




 **ROGERS PLACE**

ROGERS PLACE

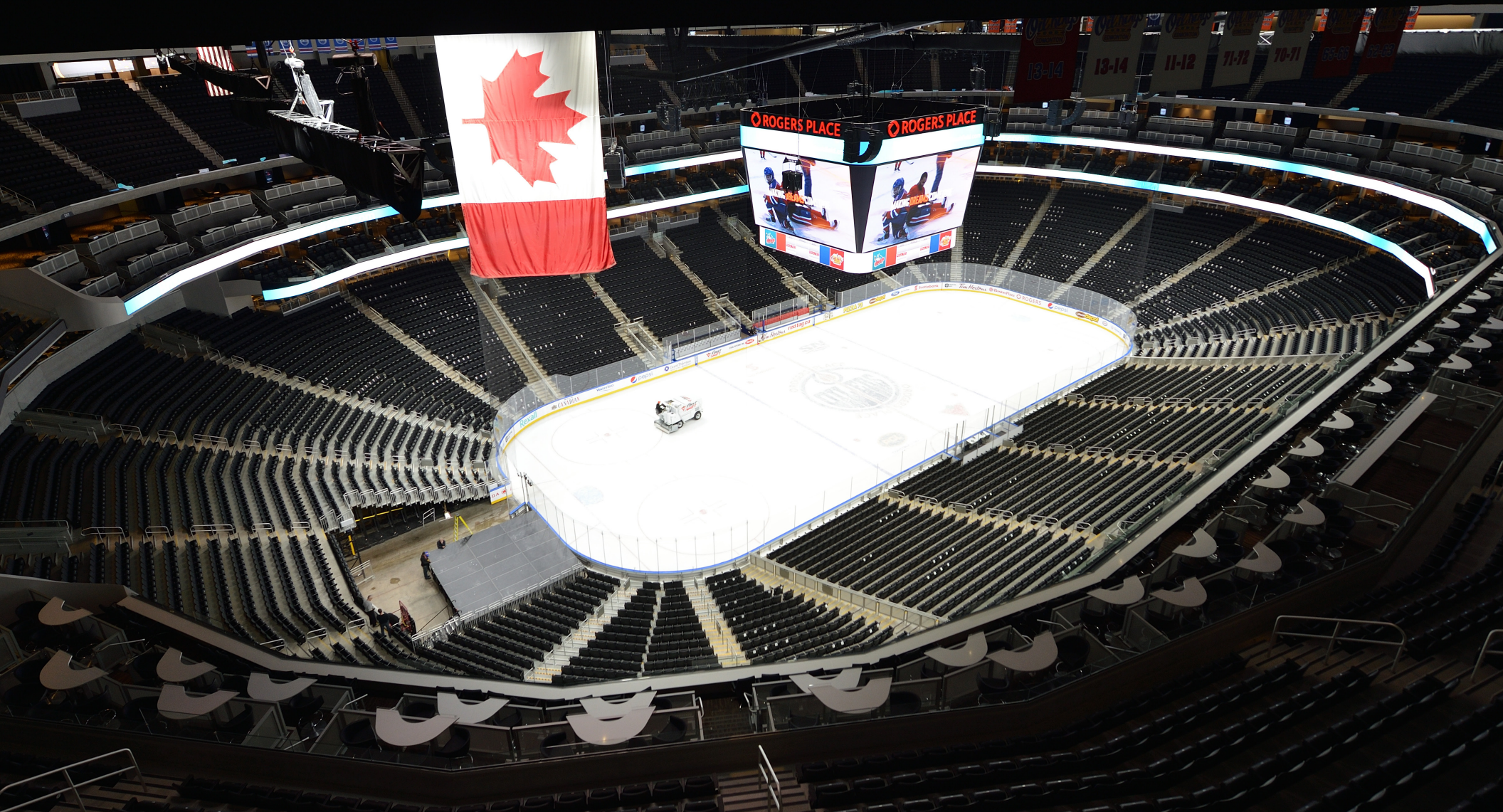
Canadian Consulting Engineering Awards 2017

