



Proposal for

**2ND CONCESSION NORTH
REHABILITATION
SOUTH RIVERVIEW TO COUNTY
ROAD 10
RFP No. T04-2022-002**

Submitted by:

HRYCAY Consulting Engineers Inc.
1725 North Talbot Road, Oldcastle, ON N9G 0C2

Submitted to:

Corporation of the Town of Amherstburg

March 24, 2022

24 March 2022

Via: Online Submission

The Town of Amherstburg
Town Hall – Upper Level
271 Sandwich Street South
Amherstburg, Ontario N9V 2A5

Attention: Clerks Department

**Request for Proposal for 2nd Concession North Rehabilitation
Engineering Services
T04-2022-002**

HRYCAY Consulting Engineers Inc. (HCEI) is pleased to submit to the Town of Amherstburg our Proposal for the 2nd Concession North Rehabilitation Engineering Services, RFP No. T04-2022-002.

As requested in the Request for Proposal, a digital copy of our Technical Proposal, including Acknowledgement If Only One Proposal Is Received, are provided in the enclosed submission. Our engineering fee estimate and consultant hourly rates have been provided under separate submission.

We trust you will find our proposal to your satisfaction. However, if you require further elaboration on any aspect of our proposed scope of services, kindly contact us at your convenience to discuss these matters.

Yours truly,

HRYCAY Consulting Engineers, Inc.



Justine Arbour, B.A.Sc., M.E.M. P.Eng
Civil Engineering Manager

JEA/ams
Encl.

Acknowledgement If Only One Proposal Is Received

I/we, the undersigned, hereby acknowledge and confirm on behalf of

HRYCAY Consulting Engineers Inc.

That in the event that of only one proposal having been received by the town of Amherstburg after this call for proposals, the town reserves the right to open our proposal, or return the proposal unopened.

Should the town choose to open our proposal, being the lone response after this call for proposals, I/we understand that the town reserves the right to accept our proposal, negotiate the terms contained our proposal, or reject our proposal altogether, without being bound to award us with a contract for the work.

The town is not responsible to us for any liabilities, expenses, loss or damage subsequent to or by reason of the acceptance or non-acceptance by the town of any proposal.

Signature:

A handwritten signature in black ink, appearing to be 'J. Arbo', is written over a horizontal line.

In the absence of a corporate seal, please acknowledge the following:

"The signature of the person applied to this proposal document is authorized to act on behalf of the Proponent and is legally able to bind the company."

 *Signatory Initials*

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Acknowledgement if Only One Proposal is Received

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1.0 Company Overview & Experience

1.1 Company Overview

HRYCAY Consulting Engineers Inc. (HCEI) is pleased to submit this proposal to The Corporation of the Town of Amherstburg, Ontario for the Engineering Services for the rehabilitation of 2nd Concession Road North from South Riverview Drive to County Road 10, RFP T04-2022-002. The RFP Documents were obtained from the Town by Ms. Justine Arbour, HCEI on March 8th, 2022. No addenda were issued at the time of submission.

HCEI is a professional consulting engineering firm, providing services in the areas of civil and municipal design, transportation safety, motor vehicle accident investigation, and engineering analysis of motor vehicle accidents. HCEI is an Ontario Corporation with locations in Windsor and Guelph, Ontario, and Dartmouth, Nova Scotia, and is a member company of The Becker Engineering Group Inc.

We are currently conducting or have completed motor vehicle accident investigation and engineering analysis on behalf of the Municipality of Chatham-Kent, the Counties of Haldimand, Lambton, Essex, Middlesex, and Elgin / Malahide, the Cities of Windsor, Barrie, Ottawa, Toronto, London, Kawartha Lakes and Welland, the Townships of Amaranth, King, Innisfil, and Dawn-Euphemia, the Town of East Gwillimbury, the Ontario Provincial Police, Durham Regional Police and Brantford Police. These assignments have involved the study and analysis of geometric design, driver sightlines, speed zones, illumination, signage, pavement marking, roadside features and roadside safety as contributing factors.

In addition to our motor vehicle accident investigation services, HCEI provides engineering design, contract administration and construction inspection services for municipal infrastructure projects in the City of Windsor, the Town of Amherstburg, County of Essex and the Municipality of Chatham-Kent.

Specifically, we will:

- Commit an experienced and qualified professional team. Our team includes staff that have successfully managed municipal reconstruction projects.
- Work proactively to identify issues and potential solutions from the project outset to minimize impact on schedule and budget.
- Apply best industry practices for project management, design and QC.
- Seek design solutions that minimize environmental impact, community disruption and cost but at the same time, provide enhanced municipal infrastructure.
- Minimize construction impact. We will develop a “roadmap” to effectively manage construction and traffic, minimize congestion and disruption to residents and the road users and, at the same time, mitigate environmental impacts.

HCEI's home office is located in Windsor, Ontario, with offices located in Guelph, Ontario and Dartmouth, Nova Scotia.

We are professionally licensed and insured to provide you with the specialized engineering services you require for this project.

