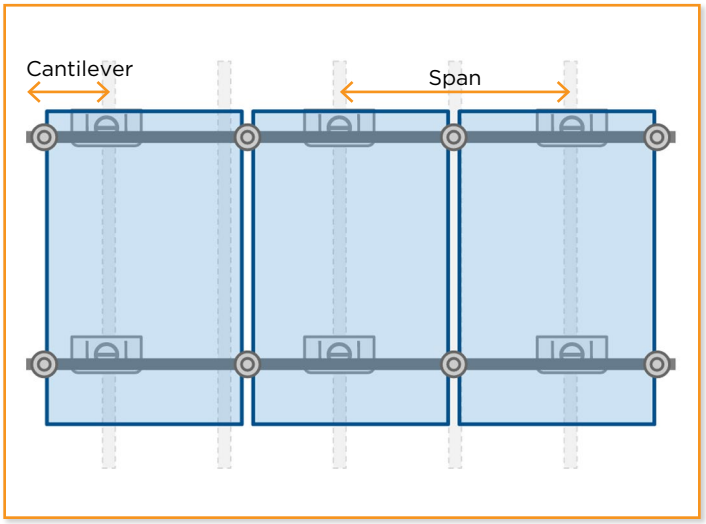
IRONRIDGE

TECHTIP

THE ADVANTAGE OF STRENGTH:
MAXIMIZING CANTILEVERS

A racking system with longer cantilevers and spans will reduce install times, roof penetrations, material and labor costs. IronRidge maximizes cantilever and spans.

Cantilever & Span



Cantilever is the distance from the edge of the array to the nearest attachment point. Cantilever is a function of span, which is the distance between attachments.

In a rail system, cantilever is measured from the end of the rail to the centerline of the mounting hardware attached to the rail. In a rail-less system, cantilever is typically measured from the outer edge of the array to the mounting component attached to the module.

Span is measured as the distance between the centerlines of the roof attachment hardware, like a lag bolt.

Determining Max Spans and Cantilever

Max allowable spans for specific site locations can be found in the span tables within the structural certification letters for the system being installed. IronRidge has these letters available on our website, or our free Design Assistant tool can auto-calculate both span and cantilever and deliver them to you in a project report.

Most rail brands must limit their cantilever to 1/3rd of the span rounded to either 33% or 34%. The efficient and strong design of XR delivers a max cantilever of 40% of the allowable span. This difference can have a very real impact when a system is designed and installed to optimize the cantilever.

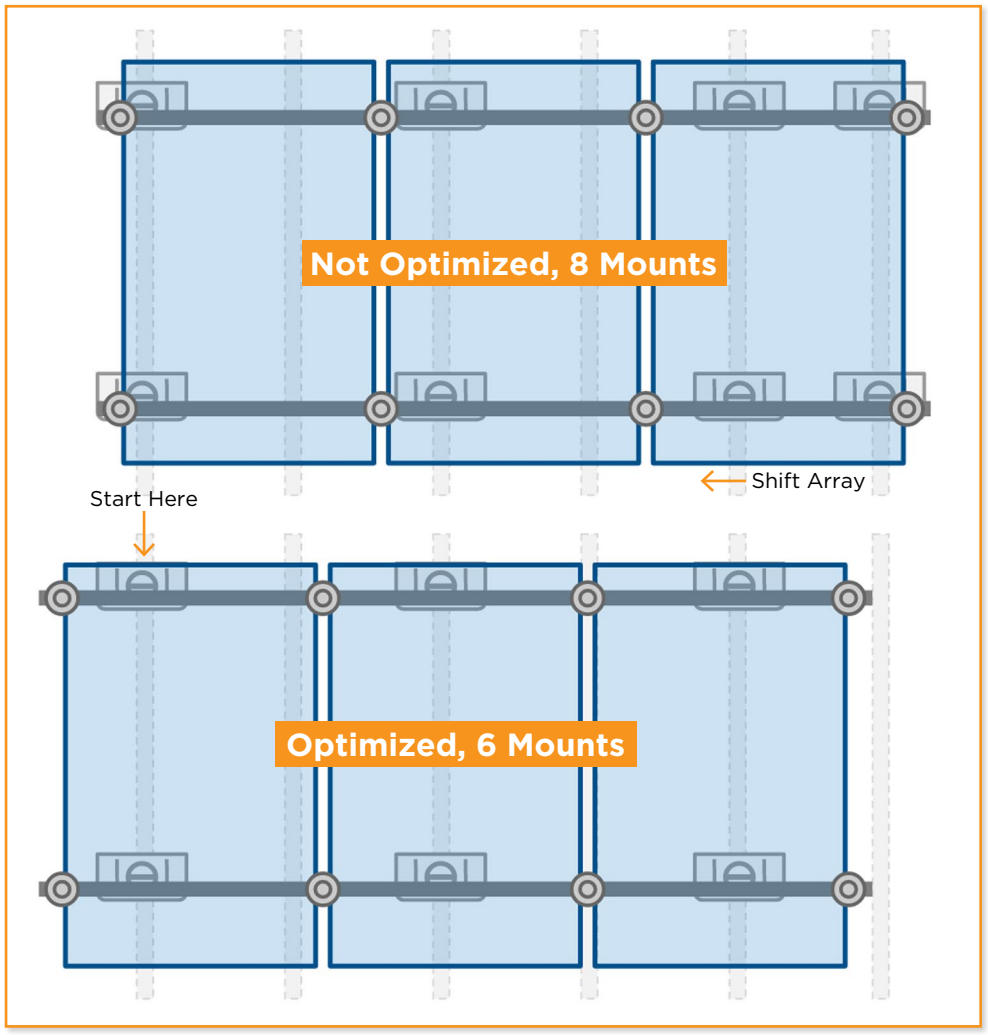
Optimizing Cantilever

A cantilever that is longer than the max allowable reduces structural integrity of the system which could lead to damage over the array's lifetime or during severe weather events. Cantilevers that are shorter than necessary will use extra mounts. To optimize your cantilever, you must stay within the max allowable length, while not creating the need for extra mounts.

The best way to optimize the cantilever is to start with your first rafter and mount. From there, measure out the exact distance of the max cantilever and mark it as the edge of your array, then continue with your layout. If desired, after marking all mount locations, shift the array over to evenly split the cantilever.

As a final check, look at your layout and ask, "Without exceeding the max cantilever, can I shift this array and eliminate a mount?" If the answer is "yes," do it. If the answer is "no" congratulations, your cantilever is optimized!

In some situations, you may need to stagger mounts, but you can still optimize your cantilever on one rail in each pair.



Case Study: IronRidge XR Offers Superior Spans and Cantilevers

The strength of XR100 Rail allows for a 61 inch max span. Cantilever is 40% of the span, or 24.4 inches. For the same array, competitor A's max span is 60 inches but their cantilever is limited to 34% of max span which is 20.4 inches. In this case, rafters are a typical 24 inches apart, so the spans are limited to 48 inches on both systems, but because XR's cantilever is 4 inches longer, you can eliminate an entire column of mounts!

Reduce Costs with IronRidge XR

By maximizing the cantilever across 7 real world arrays and on average, IronRidge required 6 fewer mounts per install. That is 6 fewer roof penetrations, mounts to purchase and attachments to install. When comparing the total cost of racking, the Bill of Materials (BOM) for an XR system was 13% less! It is clear that using a stronger product with longer spans and cantilevers like XR100 and designing your array to optimize your cantilevers will deliver savings in time and materials!