A primary concern is the specific gravity or wood density that affects the performance of fastening devices such as nails, screws or guaged plates. A lower specific gravity may result in a decreased resistance capacity of a shear wall designed to withstand wind and seismic loads, lower gripping strength of a tensile metal plate, or lower bending strength that could affect wall height.

There are also concerns with the differences between U.S. and imported lumber milling processes.

The American Lumber Standard Committee (ALS) requires the lumber species to be identified in the grade stamp on each piece of lumber. The structural properties widely vary by species and the origin where the wood was grown and harvested.

"Contractors should be aware that, despite a piece of lumber bearing a 'No. 2' stamp, there can be significant differences in the wood's engineering properties depending on where it came from," said Commissioner Causey. "I urge builders to know the difference between imported and domestic 'No. 2' stamped lumber so they don't mistakenly use the wood in an unsafe manner that does not meet code."

As a result of these significant issues, the N.C. Building Code Council has issued an advisory that European lumber can only be used as an alternate material that must be reviewed by the code enforcement official before it is used. This does not mean European wood products are prohibited. It simply requires additional supporting documentation to assure the wood characteristics are properly reflected in the overall project design.

Code enforcement officials must ensure the documentation includes the testing or evaluation performed on the lumber to support compliance with the building code requirements. Without the documentation, the use of European lumber products will require an engineering analysis and subsequent seal to verify code compliance.
AWC Response to NCDOI Press Release

Jun 18, 2021

LEESBURG, VA – On June 11, the North Carolina Department of Insurance (NCDOI) issued a news release warning of the use of European lumber in North Carolina. The news release identified several potential use issues given the building community’s lack of familiarity with European lumber and served to alert suppliers, designers, builders, and regulators that lumber should be used in accordance with applicable codes and standards; however, there were several statements that need to be clarified or corrected. The Pacific Lumber Inspection Bureau has prepared a detailed response to the NCDOI news release and can be located at the following link: PLIB’s Response to North Carolina DOI warning notice | Pacific Lumber Inspection Bureau.

Prescriptive provisions in the building codes that cover wood-frame construction are primarily based on the four major commercial species combinations: Douglas Fir-Larch, Hem-Fir, Southern pine, and Spruce-Pine-Fir (SPF) from Canada. These prescriptive provisions provide species- and grade-specific span tables for common loading conditions for the four major species combinations or the requirements are based on the minimum properties for certain grades of the four major species combinations. However, the building code allows the use AWC’s Span Tables for Joints and Rafter (STJR) for other grades and species of lumber and for other loading conditions. The span tables in STJR are species independent and only require the user to know the adjusted design values for the grade and species of lumber. Where European lumber has the same or higher design values than North American lumber, the material can be directly substituted.

In areas where the basic wind speeds are 130 mph or less (in some locations less than 140 mph), prescriptive provisions in the building codes that address wall studs and connection requirements have been considered to be independent of the lumber species. However, in areas where the basic wind speeds are greater than 130 mph, including coastal areas of North Carolina, the prescriptive provisions of the building codes don’t typically apply and the user is directed to use the pre-engineered wood-frame construction provisions in AWC’s Wood Frame Construction Manual for One- and Two-Family Dwellings (WFCM) or ICC’s Standard for Residential Construction in High-Wind Regions (ICC 600) or to design the structure in accordance with the loads in ASCE’s Minimum Design Loads for Buildings and Other Structures (ASCE 7). When designing to the wind loads in ASCE 7, AWC’s National Design Specification® for Wood Construction (NDS®) is used, which includes design values for all North American and non-North American species approved by the American Lumber Standards Committee, including European lumber species. Adequate resources exist for use by plans examiners, builders, and designers to accommodate the use of European lumber with these standards.

