

A new system allows  
rooftop penetration framing to come together faster and more economically.

# Picking up the PACE

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**YOU MAY KNOW THEM** as rooftop frames, roof penetration frames or structural supports for roof openings.

Whatever you call them, you probably know their purpose. These steel framing assemblies are used to bear the weight of commercial rooftop HVAC units, evaporative coolers, roof turbines, skylights, roof drains and other rooftop-mounted equipment.

The main issue with these openings occurs when their orientation is changed or doesn't account for potential changes in joist spacing, which can result in redesign as well as lost time and money. Jay Soyko, a former steel erector, had encountered this problem far too many times, and he went on to invent an adjustable, cost-efficient, welding-free roof frame. Called QuickFrames, the assemblies can be installed in a few steps:

1. Align the joist hangers flush to the end of the main rails.
2. Slide the rails open until they're flush to the joist and secured together.
3. Install angle brackets to the rails and tighten them by hand.
4. Extend the cross rails open between the main rails and secure them, then tighten them by hand when attaching them to each angle bracket (after which the length of each side rail is adjusted accordingly).

5. Secure the cross rails to the angle brackets and tighten all the nuts.

## Quick Fix

AISC member fabricator Able Steel Fabricators, Inc., Mesa, Ariz., had been using standard, welded-in roof frames on their job sites for decades. But they were intrigued by QuickFrames and decided to employ the solution on a project with 565 roof frames. A monumental design error was discovered midway through the project: The way in which the skylights had been drawn presented a problem, and the orientation of the supporting roof frames had to be switched. This meant having to stop and start over.

"The speed saved the project," said Mark Fultz, general manager with Able Steel. "We were anxious about trying something so new, but we couldn't be happier that we did. The flexibility of these frames gave us the freedom to move and adjust them as necessary, which translated into enormous cost and time savings." ■

*See page 38 for cost comparisons between traditional roof penetration frame systems and QuickFrames. You can contact the company at [www.quickframes.us](http://www.quickframes.us).*



▲ A traditional welded roof penetration system.



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### Cost Comparison

Able Steel Fabricators developed two sample cost comparisons between traditional, welded frames and QuickFrames. The first comparison is for a new construction project with 100 rooftop frames using two different gauges of steel.

Frame Type	12-gauge QuickFrames		16-gauge QuickFrames	
	Traditional	QuickFrames	Traditional	QuickFrames
100 frames 4 in. x 4 in. x ¼ in. angles at \$309 per frame		<b>100 QuickFrames</b> \$288 per frame (\$213 per frame + \$75 per install)	100 frames 4 in. x 4 in. x ¼ in. angles at \$309 per frame	<b>100 QuickFrames</b> \$270 per frame (\$195 per frame + \$75 per install)
Total	\$30,900	\$28,800	\$30,900	\$27,000
<b>Savings</b>	<b>\$2,100</b>		<b>\$3,900</b>	

The second comparison is the same as the first, except that it is for a renovation/improvement project and includes additional labor costs.

Frame Type	12-gauge QuickFrames		16-gauge QuickFrames	
	Traditional	QuickFrames	Traditional	QuickFrames
100 frames 4 in. x 4 in. x ¼ in. angles at \$509 per frame (\$309 per frame + \$200 labor per frame)		<b>100 QuickFrames</b> \$288 per frame (\$213 per frame + \$75 per install)	100 frames 4 in. x 4 in. x ¼ in. angles at \$509 per frame	<b>100 QuickFrames</b> \$270 per frame (\$195 per frame + \$75 per install)
Total	\$50,900	\$28,800	\$50,900	\$27,000
<b>Savings</b>	<b>\$22,100</b>		<b>\$23,900</b>	
Total Installation Time	400 hours	100 hours	400 hours	100 hours
<b>Savings</b>	<b>300 hours</b>		<b>300 hours</b>	

Note: These comparisons assume that all the frames are installed in the correct locations and information was received before deck installation.



▲ A QuickFrame roof penetration before deck installation...



▲ ...and after.

### Setting a New Bar

A recent project for Prologis, an owner/operator/developer of industrial real estate, involved a 500,000-sq.-ft industrial space in Arizona with 113 mechanical units (most requiring multiple frames), 348 4-ft x 8-ft smoke hatches and 60 roof drains, for a total of 676 roof frames. The project's fabricator, Triad Steel Services, Inc., Phoenix (an AISC member) estimated the roof framing cost for traditional frames at approximately \$185,000 (around \$273 per frame). Their estimated cost for doing the job with QuickFrames was \$115,000 (around \$170 each)—a \$70,000 savings over traditional rooftop penetration framing—and elected this option instead. Doing so also allowed them to perform a job that would typically take four to six weeks, in just two weeks.