Rethinking Designated Design
Improving Cost Certainty, Quality, and Project Outcomes

Over the past 7½ years, I've met many contractors on site and often made a statement that surprises people:
"My company should not exist. There is no reason this could not be done by the engineering firms with drawings issued at tender time."
While that may seem counterintuitive, I stand by it.
Designated design is becoming increasingly common. However, it carries significant implications for both project cost and schedule — many of which only surface during construction, when flexibility is limited and timelines are tight.

The Current Challenge
A common example: mechanical drawings show new rooftop equipment and note that a structural engineer must review the roof capacity.
In ideal circumstances, the review is straightforward and the roof is adequate. But when reinforcement is required, the process becomes far more complex:

- Additional structural detailing
- Back-and-forth coordination with consultants and clients
- Potential cost increases
- Construction delays
- Installation sequencing challenges

On tight schedules, these impacts can be difficult — and sometimes impossible — to absorb.

A More Proactive Approach
Structural review for rooftop equipment should occur in parallel with the mechanical design phase, not during construction. A structural engineer engaged by the mechanical design team can:

- Review loads based on specified equipment
- Confirm reinforcement requirements early
- Issue coordinated details within the tender set

If a contractor elects to provide alternate equipment, they would then be responsible for additional engineering review.
This approach provides:

- Clear scope at tender
- Better cost certainty for all bidders
- Reduced risk of underbidding
- Fewer disputes and change orders

Seismic Design: A Growing Concern

Seismic restraint, thermal expansion, vibration isolation, and pipe support design present similar issues. One of the most common site complaints is:
"We had no idea we needed to carry that."
And in many cases, that concern is valid.
If seismic design were incorporated into the consultant's mandate — either through the existing mechanical/structural engineers or via a sub-consultant — substantial benefits would follow:

1. Clearer Tender Packages

A seismic package issued with the tender drawings could outline approximate requirements such as:

- Number of wood sleepers
- Restraint points
- Pipe anchors
- Typical details

Contractors would bid with a realistic understanding of costs.

2. Faster Review Process

The seismic team would review shop drawings and adjust as required, resulting in a more streamlined process compared to full post-award design.

3. Improved Coordination

Early involvement allows:

- Input on equipment placement
- Review of existing structures
- Identification of interference issues
- Cross-trade coordination (sheet metal, plumbing, electrical)

When one engineering firm oversees multiple scopes, duplication of effort is reduced — often lowering overall project cost compared to each trade retaining separate engineers.

Addressing the Trade-Offs

There are modest drawbacks:

- Slightly longer design-stage timelines
- Less contractor discretion in selecting engineers

However, these are minor when compared to the advantages in quality, coordination, and schedule reliability.
When seismic design falls under contractor scope, we frequently see:

- Pressure to reduce restraint standards
- Selection of firms based on lowest engineering requirements
- Rushed packages under schedule pressure
- Increased risk of omissions (especially when CCNs or SIs are not issued to seismic teams)
- Inconsistent installation quality

Placing seismic under the consultant team improves consistency, quality control, and accountability.

Industry Context

The increasing seismic requirements under updated Ontario building codes have significantly expanded the scope of restraint design. At the same time, firms specializing in seismic restraint are already operating at capacity, and training new personnel takes time.
Many mechanical and structural consulting firms already have capable professionals with strong foundational knowledge in this area. Alternatively, specialized firms such as Capital Seismic and HTS can serve as sub-consultants. For larger organizations operating across Ontario, another viable option is developing in-house expertise through acquisition or team expansion.

Supporting Research

A detailed technical paper on this topic was published in 2010 by Halsall Associates and HTS, outlining many of the structural and seismic coordination challenges still relevant today. It's available for download at:
https://www.caee.ca/10CCEEpdf/2010EQConf-000434.pdf

Moving Forward

This is not a small shift in industry practice. However, as seismic requirements increase and construction schedules tighten, it is a conversation worth advancing.
Reducing reliance on designated design would improve:

- Cost predictability
- Schedule stability
- Engineering quality
- Contractor fairness
- Overall project coordination

While widespread change may not happen immediately, initiating discussion is an important first step.
We welcome thoughtful feedback from consultants, contractors, and owners alike. Please feel free to reach out at **hello@capitalseismic.ca** with comments or insights.