



RETROFIT SOLUTIONS

Retro-R® SSR NuRoof® NuWall®

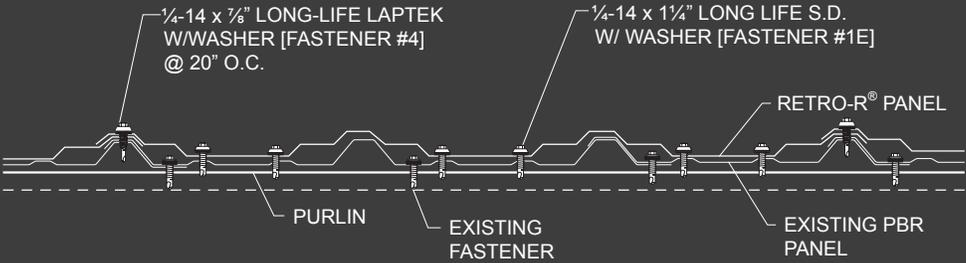




RETROFIT SOLUTIONS BY MBCI®

MBCI® has experience in retrofitting existing buildings proven with millions of square feet of successfully completed projects for more than 30 years. Our vast understanding and knowledge of our many different products allows us to provide you with the best option for your building.

MBCI offers a number of retrofitting solutions, including our NuRoof® retrofit roof framing system, a trapezoidal standing seam roof over an existing R panel roof, our innovative Retro-R® roofing panel that is installed over an existing R panel or our NuWall® retrofit wall system to cover existing R panel walls that are in need of an upgrade.



WHY RETROFIT?

There are many reasons for choosing an MBCI retrofit system for an existing building. You may need to replace a leaking roof, correct the current roof geometry, meet new regulation or code requirements, or improve the aesthetics or energy efficiency of a building.

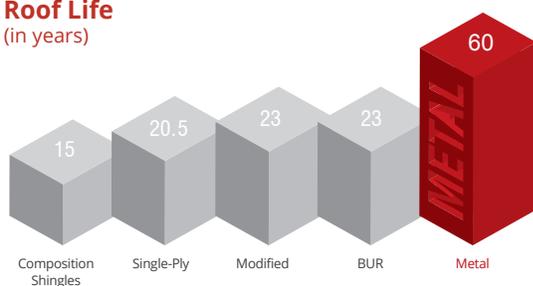
Flat roofs are naturally problematic. They lack the ability to effectively discharge rainwater from the building so they retain moisture on the rooftop for potential infiltration into the building's interior. Flat roof weatherproofing membranes are subjected to a greater range of performance issues and require continual maintenance to provide weathertightness assurance.

The proper framing design, metal roof system, insulation package and ventilation are important factors that will reduce your operating costs and provide a low maintenance roof for many years. Metal roofing is recognized by industry experts for having a 60-year or more lifespan compared to its nearest flat roof competitor at 20 years.

Retrofitting is also an ideal solution to tackle the growing concerns around energy consumption. Energy efficiency regulations are being introduced throughout the country. Adding to the momentum, the American Society of Heating, Refrigerating and Air-Condition Engineers (ASHRAE) is aggressively addressing this issue and a large number of states and local municipalities have already adopted their most recent guidelines. MBCI has systems designed that address retrofitting over existing metal roofs to upgrade to current building code requirements. These systems can be designed to increase the building's thermal efficiency by adding insulation between the old and new roof.

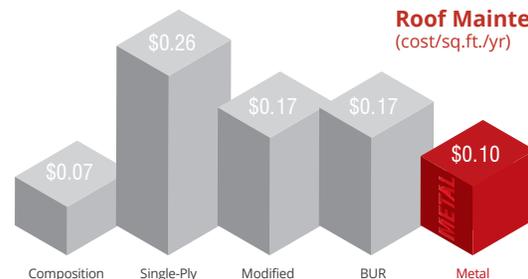


Roof Life
(in years)

