The Canadian Institute of Steel Construction

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And the Winners Are…….

(Edmonton, March 26, 2009, **EMBARGOED to 9:30pm MST**) The five winners of the 2009 Alberta Steel Design Awards of Excellence have just been announced on stage in Hall D of the Shaw Conference Centre!

Master of Ceremonies Dr. Sam Shaw (President and CEO of NAIT), and hundreds of talented Engineers, Architects, Contractors, Construction Owners, CISC members, government and industry leaders, are gathered for the biggest celebration of steel design in Canada, if not North America. Guest speaker, Cormac Deavy spoke about the "Beijing Stadium: Integration of Engineering and Architecture" and construction of the world famous structure.

The biennial CISC Award event promotes the structural steel industry within the Alberta Region and across Canada by recognizing innovative steel design, and the unique use of steel in a variety of applications. This year's theme "***Advantage Steel: Strength in Innovation + Sustainability***" launched a highly coveted award for Sustainability.

Thirty four projects raised the bar of excellence and competed for recognition of outstanding design, construction and innovation from the steel industry. The impact of these designs incorporated art and culture into the landscape of our communities, and innovations of engineering, production and sustainability into our expectations for future development.

Finalist background information: www.cisc-icca.ca/albertaawards

For further information contact:
Kevin Guile - Planning Committee Chair
CISC 2009 Alberta Steel Design Awards of Excellence
Ph: 780.733.8065

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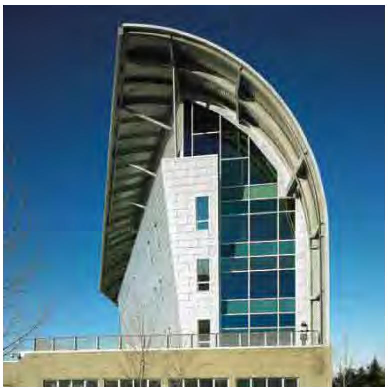

THE WATER CENTRE
Winner of the 2009 Architectural Award

Steel structures in which architectural considerations predominantly influence the design, particularly those with exposed steelwork.

Architects: Sturgess Architecture/Manasc Isaac
Structural Engineer: Read Jones Christoffersen Ltd.
General Contractor: Dominion Construction
Owner: City of Calgary

"Calgary's Water Centre makes a splash with steel design"

Nothing says "water" quite like the City of Calgary's distinctive new Water Centre. Viewed from the south, the curving steel roof pours over the building's shimmering four-storey green/blue curtain wall like a giant cresting wave.

While the design of the building makes a dramatic architectural statement in steel, that's only half the story. The Water Centre is also the first and largest civic office building to exceed Calgary's minimum LEED Silver standard. The building provides the City's Water Resources and Water Services division's approximately 775 professional staff and field personnel with open office stations, meeting and quiet rooms, conference facilities and crew changing areas.

"When we first dreamed of this building, we were two separate divisions," says Paul Fesko, Manager, Strategic Services, City of Calgary. "During the functional design we merged and the building was designed around how we wanted to work together."

Architect Jeremy Sturgess says the low-rise design was chosen to promote communication. "We wanted to encourage interaction and felt a high rise was not the way to go." The result is a long, narrow steel clad building 160 metres long by 20 metres wide, with open office spaces along the north side and meeting rooms along a middle corridor overlooking a four-storey atrium along the south side – all bathed in natural light.

Steel was used extensively throughout the interior and exterior of the building due to its reflective nature, Sturgess says. "I wanted the whole structure to appear light and steel allowed us to do that."

The most notable use of steel was to clad the unique five-storey curved envelope that starts on the north façade, arches over the building and concludes as an overhang protecting the four-storey curtain wall on the south side. "We wanted to maximize the amount of sunlight coming in but needed to temper it so the sun is never a source of irritation to the work spaces," Sturgess says. "The curved steel roof acts as a blanket protecting the building from the north wind and sheltering the south side like a visor."

The underside of the steel arch is exposed on the interior, giving the impression of a loft on the top floor, Sturgess says. "We set out to create beauty from the structural materials. All the elements are finely crafted, and we used the best quality materials so we could leave them raw. Basically there's no 'fluff' in the building, because there was no need to hide or cover the structural materials."