Due to the rapid increase in use of and lack of familiarity with lumber species other than the four major species, prescriptive design provisions for those other species are lagging, but are being developed. The Pacific Lumber Inspection Bureau is working to develop species-specific span tables for use with the prescriptive provisions in the building codes based on the NDS and has already developed exterior wall stud tables in accordance with provisions of the WFCM for use in high wind areas and can be located at the following link: TR-9-Max-Stud-Length-Tables-for-European-Species-1.pdf (plib.org).
Element of a Grade Stamp

- Mill number
- Grading Agency Symbol
- Indicates the species or combination of species of lumber.
- Photo #2 Lumber Grade Stamp
- For species imported from outside North America, the grade stamp will include the designation “(I)”, indicating imported.
- Lumber is graded based on the quality and appearance of the wood. No. 2 lumber is the most common grade for framing. However, lumber with the same No. 2 grade could have different wood properties.
What is the code allowable span for this European 2x10 floor joint spaced 16 inches on center?

**Design Criteria:**
- 10 psf Dead Load
- 40 psf Live Load (Table R301.5)
- Live Load Deflection limit = L/360 (Table R301.7)

From PLIB Simplified Span Tables for Light Frame Construction Imported Species:

<table>
<thead>
<tr>
<th>Species and Trade</th>
<th>Residential R14 E = 30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Spruce</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Spruce</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Oak</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemlock</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redwood</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Red Cedar</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Pine</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow Pine</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alder</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poplar</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birch</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alder</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poplar</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birch</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Recommendations
Imported lumber

• Beware of imported lumber and its possibly lower properties
• You should not make representations of roof deck’s or wood blocking’s strength
Considering substitutions

Be aware of potential consequences with product substitution

by Mark S. Graham

With ongoing shortages of building materials and products, substitutions have become more commonplace—but they can have unintended consequences. One issue that has arisen involves substituting European lumber for North American lumber, a decision that could result in unintended consequences.

The situation

At the start of the COVID-19 pandemic, wood product producers were operating under the same uncertainty as the rest of the world. Many halted or reduced production in anticipation of reduced demand and reduced demand. At the same time, many wholesalers and retail lumber customers significantly reduced inventory levels. Also, because of the Great Recession, several mills had closed permanently. The American Wood Council reports between 2007 and 2017, mill closures in the Pacific Northwest resulted in a 20% reduction in lumber capacity, and between 2017 and 2018, a 10% reduction. This severe reduction in supply capacity resulted in the lumber industry being at least 10% below its pre-COVID demand levels.

Although the demand for wood products had dipped, it quickly rebounded during the pandemic because of increased remodeling projects and new housing starts spurred, in part, by low interest rates. As a result, the industry is struggling to meet the demand, leading to increased prices and shortages of many products. This has led to the use of substitutions to meet the demand, but these substitutions can have unintended consequences.

For example, using European lumber instead of North American lumber can result in different properties and performance characteristics, which can impact the durability and longevity of the finished product. Additionally, the substitution can also affect the environmental impact of the product, as the carbon footprint of shipping European lumber to North America is higher than shipping North American lumber to the US.

Considering these factors, it is important for producers and wholesalers to be aware of the potential consequences of substitutions to ensure that they are making informed decisions that meet the needs of their customers while also considering the environmental impact and potential risks.

Link
Plywood and OBS roof deck concerns
Standards for wood structural panels
International Residential Code, 2018 Edition

Plywood:
• U.S. Department of Commerce PS-1, “Structural Plywood”
• CSA Group O325, “Construction Sheathing”

Oriented-strand board (OSB):
• U.S. Department of Commerce PS-2, “Performance Standard for Wood-based Structural-use Panels”
• CSA Group O437, “Standards for OSB and Waferboard”
Common, but not referenced in the Code

Plywood and OSB:
Roof sheathing attachment

IRC 2018 Table 602.3(1), Rows 30-32 (minimum attachment):

• Panel edges:
  – 2½-inch-long 8d common nails at 6 inches o.c. at supported panel edges

• Intermediate supports:
  – 2½-inch-long 8d common nails at 12 inches o.c. at intermediate supports
APA Form E30, “Roof Construction”
--Roofing-specific excerpts from APA’s
_Engineered Wood Construction Guide_ (102 pages)
Recommendations
Roof sheathing attachment