DIALOG

 **Stantec**

 **MCW**
Hemisphere Ltd.

 **amec
foster
wheeler**



Project Summary

The City of Edmonton and the Edmonton Arena Corporation wanted to build the world's finest arena on an extremely tight schedule. The design team had effectively 9 months to complete contract documents and the building was constructed in only 928 days from ground breaking to the first concert. DIALOG (Structural), Stantec (Electrical), MCW (Mechanical) and AMEC (geotechnical) provided sub-consultant services for the project. In the first 115 days since the arena opened, 871,833 people have attended events, significantly contributing to Edmonton's economy. It is projected that between 2.5 and 3 million people will attend events at Rogers Place annually.



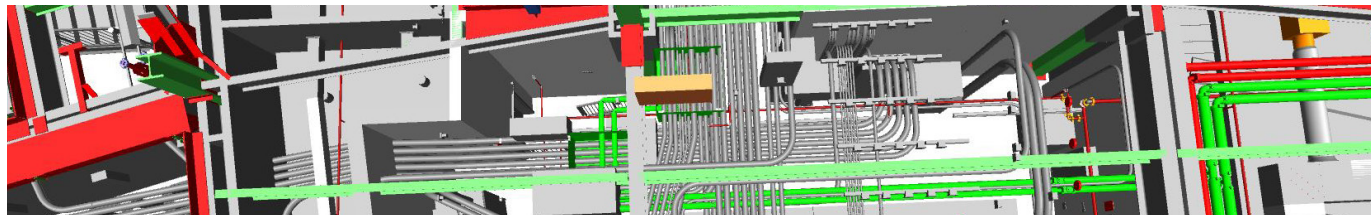
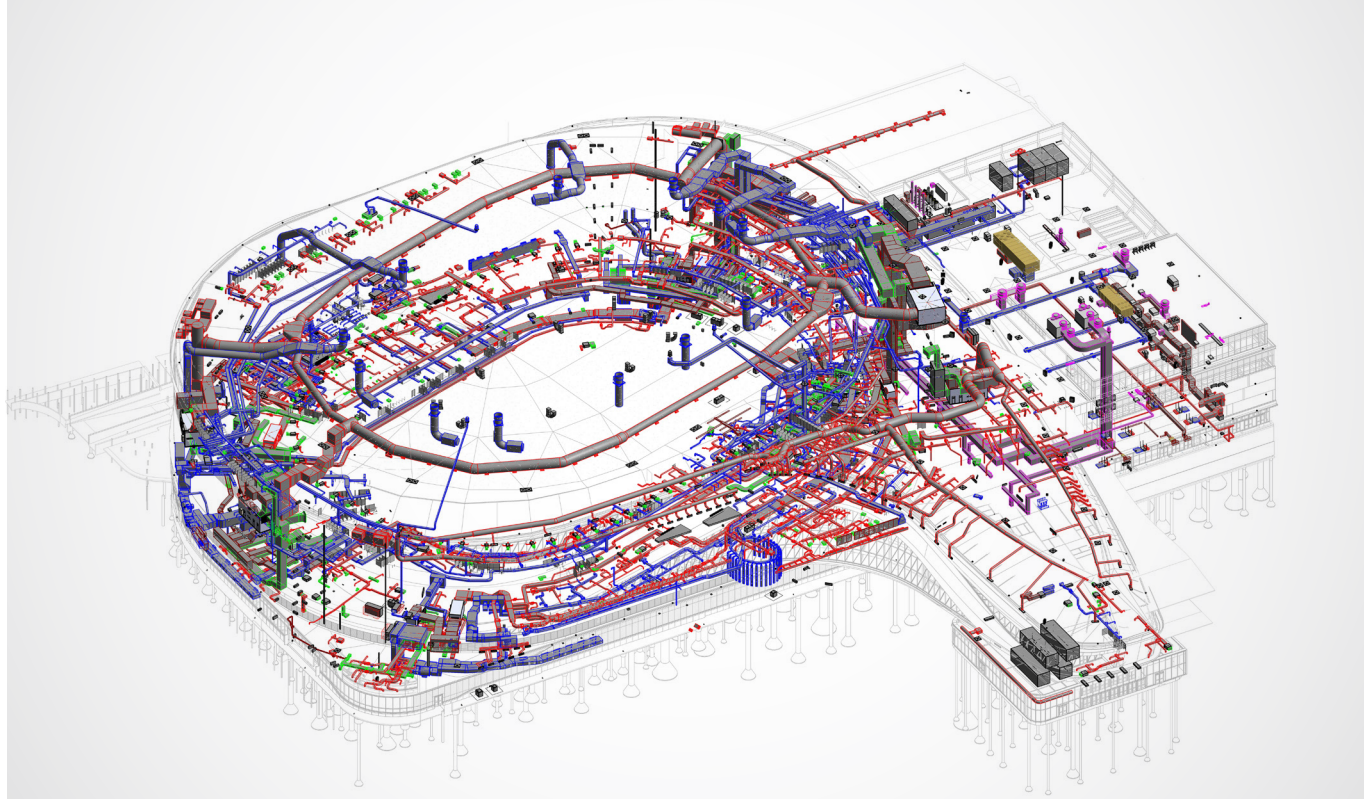
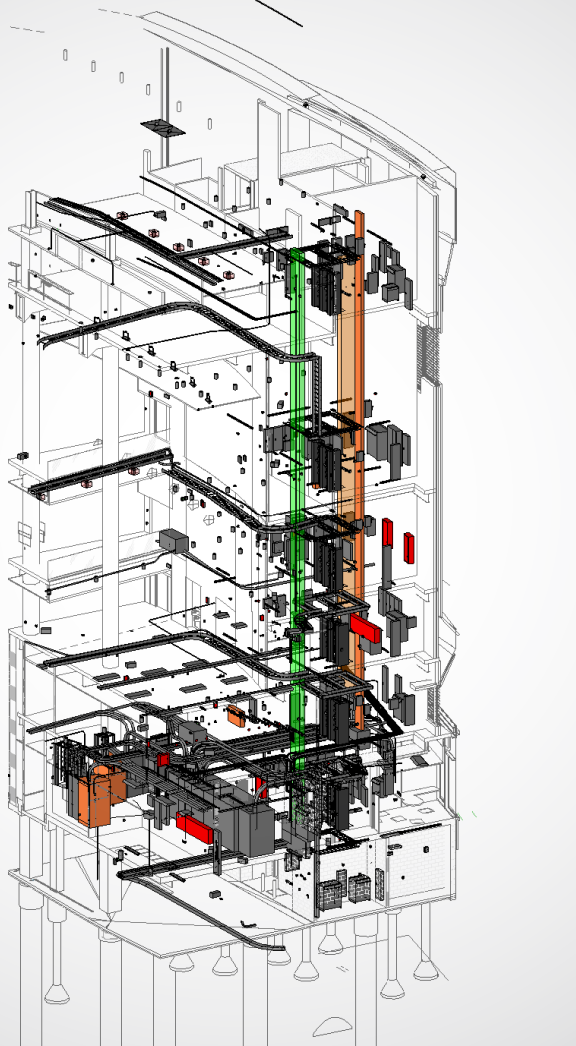
Innovation

Rogers Place is the most modern arena in the NHL and at over 1.1 million square feet, it is double the size of the former home of the Edmonton Oilers.

Everything about the building is bigger, from conducting the largest pile load test to date in western Canada at the start of the project to installing the largest HD score board in the NHL at the end of the project. Keeping the fan experience in the forefront, every aspect of the building was thought out in detail. The structure was designed using moment frames to keep concourses free of obstructions, mechanical units larger than a city bus were hidden away and carefully insulated as to not be heard, electrical services were given just eight feet of wall space to route conduit from electrical rooms, and everything was kept out of view of the fans. The unique shape of the building is allowed to shine through and is not obstructed by all of the elements that make the building function.