Fesko says the building reflects his department's water management values. "We're quite well served by the building. We're a LEED Gold facility and we may actually end up with a LEED Platinum rating."

All 700,000 kilograms of reinforcing steel used in construction of the building came from recycled sources, and 95 per cent of excess construction material was recycled. With 95 per cent natural lighting, the Water Centre will save an estimated 1,250,000 kilowatt hours per year on lighting – or over 1,100 tons of greenhouse gas emissions.

"We've built a highly sustainable building for a basic building budget and we're really proud of that," Sturgess says.

CALGARY COURTS CENTRE
Winner of the 2009 Engineering Award

Steel structures in which engineering considerations and the efficient use of steel in unique applications are the predominant factor.

General Contractor: CANA Management Ltd.
Structural Engineer: Stantec Consulting Ltd.
CISC Fabricator: Triangle Steel Ltd.
Architect: Kasian Architects
Owner: Government of Alberta

"Steel allows for judicial transparency"

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The central glass atrium of the new Calgary Courts Centre is an architectural metaphor for the concept that justice must be transparent to all. It also connects two reinforced concrete towers via a system of structural steel bridges and trusses in an engineering feat that could be a first in North America.

"The function of the building meant we had to incorporate for security purposes three separate vertical circulation systems – for judges, prisoners and the public," says Fabrizio Carinelli, Vice President with CANA Management Ltd. general contractor on the project. "The design build team envisioned the public area inside a clear glass atrium to represent the transparency of justice. To make it work in the most cost effective way possible, steel was the most flexible choice."

The 27-storey glass and steel atrium connects two concrete towers – 21 stories tall and 25 stories tall. "The height of the atrium was a big challenge," says engineer Pang Ng, of Stantec. "It was the first complex of its kind of this size in Western Canada, if not in North America.

"The challenge is that the atrium roof rises eight or nine metres above the towers, almost like a head on top. Because the two towers move differently – at different speeds and magnitudes up to as much as six to ten inches – we had to build in tolerances both for wind and earthquake activity."

The atrium walls – essentially full-height curtain walls at the east and west ends of the complex – were another challenge. "If the buildings move differently, the curtain wall might have a problem," Ng says.

To ensure the buildings move as a single structure, they are tied together at each floor by a series of three-dimensional structural steel trusses that support the weight of the curtain wall and also take lateral forces into account. "This ensures that the dimensions between the two buildings won't change and the curtain wall will be sound in all conditions," Ng says.

The towers were also tied together on the interior by a series of structural steel walkway bridges. Structural steel horizontal cross bracing at the 20th level further limits relative east-west movement between the towers.

Construction presented other "daunting challenges," Carinelli says. The site was only accessible on two sides and only two tower cranes were permitted. "We had all the structural steel elements pre-fabricated and assembled as much as possible off-site. In the case of the bridge spans, all we had to do was set them in place between the towers."

As construction spread over two winters, weather created another challenge because steel and concrete react differently to environmental conditions. "That meant we couldn't make final connections until the structure was closed in," Carinelli says. To accommodate this, each bridge and atrium wall truss was welded in place only at one end and a temporary sliding connection was used at the other end until the structure could be enclosed.

"It took a full team effort – between the builders, fabricators, engineers, and architects – to achieve this," Ng adds.

ASU COLD BOX – OPTI CANADA
Winner of the 2009 Industrial Award

Structures, process plants, or other steelwork in which industrial considerations predominantly influence the design.

Owner: Air Liquide Process and Construction
Structural Engineer: SDK et associes
CISC Fabricator: WF Welding & Overhead Cranes Ltd.

"Huge project, huge construction challenges called for steel"

SDK of Montreal was faced with a unique challenge from Air Liquide Process and Construction: design a cold box to house the air separation unit (ASU) for a facility that would be the largest operating oxygen production unit in the world. The client was OPTI Canada Inc.; the site, Fort McMurray.