• **New construction:**
  – Be careful with deck “acceptance”.
  – Deck acceptance should be limited to the visual surface and no visual presence of moisture on the surface

• **Reroofing:**
  – Since deck condition and attachment typically cannot be determined until roof covering tear-off, consider unit price or T & M pricing for deck replacement and/or deck re-fastening
Know your steep-slope roof decks

Following plywood and OSB installation guidelines can help ensure a successful roof system performance.

by Mark S. Graham
Synthetic underlayment
Understanding underlayments

Some roofing underlayment products may not be code-compliant

If use of a nonasphaltic or synthetic underlayment product is being considered for a specific project, code acceptance can be sought by making a specific request to the authority having jurisdiction (AHJ). AHJs typically will request an evaluation report, such as those provided by ICC Evaluation Service or Underwriters Laboratories Inc. AHJs may grant code acceptance for alternative underlayment products on a project-by-project basis and typically not a blanket acceptance applying to all future projects in a specific jurisdiction.

Professional Roofing
December 2016

Published in December 2020
1. Scope

1.1 This specification addresses mechanically attached polymeric roof underlayment used in steep slope roofing.

1.2 The objective of this specification is to provide a finished product that will be used as a water-shedding underlayment layer on steep sloped roofs prior to and after installation of the primary roof covering.

2. Referenced Documents

2.1 ASTM Standards:

D3661/D3661M Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing

D3662/D3662M Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cup Shingles, and Shingles Used in Roofing and Waterproofing

D1202 Terminology Relating to Roofing and Waterproofing

3. Terminology

3.1 Definitions—For definitions of terms used in this specification, refer to Terminologies D1202 and G113.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 polymeric roof underlayment—a sheet material primarily composed of polymers for use as a secondary water-shedding layer on steep sloped roofs when installed below the primary roof covering.

4. Workmanship, Finish, and Appearance

4.1 The polymeric roof underlayment shall be supplied in roll form.

4.2 The polymeric roof underlayment shall be uniform in thickness and appearance. It shall be free of visible defects such as blisters, ragged or uneven edges, blisters, cracks, tears, and protruding edges of reinforcement.
### TABLE 1 Requirements for Polymeric Roof Underlayments

<table>
<thead>
<tr>
<th>Test Requirement</th>
<th>Specimen Type</th>
<th>Test Method</th>
<th>Conditions of Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrolling</td>
<td>As received</td>
<td>7.2</td>
<td>No visible cracking, tearing, or delamination of underlayment</td>
</tr>
<tr>
<td>Flatness</td>
<td>As received</td>
<td>7.3</td>
<td>No visible cracking or delamination of underlayment</td>
</tr>
<tr>
<td>Water Vapor Transmission</td>
<td>As received</td>
<td>7.4</td>
<td>Results shall be reported in Perms</td>
</tr>
<tr>
<td>Liquid Water Transmission</td>
<td>As received</td>
<td>7.5</td>
<td>Shall meet the “PASS” requirements of ASTM D4869/D4869M</td>
</tr>
<tr>
<td>Linear Dimensional Change</td>
<td>As received</td>
<td>7.6</td>
<td>Max. linear change of −2.5 to +1%</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>As received</td>
<td>7.7</td>
<td>Min. 3.5 kN/m [20 lb/fm]</td>
</tr>
<tr>
<td>(machine and cross-machine direction)</td>
<td>After Thermal Cycling</td>
<td>7.7 and 7.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After Laboratory Accelerated Weathering</td>
<td>7.7 and 7.12</td>
<td></td>
</tr>
<tr>
<td>Tearing Strength</td>
<td>As received</td>
<td>7.8</td>
<td>Min. 67 N [15 lbf]</td>
</tr>
<tr>
<td>(machine and cross-machine direction)</td>
<td>After Thermal Cycling</td>
<td>7.8 and 7.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After Laboratory Accelerated Weathering</td>
<td>7.8 and 7.12</td>
<td></td>
</tr>
<tr>
<td>Fastener Pull-Through Resistance</td>
<td>As received</td>
<td>7.9</td>
<td>Min. 111 N [25 lbf]</td>
</tr>
<tr>
<td></td>
<td>After Thermal Cycling</td>
<td>7.9 and 7.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After Laboratory Accelerated Weathering</td>
<td>7.9 and 7.12</td>
<td></td>
</tr>
<tr>
<td>Hydrostatic Resistance</td>
<td>As received</td>
<td>7.10</td>
<td>No water shall pass through any specimen</td>
</tr>
<tr>
<td></td>
<td>After Thermal Cycling</td>
<td>7.10 and 7.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After Laboratory Accelerated Weathering</td>
<td>7.10 and 7.12</td>
<td></td>
</tr>
<tr>
<td>Thermal Cycling</td>
<td>As received</td>
<td>7.11</td>
<td>No visible damage such as peeling, chipping, crazing, splitting, cracking, flaking, or pitting</td>
</tr>
<tr>
<td>Laboratory Accelerated Weathering</td>
<td>As received</td>
<td>7.12</td>
<td>No visible damage such as peeling, chipping, crazing, splitting, cracking, flaking, or pitting</td>
</tr>
</tbody>
</table>