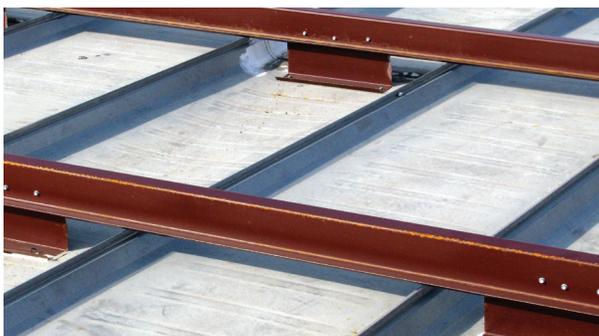
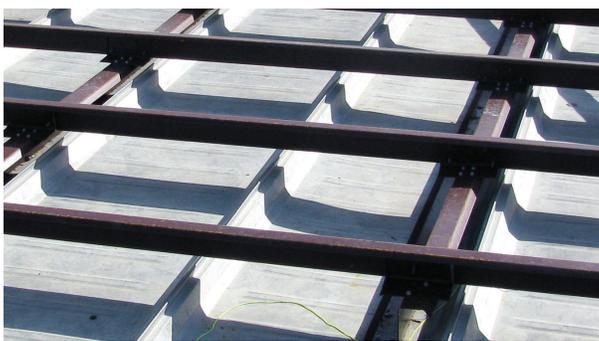
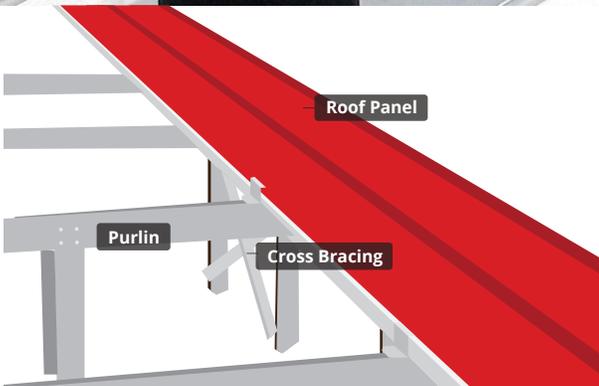


Source: Ducker Worldwide Case Study 2007 & MCA/ZAC Service Life Assessment Study 2015

Roof Maintenance
(cost/sq.ft./yr)



Source: Ducker Worldwide Case Study 2007



NUROOF®

The NuRoof® framing system utilizes light-gauge (16 ga. to 12 ga.) steel framing installed directly over the existing roof's framing members to create a sloped plane. Regardless of whether your roof substrate is steel, wood or concrete, MBCI's NuRoof system can be employed to satisfy the building owner's requirements. MBCI has the experience required to design the retrofit framing system that will comply with the original load requirements of the existing roof.

The existing roof's physical footprint, framing system and other rooftop conditions will most likely control the new roof's geometry. A low-slope application ($1/4:12$ to $2:12$) is typically driven by economy and designed to discharge rainwater from the roof. High-slope applications (greater than $2:12$) are also designed to improve and update the look of an existing building in conjunction with improving the performance of the roof.

Once a NuRoof framing system has been installed, one of MBCI's standing seam metal roofs is typically installed, creating a ventilated attic space.

NUWALL®

If your wall systems need an update, then you need MBCI's NuWall® system. NuWall can be used for retrofitting metal walls or other wall surfaces. The NuWall panel can be used for either new or retrofit construction. This concealed fastened wall system creates a clean, uninterrupted wall on a building. It is based on a 12" module, which means that when using it over existing metal panels, the existing panel ribs must be 6" or 12" on center.

The NuWall panels come in a variety of colors and are also available in textured finishes, giving your building a stucco-like appearance. Our numerous textured finishes allow for an architecturally pleasing look to your exterior design.



RETRO R[®]

If your existing R panel is in need of replacement or repair, MBCI offers two low-cost retrofit solutions to renew the existing roof. Like our NuRoof system, these reroofing options allow the existing roof to remain in place, which saves on labor costs while minimizing the chance for water entry into the building during the roofing process and providing for a safer working environment. Existing roof top equipment, vents or light transmitting panels can be accommodated by either system.

If you're looking to upgrade your roof to a standing seam, then installing our Double-Lok[®] or Ultra-Dek[®] roof panels over the existing roof without the need for sub-framing is an excellent choice. If you are looking for an even more effective cost solution and want to cover your roof with another through-fastened panel, then the Retro-R[®] panel is the right choice for you. Both systems are available in a wide variety of colors and offer long-term warranties.



