KUBES STEEL

VOLUME 1 · ISSUE 11 SUMMER 2026



WHEN IT MAKES MORE SENSE TO BUILD IT THAN BUY IT

The Section You Need Doesn’t Exist. Or It Does — But You Can’t Get It in Time.

Fabricating structural sections from plate is not a last resort. For the right project, it’s the smartest call in the room. Here’s how to know when.

That staircase above has stringers that were available from a mill — but not in the time frame the project demanded. They were built from plate instead — cut, beveled, formed, welded, and ground — to keep the project on schedule. Sometimes the section exists but the lead time doesn’t work. Sometimes the section doesn’t exist at all. Either way, the

answer can be the same: fabricate it. It's happening more often than most people in the industry realize, and the reasons are more layered than most people admit.

WHY IS THIS HAPPENING MORE? THE HONEST ANSWER.

Over the past few years Kubes Steel has seen a meaningful increase in projects where the structural section the designer specified simply cannot be sourced in time — or at all. The workaround, increasingly, is to fabricate it from plate. This is not a new concept. What is new is how frequently it's becoming the practical answer.

Ask five fabricators why and you'll get five different answers. The honest response is that it's probably all of them at once:

- **Mills are optimizing for efficiency.** Integrated steel mills run sections in campaigns — large production runs of a given size that justify the setup cost. Less-common sections run less frequently. If your project needs HSS 8×20×3/8 and the next campaign is four months away, that's your lead time. The mill isn't being difficult — it's running a rational business. But it puts pressure on the fabricator.
- **Some sections have quietly disappeared.** Product rationalization is real. Sections that were once regularly produced have been dropped from mill programmes entirely. A designer working from a 10-year-old reference table or a software library that hasn't been updated may specify a section that simply no longer exists as a mill product. Nobody told them.
- **Global sourcing has become more complicated.** Pre-COVID, a section unavailable domestically could often be sourced offshore with acceptable lead times. Post-COVID, tariffs, Buy American/Canadian policies, and origin requirements have narrowed the sourcing options considerably. What used to be a phone call to a service centre with international supply has become a procurement exercise with compliance implications.
- **Owners are holding POs longer.** Schedule compression is showing up at the fabrication stage because owners are holding purchase orders as long as possible before issuing them. By the time the order lands, the comfortable procurement window has already closed. What would have been a reasonable lead time six months ago is now a crisis.
- **Mill demand is increasing across the board.** Nuclear, defence, infrastructure, and construction are all accelerating simultaneously. The mills — already running optimized campaigns — are absorbing increasing demand from multiple sectors at once. Lead times on even moderately common sections are stretching. Fabricators are having to get creative to keep their customers and schedules happy.

Pinpointing a single cause is the wrong exercise. The right exercise is understanding when fabricating from plate makes sense — and building that option into your project

planning from the start.

THE THREE DRIVERS — SHAPE, DELIVERY, VOLUME

01
SHAPE

The section you need doesn't exist as a mill product — or it did once and no longer does. The geometry is non-standard. The wall thickness falls between available sizes. The aspect ratio is outside what any mill currently produces. Plate fabrication is the only path to the exact section the design requires.

02
DELIVERY

The section exists but the next mill run is weeks or months away. Your installation window isn't. The cost of a project delay — extended site supervision, liquidated damages, downstream schedule impacts — can dwarf the cost of the additional fabrication labour. When the math works out that way, fabricating from available plate is the right call.

03
VOLUME

Counterintuitively, lower quantity often favours fabrication from plate. At 1 to 25 pieces the labour cost per piece is manageable and a mill won't run a campaign for you anyway. At high volume the economics flip decisively — dedicated tube and beam lines at steel mills exist for exactly this reason. No fabrication shop can compete with a mill running thousands of identical pieces. If you need 500 of something, wait for the mill.

When two or three of these drivers are present simultaneously — a non-standard shape needed quickly in a manageable quantity — the fabricated option almost always makes sense. When only one applies, the decision requires more careful analysis. And when volume is high, the mill almost always wins — that's precisely why those mills were built. The mistake is assuming fabrication from plate never makes sense without running the numbers.

CASE STUDY 1 — DELIVERY DRIVES THE DECISION

HSS 8×20×3/8 · FEATURE STAIRCASE · ARCHITECTURAL

The Staircase Stringer That Couldn't Wait 16 Weeks

THE SPECIFICATION

HSS 8×20×3/8 wall, curved staircase stringers for a feature architectural stair. Not a high-volume stock item — what service

THE PROBLEM

After exhausting every regular supplier, the answer was the same everywhere: 16-week mill run. The project schedule could not

centres would call “moderately common.” Available, but not sitting on a shelf.