* The effect of laboratory accelerated weathering on the tensile strength, tearing strength, fastener pull-through resistance, and hydrostatic resistance of the roof underlayment is for the purpose of simulating the effect of solar radiation, heat, and moisture on the roof underlayment during the period in which it is exposed to the environment before the roof covering is installed.
Some synthetic underlayments are vapor retarders, while others are vapor “open”
Where would a “breathable” underlayment be preferred over an “non-breathable” underlayment?
Conclusions and recommendations

Synthetic underlayments

• Specify, select and purchase synthetic underlayments based upon ASTM D8257

• Beware of specific products’ vapor retarder or vapor “open” characteristics

• ASTM D8257 will first be introduced into IBC 2024 and IRC 2024
  – Until then, code official “acceptance” is still needed
A new standard

Guidelines for synthetic underlayments

by Mark S. Graham

A

A new standard for synthetic underlayments, in December 2020, ASTM International published the first USI product standard specific to synthetic, steep slope underlayment products. If you are involved with the design, installation, or evaluation of steep-slope roof systems, I encourage you to become familiar with this standard and begin to use it when specifying and presenting steep-slope underlayment systems.

ASTM D6227


The standard defines polymeric underlayments as a roof material primarily composed of polymeric materials and not necessary a waterproofing layer. The objective is to provide a finished product that will be used as a water-shedding underlayment layer beneath and after the installation of a primary steep-slope roofing.
FM Global-insured roofing project process
Design loads (ASCE 7-10) from the Construction Documents:
- Field: -68.6 psf
- Perimeter and corners: -115.4 psf

Resulting loads for FM 1-52 testing (based on the Construction Documents’ design loads):
- Field: -52 psf
- Perimeter and corners: -87 psf
Conclusions and recommendations

FM Global-insured roofing project process

• FM Global/FM Approvals is not likely a party to the Contract for roofing work
  – FM Global makes recommendations to their insureds/building owner clients
  – FM Global should not be dictating to the Roofing Contractor

• A FM Global-insured roof assembly is a premium product
  – It is typically (well) above minimum code requirements

• Actively manage roofing projects for FM Global-insured clients
Construction-generated moisture
Construction-generated moisture
Unintended moisture accumulation can affect roof system performances

by Mark S. Graham

The process of constructing buildings and certain building systems often involves the use of materials that absorb and retain moisture. This moisture can lead to potential damage and can affect the performance of the building systems. Proper moisture control and management are crucial to ensure the longevity and efficiency of the building systems.

**Moisture Sources**

During construction, large amounts of water are used in the manufacture and installation of certain building materials. For example, a normal-weight structural concrete mix with a water-to-cement ratio of 0.4 contains about 50 gallons of water per cubic yard of concrete. In some instances, additional water is added to ease the transport and placement of concrete. About half of this water will be consumed during the concrete hydration and curing process. The remaining water is left to drain away by evaporation and moisture vapor transport over time.

