

# Modeling the Recovery of Critical Urban Infrastructure

Thesis Project (M.Sc.)

## **Description:**

The function of critical urban infrastructure is under constant threat from natural hazards. When a flood occurs, the infrastructure which we all rely upon for our daily lives – drinking water, electricity, highways, internet, food supply – can come to a complete and abrupt halt. While much work has already been done to estimate the inundation and associated damages resulting from floods, there is less research focused on the recovery of the affected infrastructure. A prototype of a numerical model has already been developed for the purpose of modeling the recovery of residential buildings from flood damages. Through prior work, the data needed to adapt this model to estimate the recovery of other critical infrastructure (e.g. transportation network, electrical grid, water supply and sewer system) has been collected. It will be the goal of this project to apply the collected data in order to setup and run the recovery model for various flood scenarios.

## **Tasks:**

During the course of this project, the following work should be carried out:

- Review and analysis of the data collected from literature review.
- Review of the background material describing the recovery model.
- Development of the model input data.
- Running the model for various flood scenarios.
- Summarizing the results in a final report.

## **Prerequisites:**

The following skills are required for this project:

- General research skills (retrieving literature from databases, reading and analysis of scientific articles, proper citation of all work, etc.).
- Ability to write in a clear and concise manner.
- Prior use of QGIS or ArcMap.

The following skills are not required, but are highly recommended:

- Experience programming in Python.
- Familiarity with inundation models, specifically PDWave.

## **Target Start:**

Summer Semester 2023

## **Contact:**

For more information about this project and related projects, please contact:

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