1.2 Corporate Certificates and Accreditation

HCEI is a member of the Consulting Engineers of Ontario and holds a Certificate of Authorization from the Professional Engineers Ontario (PEO) as well as a Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Alberta (APEGA) and a Certificate of Compliance from Engineers Nova Scotia (ENS).

1.3 Professional Liability Insurance

HCEI has Commercial General Liability Insurance in an amount of five million dollars (\$5,000,000) and Professional Liability Insurance in an amount of three million dollars (\$3,000,000). Certificates of Insurance are available upon request.

1.4 Company Policies

1.4.1 Health & Safety Policy

HCEI is committed to the Health and Safety of its workers and has an active Health and Safety Program that is supported in its management processes. A corporate Health and Safety Plan is in place at HCEI and is administered by our qualified Health and Safety coordinator. HCEI staff have WHMIS training and designated individuals have General First Aid training.

All of HCEI field staff receive training and certification to meet applicable OHSA requirements for being involved in the various construction projects we administer and inspect, including Due Diligence and Risk Assessments (Safety Plans), Construction Safety and Trenching, Confined Space Entry or Awareness, Fall Restriction and Fall Arrest etc. Experience and familiarity with the OHSA Construction Regulations gives us the ability to advise our clients if we see risky or inappropriate practices on a construction site so that communication and notification steps can be taken to help ensure compliance.

HCEI recognizes its legal responsibility to ensure compliance with statutory regulations governing health and safety at work. HCEI's Health and Safety Policy states that primary attention is to be given to safety considerations in all work performed. This involves provision of safe working conditions, development and use of safe working procedures and proper training programs.

This objective is paramount in the minds of management and goes hand in hand with a sincere recognition of our responsibility. No job is to be regarded so urgent that time cannot be taken to do it in a safe manner. The welfare of the individual is our greatest concern.

It is recognized that a safe environment can be established and sustained only through a united effort by all employees and the assistance of each person is solicited.

Each level of management is responsible to their superior for activities and results in Accident Prevention, has authority to correct, instruct and determine courses of action, and has accountability which will be constantly measured to ensure compliance with this policy.

It is the responsibility of the constructor and sub-contractors to implement and enforce the Health and Safety Program to ensure the identification and control of hazards and legislative compliance.

HCEI endeavours to take every possible measure to prevent personal injury by providing adequate facilities, full maintenance of all company equipment and the necessary instruction and training of staff on Health and Safety issues.

1.4.2 Quality Control Program

Mistakes can have a costly effect on a project's overall cost and cause delays in schedules. HCEI has developed a Quality Control process that identifies and corrects mistakes before they become serious cost and/or schedule implications to the project. A generic quality control plan for projects has been prepared to guide HCEI staff through the quality control checks required at key milestones throughout a project. The basic principles of the Quality Control Program are:

- Each member of the team is responsible for the quality of their work. However, the work is verified internally by others, under the direction of the Project Manager;
- As each element or task is completed, it is submitted to a checker to ensure compliance;
- The results of all quality control checks and reviews are documented and recorded in a traceable manner. This includes corrective and/or explanatory reports in the case of non-conformity. Quality Control audits are also conducted to ensure process and documentation compliance.

The entire Quality Control process is summarized in a series of checklists noting tasks, who completed the work, who checked the work and the corresponding dates for when the work was completed and checked. The checklists correspond with various milestones of the work (e.g. 50%, 80% and 100% submissions).

Through this process, HCEI is able to carry out and verify the work in each phase of the project before progressing to subsequent phases. This minimizes the occasion for errors to be carried through the entire design process.

2.0 Declaration of Conflict

HRYCAY Consulting Engineers Inc. (HCEI) hereby declares that we have no conflict of interest related to any person(s) employed by the Town in any capacity that:

- Has a direct or indirect financial interest in the award of the Contract to HCEI;
- Is currently employed by, or is a consultant to or under contract to HCEI;
- Is negotiating or has an arrangement concerning future employment or contracting with HCEI; and/or
- Has an ownership interest in, or is an officer or director of HCEI.

3.0 Primary Contact Person

The Primary Contact Person for this proposal is Mr. Scott Rahm, P.Eng. He may be reached at our Windsor office located at 1725 North Talbot Road, via telephone (519) 737-7234 or by e-mail srahm@hcei.ca

4.0 Project Understanding & Work Plan

4.1 Project Understanding

We have reviewed the Request for Proposal and supporting documents supplied by the Town. Our proposal is based on providing all of the engineering services required to complete the Scope of Work set out in the Terms of Reference in the Town's RFP documents. We understand the unique challenges posed by this assignment which are summarized below.

Rehabilitation of 2nd Concession Road North

2nd Concession Road North between South Riverview Drive and County Road 10 is a two-lane rural road that is approximately 4.0 kilometers long with an average lane width of 3.2 to 3.5 meters. Within the project limits, it is bounded by South Riverview Drive on the north end and County Road 10 at the south end. There is one other intersection with stop-control on the minor road: North Side Road. 2nd Concession Road North has narrow gravel to non-existent shoulders and roadside drainage ditches and swales. The adjacent lands are a mixture of agricultural and residential land uses.

