

2017 Ontario Technological Skills Competition
Architectural Technology & Design - Post Secondary Exam



COMPETITOR NUMBER: _____



**28TH ONTARIO TECHNOLOGICAL SKILLS COMPETITION
28TH OLYMPIADES ONTARIENNES DES COMPÉTENCES
TECHNOLOGIQUES**

Architectural Technology and Design

POST SECONDARY

Contest Date/Date de la compétition: Tuesday May 2, 2017

**Location / Endroit: Toronto Congress Centre
650 Dixon Road, Etobicoke, Ontario M9W 1J1**

**TECHNICAL CHAIR / PRÉSIDENT DU COMITÉ TECHNIQUE:
Joel Foster, j-foster89@hotmail.com**

COMPETITOR NUMBER: _____

Time: (6 hours)

Project Description:

Buildmore Inc. A local developer has requested your help on a new development in a local city's downtown core. Buildmore Inc. has asked for you to prepare a set of design working drawings for a **3 Storey Medical Building**. The building design will only require to have the **Shell and Core developed**. Once the building is complete, Buildmore Inc. will have their leasing department, lease the space.

Buildmore Inc. requires a **400 Metre Square building** with **6 Tenant spaces per floor**. They have asked that the building be a **square or a rectangle** with a **central core** having the following requirements:

1. Double elevators
2. Two Stairwells (ensure travel distances are considered)
3. (2) Two Barrier Free Washroom with all the required OBC requirements
4. Janitor room with a mop sink.
5. Garbage chute to garbage bin in ground floor janitor's room.

Due to City requirements that restrict the building shape, Buildmore Inc. has asked you to be **creative with the exterior building envelope**. They would like to see an attractive mix of building materials **highlighting the main entrance** to the building. The Main Entrance to face South (down on page).

Buildmore Inc. has requested the building feature a couple sustainable design options. They'd like to minimize their heating and cooling cost, as well as his dependency of municipal water supply. They are unsure of their options and would like some suggestions. Take the building location into account.

Given:

- Schematic Wall Section of building provide by Buildmore Inc.

COMPETITOR NUMBER: _____

Structure

Main Concept:

- Structural steel frame (girders/beams & columns) c/w masonry in-fill walls OR structural steel stud.

Addition Exterior Walls

- "Rainscreen Principle" Cavity walls with 190 concrete Block OR 200 steel stud, 75mm rigid Insulation with 90mm stone/brick veneer OR aluminum composite panel
- Aluminum Curtain Wall or Aluminum Store Front
- Insulated Precast Concrete Panels

Interior Partitions:

- 150mm Steel Stud with 16mm Gypsum Board each side of stud. (Retail Units)
- 92mm Steel Stud with 16mm Gypsum Board each side of stud. Fill stud space with sound batt insulation. (Washrooms)

Stairwell/Elevator Walls:

- 190mm Concrete Block

Foundation:

- Reinforced Concrete Foundation wall c/w interior insulation 24" min. below grade, bearing on 400X800 wide reinforced concrete strip footings min 4'-0" below finished grade.

Ground Floor:

- 150mm Concrete Slab c/w perimeter insulation

Second Floor:

- 300mm concrete hollow core slabs c/w 50mm concrete topping supported on steel beams/girders and columns

Roof:

- Low-Sloped Roof: "Conventional Roof System" using single-ply membrane and sloped insulation on 300mm concrete hollow core slabs bearing on steel structure.

Stairs:

- Steel structure with steel pan treads c/w concrete fill

Structure Sizing Guide

Second/Third Floor Slab:

- 300mm Hollow Core Slabs
- 50mm Concrete topping

Steel Beams:

- 12mm Deep For Every 300mm Of Span. Width=1/3 Of Depth

Steel Girders:

- 20mm Deep For Every 300mm Of Span. Width=1/3 Of Depth

Steel Columns:

- Square, Width = Beam Width

COMPETITOR NUMBER: _____

Working Drawings Will Include:
(Drawings to be completed in Metric)

- **Ground & Second (typical) Floor Plans:** (100)
 - Scale 1:100
 - Design structural layout (Girders/beams and columns)
 - Determine interior wall locations for rental units Client would like the most efficient layouts.
 - Ensure all code requirements are considered.
 - Design **BARRIER FREE** washroom layouts:
 - 2 Universal Washroom c/w all applicable turning circles, clear transfer spaces, change table requirements and grab bars.
 - **Include:**
 - Grid lines
 - Dimensions
 - Wall-Type legend
 - Room names
 - Wall Section cross references
 - Applicable notes

- **Wall Sections:**
Ensure sections are at Front Entrance & through Min. (2) two material changes (150)
 - Scale 1:100
 - **Include:**
 - Grid lines
 - Spot elevations
 - Room Names
 - Dimensions & Notes
 - Finishes/Material/Wall Constructions

- **Exterior Elevations (West & South ONLY):** (100)
 - Scale 1:100
 - **Include:**
 - Grid lines
 - Spot Elevations
 - Notes, finishes, materials etc.

