

## **CIV498 Design Project 2018**

**Project Area: Transportation**

**Project Title: Design of Multi-modal Inter-regional Transportation Corridor**

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**Manager, Transportation System Planning, Region of Peel**

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### **SUMMARY:**

The Greater Golden Horseshoe Corridor that covers the Greater Toronto Area, Hamilton, Waterloo and Niagara Region is one of the fastest growing regions in North America. Over the next few years, the area is evolving from a GTA centric urban centre to a large geographic region with many centres of economic activity, population and employment. Travel demand is increasingly dispersed from these urban and suburban areas. Further population and employment growth in major suburban areas will result in increased demand for both people and goods movement between these growth centres.

The Ministry of Transportation, Ontario (MTO) is currently undertaking the Greater Golden Horseshoe Multi-modal Transportation Plan to meet transportation needs for the horizon year of 2071. The MTO is also considering building High Speed Rail to connect Toronto with Windsor, Ontario in addition to undertaking various aggressive transit/active transportation projects.

The MTO has also recently completed the GTA West Transportation Development Strategy for the GTA West area. The Ministry has also initiated the Niagara GTA West Environmental Study to further connect GTA West to Niagara Region and ultimately to US highways, south of the US/Canada border. The study identifies the need for the development of a new multi-modal transportation corridor. This east-west corridor connects Highway 400 in York Region to Highway 401/407 interchange i-modal Halton Region running through the Region of Peel and then to Highway 401/QEW and ultimately to new mid-peninsula corridor parallel to current QEW. The hydro corridor will also be accommodated within the transportation corridor right-of-way. This presents several opportunities to utilize the corridor for various modes, the infrastructures and how the transportation facilities and services could be integrated with the surrounding infrastructures, community and environment.

The purpose of this design project is to approach the opportunity from a strategic level to plan and design specific elements of this multi-modal and inter-regional transportation corridor. This multi-modal transportation corridor should meet needs of future urban and rural communities with a specific emphasis on accommodating all modes of transportation including cars, trucks, transit and non-motorized modes. The provision of the hydro corridor also presents additional opportunities to accommodate transit and active transportation modes.

Students will be encouraged to develop creative, effective, innovative and sustainable solutions and encourage out of box thinking meeting diverse needs of urban and rural communities while respecting environment, promoting economy and enhancing quality of life of residents, businesses and visitors.

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**TECHNICAL BREADTH****Primary Discipline:**

Building Materials  
Building Science  
Community Development  
Environmental  
Geotechnical  
Structures – Building  
Structures - Bridge  
Transportation (X)

**Secondary Areas:**

|                              |   |                                  |
|------------------------------|---|----------------------------------|
| Building Codes               |   | Groundwater                      |
| X Assessing Alternatives     | X | Infrastructure Planning          |
| Building Science             | X | New Technologies                 |
| Constructability             |   | Project Management               |
| Building Materials           | X | Public Policy                    |
| X Computer Modeling/Drafting |   | Quality Assurance/Control        |
| Construction Management      |   | Resilience                       |
| Durability                   |   | Scheduling/Planning              |
| Energy efficiency            | X | Social/Political/Economic Issues |
| X Environmental Assessment   |   | Structural design                |
| X Environmental Issues       | X | Sustainable design               |
| X Estimating Cost            | X | Systems approach                 |
| Ethics                       | X | Transportation                   |
| Financing                    | X | Urban Planning                   |
| Foundations                  |   | Using analysis software          |
| Geotechnical                 |   | Water Treatment                  |
| GPS                          |   | Other:                           |

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**DELIVERABLES:**

All assignments are team assignments and should include an attribution table listing the contribution of each team member (not included in the page count)

**Interim Deliverables #1: Project Proposal**

The detailed proposal should include background, project scope, goals and objectives of the design, relationships to the Places to Grow, MTO initiatives including the GTA West Transportation Strategy, Metrolinx RTP and Region's TMP. The description should include draft work plan, resources needed and timeline to complete the milestones.

**Interim Deliverables # 2: Project Methodology**

This deliverable will provide a detailed study methodology, elaborating upon the preliminary methodology provided in the proposal. The methodology should include description of data and software packages that team will need access to. The methodology will also provide details on the process (e.g. environmental assessment process) and plans for public/agency consultations.

**Interim Oral Presentation (20 minutes)**

Based on your proposal and detailed methodology, you will prepare a Power Point presentation to be delivered to the rest of the class, along with any preliminary results.

**Interim Deliverables # 3: Preliminary Analysis Report**

This report summarizes your preliminary analysis results. Depending upon your project, this report

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will include a detailed justification of your selection including supporting modeling analysis and results and a description of how the infrastructure will integrate with other existing transportation networks

**Final Oral Presentation (20 minutes)**

The oral presentation should provide information on: overview of the project, goals, objectives and purpose, background including review of best practices, methodology, findings, conclusions and recommendations.

**Final Report Due date:**

A written final report documenting your final design and the process/analysis leading to the final design will be submitted. For each project, students will prepare project report that outlines: overview of the project, goals, objectives and purpose, literature review – best practices, methodology or process, technical analysis and discussions, findings, implementation plan, conclusions and recommendations.

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**GRADING:** The evaluations will be conducted as under:

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|---|------------|
| Studio Session Participation:                 | 10%        |
| Interim Deliverables (report, memos...etc.) : | 30%        |
| Interim Presentation:                         | 10%        |
| Final Report:                                 | 40%        |
| <u>Final Presentation:</u>                    | <u>10%</u> |
|   | 100%       |

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