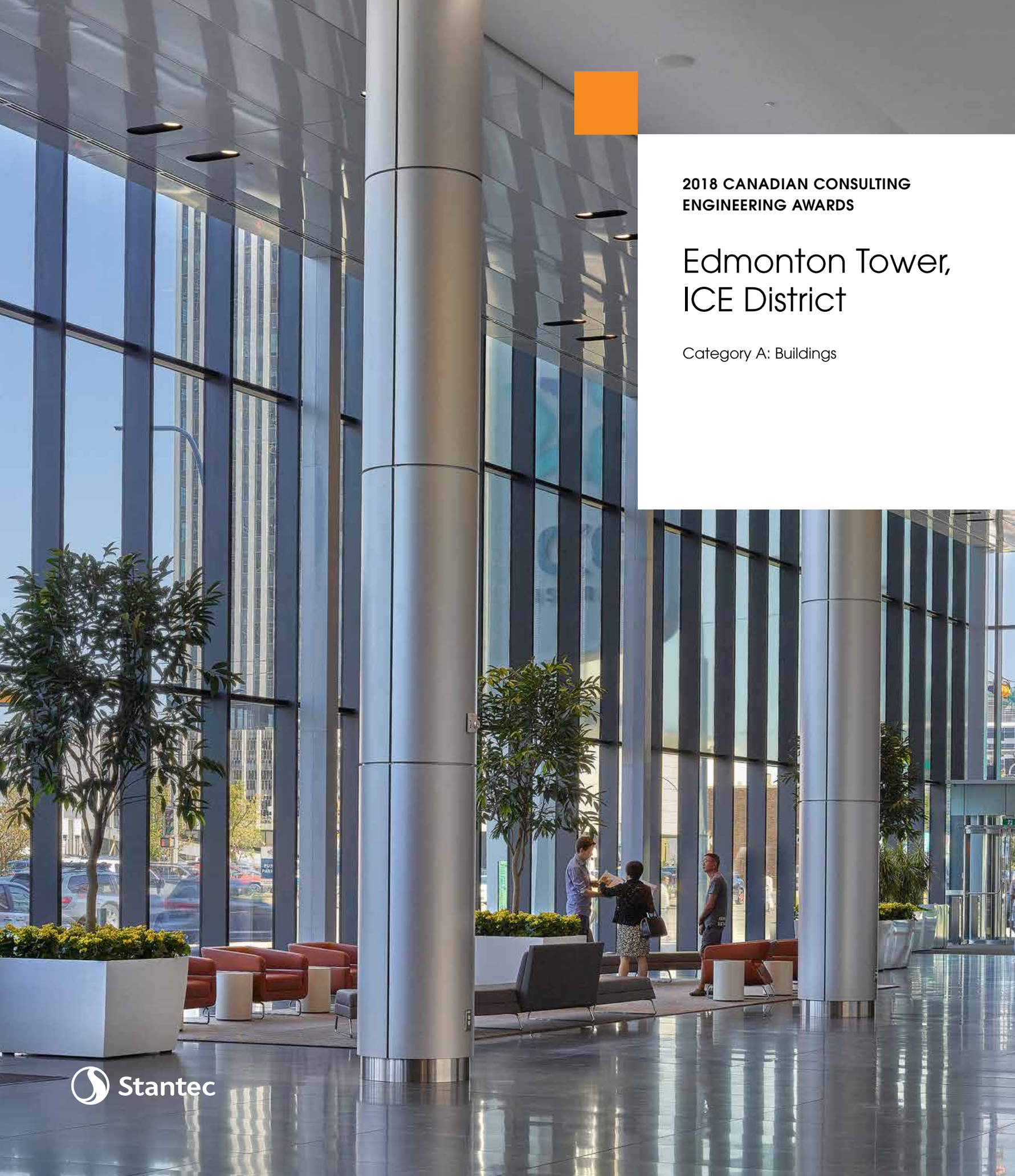


2018 CANADIAN CONSULTING ENGINEERING AWARDS

Edmonton Tower, ICE District

Category A: Buildings

Stantec

Edmonton Tower

ICE District Joint Venture engaged our structural, electrical and sustainability consulting groups, and Smith + Andersen mechanical consultants, to design an ‘iconic’ office building that would change the skyline of Edmonton and set new standards of design the City.

Edmonton Tower’s curved façade rises 27 floors at the intersection of downtown’s northern gateway. Its skillful and efficient design sets a new benchmark against which all future development will be measured.

