Centre for Architectural Structures and Technology

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The *Centre for Architectural Structures and Technology* (*CAST*) is a laboratory where faculty and students of architecture will experiment with building products and assemblies in collaboration with materials suppliers, manufacturers, and contractors from the building industry. The project advances architectural research at several scales: landscape, building envelope, temporary structures, lighting, and building component fabrication. Folded facade elements- constituted as a combination of materials- wrap an efficient industrial-like plan.

In its initial configuration, a research unit led by Professor Mark West, (Director of *CAST* and primary researcher) will continue experiments with fabric-formed concrete, testing the potential of proprietary casting methods for broader use. The surrounding landscape will be used as a design/build site. Flexible interior lighting (including a solar powered 12 volt system) will be used for teaching and research. The 11 voids in the north, east, and south elevations will house state-of-the-art glazing and wall prototypes built students. A 2-storey galvanized frame one the north side of the building will provide a permanent open armature for building experiments. *CAST* is a direct manifestation of its function. Every aspect of the building reflects a pedagogical agenda, and extends the existing Structures, Building Technology, and Product Design courses of the Faculty by facilitating 'hands-on' experience.

The building was initiated by a *Canadian Foundation for Innovation* grant. This contribution has generated an endowment approximately 4 times the value of the initial grant from the building industry. Primary contributions come from partners representing the concrete, pre-cast concrete, masonry, and steel industries. The supply and installation of miscellaneous metal, curtain wall systems, doors and hardware, and mechanical systems are also being donated.

CAST is located in front of the Faculty of Architecture's *John A. Russell Building*, one of the most important examples of modern architecture in Canada. This glass and aluminum pavilion, inaugurated in 1959, was designed as a didactic ensemble of structure and material which demonstrated the leading construction technologies of the day.

In extending this tradition of considerate assembly as an important historical imperative, *CAST* is formally modest, but expressive in detail and connection. The design emphasizes clarity of material choice, and reveals assembly and construction methods. Like the Russell Building, the structural system is engaged for its lyric potential. In this case, a wall of local lime stone- weighing approximately 28 tons- is cantilevered across the south and west facades. The stone is detailed as a paper-thin wrap which floats above an open glazed corner, invoking a sense of weightlessness. The mass of stone is counterweighted by a pre-cast hollow concrete floor slab for the mezzanine. This ensemble demonstrates the dramatic potential of combining pre-manufactured steel and pre-cast concrete structures.

Notwithstanding the principle argument of purposefulness- the project is formally and spatially indeterminate, and neutral. It has the capacity to accept dramatic shifts in 'content' and use: materials laboratory, studio space, exhibition gallery, and library, for example. At an urban design scale, the building demonstrates that intensive 'infill' planning and development is possible throughout the campus, an alternative to campus sprawl.

The confirmation of the buildings success (and its ultimate justification) will be evidenced by its productive research over the next 40 to 50 years, and by the extent to which it instills students of architecture with confidence in the art of building.