As per the RFP, the reconstruction works are to include, at a minimum, the following:

- Standard width lanes with a rural cross-section for vehicle traffic on 2nd Concession Road North from South Riverview Drive to County Road 10;
- Replacement of driveway approaches within municipal boulevards, as required by condition of grading, to Town standards;
- Boulevard preservation, grading, and restoration, as required

Consideration shall be given to the following new construction, dependent on site investigations, available right-of-way, and budgetary constraints:

- Partially or fully paved shoulders to facilitate active transportation use, where possible; and
- Associated drainage improvements resulting from above provisional road widening.

HCEI reviewed the existing topography of 2nd Concession North and noted the presence of the following drainage structures:

- Various culverts along 2nd Concession Road N such as Shipman Drain, Laura Meloche Drain, Wilfred Bondy Drain, Matte Benateau Drain and West Ouellette Drain;
- Bridge structure approximately 520m south of South Riverview Drive over the Long Marsh Drain; and,
- 2nd Concession Road Drain North.

It is understood that construction is expected to commence in 2023, and that all work must be completed in 2023. Our schedule of work includes the submission of a detailed cost estimate to the Town as part of Phase 3 (80% submission milestone) to be submitted in 2022. HCEI proposes a multi-phase work plan, with each step building on the work in the previous step. This structured approach will keep the project on schedule and ensure Town Staff involvement throughout the duration of the work. A breakdown of each phase with deliverables and objectives is as follows:

4.1.1 Phase 1: Project Initiation and Background Data Review

Objective: Meet with the Town to confirm project's scope, schedule and deliverables. Collect and review background information. Establish lines of communication for the project. Visit site to obtain detailed assessment and evaluation of the roadway and its components; compile topographic information; prepare high-level budget estimate.

Deliverables: *Engineering agreement, updated schedule, confirmation of key milestone dates and deliverables, review background information, confirmation of the Town's expectations in the project and gap analysis of any further information that may be required to complete the design, notify regulatory agencies/utilities of proposed works, carry out field surveys and inspections, initiate additional geotechnical investigations as required, prepare base drawings, and submit high-level budget estimate.*

The purpose of the project initiation phase is to begin the project with a project initiation meeting to confirm the scope and schedule, assemble background information, establish communication protocol, and most importantly, confirm the Town's expectations in key aspects of the project.

A key element of this phase will be to contact agencies/utility companies, conduct field surveys and engineering inspections and prepare base plans. As per the RFP documents, an OLS firm will be retained to establish site control and to ensure that the project and corresponding as-built submission will be in UTM coordinates and NAD83 elevation datum. HCEI will solicit quotes from no fewer than three (3) qualified OLS firms to perform this work.

It is HCEI's experience that collecting pre-construction topographic information is vital in preserving or replacing as many affected features as possible. As a result, pertinent information to be collected within the ROW includes the location of all utilities; property lines; driveway materials, locations and elevations; roadway alignment and elevation at the centerline and edge of pavement; elevation of the boulevard; location and depth of all swales and roadside ditches; location of all drainage structures; landscaping locations; and the location of any objects (including hydro poles, bell pedestals, mailboxes, fire hydrants, trees, signs, property bars and any other objects identified). All relevant information will be reviewed and incorporated into the design of the vertical and horizontal layout of the proposed roadway. Initial contact with key stakeholders (e.g. property owners on 2nd Concession North) will occur at this stage to begin the consultation process and to ensure that stakeholders are involved in each step of design from the very beginning.

At this stage, HCEI will prepare a high-level cost estimate for construction, based on our site reviews and expected reconstruction works, for the Town's budgetary needs.

Resources/Input Required: Town Staff, HCEI Project Team, Regulatory Agencies, Local Utilities, Stakeholders.

Phase Completion: May 2022

4.1.2 Phase 2: Preliminary Design

Objective: Successfully complete the preliminary design and cost estimates. Coordinate with local Utility Agencies. Coordinate with Regulatory Agencies. Consult with Stakeholders

Deliverables: *Preliminary design (50% submission) in contract drawing format for the proposed roadway and preliminary cost estimates.*

The intention of this phase is to develop and assess the preliminary design with consideration given to cost, constructability, lifecycle analysis and required agency approvals. HCEI will identify any locations where additional subsurface information is required, and coordinate as needed with subsurface investigation firms to perform locates to confirm potential conflicts.

The preliminary design concepts will be prepared and confirmed with the Town, and the preliminary design (50% submission package) will be submitted to the Town for review. As part of this preliminary design phase, various regulatory agencies (e.g. MNRF, MOECP, DFO and ERCA) will be contacted to discuss the proposed designs and to begin the approval process for each agency, if required. Early consultation with these agencies is vital for determining the extent of environmental impacts as it relates to the watershed, wildlife and aquatic species which are involved in this project, discussed further in Section 4.2 Design Issues. HCEI will liaise with environmental authorities on an ongoing basis throughout the project to ensure that proper protection and mitigation measures are incorporated in the design phase and correctly carried out during construction.