THE SOLUTION

Fabricate the section from plate. The designer signed off on one condition: the finished section had to look identical to a mill-produced HSS — same exterior profile, same corner geometry, no visible evidence of being built up. Plate was in stock. Production started immediately.

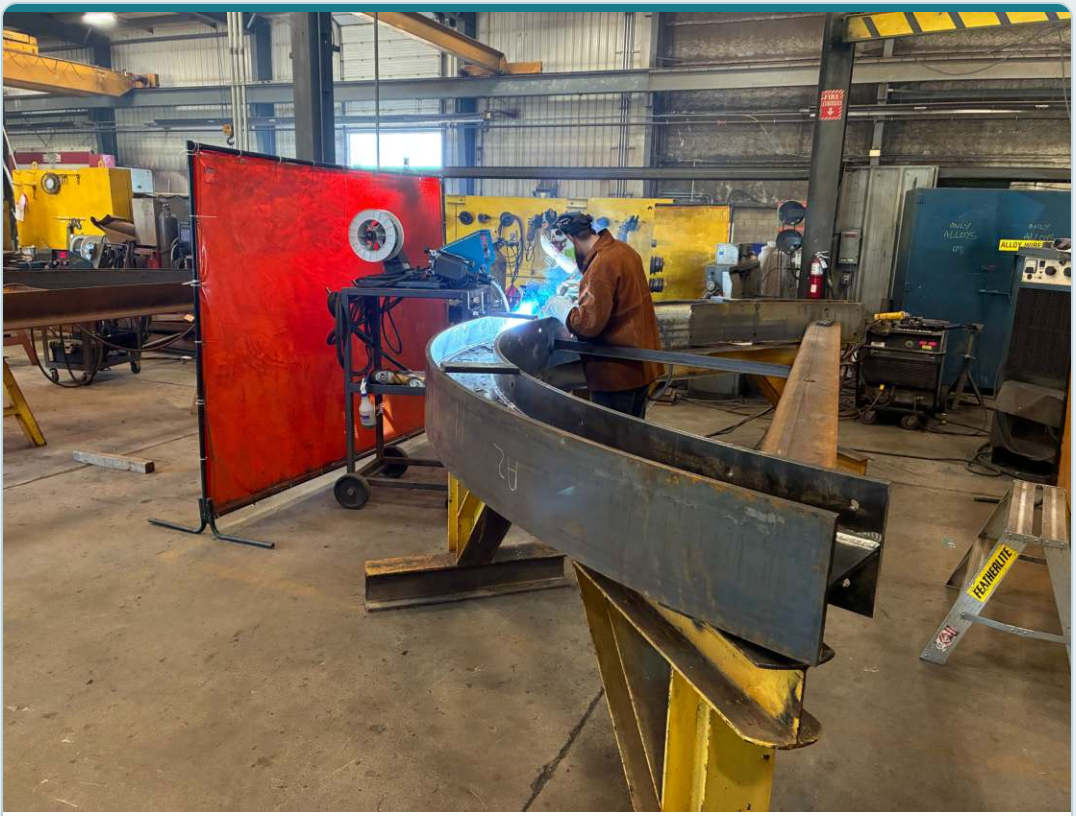
absorb it. The installation window was fixed. The delay cost would have been significant.

THE OUTCOME

The stringers were delivered on schedule. The staircase was installed on time. The additional fabrication cost was a fraction of what a 16-week delay would have cost the project. The designer saw the finished product and approved it without reservation.

> *“The extra cost at this stage of a project can be well worth it when the alternative is absorbing project delays that cost far more.”*

CASE STUDY 2 — SHAPE AND ECONOMICS CONVERGE



FABRICATED WIDE FLANGE · CURVED · MINING TUNNEL SUPPORTS

The Beam That No Longer Exists — and Why Fabricating It Made Perfect Sense

THE SPECIFICATION

A wide flange beam section selected by the engineer for curved tunnel support ribs in a

THE PROBLEM

The specified section is no longer in production. Not unavailable — discontinued.

mining application. The section was on the lighter end of the design — deliberately chosen to minimize dead load in the tunnel structure.

The next logical choice was to substitute a heavier section that is currently produced. But substituting upward meant adding dead load the design had specifically tried to avoid.

THE INSIGHT

The beams needed to be curved to suit the tunnel radius anyway. Rolling cost was already in the budget. Since fabrication labour was going to be involved regardless, the economics of building the exact section from plate — rather than sourcing a heavier substitute and rolling that — became genuinely competitive. The rolling work effectively subsidized the fabrication decision.

THE OUTCOME

The engineer kept the original design intent. The tunnel got the lighter section it was designed around. No substitution, no re-engineering, no added dead load. The fabricated and curved beams matched the specified geometry exactly — because they were built to it from the start.