Project Highlights

Q.1 INNOVATION

Our project team demonstrated true innovation through the unique and complementary integration of engineering systems and architectural assemblies found in Edmonton Tower. The conceptual massing and design elements of the project are expressed along an east-west axis parallel to 104 Avenue, a prominent commuter route intersecting ICE District.

Key massing and façade treatments are featured along this axis: the curvature of the tower envelope, tower crown lighting features, entry into the main lobby, and feature podium façades, which are all defining features of the project.

Tower Form

The most prominent identifier of Edmonton Tower is its curved form. This dynamism finds economies in utilizing a traditional double-glazed unitized curtain wall as its building envelope. Edmonton Tower's unique shape is generated by implementing this wall assembly in two contrasting constructs and installations. The east and west façades use a clean silicone joint assembly while the north and south façades are expressed as curved façades with extended vertical mullions. These two contrasting assemblies create the aesthetic of a traditional tower cradled between two dynamic curved planes.

Crown Lighting

The Tower includes two distinct LED lighting features which promise to introduce a dramatic and iconic flare to the downtown Edmonton skyline. The gentle and elegant curvature of the north and south façades are highlighted by a wash of light that extends the entire height of the building. These vertical ribbons of light wash the backside extensions of these façades as they reach beyond the east and west elevations.

The LED fixtures are full spectrum lights that are computer controlled and can be programmed to register any colour desired, so that they can convey the theme and tone of specific seasons, events, and celebrations. The crown of the Tower is punctuated by smaller vertical LED bands integrated with the vertical mullions on both the north and south façades.

From top to bottom, the LED lighting creates a dynamic lighting feature on the north face reminiscent of the aurora borealis and the northern sky that serves as a natural backdrop for the building.

Crown lighting

Q.2 COMPLEXITY

While the technical innovations, management of risk, and sustainable strategies implemented on the project do not alone amount to overly onerous tasks, the compounding effect of an expedited timeline required integrated submittal and site reviews.

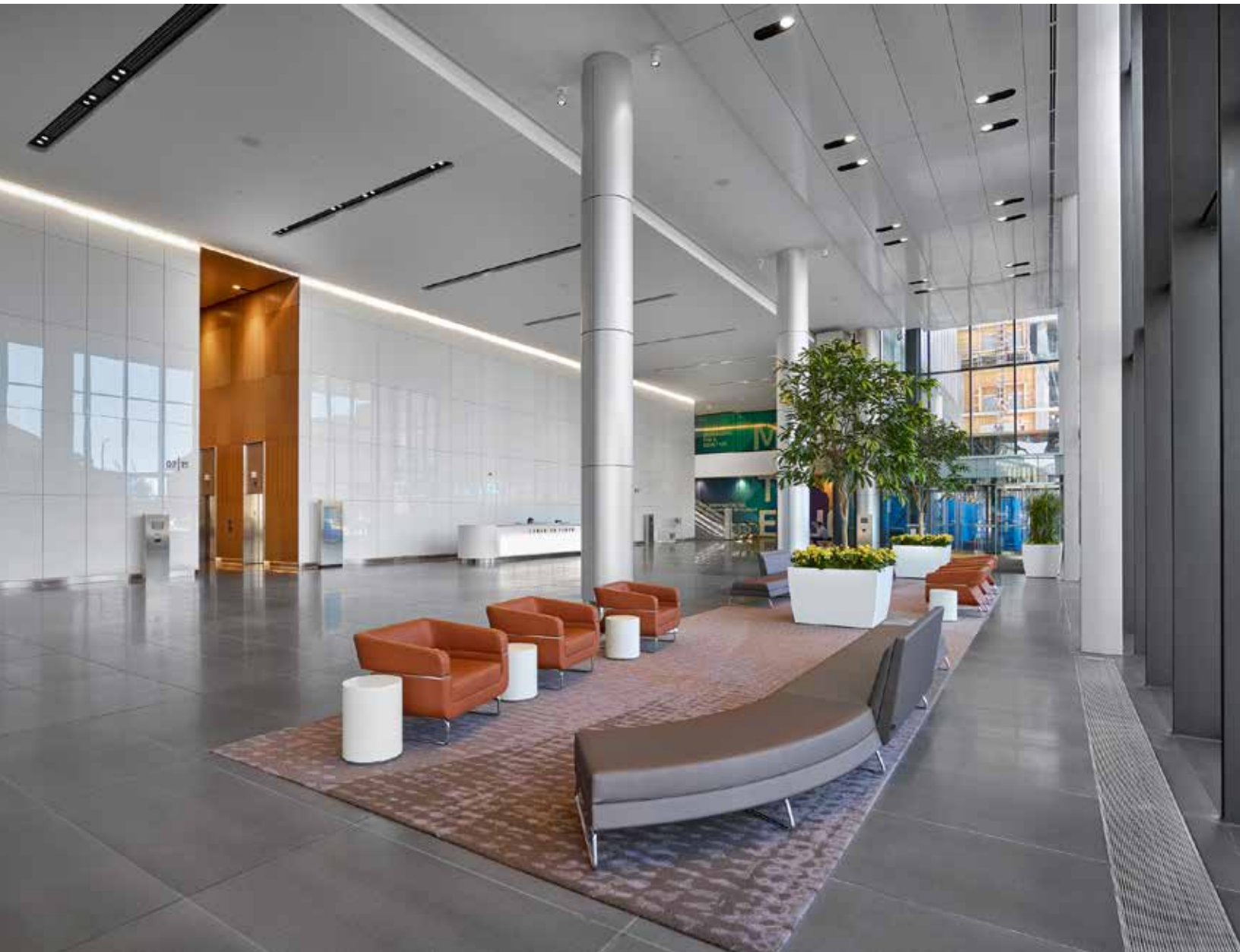
As with the majority of urban construction sites, there was limited room to work and minimal space available for a laydown area. As such, steel was on Just-In-Time delivery, its installation was followed closely by the unitized curtain wall which was also fabricated off-site and delivered ready for direct install. In order to facilitate this delivery method, rapid turnaround of submittal reviews and requests for site reviews were required to stay on a manageable construction schedule.