Similarly, many building construction fiber materials contain large amounts of water. plywood, drywall, and plastic membranes, among others.
Some things we know...

Construction-generated moisture

- Cooler temperatures are more challenging than warmer temperatures
  - Cool air holds less moisture
- Some “modern” materials are less moisture tolerant
- Water-based products release moisture; more than solvent-based materials
- Concrete is placed using much more water than is necessary for proper hydration
- Many concrete admixtures slow moisture release
Some things we know (cont.)...
Construction-generated moisture

- Temporary enclosures can trap moisture/prevent moisture release
- Temporary heating can be problematic
  - Propane heaters release large amounts of moisture vapor
- Bringing warm, stored materials out into a cold environment can result in surface condensation
Recommendations
Construction-generated moisture

• Realize practical (and physical) limitations
• Consider appropriate contract provision language so you don’t take on additional liability
• When construction-generated moisture cannot be controlled, use a vapor retarder at the deck level
Material and product shortages and price volatility
ARMA Releases Fourth Quarter 2021 Report on Asphalt Roofing Product Shipments

<table>
<thead>
<tr>
<th>Year</th>
<th>Shipments (squares)</th>
<th>% Change</th>
<th>YTD 2021</th>
<th>YTD 2020</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>37,014,634</td>
<td>-10.2%</td>
<td>169,188,143</td>
<td>161,416,435</td>
<td>4.8%</td>
</tr>
<tr>
<td>2020</td>
<td>1,344,956</td>
<td>-15.8%</td>
<td>6,587,255</td>
<td>7,078,723</td>
<td>-6.9%</td>
</tr>
<tr>
<td>2020</td>
<td>8,652,926</td>
<td>-3.4%</td>
<td>38,693,700</td>
<td>34,545,343</td>
<td>12.0%</td>
</tr>
<tr>
<td>2020</td>
<td>2,917,763</td>
<td>19.1%</td>
<td>14,215,825</td>
<td>12,910,687</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

The Asphalt Roofing Manufacturers Association (ARMA) is a trade association representing North America's asphalt roofing manufacturing companies and their raw material suppliers. The association includes the majority of North American manufacturers of asphalt shingles and asphalt low-slope roof membrane systems. Information that ARMA gathers on modern asphalt roofing materials and practices is provided to building and code officials, as well as to regulatory agencies and allied trade groups. Committed to advances in the asphalt roofing industry, ARMA is proud of the role it plays in promoting asphalt roofing to those in the building industry and to the public.
Material and product shortages and price volatility

Supply Chain Shortage Information

Construction material prices are 22.3% higher than a year ago
Construction material prices rose 0.6% in December 2021 and are up 22.3% on a year-over-year basis; nonresidential construction material prices are 23.2% higher than a year ago.

Jan. 19, 2021

Construction material prices are 23.5% higher than a year ago
Construction material prices rose 1.4% from October to November and are up 23.5% on a year-over-year basis.

Dec. 15, 2021

Owens Corning will expand capacity to meet growing demand
Owens Corning, Toledo, Ohio, plans to accelerate increased production capabilities to support growing demand for its roofing products.

Dec. 14, 2021
NRCA Industry Issue Update: Roofing Material Shortages and Price Volatility

Roofing material shortages and price volatility

September 2021

The U.S. roofing industry is experiencing unprecedented shortages of roofing materials and products and significant price volatility. NRCA is providing this Industry Issue Update to help its members with building owners, facility managers, general contractors and construction managers involved in roof purchasing decisions.

Although this information is intended to apply specifically to the U.S. roofing market, based on NRCA’s communications with its affiliated partners in Canada, Mexico and elsewhere worldwide, shortages of roofing materials and products and price volatility appear as global issues.

