

## Self Consolidating Concrete

The Bay Adelaide Centre, situated conveniently in the middle of Toronto's financial district, is a 51 storey office tower currently under construction. The tower is a steel structure with a concrete core and composite floors. The building has approximately 457,000 m<sup>2</sup> of rentable office space and is targeting LEED Gold status.

The core walls are constructed using self consolidating concrete (SCC). As one of the first North American projects to be using SCC at this scale, it provides an excellent opportunity to gather data on the effect of SCC on formwork pressure. Along with pressure monitoring, concrete testing occurs for every pour in order to better understand the relationship between the thixotropic properties of SCC and formwork pressures. The total volume of SCC that is expected to be used for the core walls is 18,500 m<sup>3</sup>. The internal pump line delivering the concrete to the top of the core wall runs approximately 90 m horizontally before turning in the vertical direction. The vertical line will run approximately 200 m high once the last floor is reached.

### Mixture Proportions

Cement: Type GU (Type 10)  
GGBFS: 5% - 30% replacement  
Coarse Agg.: 10 mm gravel  
w/cm: 0.35 – 0.38

### Admixtures

Accelerating Admixture: GRACE Non-Chloride Accelerator  
HRWR: GRACE ADVA Cast 575  
Viscosity Modifying Admixture: GRACE V-Mar 3  
Water Reducing Admixture: GRACE WRDA 20



Owner: Brookfield Properties  
Concrete Producer: Canada Building Materials  
General Contractor: EllisDon

### Fresh Concrete Properties

Air content: 1% to 3%  
Target Slump Flow: 700±50 mm  
Unit Weight: 2375 – 2425 kg/m<sup>3</sup>

### Compressive Strength

Target: 8 MPa in 12 hrs, 60 MPa in 91 days  
Actual: 15-20 MPa in 12 hrs, 60-65 MPa in 56 days