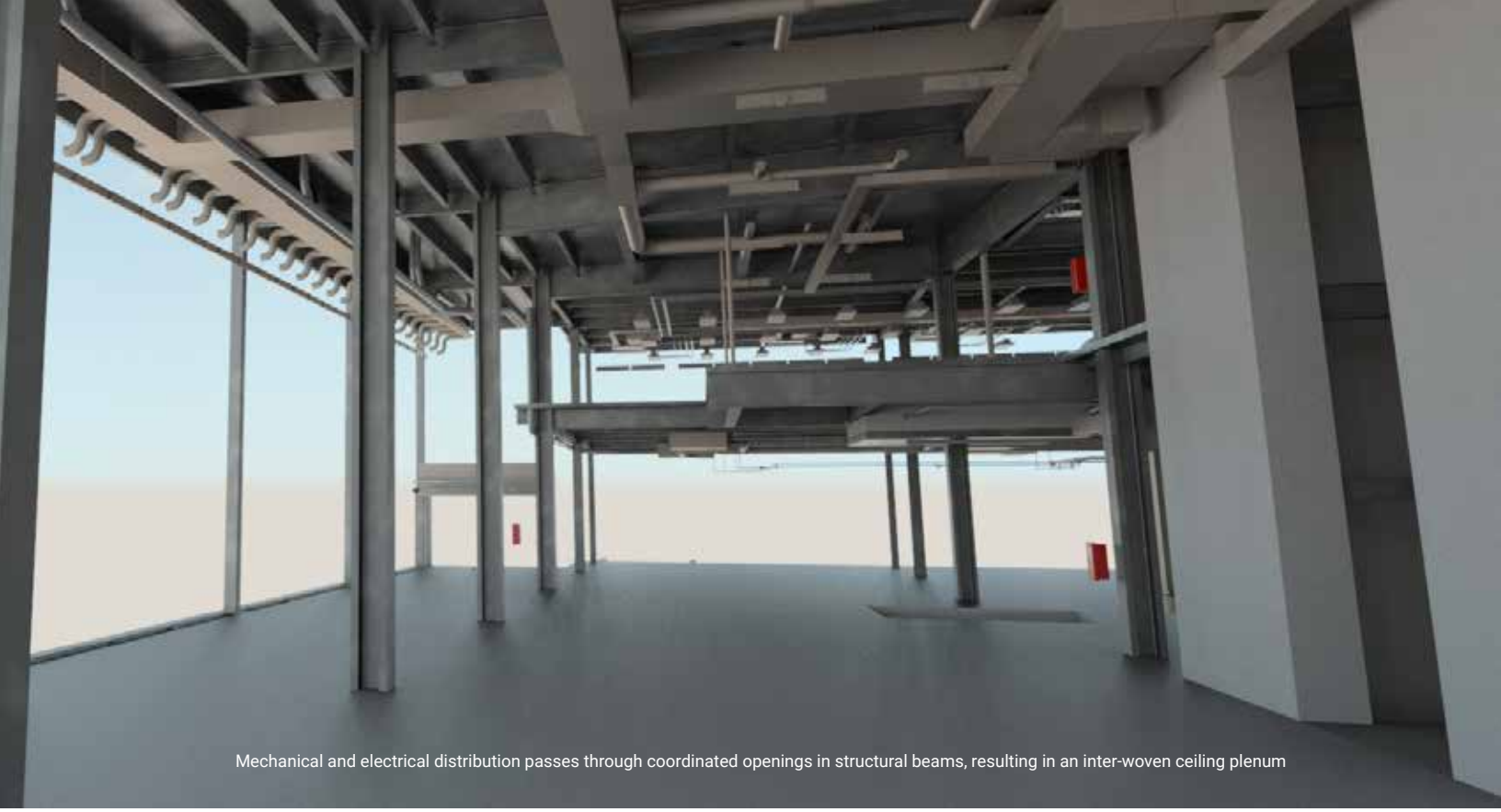
Further complicating the rapid pace and construction of the base building core and shell were the concurrent tenant improvements. In an effort to provide the City with a functional and operational working environment in the timeframe required, the construction and tenant improvements dovetailed into one another. While a benefit to both the developer and tenant, reduction in lag between the completion of the building for occupancy and having a functional tenant in the building required extensive measures on the part of both the contractor and the design teams. Efficiencies were drawn upon at the stage of staggered completion of a base building typical floor, when final base building signoff could be achieved, and tenant work could commence.