This phase will also involve continued communication with local utility agencies, who would have been notified of the proposed works during the project initiation and background data review phase of the project. At the conclusion of this phase, sufficient design will have been completed to determine the utilities that are in conflict and to devise possible relocation strategies. HCEI will coordinate with these affected utilities to determine relocation requirements and associated costs.

This Phase of the assignment will include one progress meeting after the 50% submission.

Resources/Input Required: Town Staff, Regulatory Agencies, Local Utilities, HCEI Project Team

Phase Completion: July 2022

4.1.3 Phase 3: Detailed and Final Design

Objective: Prepare detailed designs, contract package and project costs for the Town and obtain agency approvals.

Deliverables: *Prepare detailed design package (80% submission), complete tender package (90% submission) and complete final design package (100%) for the Town. Prepare, submit and assist the Town in obtaining all agency approvals. Assess and arrange for all utility relocations necessary to accommodate the project.*

This phase will consist of three (3) submissions (i.e. 80%, 90% and 100% detailed designs) which includes the preparation of the contract drawings, contract documents, traffic management plans, specifications, tender items and detailed cost estimates for the work. Also included is the preparation and submission of all agency approval applications as required and arranging all utility relocations required to accommodate the work.

The 80% submission package will include the 80% milestone drawing package, including the Base, Design, Key Plan and Plan and Profile drawings, as well as the preliminary cost estimate prepared in Microsoft Excel. The cost estimate will include an estimated breakdown of the quantity, unit, unit rate, and total cost for each contract item, subject to change with more information and design changes in subsequent submissions.

The 90% tender package submission will include the finalized drawing package which will include the revised Base, Design, Key Plan and Plan and Profile drawings, as well as Removals, Typical Cross Sections, Details, Pavement Markings and Signage. This submission will also include the revised contract documents and specifications and itemized cost estimate, each revised based on the Town's comments from the 80% submission.

This phase of the assignment will include two (2) progress meeting after the 80% and 90% submissions.

Resources/Input Required: Town Staff, Approval Agencies, Utility Companies, HCEI Project Team

Phase Completion: September 2022 (80% Submission)
November 2022 (90% Submission)
December 2022 (100% Submission)

4.1.4 Phase 4: Tendering Services

Objective: Submit tender documents to the Town; respond to questions and issue addenda; attend tender opening; review tender submissions and provide recommendation for tender award.

Deliverables: Tender documents (electronic & hard copies); addenda; bid comparison spreadsheet; tender award recommendation.

Once given approval to proceed, the tender documents will be prepared and submitted to the Town and the tender will be advertised through bidsandtenders.com. During the tender period, HCEI will provide technical support to questions from bidders and the Town regarding the contract and issue addenda as required. Upon closing of the tender period, HCEI will review the submitted bids, provide a bid comparison spreadsheet, and recommend award to the Town. Recommendation of award will be provided in the form of a letter, with HCEI summarizing key findings, any significant discrepancies identified between tenders, irregularities in tenders, and a summary of tenderer experience and capability.

Resources/Input Required: Town Staff, HCEI Project Team

Phase Completion: March 2023

4.1.5 Phase 5: Contract Administration & Construction Inspection

Objective: Provide ongoing Contract Administration and Construction Inspection services throughout the duration of construction.

Deliverables: *Regular Construction Progress Meeting reports, Change Order Documentation, Payment Certificates, Substantial Completion Walkthrough & Deficiency Lists, Certificate of Substantial Completion, As-Built Drawings and Certificate of Completion.*

For this phase, HCEI will provide Construction Administration and Construction Inspection services during construction activities and throughout the warranty period. As per the Terms of Reference, 800 total hours of on-site inspection time by a qualified site inspector have been assumed.

These services include review of all shop drawings and mix designs, preparation of inspection reports and payment certificates, review of traffic and pedestrian control plans, material testing and survey layout, confirmation of all quantities and overseeing construction activities to ensure conformance with the Contract Documents and Drawings.

HCEI will also organize and facilitate a pre-construction kick-off meeting and regular construction progress meetings as required, prepare documentation of all meeting minutes and change orders, keep a detailed construction inspection diary, order and observe field tests as necessary, perform a Substantial Completion Walkthrough, prepare deficiency lists prior to issuing a Certificate of Substantial Completion, prepare As-Built Drawings and issue a final Certificate of Completion. To ensure unacceptable aspects of the work have been addressed, a follow-up final inspection before the expiration of the maintenance period (typically one-year) is included.

