KUBES STEEL

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A KUBES STEEL EDUCATIONAL SERIES

STRAIGHT TALK ON CURVED STEEL

PART 3 OF 3 · CALL THE ROLLER BEFORE YOU FINALIZE THE DRAWINGS



CALL THE ROLLER BEFORE YOU FINALIZE THE DRAWINGS

The Single Most Valuable Thing You Can Do on a Curved Steel Project.

It’s a Phone Call. It Costs Nothing. It Saves Everything.

The King George Bridge in Calgary. Each arch is a custom fabricated assembly — two mirrored curved pipes connected with top and bottom plates to form a hollow oblong

section. Complex geometry, demanding tolerances, and not a single straight piece in the structure. Every curved component came out of the Kubes Steel shop in Stoney Creek, Ontario. Projects like this don't happen by accident — they happen because the right conversations happened early.

WHY EARLY ENGAGEMENT CHANGES EVERYTHING

AISC Design Guide 33 is explicit on this point: the capabilities of bender-rollers vary significantly from shop to shop, and early involvement of the bender-roller in the design process is one of the most effective ways to avoid problems downstream. The guide specifically recommends that engineers and detailers consult with their bender-roller before drawings are finalized.

The reason is straightforward. What's achievable in curved steel — the minimum radius for a given section, the bending method that produces the least distortion, the tolerances that are realistic vs. aspirational — is a function of the equipment and expertise available at the specific shop doing the work. No design guide can substitute for a direct conversation with the people who will actually bend the steel.

Getting Kubes Steel involved early means your drawings arrive already optimized for fabrication — not requiring a round of RFIs, revisions, and schedule delays before a single piece of steel is touched.

WHAT WE LOOK AT WHEN YOU SEND US DRAWINGS EARLY

RADIUS ACHIEVABILITY

We confirm whether your specified radius is achievable in your chosen section using our equipment. If it isn't, we tell you the minimum we can achieve — and often suggest a section or method change that gets you there.

METHOD SELECTION

Cold bending, induction bending, or a combination — the right method depends on your section, radius, distortion tolerance, and service conditions. We recommend the most cost-effective approach for your specific application before you're committed to a spec.

GEOMETRY VERIFICATION

We check that your geometry combination is complete and internally consistent — catching conflicting dimensions, missing grip lengths, and unclear bending

TOLERANCE DISCUSSION

Standard curved steel tolerances follow the AISC Code of Standard Practice. If your project has AESS requirements or tighter-than-standard tolerances, we need

orientations before they become RFIs. Five minutes of review here saves days of back-and-forth later.

to know early — these affect method selection, QA requirements, and pricing.

BUDGET PRICING

We can provide indicative pricing at the design stage so curved steel can be properly budgeted. No surprises when the tender comes back. Knowing the rolling cost early also allows the design team to evaluate curved vs. straight alternatives on a real cost basis.

SECTION OPTIMIZATION

Sometimes a small change in section size opens up significantly better bending options — tighter radii, cleaner profile, lower cost. We can advise on this at the design stage when changes are still easy to make.

FROM THE SHOP FLOOR — PRECISION THAT STARTS WITH THE RIGHT CONVERSATION



TRIAL FIT · AMUSEMENT PARK

Roller Coaster Track Sections — Trial Fit on the Shop Floor

Two curved roller coaster track sections being trial fit on the Kubes Steel shop floor before shipment. The sections have to mate perfectly — on a roller coaster, there is no tolerance for misalignment at the joints. This kind of precision is only achievable when the geometry is defined correctly from the start and the bender-roller is brought in early enough to ask the right questions before anything is cut or rolled.

STRUCTURAL ROLLING · TRIAL FIT · AMUSEMENT & THEME PARKS



COMPLEX GEOMETRY · MONORAIL

Complex “S” Bend — Wide Flange Beam for a Monorail System

This compound “S” curve in a wide flange beam illustrates exactly why early engagement matters for complex geometry. A single member with two opposing radii — each transitioning smoothly into the other — requires precise specification of both curves, the transition point, and the bending orientation. Get any one of those wrong

and the piece doesn’t fit. This is not the kind of job where you finalize the drawings and hope for the best. It starts with a conversation.

COMPLEX GEOMETRY · WIDE FLANGE ROLLING · MONORAIL · INDUSTRIAL



BRIDGE INFRASTRUCTURE · ST. CATHARINES

Burgoyne Bridge, St. Catharines — 36″ Diameter × 3″ Wall Arch Sections

The Burgoyne Bridge arch sections going up in St. Catharines, Ontario. Each curved section is 36″ diameter with a 3″ wall — heavy, precise, and unforgiving. There is no adjusting a bridge arch on site. Every section had to arrive dimensionally correct, ready to fit up with the adjacent piece and be welded into a permanent structure. That level of precision is the direct result of early collaboration between the project team, the fabricator, and Kubes Steel — long before the first piece of steel was cut.

BRIDGE INFRASTRUCTURE · LARGE DIAMETER PIPE ROLLING · HEAVY WALL · CIVIL

WHAT YOUR CONTRACT DOCUMENTS NEED TO INCLUDE

PER AISC DESIGN GUIDE 33, SECTION 5.6 — CONTRACT DOCUMENT REQUIREMENTS

Incomplete contract documents are one of the leading causes of delays and cost overruns on curved steel projects. Design Guide 33 specifies what must be included. Make sure your documents cover all of the following:

- ✓ Complete curved member geometry (one valid combination — see Part 1 of this series)
- ✓ Bending orientation (easy way or hard way) clearly specified
- ✓ Section size, material grade, and heat requirements
- ✓ Applicable tolerances — standard AISC or project-specific AESS requirements
- ✓ Any special inspection or testing requirements
- ✓ Connection details, end preparations, and welded attachments
- ✓ Camber requirements if applicable

Not sure if your documents are complete? Send them to us before the tender goes out. We review curved steel contract documents as part of our standard pre-project engagement — at no charge.

WRAPPING UP THE SERIES

Straight Talk on Curved Steel — The Three Things That Matter

1. **Get the geometry right.** One valid combination, correct orientation, all dimensions from the same work points, grip lengths accounted for. (Part 1)
2. **Don’t overcomplicate the design.** Under normal building conditions, curved members are designed the same way as straight ones. Your existing software is all you need. (Part 2)
3. **Call the roller early.** Before the drawings are finalized. Before the tender goes out. A 15-minute conversation with our team can save days of RFIs, redesigns, and schedule delays. (Part 3)

Have a Curved Steel Project Coming Up?

Call us early. Send us your drawings. We’ll make sure it goes smoothly.

SEND YOUR DRAWINGS →

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