Q.3 SOCIAL AND/OR ECONOMIC BENEFITS

Edmonton Tower is both a physical and symbolic landmark of our city. The development's unique curved and lit tower form will beautify the dated skyline while the podium will activate the once dull streetscape. While the neighbouring downtown arena casts a long shadow, Edmonton Tower marks the successful debut of ICE District as a whole. Without private development such as Edmonton Tower, the critical mass of people and diversity of programs required to activate this neighbourhood could not be achieved.

Further benefit to Edmonton's community at large comes from the injection of vibrancy into our downtown core and associated economic stimulus. By drawing more people into the area every day, Edmonton Tower provides new potential patrons for surrounding businesses and restaurants. By welcoming increased numbers of pedestrians to the District, the Tower is encouraging the support of local businesses and industry.





Mechanical and electrical distribution passes through coordinated openings in structural beams, resulting in an inter-woven ceiling plenum

Q.4 ENVIRONMENTAL BENEFITS

Urban Densification

The project site alone contributes substantially to achieving its targeted LEED® Gold classification. The construction of Edmonton Tower in the downtown core draws upon existing transportation and utility networks while remediating a once polluted industrial site. But the environmental benefits of this project extend beyond remediation.

Energy Efficiency

Edmonton Tower is a unique building mechanically, and it incorporates many energy saving features. Perhaps the first of its kind in Canada, Edmonton Tower uses chilled beams for the interior zones and variable flow non-condensing fan coil units with Electronically Commutated Motors (ECM) on the perimeter.

Other features of this building's energy efficiency design include air-side heat recovery at each dedicated outdoor air system, water-side free cooling from cooling towers in winter operation, variable flow heat pumps with ECM fan motors for podium retail tenants, and high-efficiency chillers.

Reduce, Reuse, Recycle

Typically, towers are constructed using concrete instead of steel. While there are many benefits to using concrete as a primary material, it is not the optimum environmental choice. Edmonton Tower was constructed with recycled steel columns and composite recycled steel beams which maximized the recycled content of the structural system that was selected while minimizing the tonnage of the system itself. An increased tower weight would have had a compounding effect on foundations and required additional concrete; constructing in high recycled content steel offered an environmentally-friendly alternative.

Through fixturing and sub-metering, water efficiency was dramatically increased, utilizing 35% less water than a standard base comparable facility.