A final "As-Built" package will be provided within 45 days of substantial completion of the contracted works which will include:

- One (1) full-size set of drawings
- Electronic in PDF format for full-size drawings
- Electronic AutoCAD drawings in .dwg format. Drawings will be AutoCAD Lite compatible
- Electronic files will be submitted on a USB memory stick and will not span multiple USB's. USB's will be labeled identifying the project name, the types of drawings contained on the stick, the engineer's name, date of creation or submittal, and the system used (i.e. UTM NAD83, etc.). File types (PDFs, AutoCAD files, etc. will be separated on the disc in separate file folders clearly indicating the contents.

Resources/Input Required: Town, Contractor, HCEI Project Team

Phase Completion: Construction: Summer 2023
Warranty Period Complete: Summer 2024

4.1.6 Phase 6: Quality Control & Project Management

Objective: Implement and carry out a comprehensive quality control and project management program through all phases of the project in order to deliver the finished project on-time and within budget.

Deliverables: HCEI team project meetings; progress meetings with Town Staff; Quality Control Plan submissions at key milestones.

This Phase is considered to be on-going throughout all Phases of the project. This program includes regularly scheduled team project meetings in addition to progress meetings with Municipal Staff, implementation of HCEI's Quality Control Plan with tracked design checkpoints and milestones, and an internal peer review process of all engineering documents and design drawings. The internal peer review will include quality control checks of each milestone drawing package and contract document set prior to submission to the Municipality.

Resources/Input Required: HCEI Project Team

Phase Completion: Ongoing throughout project

4.2 Design Issues

The preceding section provided an overview of the objectives and deliverables for each phase of the project. The RFP document specifies the designs required, standards to be followed and deliverables to be provided. In the interest of brevity, these are not repeated here. The following section provides specific details of key aspects of the designs required and outlines our work plan for the project:

Topographic & Legal Survey

HCEI will obtain digital planimetric information and property data files that are available from the Town. This information will be used along with legal and topographic surveys to generate base plan property lines for the project. Experienced HCEI field staff will collect topographic data within the ROW to establish existing conditions and assist in developing the rehabilitation recommendations and design. It is our understanding that a legal OLS survey is required for this project. An OLS firm will be retained to establish site control and to ensure that the project and corresponding as-built submission will be in UTM coordinates and NAD83 elevation datum. HCEI will solicit quotes from no fewer than three (3) qualified OLS firms to perform this work. The cost of coordinating and completing a legal survey has been included in our fee estimation.

Overhead Conflicts

2nd Concession North has many mature trees within the public right-of-way, from South Riverview Drive to approximately 284m south of the South Riverview Drive. In addition, there is overhead hydro along the west side of 2nd Concession Road North until approximately 310m south of South Riverview Drive where the overhead hydro switches to the east side of 2nd Concession Road North. The hydro poles along the east side of 2nd Concession Road North continues until approximately 358m south of North Side Road, the overhead hydro switches to the west side of 2nd Concession Road North until County Road 10.

These overhead trees and utilities will pose as obstructions for construction equipment during excavations and material placement. HCEI will take into consideration any potential overhead conflicts during the design phases of the project, including the need for any tree removals or utility relocations, in order to minimize any delays during construction.

Environmental Assessment

The Municipal Engineers Association (MEA) *Class Environmental Assessment* (EA) (October 2000, as amended 2007, 2011 & 2015) process applies to municipal infrastructure projects including road rehabilitation and reconstruction. Since the reconstruction of 2nd Concession N will preserve the existing lane widths and lane configurations, it is anticipated that the works are subject to a Schedule A+ EA.

Since 2nd Concession North is intended to be reconstructed essentially for the same purpose, use, capacity and generally at the same location, and since any provisional paved shoulder facilities will be constructed within the existing right-of-way, it appears to be a Schedule A+ project. Based on past projects and our review of the MEA Class EA document, a road project may still retain a Schedule A+ status even if additional property is required for right of way widening, provided that the same purpose, use, and capacity of the road is maintained. Further, if the road reconstruction is intended to bring the road to minimum municipal standards, these undertakings typically are Schedule A+ projects as well.

According to the RFP documents, this project does not require a public notification and consultation process, and the overall environmental impacts are not considered significantly adverse as to warrant a Schedule B EA. Additionally, a Schedule A+ EA has the benefit of not being subject to a Part II Order (a “bump up” request). Due to the Town’s requirement for all construction to be completed in 2023, approaching the project as a Schedule A+ EA will allow the project team to complete the design process in an expedient manner.

The categorization of an undertaking as a Schedule A+ project does not relieve the proponent from undertaking other necessary studies or obtaining other agency approvals that the undertaking may require. Some approval agencies may recommend that certain additional studies be carried, regardless of the EA Schedule. Further, HCEI suggests that the need for approvals does not directly determine the appropriate Class EA Schedule.