The building was designed and constructed on an extremely tight schedule. The design team effectively had only 9 months to complete contract documents and the building was constructed in only 928 days from ground breaking to the first concert. The design team worked closely together with the Client, Project Manager, and Construction Manager on a daily, sometimes hourly basis, to provide quick answers and resolve coordination issues that arose in order to keep the construction team on schedule. The efforts of both the design team and the construction team allowed Rogers Place to open on time and on budget.



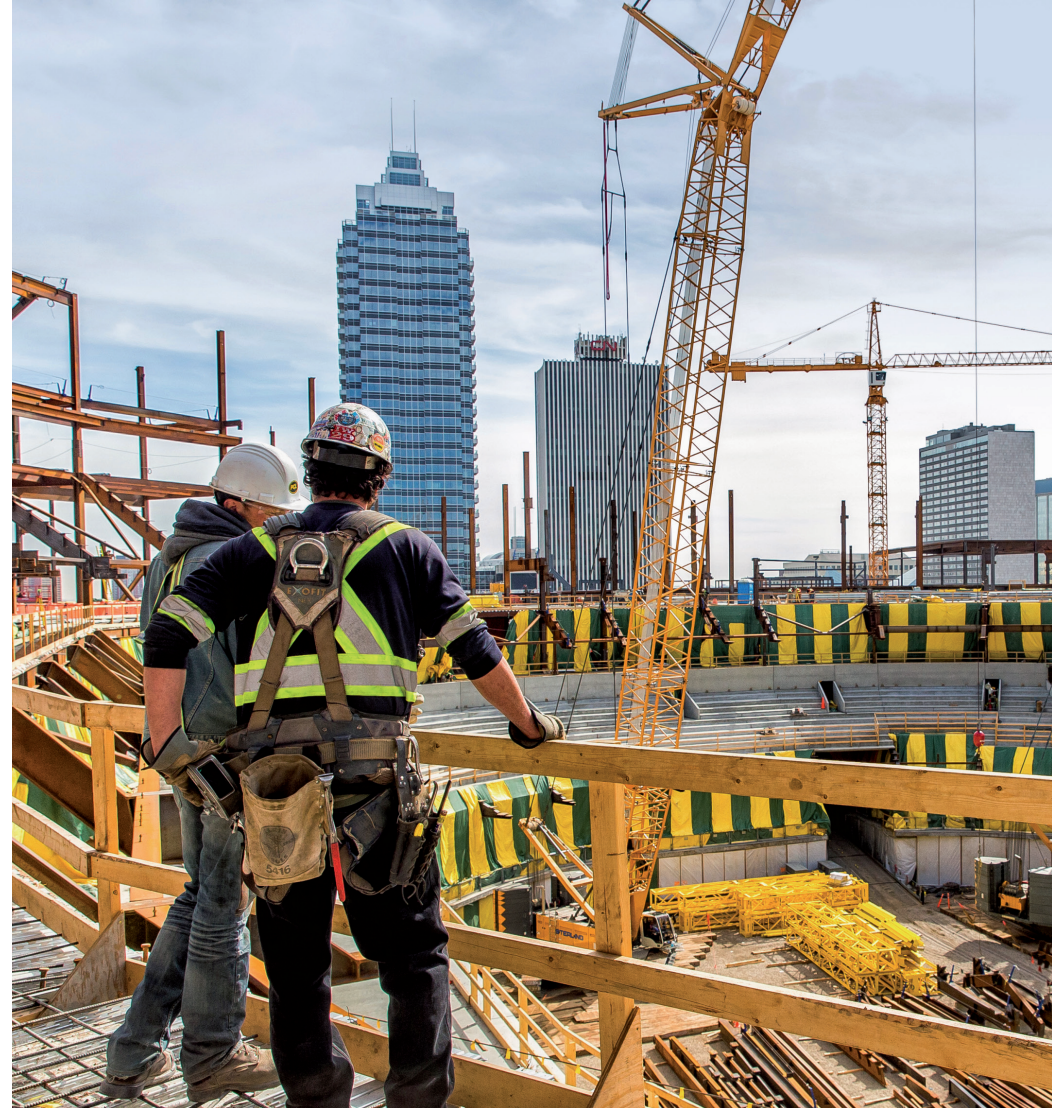
Complexity

One of the main challenges was to coordinate the sheer number of systems required to service an arena all while putting them in strategic spaces that will provide the most flexible operations of the facility and be hidden from the public spaces. One example of this complexity was that the electrical and mechanical teams had to coordinate over 1000 connections for food service equipment alone.