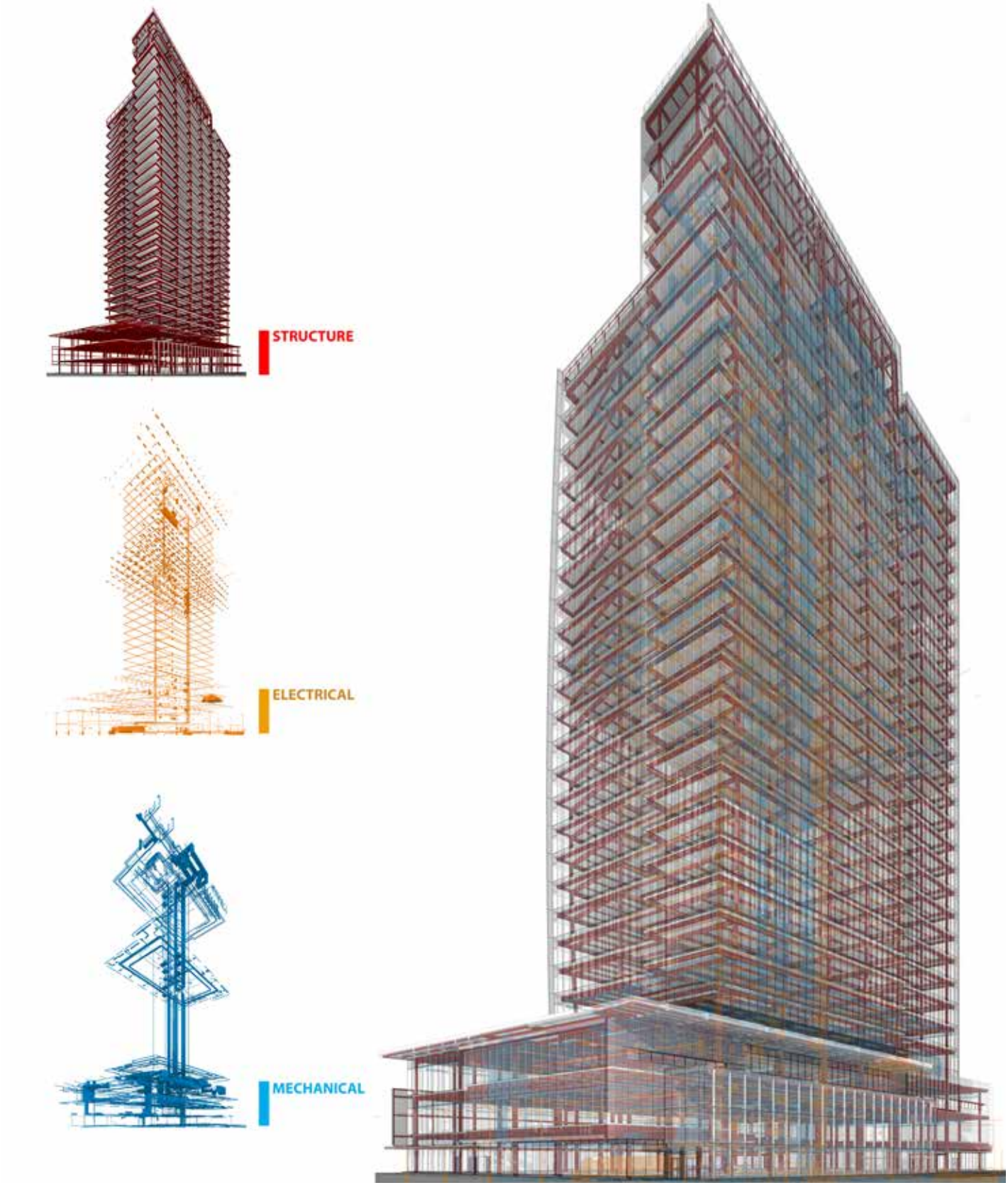
Q.5 MEETING CLIENT'S NEEDS

The design team was challenged to provide an innovative 'shell' and enticing public space that would support adaptable and open lease spaces. Technical excellence was required to achieve design solutions for many key elements— including tower core, tower structural grid, efficient ceiling plenum, and outdoor accessible spaces—that would maximize space efficiency and flexibility.

Time is money. Upon award of the project, the project team's attention was rapidly focused on advancing design drawings permitting the contractor to begin construction. While the pursuit team had clarified many key elements in the building's design, advanced engineering and architectural detailing were still required to fully document the project in its entirety. Sequential tendering and permitting were key strategies required to meet the client's timeline.

Critical path items on a construction schedule are those activities in which any delay stands to directly and adversely affect the overall schedule. The foundation construction of Edmonton Tower was a key element which Stantec designed in a manner that minimized risk of project delay. As the first element upon which a long line of future work and a tight timeline depends, foundation design is a daunting responsibility. Deep pile foundations are typically used in Edmonton for larger buildings, but as the piles go deeper into the soil, the number of unknowns and risks greatly increase. In order to minimize timeline and cost risks, Stantec opted instead for a significant raft slab foundation. This approach provided the client with the necessary strong start to keep the project on track.

Mechanical and electrical distribution passes through coordinated openings in structural beams, resulting in an inter-woven ceiling plenum.



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