HCEI anticipates the following will be key environmental issues that will need to be addressed, no matter what Class EA Schedule the undertaking falls under. These issues are:

- ERCA mapping notes that approximately 520m south of South Riverview Drive on 2nd Concession North lies within the 1:100-year flood limits for Long Marsh Drain and subwatershed of the Canard River. Consultation with MNRF and ERCA will be required should the proposed undertaking impact the subwatershed system.
- Wetlands: ERCA mapping indicates that approximately 520m south of South Riverview Drive on 2nd Concession North lies within provincially signification wetlands. Similar to above, consultation with MNRF and ERCA will be required should the proposed undertaking impact on the wetlands.
- Area of Natural and Scientific Interest (ANSI): ERCA mapping indicates that approximately 520m south of South Riverview Drive on 2nd Concession North lies within an ANSI. Similar to above, consultation with MNRF and ERCA will be required should the proposed undertaking impact on the ANSI.

- Environmentally Significant Area (ESA) / Significant Valley Land (SVL): ERCA mapping shows that ESA and SVL limits follow relatively the same boundary as the ANSI. Consultation with MNRF and ERCA will be necessary at the identified locations to ensure that the reconstruction works do not negatively impact ESA and SVL areas.
- Habitats: According to the DFO mapping for aquatic species at risk, 2nd Concession North has areas that are identified as a critical habitat for fish species classified as Threatened, and species or potential species of fish and mussels classified as Threatened, Special Concern and Endangered. These areas are largely concentrated where the Long Marsh Drain intersects 2nd Concession Road North. The remainder of the adjacent vegetation is comprised of open agriculture areas, manicured anthropogenic land use areas (i.e., lawns), and/or low-density residential areas and are not anticipated to be areas of concern. Consultation with MNR and ERCA will be necessary to mitigate impacts to species affected by this work.

All of the above issues need to be considered in evaluating the design alternatives for the proposed road improvements. Early consultation with ERCA, MNRF and DFO is vital for determining the extent of environmental impacts as it relates to the watershed, wildlife and aquatic species. HCEI will liaise with environmental authorities on an ongoing basis throughout the project to ensure that proper protection and mitigation measures are incorporated in the design phase and correctly carried out during construction.

Schedule A+ Approach

Based on the anticipated scope of work for the roadway improvements, a Schedule A+ project designation is applicable provided the preferred alternative for improvement will not represent a substantial change in the location of the facility and is for the same purpose, use and capacity. The following outlines the anticipated tasks associated with the Schedule A+ project.

Task 1 – Background Review – HCEI will carry out a background review and initiate other studies as identified in this proposal in order to develop a position on the appropriate Class EA schedule and to initiate agency approvals.

Task 2 – External Agency Contact – Preliminary contact with relevant external review agencies will be initiated. Appropriate agencies are anticipated to include, but are not limited to, the Essex Region Conservation Authority (ERCA), Ministry of Northern Development, Mines, Natural Resources and Forestry (MNRF), Department of Fisheries and Oceans (DFO) and any other agencies, as warranted, to obtain technical approvals as part of the final detailed design process.

ERCA

As noted earlier, a portion of 2nd Concession North is located within the ERCA regulated limit of the Canard River. The following anticipated project activities require approval from ERCA if conducted within the conservation authority's regulated areas:

- site grading;
- the temporary or permanent placing, dumping or removal of any material originating on the site or elsewhere; and
- changing or interfering with a wetland.

Based on our site review of the project, the above noted activities are anticipated to be minimal/non-existent within these ERCA regulated lands, but will still require HCEI assessment and ERCA review. Consultation with ERCA is especially significant if the chosen design option includes any changes to the overall road elevations in order to mitigate detrimental impacts to drainage patterns within the regulated limits.

Task 3 – Site Characterization – The properties adjacent to the project contain environmentally sensitive features and species. A preliminary search of ERCA, MNRF and DFO records indicates the presence of the following environmental features within the vicinity of the project areas:

- regulated limit (floodplain);
- environmentally significant areas;
- significant valley land;
- provincially significant wetlands; and,
- habitats associated with species at risk.

Although not identified within the Terms of Reference, HCEI respectfully suggests that additional assessments as described below, may be required as part of the permitting and approvals process during the detailed design of the project. HCEI has not made allowances in our fee estimate for this work, but would be happy to coordinate these works with qualified ecologists to complete the studies noted below.

Based on the scope of work and potential impact to surrounding features and in order to obtain technical approvals, HCEI anticipates the following studies may be required:

- Environmental Existing Conditions and Impact Assessment – to determine the presence of, and potential impact to wetlands, aquatic habitat, sensitive species including wildlife (snakes, amphibians, deer, birds, etc.), vegetation communities and related habitat within the study area. The study will consist of a desktop review and field assessment of environmental features and the potential impacts associated with the proposed works and consider mitigation measures for any impacts.

Task 4 – Public Notice – After consultation with external agencies and in conjunction with the engineering design, HCEI will recommend to the Town the appropriate Class EA Schedule for this project and posting of the appropriate public notice. Assuming that the project will be a Schedule A+ project, the project is pre-approved, but the public is to be advised prior to project implementation. The manner in which the public is to be informed is to be determined by the Town of Amherstburg. HCEI respectfully suggests a notice to affected residents and stakeholders be provided via hand-delivered letters. The public retains the opportunity to comment on the project through contact information contained in the notice. At the Town's discretion, a Public Information Centre (PIC) may be held to maintain communication with the public in a proactive approach.