Key insight: fabricating a custom wide flange from plate makes sense whenever the required flange or web geometry falls outside what mills currently produce — whether the beam is straight or curved. In this case, the curved requirement made the decision even more compelling: the rolling cost was already in the project regardless of how the section was sourced, which improved the economics of the fabricated option further. When a beam needs to be both custom and curved, fabricating from plate is often the most practical path available.



FABRICATED WIDE FLANGE · STRAIGHT · COMPOSITE BEAM

It Works for Straight Beams Too

This fabricated wide flange — built from plate with heavy custom flanges and web, complete with shear stud anchors for composite action with a concrete slab — is a straight beam. No curve involved. The case for fabricating it from plate was purely about geometry: the required flange and web dimensions fell outside what any mill currently produces as a standard section.

When a structural engineer specifies a heavy flange thickness or an unusually deep web that doesn't correspond to a standard W-shape, the options are to substitute a

heavier standard section, redesign, or fabricate the exact section required. In cases where the geometry is load-critical and substitution would mean significant over- or under-engineering, fabricating from plate is the cleanest solution.

CUSTOM FABRICATED BEAM · HEAVY PLATE · COMPOSITE CONSTRUCTION · SHEAR STUDS

WHAT IT ACTUALLY TAKES TO FABRICATE A STRUCTURAL SECTION FROM PLATE

This is not a shortcut. It is a different path to the same destination — and it requires capability, process discipline, and quality control that not every shop has. The production sequence for a fabricated HSS or structural section typically involves:

1. PLATE SELECTION & CUTTING

Off-the-shelf plate in the required grade and thickness. Plates cut to the precise dimensions of the web, flanges, and any intermediate stiffeners required.

2. BEVELING

Weld joints are beveled to the correct profile for the required weld procedure. The bevel geometry affects penetration, strength, and the finished appearance of the corner.

3. FORMING

For HSS sections, plate elements are brake-formed or press-formed to shape. For curved applications, the assembled section then goes through the rolling process to achieve the specified radius.

4. WELDING

CWB-certified welding to the required procedure. For sections that will be exposed — architectural or AESS applications — weld quality and consistency is as critical as dimensional accuracy.

5. GRINDING & FINISHING

Weld crowns are ground flush. Corner radii are dressed to match the appearance of a mill-produced section. For exposed applications, this step is what makes the fabricated section visually indistinguishable from a rolled one.

6. QA & INSPECTION

Dimensional verification, weld inspection, and any NDE requirements are completed before the section moves to the next stage — rolling, painting, or delivery.

THE HONEST COUNTERPOINT — WHEN IT DOESN'T MAKE SENSE

Fabricating from plate is not always the answer. There are situations where it clearly doesn't make sense:

- **Standard section, in stock, available now.** If the section is readily available from a service centre at a competitive price and delivery works for the schedule, there is no case for

fabricating from plate. Just buy it. Fabricating from plate only makes sense when the mill option fails on geometry, availability, or lead time.

- **High volume requirements.** At large quantities the mill wins decisively on cost and throughput. Dedicated tube and beam lines run at a pace and efficiency no fabrication shop can match. If you need hundreds or thousands of a standard section, fabricating from plate is not the answer — sourcing from the mill or waiting for a campaign run is.
- **Structural applications with stringent code requirements.** Some applications require mill-certified product with specific ASTM designations. A fabricated section made from plate is a different product with different certification requirements. This needs to be sorted out with the engineer before any commitment is made.
- **The schedule is too compressed for either option.** If the timeline is so tight that even fabrication from available plate can't be completed in time, the conversation needs to be about the schedule, not the section.
- **Substitution is genuinely acceptable.** Sometimes a slightly heavier available section is structurally acceptable and the engineer can approve it without redesign. That is often the cleanest and cheapest solution. Fabricating from plate should not be the default answer before substitution has been genuinely evaluated.

Talk to the Fabricator Before You Substitute.

The most common mistake we see is projects that substitute a heavier, less-ideal section because nobody asked whether fabricating the original section from plate was a viable option. Sometimes it isn't — but often it is, and often the cost and schedule implications are better than expected once the numbers are actually run.

At Kubes Steel we have this conversation regularly. If you have a project where the section you need is unavailable, discontinued, or on a lead time that doesn't work — reach out before you substitute. It's a conversation worth having.

Can't Source the Section You Need?

Talk to us before you substitute. Send your drawings and we'll tell you whether fabricating from plate makes sense for your project.

SEND YOUR DRAWINGS →

1-877-327-8357

KUBES STEEL INC. · 930 ARVIN AVENUE, STONEY CREEK, ONTARIO L8E 5Y8
kubesteel.com · © 2026 Kubes Steel

You’re receiving this because you’re a valued Kubes Steel contact.

Unsubscribe