Edge Systems Specification Guide

Every day, architects and specification writers research hundreds of construction products to develop written specifications within a set budget established by the building owner.

It is crucial that spec writers take care when specifying the roof edge. The spec for this vulnerable part of the roof is often left with gaping loopholes that are left open to misinterpretation.

Yet even the most tightly written spec can encounter problems once it hits the construction site. Specs are often changed, forgotten or otherwise ignored for a variety of reasons, and sometimes the changes are made with good reason. However, it is often forgotten that specifications are written with a purpose and it is important that the specified standards are maintained.

This guide will help underline the importance of writing and maintaining a proper specification for perimeter roof edge systems.

Warranties:

Overview

Performance product specifications based on physical properties or wind design requirements are essential to the long-term success of any roofing investment. Many roofing specifications are written requiring some form of warranty coverage.

If one component of a warranted roof system fails, the roof membrane manufacturer's system warranty will cover those components sold and marketed under their name by repairing and/or replacing the damaged areas.

Perimeter metal manufacturers can provide performance warranties on edge metal details to compliment any roof membrane manufacturer's warranty that may be specified.

Warranties:

Many Options

There are many different types of warranties available for roof edges. It is important to have a complete understanding of what each option means when writing a specification. Remember if you don't ask for it, you won't get it.

Workmanship Warranties
This warranty covers replacement or repair of products that are defective in material or workmanship, and usually last for 2-5 years. This is typically the extent of warranty coverage available on shop-bent roof edges.

Manufacturer Performance Warranties
These warranties can be provided by the roof edge manufacturer, and protect against failure due to manufacturer's defects. This type of warranty exceeds the coverage beyond the length of the workmanship warranty. They typically limit coverage to protection under a certain wind speed.

Full System Warranties
This kind of warranty is given by the roof manufacturer and includes the roof edge system in the warranty. This allows for all roofing products provided by the roof manufacturer to be covered under one warranty.

Finish Warranty
This warranty is provided through the roof edge manufacturer, and guards against peeling, cracking, excess chalking and fading of the paint finish. Length of coverage and special limitations, such as for coastal regions often apply.

As with any warranty it is important to work with the provider to ensure that there is a clear understanding of the extent of coverage and any limitations, restrictions or additional charges that may apply.

Importance:

Limits Risk to Litigation

Simply stated, a roof edge system must act as a water seal at the edge by protecting the membrane from pulling free under high winds or repeated seasonal wind cycles. If the edge leaks or blows off, damage to the roof membrane, insulation and/or the structural decking can occur.

Compromising any portion of an edge metal specification greatly diminishes the useful life expectancy of the entire roof system. Accepting a shop-fabricated roof edge system that may not perform as required in lieu of the specified products, provides little or no monetary recourse for the building owner.

The following are conservative estimates regarding the cost of litigation versus the cost of the roof edge:

- The cost of a building's roof is approximately 10% of the total building cost.
- Conservatively, 60% of litigation claims originate from the roof area.
- On average, 60% of roof warranty claims are attributed to metal edge failures.
- Therefore, out of all of the litigation, 36% is attributed to the edge metal failure.
- Perimeter edge metal is typically .1% of the building cost.
- .1% of the cost of the building carries 36% of the exposure to risk of litigation.

Despite this, many specified edge metal products are routinely eliminated or substituted with inferior products due to cost overruns, contractor convenience or misguided information. This is an unnecessary risk that can easily be avoided by properly specifying (and holding to that specification) a quality, tested roof edge.

Dos & Don'ts:

Some Guidelines

Don't:
"Furnish aluminum gravel stops in sizes as shown on prints. Color to be selected by architect or building owner."

Reason:
Failing to state precisely what is needed in regards to wind design requirements, metal thickness, finish and color forces contractors to inflate bids to cover the cost of possible "non-standard" materials.

Do:
"Provide edge metal details certified to meet the project's design requirements as tested by ANSI/SPRI's RE-1, RE-2 and/or RE-3 testing standards.

"Provide two-piece fascia profile as shown on plans, 6" overall face height. Waterdam fabricated from 24 ga. G-90 galvanized steel. Fascia panels to be fabricated from prefinished .050" Kynar 500 coated aluminum. Color to be selected from manufacturer's standard colors. Fascia sections to be a minimum of 12'-0"."

Dos & Don'ts: A Real-Life Example

Three midwestern schools were all built within months of each other using the following specification.

The Spec

Division 7 - THERMAL & MOISTURE PROTECTION
Section 07710 - Prefabricated Roof Specialties

PART 1 - GENERAL

1.01 DESCRIPTION
- A. Provide labor, materials, equipment and incidentals required for the completion of the work shown on the drawings and/or specified under this section.