Schedule B Approach

If it is deemed that the project should be completed as a Schedule B Municipal Class EA, based on the results of the preliminary design and defining the scope of work for detailed design, HCEI will complete all additional works associated with undertaking a Schedule B Class EA. Phase 1 of the EA process will have generally already been completed in that the problem has been identified, as improvements are required. Phase 2 of the EA process will include the following:

- Issue notice of study commencement as the first mandatory point of contact with the public, agencies and stakeholders. The notice of study commencement will be distributed to relevant agencies, aboriginal groups and stakeholders as well as published in two editions of the local paper.
- Confirm the preferred solution by identifying alternative solutions to the problem and evaluating the alternatives against the existing environment in consideration of agency and public review and input.
- Develop a Project File Report to document the decision process.
- Issue a notice of study completion, as the second mandatory point of contact, to relevant review agencies/stakeholders and the public. A public and agency/stakeholder review period of 30 calendar days will follow the notice prior to development of the project and detailed design.

Should the project be completed as a Schedule B, the schedule for the EA task is anticipated to be extended by approximately 4 – 8 weeks. However, it is anticipated that the time required to complete the Schedule B EA can be accommodated within the overall project schedule, assuming minimal public comment and agency concerns.

Excess Soils Management

Ontario's new On-Site and Excess Soil Management Regulation (O. Reg. 406/19) made under the Environmental Protection Act, lays down a framework for the better management and reuse of excess soils excavated from a project. As was provided in the RFP, a geotechnical report was prepared in 2017 by Amec Foster Wheeler (now known as Wood PLC) for this length of 2nd Concession Road North. The information provided in this report will be used for the design of the new roadway, but a geotechnical firm will still need to be retained to determine the classification of the existing material to be excavated. Recommendations will be made based on this testing to determine whether the material can be reused on site, repurposed off site or taken to a landfill as unusable material.

As indicated in the RFP, all costs associated with developing, implementing and coordinating of the excess soil management plan shall be included in the Financial Proposal. HCEI shall develop an Excess Soils strategy to reduce the quantities generated, and if required, for the re-use of material on-site. From recent experience with this regulation, HCEI shall including wording in the contract documents to specify that material deemed reusable in accordance with the regulation shall be taken to a certified facility for disposal.

Design Criteria

HCEI shall be responsible for the implementation and proper application of current design manuals, reference materials and resources to carry out a design in accordance with all relevant and current design standards. In conjunction with the Town of Amherstburg Development Standards Manual, HCEI will prepare a design criteria (DC) memo for this assignment. HCEI believes that a design criterion (DC) formally prepared by the consultant and approved by the Town aids in clearly defining the design principles and required standards to be used for a project. **Appendix C** contains a generic design criteria template HCEI has adopted, based on those used by other road authorities to describe the various design elements and standards for a project.

For this project, HCEI proposes to provide a draft DC prior to the preliminary design submission for consideration by the Town. The draft DC will assist the Town in reviewing the overall design principles proposed for the project. However, final approval will not be sought from the Town at the conceptual design stage.

The formal DC will be submitted at the 50% design submission, preliminary design phase. It is expected that minor revisions will occur between the conceptual design and preliminary design and for that reason, formal approval of the DC will not be sought at the conceptual design submission. HCEI believes that the approved DC is a single most important document describing the design and the various design elements.

Design Meetings

HCEI will meet with the Town on a regular basis, to ensure the project is progressing on schedule and on budget. Successful design projects are based on a system where issues are identified early into the project and design decisions are clearly communicated to the client, and reviewed and approved by the client during the design process. Regular meetings will assist in this process. It is our experience that bi-weekly conference calls incorporated into the schedule are useful in communicating progress updates, in discussing upcoming project tasks and in resolving any design issues.

Utilities

During the data collection and preliminary design phases, all utility companies will be contacted to verify location and inquire as to the status of their services.

HCEI anticipates the following utility agencies will be involved in this project. Utilities will be confirmed via the Ontario OneCall system:

- Enbridge - Gas
- Bell - Telecommunications
- Cogeco - Telecommunications
- Hydro One – Hydro
- Essex Powerlines – Hydro

All utility companies will be asked to examine the need for upgrading their services to accommodate future needs. In order to ensure that conflicting utilities are relocated before construction starts, a two-step relocation program is proposed. At the conclusion of the preliminary design, sufficient design will have been completed to determine the utilities that are in conflict and to devise possible relocation strategies. However, full details for some relocates may not be known until later in the detailed design phase, and this information will be provided as soon as possible so that relocations may be completed before construction.

