CHAPTER 14
REROOFING AND RENOVATIONS OF METAL BUILDING SYSTEMS

14.1 INTRODUCTION

Building reuse and rehabilitation grow ever so popular, and the volume of renovation work now rivals that of new construction. The principles of metal building systems such as cost efficiency and single-source responsibility are applicable not only to new construction but also to building renovation. As the first generations of pre-engineered buildings approach the ends of their useful lives, they can be rehabilitated or partially replaced with new metal building framing. Some components of metal building systems have their place in renovation of buildings constructed conventionally.

A common problem facing the owners of low-rise buildings is leaky roofs. Whenever building renovation is mentioned, reroofing or roof retrofit immediately comes to mind. Accordingly, this chapter focuses first on renovations of both conventional and metal roofs using metal roofing. Modifications of exterior skin are addressed next, followed by reinforcement of primary and secondary framing. The chapter concludes with a discussion of some difficult issues surrounding adaptation of existing pre-engineered buildings to new conditions of service.

14.2 ROOF RETROFIT WITH METAL BUILDING SYSTEMS

14.2.1 The Troublesome Roofs

No building problem seems to cause more aggravation than a leaking roof. Dealing with the occupants pointing to a leak—a problem that is easy to spot but hard to fix—is among the most frustrating duties of the building owner. After a few rounds of thankless repairs, a total reroofing seems to be the only solution left. Not surprisingly, reroofing work makes up two-thirds of all roofing projects in this country.

Why do roofs fail so fast?

The roof is the hardest-working part of the building, protecting it from the blazing sun in the summer, snow in the winter, and rain year-round. Every windstorm attacks the roof by first trying to literally lift it off the building and then slammming it back. Ultraviolet radiation shortens the lives of unprotected single-ply membranes, slowly robbing them of elasticity and strength; it causes damage to other roofing types as well.

Most conventional low-rise buildings have flat or nearly flat membrane or built-up roofs, a solution that was popular until only a few years ago. A minimum pitch of $^1/_8$:12 was considered adequate for drainage; it probably was—in theory. In real life, however, building foundations settle a