"A cold box is relatively straightforward to design for operating conditions," says Carl Boutin, Associate with SDK and Senior Project Engineer on the ASU Cold Box project. "But putting together a cold box of this size is a completely different story. This was a big challenge for us and the client.

"We knew right away it couldn't be shipped in one piece because of its size, and it wasn't practical to construct on site because of weather conditions and the difficult labour situation in Fort McMurray."

This meant the structural system had to be modular. Every module had to be small enough and light enough to meet shipping limitations, yet large enough to minimize site assembly time.

"It became obvious that a trussed steel structure was the only system that could satisfy all these criteria," Boutin says. "We knew from experience a steel system would give us the most flexibility. As long as the interface details were planned accordingly, modules could be created by cutting the structure at specific locations into as many smaller pieces as required."

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The completed ASU cold box is an air-tight structural steel rectangular box measuring 8.5 metres by 10 metres by 64 metres high. It is made up of approximately 12,700 pieces (excluding bolts), is fully clad with flat steel plates, and weighs about 333 tonnes.

"The erection portion of the job was the most challenging," says Ryan Schram, Project and Drafting Coordinator with WF Welding & Overhead Cranes Ltd., fabricators on the project. "The structure was basically a giant wind sail. With a structure of that size it would have been impossible to weld at that height. All structural connections were field bolted, and the only field welding required was to attach the cladding over the splice connections."

Originally, the cold box was designed to be assembled horizontally in two sections on site to limit scaffolding requirements and then flipped into its vertical position in one piece. But the crane needed for the task was suddenly moved off site. The structure was then cut again, creating upper, mid and lower modules. But this design created a shipping problem because each module was too wide and too high to be shipped in one horizontal piece. Longitudinal cuts were made to create 12 sub-modules with L-shaped cross sections. These L sections were then stacked in a box shape to reduce shipping costs.

The flexibility of the system proved itself during construction when the large crane needed to flip and stack the upper module had to leave the site due to scheduling issues. "We had to suddenly add another splice on the fly," Schram says. A transverse cut created smaller modules allowing smaller cranes to perform the stacking.

Boutin and Schram agree the flexibility of the steel truss system was key in making this project a success.

CAPITAL HEALTH CENTRE
Winner of the 2009 Steel Edge Award

An open category demonstrating excellence in the application of steel design, fabrication, detailing or finishing. These projects or project components demonstrate tremendous innovation in addressing unique design, resource or application challenges.

Architect: Dub Architects
CISC Fabricator: Collins Industries Ltd.
Structural Engineer: Protostatix Engineering Consultants Inc.
General Contractor: Aman Building Corporation
Owner: Alberta Health Services

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"Cantilevered steel entry system conveys simplicity and elegance"

If buildings were contestants on TV make-over programs, the transformation of the Capital Health Centre entrance in downtown Edmonton from mousy to elegant would steal the show. When Capital Health purchased the 1970s office complex for use as its headquarters, the two concrete towers were connected by a dark, uninviting, one-storey entry.

"A new entry was needed to improve the level of the building, reflecting its status as the headquarters of one of the biggest employers in Alberta," says Gene Dub, principal of Dub Architects. "The entry was low, hidden, and located in mid-block. We angled and extended the roofline to make it more prominent." The structure also had to interface with the existing buildings and integrate with the underground parkade.

The new entry features a dramatic cantilevered steel and glass canopy that gives the impression of an open raft floating above the interior and exterior spaces. The design maintains the same footprint as the original structure but uses a single span, allowing for a vast column-free space. The steel frame also allows generous natural light to penetrate the atrium between the towers.

"We wanted an enclosure that would appear both light and substantial," Dub says. "We chose steel because it gave us these qualities. The canopy is designed much like a suspension bridge, with few vertical supports."

The structure consists of four primary beams supported by two primary mast columns in hollow structural steel. The primary beams are supported at mid-span by tensile rods that splay outward from the mast columns. Stepped skylights provide a transition between the steel slope and the existing precast buildings.

"The natural tendency of a sloped structure is to sag," says Jason Collins, General Manager of Collins Industries Ltd., steel fabricators on the project. "The tensile rods were used to support the huge cantilevers and counter that."