Not only did the M&E systems have to be hidden away, the structural system needed to be designed with moment frames to maintain clear access around the arena. Most typical moment frames have the potential for large drift movements under load, which would be unacceptable for Rogers Place.

In order to limit these drift movements, the design team engaged the main floor as part of the lateral resisting system. This resulted in a concrete slab acting as a part of the steel moment frame which is very rare, and shows the innovation required on this complicated project.

These moment frames result in large foundation loads. The results of the pile load test gave the team a higher factored soil resistance allowing single 5.4m diameter belled piles to be used rather than pile groups which may not have been possible due to site congestion.



Social and Economic Benefits

The development of Rogers Place has been a significant catalyst for construction and employment in Edmonton. This \$450M project spurred an additional \$2.4B building boom in what is now known as Ice District. Throughout construction a workforce of about 1,100 people at any given time was building Rogers Place. It is projected that between 2.5 and 3 million people will attend events at Rogers Place annually. Approximately 1,600 workers are required to run the facility and provide service during events. The direct economic impact of the arena, combined with the spin-off effects to surrounding businesses have substantially contributed to Edmonton's economy.

In the first 115 days since the arena opened, 871,833 people have attended events, significantly contributing to Edmonton's economy. Having so many people concentrated in one place has had a significant impact on hotels, restaurants, bars and shopping within the downtown core. It is projected that between 2.5 and 3 million people will attend events at Rogers Place annually.



Environmental Benefits

Rogers Place is the first LEED Silver certified NHL facility in Canada and the second in North America. In order to achieve the certification it was a series of little things that added up to large energy savings overall. Starting with construction waste, 94.8% of waste has been diverted from the landfill, this amounts to 3,469 tonnes of waste that didn't end up in a landfill. Throughout the project, low-flow plumbing fixtures and toilets were used to minimize water usage by up to 35%. LED lighting is used throughout the facility. When installed, Rogers Place was the 2nd facility in North America to use LED sports lighting. This modern lighting technology saves about 60-70% in energy costs over traditional sports lighting systems. Energy modelling was used to reduce overall energy consumption and focus on efficiency.

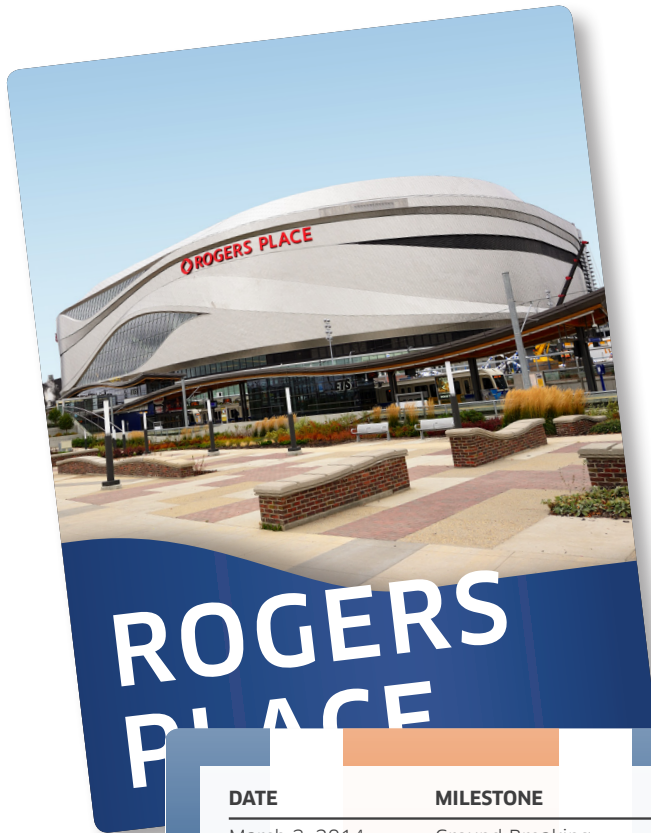
Other environmental benefits include: recycling within the facility, food composting, the use of safer cleaning chemicals, development density, transportation access (Rogers Place will be connected to 7 Light-rail transit stops within a 10 minute walking distance), strong pedestrian connections to the downtown core and increased walkability in the area.