1.02 SCOPE OF WORK
- A. Work under this section shall include, but necessarily be limited to the following:
  1. Metal fascia, counterflashing, gutters, downspouts, expansion joints, pipe supports and roof pavers.

1.03 SUBMITTALS
- A. Shop drawings and product data.
- B. Samples of finish color on metal.
- C. Pipe support

1.04 GUARANTEE
- A. Furnish a written 20-year non-prorated guarantee on finish and material.

PART 2 - PRODUCTS

2.01 METAL FASCIA, COUNTERFLASHING, GUTTERS & DOWNSPOUTS
- A. 24-gauge galvanized steel by:
  1. Vincent Metals, "ColorKlad"
  2. Metal Building Components, Inc.
  3. Petersen Aluminum Corp. "Pac-Clad"
  4. AEP Span
  5. Copper Sales, "Una-Clad"
  6. Metal-Era, Inc.
- B. Sizes and shapes as shown on the drawings.
- C. Finish: Kynar 500®, color as selected by Architect from manufacturer's full range of non-metallic colors.
- D. Manufacturer must be as specified and required by membrane roofing manufacturer to provide the specified warranty.

Dos & Don'ts: A Real-Life Example

Despite using the same specification, each of the three schools had significantly different results.

The Finished Schools

The first school (fig. 1) used contractor fabricated metal. As a result of using untested, poorly designed fascia, it began to pull away from the building shortly after installation.

The second school (fig. 2) uses contractor fabricated external splice plates, per the NRCA detail. There is no failure at this time, but the use of external splice plates opens up the edge to a greater risk of penetration. It also creates a more segmented and less attractive appearance.

The last building (fig. 3) used manufacturer fabricated fascia with concealed splice plates that had been test per ANSI/SPRI ES-1 standards.

A clearer and more precise specification is necessary to avoid misinterpretation and potentially sub-standard roof edges.

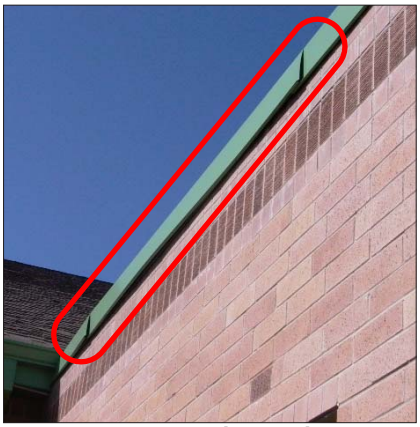

Fig. 1: Contractor Fabricated

Fig. 2: Contractor Fabricated

Fig. 3: Manufacturer Fabricated

How to Specify

There are four basic "must-haves" for specifying a wind-warranted and performance tested edge system:

1. Be sure the appropriate manufactured fascia and coping wind warranties are specifically stated in Section 7710 or 7620, Part1-General, Quality Assurance, Warranty paragraph.

2. In Section 7710 or 7620, Part 1-General, Quality Assurance, specify that the fascia and coping shall be tested and designed to withstand wind pressures for that building as calculated by using the ANSI/SPRI ES-1 document.

3. In Section 7710 or 7620, Part 2-Products, specify the respective brand names of the fascia and coping systems.

4. In Section 7710 or 7620, Part 2-Products, state the correct material gauges and finishes.

Spec Checklist

1. Know the performance characteristics inherent to the building structure based on location, building height, ground roughness factors, and documented design wind speed. If you are unfamiliar with the potential forces imposed on the structure (i.e. wind loads creating uplift pressures, surrounding terrain factors, rainfall intensity, etc.) you cannot precisely determine the type(s) of products that will perform within the building's required parameters.

2. Use recognized testing standards such as the Single-Ply Roofing Institute's (SPRI) *Wind Design Guide for Use with Low Slope Roofing Systems*. By subscribing to the ANSI/SPRI design methodologies you will develop the edge metal specification around the project's actual location, not arbitrary windstorm resistance areas or zones.

3. Ask for certification that the products furnished meet those requirements as tested by the ANSI/SPRI RE-1, RE-2 and/or RE-3 tests.

4. Follow and practice the industry recognized acceptable material thicknesses for gravel-stop face heights, coping wall widths and gutter girths.

5. Specify exactly what you want by including the metal's material thickness, finish and color if available.

6. Rely on the advice and expertise of the manufacturer and local sales representatives of the specified materials to recommend the best product for the guidelines you've established. Ask for manufacture's warranties on performance and material finishes.

7. Most importantly, provide the building owner with the products and performance they expect from their roofing investment. Quality perimeter metal edges are the first line of defense in creating a long-term, successful roofing system.