The project presented some construction challenges, including limited site access. "We had to sequence the work precisely," Collins says. "There was no room to store materials on site. The components were pre-fabricated and pre-painted so we could just back up to the site and unload them as needed for assembly."

Connecting the new steel structure with the existing concrete buildings was another challenge. The new structure is designed to be structurally independent of the existing buildings and is connected through slotted holes that allow for movement between structures.

"We had to work closely with the glazing contractor to make sure we worked within the tolerance of the glazing," Collins says.

All of the steel is exposed in the final construction, Collins says. "Because it was open for all to see, we used a special finishing involving a three-coat intense and durable paint system.

"All in all, it was a very complex project, but the design made it simple to execute with proper planning. The simplicity of it is what makes it neat. It's an elegant, beautiful structure."

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UNIVERSITY OF ALBERTA-TRIFFO HALL
Winner of the 2009 Sustainability Award
Recognizes steel structures in which steel has been used or re-used as part of a sustainable development project that aims to improve environmental impact of the structure by using established and innovative design, standards and technologies.

Architect: Johns Group2 Architecture Engineering Ltd.
Structural Engineer: Read Jones Christoffersen Ltd.
General Contractor: Binder Construction Limited
Owner: University of Alberta

U of A historic building reno celebrates good steel "bones"

The renovation of Triffo Hall on the University of Alberta campus is an example of the adage that what was old is new again. Built primarily in steel in 1915, the two-storey structure was originally designed to work with natural light. Changes over the years lost sight of that intent, but once again the hall's long-covered clerestories are channeling daylight throughout.

During its history, the building had gone through a "hodge-podge of uses" by a number of departments, says architect Laura Plosz, Associate with Johns Group2 Architecture Engineering. "The building had good bones but was not well served over the 90 years of its use."

Triffo Hall is home to the Killam Centre for Advanced Studies, which houses the Graduate Students' Association, the Faculty of Graduate Studies and Research, the Postdoctoral Fellows Office, and the Postdoctoral Fellows Association.

"The catalyst for this project was the University's priority need to provide a facility that consolidated the advanced study service providers, created a stronger sense of community, and enhanced service delivery," says Lorna Baker Perri, Planner, Office of the University Architect. "The development of Triffo Hall created a symbolic home for advanced studies in a facility that celebrates the University's history and adheres to the principles of sustainability."

Triffo Hall is the first project at the University to be registered with LEED. The building passed its first review for Gold certification and is now undergoing its second review.

"We knew from the start we would approach the project from a sustainability standpoint," Plosz says. "What we found fit quite well with our goals. We were working with a long narrow building with these wonderful clerestories, so it was very easy to get daylight into the spaces."

A scarcity of original drawings and a 1919 addition that changed the structural system to concrete complicated the project.

"Steel was the primary structural material so we decided to work with it," Plosz says. "It was very important to us to use the steel and leave it exposed. We retained the steel trusses that supported the roof and clerestory and made them visible by removing the existing ceiling systems."

A load-bearing brick wall was preserved for its rich texture, colour and heritage value.

New steel elements included beams for second floor structure modifications, stair structure, lintels in the brick wall, and the exterior canopy. All steel elements are painted black to contrast with the white painted walls, clear sealed brick, and concrete floors.

The new design features a two-storey interior "street" that runs the length of the building along the brick wall. Punctures through the second floor allow the street to be flooded with natural light.

The ability to re-use the existing steel structure and construct new elements with steel contributed significantly to the sustainability of the project. Of the existing steel, 99.5 per cent was retained; of the new steel material, 100 per cent is recycled, Plosz says. "That means it's also 100 per cent recyclable, which is one of the most fantastic aspects of using steel."

CISC congratulates the winners, and all of the finalists for the 2009 Alberta Steel Design Awards of Excellence!

