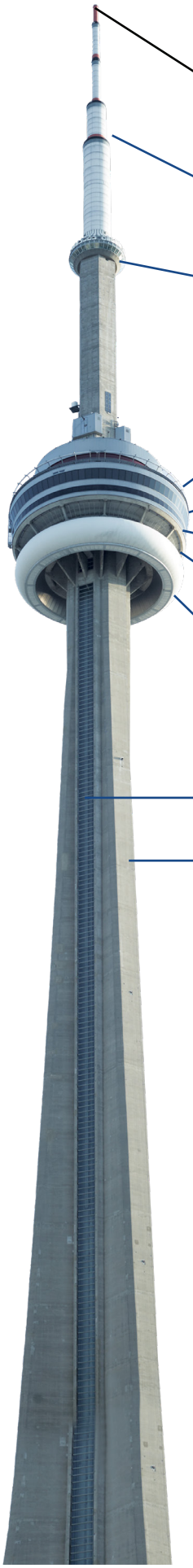
ENGINEER DESIGN BRIEF

Name:

Date:



Full height
553.33m | 1,815ft 5in | 181 storeys

Antenna

The Top
447m | 1,465ft | 147 storeys

EdgeWalk
356m | 1,168ft | 116 storeys

360 Restaurant
351m | 1,151ft | 115 storeys

Main Observation
346m | 1,136ft | 114 storeys

Lower Observation
342m | 1,122ft | 113 storeys

Radome

Elevator Shaft

Tapered Legs

Welcome to the CN Tower!

Your task is to discover the unique features that have made the CN Tower one of the Wonders of the Modern World. With this knowledge you and your team must be able to create a structure that stands just as strong and tall as the CN Tower. You will form teams of 5 that will consist of an Industrial Designer, Architect, Engineer, Builder, and Scientist.

As the ***Engineer***, it is your job to ensure that all designs created are feasible, and that everything built is structurally sound. Once you have completed your research, you can reconvene with the rest of your team members to collaborate on the final design and construction of your own structure.

1. Why was it important to test the forces of nature on the CN Tower before it was built? (wind, lightning, gravity, temperature) How would you do this?

2. Why did the CN Tower need to be the tallest unobstructed building in Toronto?

3. The Radome is made of a Teflon-coated fiberglass membrane. What is housed in the Radome? Why was this material used?

4. The form of a structure is dependent on its function. Explain why is it important to consider the function of an object before developing the design?

5. Which feature of the CN Tower, outside or inside, do you think your project role had the biggest impact on and why?

6. The CN Tower is symmetrical; when standing outside looking at the Tower, regardless of where you are standing, all sides look the same. Explain why symmetry is important to the design and construction of the CN Tower. Tell this from the perspective of your role in the project group. Feel free to draw.

7. Orient yourself using the map below and the view from the top of the CN Tower. The land in this area of Toronto is used for a wide variety of things. Using the list provided, identify each area by placing the appropriate letter on the correct location of the picture.

A. High density housing

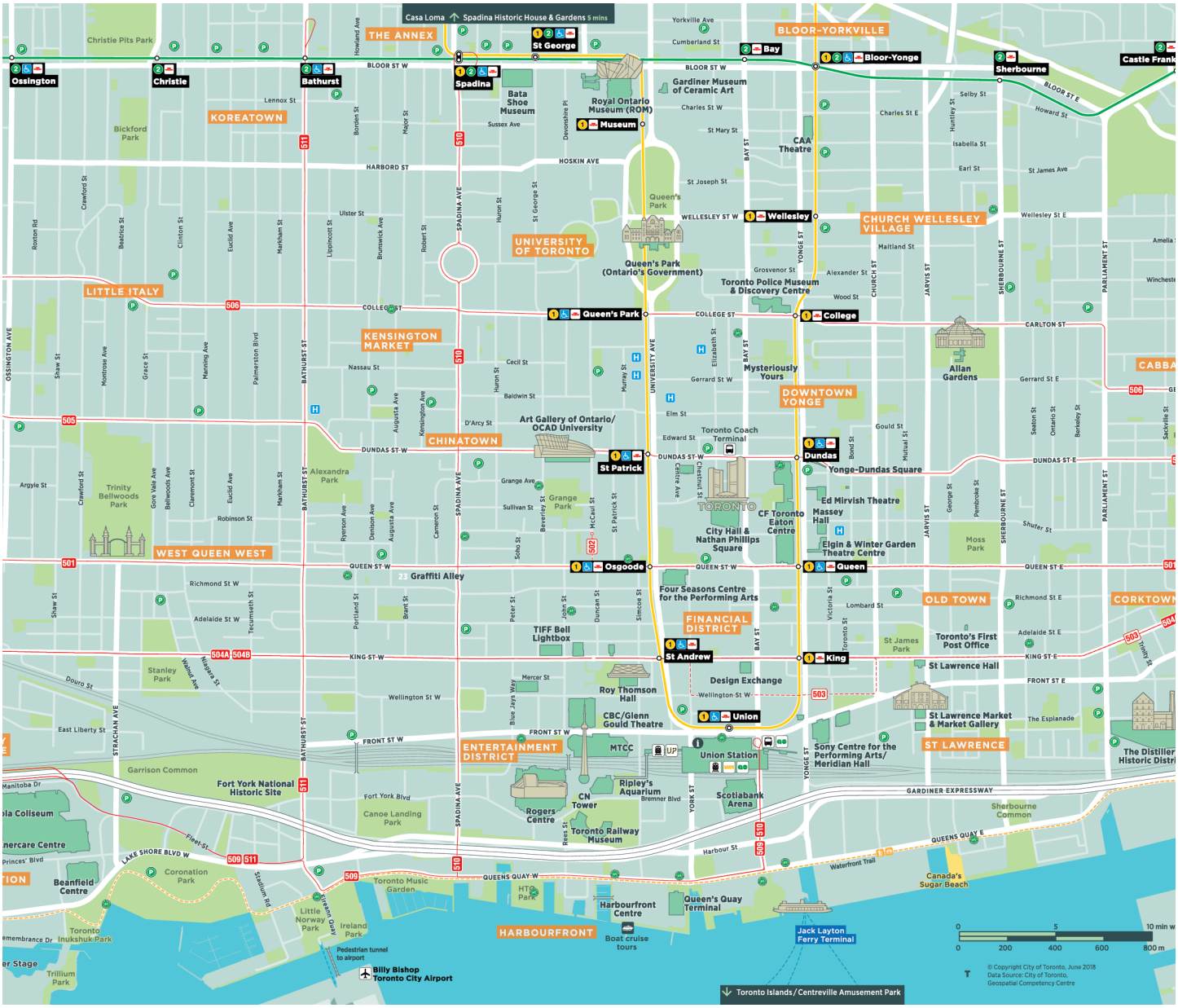
B. Business

C. Entertainment

D. Transportation

E. Housing Community

8. Consider your group's new structure. What would be the ideal location based on its purpose? Indicate that location on the map and describe how it would impact the area around it.



Structures come in many different shapes and sizes, each with its own unique purpose or function. The form of a structure is dependent on its function. Forces acting on the structure and a structures impact on the environment must also be taken into consideration during the planning and design phase. Looking at the city from the top of the CN Tower, identify 3 different types of structure that you can see and complete the chart below.

Type of Structure	**Function**	**Probable forces to be considered**	**Impact on society, environment, economy**	**Form**
Bus	Transporting large number of people in one vehicle	Wind, rain, weight, weight distribution, etc	Less cars on the road means energy conservation, provides public with a means of getting around	Low centre of gravity, long, narrow