Meeting Client's Needs

The client had an extremely tight schedule and a fixed budget to design and construct the building. With a scheduled opening of September 2016, the design team effectively had only 9 months to complete contract documents and the building was constructed in only 928 days from ground breaking to the first concert. The design team worked closely together with the Client, Project

Manager, and Construction Manager on a daily, sometimes hourly basis, to provide quick answers and resolve coordination issues that arose in order to keep the construction team on schedule. The efforts of both the design team and the construction team allowed Rogers Place to open on time and on budget.



ROGERS PLACE

DATE	MILESTONE
March 3, 2014	Ground Breaking, excavation and foundation work begin
Fall 2014	Erection of steel and concrete structure
Spring 2015	Interior work begins
Summer 2015	Exterior Completion
Spring 2016	Concrete ice slab poured
September 8, 2016	Opening Day
September 16, 2016	First Concert

928 days from ground breaking to first concert
Up to 1250 people per day on site during construction

DIALOG

Stantec

MCW7
Hemisphere Ltd.



ROGERS PLACE

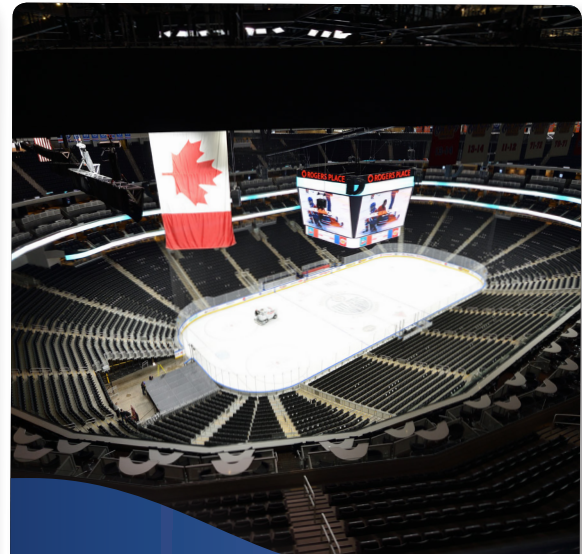
FAST FACTS

Cost including arena, Ford Hall pedestrian crossing, LRT link, land, pedestrian corridor, community rink	\$614 Million
Site Area	9.5 Acres
Building Height	43 m
Material Excavated	80,000 m³
Number of Piles	700
Length of Piles	6,600 m
Pieces of Structural Steel	10,000
Tonnes of Structural Steel	9,000
Concrete	31,500 m³

DIALOG

Stantec

MCW7
Hemisphere Ltd.



ROGERS PLACE

FAST FACTS

1,110,900 square feet on 7 levels (double the size of Rexall Place)
18,641 seating capacity for hockey
20,700 for concerts and other events
15 escalators and 15 elevators, this includes one of Canada's longest escalators
14m x 14m x 11m high score board, largest HD scoreboard in any NHL arena, weighs 48,000 kg
1200 HD TVs in the building
75 km of mechanical piping
120,000 gallons per minute of heating and cooling water
2.5 million cubic feet of air moved per minute
586,000 lbs of ductwork
975,000 feet of EMT Conduit (3/4-4 inch)
1,800 km of RW90
275 km of broadcast cable

DIALOG

Stantec

MCW7