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PROJECT	Submitted By:	Project Team Representatives (spokes persons)	Project Team Representatives (spokes persons)
Capital Health Centre	Dub Architects (Collins Steel)	Gene Dub - Dub Architects Ph: 780-428-7888 dubarch@caisnet.com	Jason Collins - Collins Industries Ltd. Ph: 780-577-2081 jcollins@collinssteel.com
University of Alberta Triffo Hall	Johns Group2 Architecture Engineering	Laura Plosz - Group2 Architecture Engineering Ltd. Ph: 780-447-2990 laurap@johnsgroup2.ca	Lorna Baker-Perri - U of A Ph: 780-492-4090 lorna.baker-perri@ualberta.ca
Edmonton Pipe Trades Training & Education Centre	Hartwig Architecture Inc. (Rampart Steel)	Frank Hilbich - Hartwig Architecture Ph: 780-417-3757 fhilbich@hartwigarchitecture.com	Wilfred Siu - Merwin Engineering Ph: 780-451-1905 merwin@constructworld.com
The Water Centre	Sturgess Architecture / Manasc Isaac Architects	Jeremy Sturgess - Sturgess Architecture Ph: 403-263-5700 Email: jeremy@sturgessarchitecture.com	Paul Fesko - Manager Strategic Services, City of Calgary Ph: 403-268-3588 or 403-651-6078 paul.fesko@calgary.ca
Petro-Canada RCP Delayed Coker Structure	Bantrel Co. (Supreme Steel Ltd.)	*Craig Graham - Construction Services Manager, Oilsands Petro-Canada Ph: 403-605-9686 cgraham@petro-canada.ca	Geoff Prowse - Project Director, Suncor Voyageur Project Ph: 403-472-2981 prowseg@bantrel.com
De Beers Canada Victor Diamond Mine	AMEC Americas Limited (Supreme Steel Ltd. - Walters Joint Venture)	Quinn Leder - Supreme Steel Ltd. Ph: 780-483-3278 quinn@supremegroup.ca	Antoni Kowalczewski - Janto Engineering Ph: 780-451-9214 ak@janto.ca
Royal Canadian Pacific Entry Pavilion	Cohos Evamy integratedesign	Doug Cinnamon - Architect, Cohos Evamy integratedesign Ph: 780-541-5422 cinnamon@cohos-evamy.com	Gamel Ghoneim - P. Eng. Cohos Evamy, integratedesign Ph: 780-541-5478 ghoneimg@cohos-evamy.com
WestJet Campus Office Facility	Stantec (Triangle Steel)	Bruce Bungay - Triangle Steel Ph: 403-279-2622 bruceb@trianglesteel.com	Enzo Vicenzino - Stantec Ph: 403-569-5355 enzo.vicenzino@stantec.com
Alta Steel Whaler Truss	Supreme Steel Bridge Division	Todd Collister - Supreme Steel Ltd. Bridge Div. Ph: 780-907-0599 todd.collister@supremegroup.ca	Jim M. Groenewegen - Alta Steel Ph: 780-468-1133, #2482 jgroenewegen@altasteel.com
Calgary Courts Centre	CANA Management Ltd. (Triangle Steel)	Fabrizio Carinelli - CANA Management Ltd. Ph: 403-255-5521 carinelli@cana.ca	Pang Ng - Stantec Ph: 403-716-8005 pcng@stantec.com
Black Foot Crossing Interpretive Centre	Goodfellow Architecture Ltd (Empire Iron Works)	Ron Goodfellow - Goodfellow Architecture goodfellows@shaw.ca	Thor Gaul - Empire IronWorks Ph: 780-447-4650 #230 tgaul@empireiron.com
Mazankowski Alberta Heart Institute	Stantec Architecture Ltd. (Empire Iron Works)	Paddy Meade - Alberta Health Services Ph: 780-342-2021 Paddy.meade@capitalhealth.ca	Greg McPhee - Stantec Architecture Ph: 780-917-7130 greg.mcphee@stantec.com
ASU Cold Box - Opti Canada	SDK et associes (WF Welding & Overhead Cranes Ltd)	Carl Boutin - SDK et associes Ph: 514-938-5995 cboutin@sdklbb.com	Ryan Schram - WF Welding & Overhead Cranes Ltd. Ph: 780-955-7671 rschram@wfwelding.com
Legend = 2009 Award Winner are Indicated with Brown Background			

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