BACKGROUND

Compared with other industries, the U.S. roofing industry is more volatile. With few exceptions, a vast majority of roofing products and materials are manufactured in the U.S. From U.S.-sourced raw materials, followed by U.S. suppliers and distributors, and installed by U.S. roofing contractors companies. Although the global economy has a significant impact on many purchasing decisions, the U.S. roofing industry is largely driven by the U.S. economy, interest rates and consumer sentiment.

During the past decade, the U.S. roofing industry has experienced a period of constant, modest growth. The roofing material and product supply chain has expanded in capacity and roofing contractors have added full personnel and capability to fulfill this growing need. In many regions of the U.S., additions to the roofing industry growth have been limited by a lack of adequately trained full persons.

At the same time, energy code requirements and sustainability incentive programs have resulted in a demand for more energy-efficient roof systems. For example, when roofing a building, it is not unusual to replace an existing aged roof system having a R-10 insulation value with a new roof system with an energy code mandated minimum R-20, R-25, R-50 or R-65 insulation value. Such increases in insulation values necessitate using greater amounts of energy-efficient materials, usually in multilayered, larger fasteners, more layers of insulation assemblies and additional materials at handling and installation labor.

THE CURRENT SITUATION

The U.S. roofing industry responded and adapted to the COVID-19 pandemic remarkably well. The U.S. roofing industry quickly was considered “essential” and at the start of the pandemic, the roofing material and product supply chain functioned with minimal interruption. Roofing contractors adapted to additional safety work practices necessary to perform work on occupied buildings during the pandemic.

By many measures, 2020 was a productive year for the U.S. roofing industry. For example, 2020 was a record year for asphalt shingles installations. Homeowners invested in roofs and maintaining their homes during the pandemic, spurred in part by low interest rates and the availability of stimulus funding, and the roofing industry responded to several weather events involving high winds and hail.

The institutional and industrial segments of the U.S. roofing industry also experienced similar levels of activity.

However, one noticeable change is the level of pricing materials and product in inventory chains consistently. Roofing material suppliers and distributors reduced their material and product inventories. Since the start of the pandemic, far more roofing material and products are being shipped on a job-specific basis. This especially is the case with roof insulation and roof covering products and certain specialty products, such as fasteners and adhesives. A few years ago, many roofing jobs often could be carried out with roofing materials and product held in inventory, but manufacturers now are shipping roofing materials and products on a job-specific basis with fewer roofing materials and products being stocked in inventory.

Link
Substitutions...

• Owner approval
  – Change order

• Manufacturer approval
  – Documented in writing

• Code approval
  – Code official acceptance (Documented in writing)
[A. 104.10 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the building official shall have the authority to grant modifications for individual cases, upon application of the owner or the owner’s authorized agent, provided that the building official shall first find that special individual reasons makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

2021 INTERNATIONAL BUILDING CODE®

INFORMATION CODE COUNCIL

[4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard.

5. Submission to the applicant of written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced flood elevation, and stating that construction below the design flood elevation increases risks to life and property.

[A. 104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically proscribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where...
Consider alternatives

Code interpretations, modifications and alternatives provide some code compliance flexibility

by Mark S. Graham

Building codes by their nature tend to be relatively inflexible; they limit designs, materials and construction methods to those specifically prescribed in codes and meeting the code’s performance requirements. However, most codes also contain provisions that allow code officials to accept limited, project-specific modifications and allowances to code requirements.

You should be aware of a code’s interpretation, modification and alternative acceptance provisions because these may provide a basis for acceptance of new system designs and existing products that do not specifically comply with a code’s requirements.

Alternative acceptance

In Chapter 1-Types and Administration of the International Building Code® 2019 Edition, Section 304, Duties and Powers of Building Official grants a code official the authority to enforce the code, render interpretations and adopt procedures to clarify the code provisions. Such interpretations and procedures are not intended to waive code requirements.

Section 304.30—Modifications given a code official authority to
Questions... and other topics
Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association
10255 West Higgins Road, 600
Rosemont, Illinois  60018-5607
(847) 299-9070
mgraham@nrca.net
www.nrca.net

Twitter:  @MarkGrahamNRCA
Personal website:  www.MarkGrahamNRCA.com