SOLUTION 1: A New Standing Seam Roof

The first option for retrofitting over an existing R panel roof is one of our trapezoidal standing seam roof systems. The 24-inch wide Double-Lok roof panel is a mechanically field-seamed system. It requires a minimum slope of ¼:12. Double-Lok is UL-90 rated and FM Global rated. When choosing the Double-Lok option, high clips are used to provide clearance between the Double-Lok panel and the major ribs of the existing R panel.

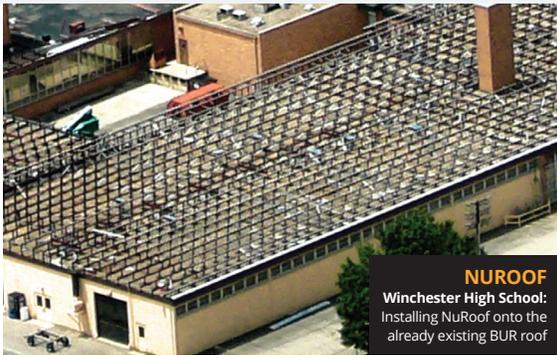
There are two options to increase the energy efficiency when using the Double-Lok panel over an existing R panel. The first is adding two-inch unfaced fiberglass insulation between the existing R panel and the new Double-Lok panel. The second is to vent the cavity between the old and new roofs by adding a vent strip at the eave to allow air intake and a vented ridge to provide for air exhaust. This method works well with roof slopes of 3:12 or greater.

SOLUTION 2: The Retro-R[®] Panel

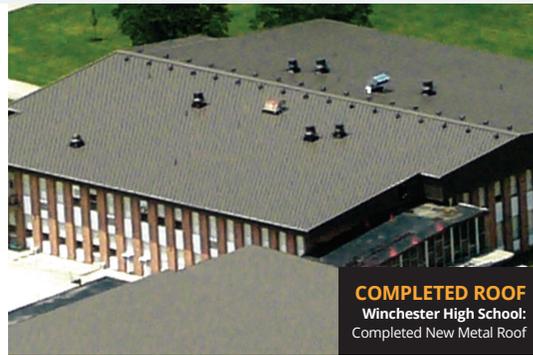
The second option is using MBCI's Retro-R panel over the existing R panel. The Retro-R panel has rib spacing 12" on center with a rib height of 1-1/16". The minimum slope for the Retro-R panel is ½:12. The existing lap screws must be removed from the R panel roof before the Retro-R panels are installed. The screws that attach the existing R panels to the purlins do not have to be removed. The Retro-R panels are attached with special shoulder screws that fasten through the existing R panel major ribs and into the existing purlins. Once the Retro-R panels are installed, new lap screws are installed through the Retro-R ribs and into the existing R panel side laps.



FLAT ROOF
Winchester High School:
Existing Roof – BUR (asphalt)



NUROOF
Winchester High School:
Installing NuRoof onto the
already existing BUR roof



COMPLETED ROOF
Winchester High School:
Completed New Metal Roof



COMPLETED PROJECT
Winchester High School:
By installing a NuRoof® system, Winchester High School saved an estimated \$54,055 annually.

LIFE CYCLE CASE STUDY

Winchester High School

- Winchester, Ind.
- 108,000 square feet
- 6" added insulation – attic
- Ventilated
- Existing Roof – BUR (asphalt)

RETROFIT BENEFITS	COST VS. SAVINGS
BUR (asphalt) Tear Off & Replace	\$1.5M
Retrofit Roof Replacement	- \$1.6M
	< \$100K >
Estimated Energy Savings (\$0.10 / sq ft x 108,000 sq ft)*	\$10,800
Estimated Reduction of Maintenance Cost (\$0.10 sq ft vs. \$0.17 x 108,000 sq ft)*	\$7,560
Estimated Savings based on not having to Reroof BUR (Asphalt) (Avg. BUR Reroof cost of \$3.75 / sq ft* annualized based on 23 yr service life* and 3.12% inflation rate)	\$35,695
Estimated Annual Savings	\$54,055
Estimated Maintenance & Energy Payback of \$100K Initial Retrofit Cost Difference	5½ Years
Estimated Maintenance, Energy and Future Replacement Cost Payback of \$100K Initial Retrofit Cost Difference	2 Years

*SOURCE: 2007 DUCKER WORLDWIDE REPORT



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