- **Stair Sections and Details:** (Draw new U-Shaped stair ONLY) (150)
 - Stair Plans (At Ground Floor & Second Floor) scale 1:50
 - Typical Stair Section scale 1:20
 - Section Details at ground floor connection **and** at typical stair landing.

COMPETITOR NUMBER: _____

- **Details/Enlarged Plans at the following locations:** Scale (designer to establish/set)
 - Ground and Second floor connections
(Section detail – indicate section with callout on wall sections)
 - Typical roof parapet/curb (Roof-to-wall connection)
 - **Enlarged plan** at fire rated garbage chute
- **Addition Details:** Scale (designer to establish/set)
 - Foundation Wall Section detail at Grade.
 - Plan Detail at typical window/door jamb.
- **Include the following:**
 - Grid lines
 - Dimensions
 - Spot Elevations
 - Notes/materials
 - Applicable notes

Layout:

- Use the “D” size border.

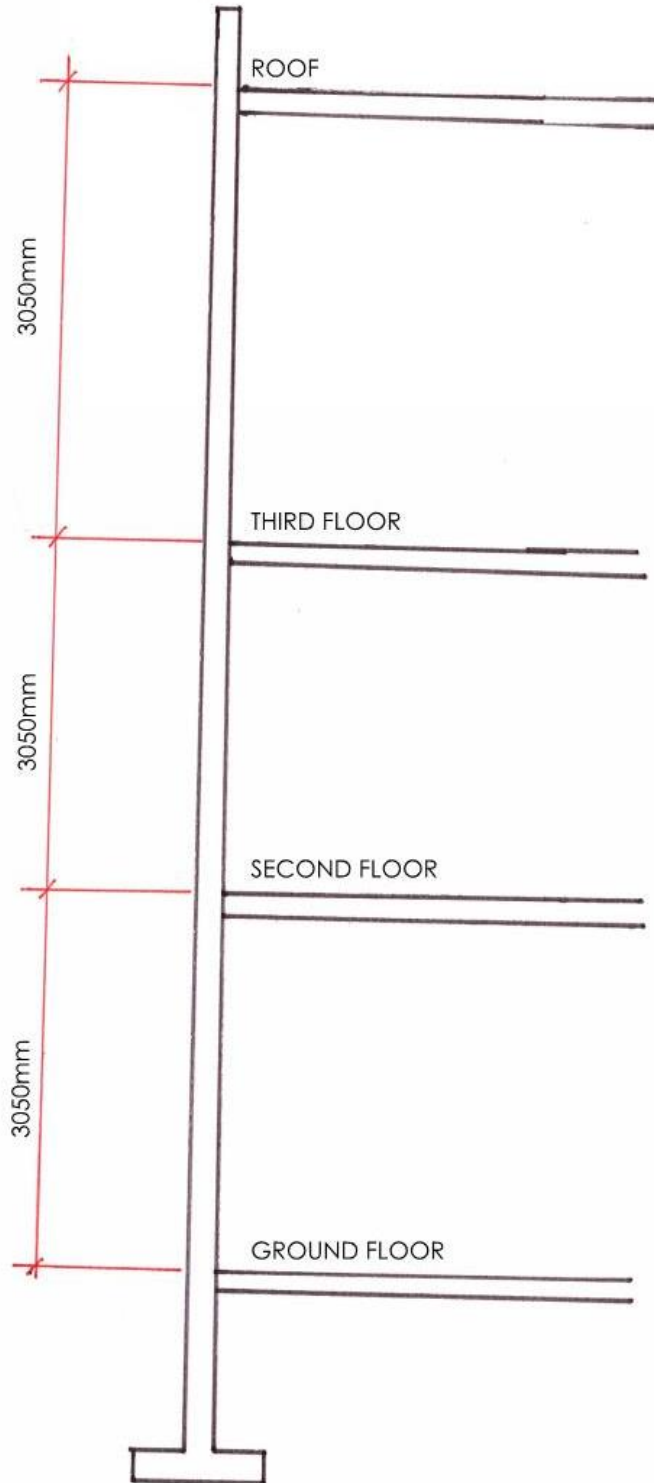
Hand-in Instructions:

- Plot your work and **save drawing files.**
- Turn off your monitor **ONLY**.
- **DO NOT** shut down the CAD or REVIT programs.
- leave all drawings open on taskbar or in a folder on the desktop
- Leave all notes and the test paper at your station.
- Make sure your **COMPETITOR NUMBER** is on all the documents and files.

IDENTIFY YOUR DRAWINGS AND COMPUTER FILES WITH YOUR **COMPETITOR NUMBER ONLY**.
THE USE OF YOUR NAME COULD RESULT IN **DISQUALIFICATION**.

SAVE YOUR WORK!

COMPETITOR NUMBER: _____



TYPICAL SECTIONS
N.T.S.