Sub-Surface Investigation

HCEI has coordinated utility daylighting during the detailed design stage of other projects using hydro vac trucks, which is a safe and efficient work procedure to reduce the risk and uncertainty when the project goes to construction. Depending on the available as-built data, it may be necessary to confirm the depth and sizing of existing infrastructure such as watermains, gas lines, etc. that may be in conflict with the proposed roadworks. From previous design experience with other rural roads in Amherstburg, HCEI does not anticipate any sanitary sewers or storm sewers within the project site. Once the preliminary design has been developed and agreed upon between the Town and HCEI, potential utility conflict points will be identified and exposed to confirm depths and sizing of buried infrastructure.

HCEI's fees do not include any costs for the provision of sub-surface investigations. The Town may wish to use their own equipment or HCEI would be pleased to coordinate the collection of quotes from sub-contractors that provide this service.

Roadway Geometry & Safety

HCEI recognizes that this project may involve road widening to install paved shoulder facilities. In many other road widening projects, it is economically advantageous to utilize the existing pavement structure and simply widen and resurface the existing roadway. The proposed design will rely on information gathered from the topographic and legal surveys, as well as cost and life expectancy of the design option.

2nd Concession North has a posted regulatory speed of 70 km/h which reduces to 50 km/h approximately 780m south of South Riverview Drive. As part of the design process, HCEI will undertake an inspection of the existing roadway features as they relate to roadside safety and incorporate improvements for roadside safety into the proposed design. HCEI's extensive experience in accident investigation allows our firm to easily identify and correct roadway deficiencies to reduce liability to the Town related to issues such as signage, geometry, pavement markings and roadside features.

Stormwater Management and Drainage

Since a rural cross-section is to be maintained for the roadway, HCEI will explore potential storm water best management practices that safely and efficiently direct and collect surface runoff into roadside ditches and swales. HCEI will work closely with environmental agencies to ensure that the storm water runoff is discharged into the municipal drain network in a responsible and appropriate manner.

With the proposed rural cross section, it is expected that the existing drainage patterns be maintained throughout the project site. Open ditches will be utilized as much as possible to convey storm water to the respective outlets and will generally follow the centreline profile of the roadway.

If property permits, ditch depths will generally be 0.5m below the top of subgrade as specified in the 2017 geotechnical report completed by Amec Foster Wheeler (now known as Wood PLC). If these ditch depths cannot be achieved, it is suggested that a perforated subdrain system be designed for the roadway to provide suitable drainage of the road base. HCEI will analyse the existing topographic limitations to determine the most cost-effective and appropriate design approach.

Based on our review of the geotechnical report, groundwater levels do not typically pose a concern from a design standpoint with the exception of Borehole B7 advanced near municipal address 1396 which indicated a water level of 0.3m below the existing road surface. It is critical that any groundwater that is present within the road base system be appropriately drained so that the service life of the pavement may be extended. HCEI will assess appropriate subsurface drainage and dewatering methods in order to mitigate this condition.

The condition of existing culvert crossing locations will be inspected to determine whether replacements are necessary, with the expectation that all culvert crossings will remain in their current locations. Existing culverts will be replaced and sized as conditions require.

HCEI will coordinate the drainage design with ERCA and MNRF to ensure that the impact to the wet lands within the Long Marsh Drain, River Canard watershed, and other surrounding lands will be minimal. It is expected that no mechanical or other water quality mitigation measures will be needed as experience has shown that grassed open ditches are generally sufficient to provide natural water quality control.

Structures

2nd Concession North crosses or impacts the crossing of several municipal drains between South Riverview Drive and County Road 10:

- Various culverts along 2nd Concession Road North such as Shipman Drain, Laura Meloche Drain, Wilfred Bondy Drain, Matte Benateau Drain and West Ouellette Drain;
- Bridge structure located approximately 520m south of South Riverview Drive on 2nd Concession North over the Long Marsh Drain; and,
- 2nd Concession Road Drain North.

At locations identified for culvert extensions (if needed), careful analysis will be required of impacts to the drains' functionality. HCEI will examine the condition of the existing drainage structures located within the project area and recommend any rehabilitation or replacement works as a result of our inspections.

HCEI is aware of current/recent reconstruction works being performed on the bridge structure located approximately 520m south of South Riverview Drive on 2nd Concession North, and as such remediation works are not anticipated at this location. Upon award, HCEI will request the as-build information for this bridge structure to incorporate these new works into the proposed roadway design. This as-built information will be used in conjunction with the information gathered from on-site topographical and legal surveys to tie-in the project limits from the structure reconstruction into the proposed works on 2nd Concession Road North.

Reconstruction Works

During the site survey, HCEI will perform condition investigations of existing infrastructure to identify notable deficiencies and to estimate the remaining service life of roadway components within the right-of-way, where applicable. Infrastructure that is identified for repair or replacement will be discussed with the Town and incorporated into the final design where approved.

As part of the topographic survey, driveway data including slope, material, and condition will be collected to assist the design team in preparing the proposed designs. HCEI will compile this driveway data to perform a pre- and post-construction analysis on driveway grades and overall dimensions, based on the proposed road.

Property Impacts and Permission to Enter (PTE)

The project will be designed to minimize impacts on personal property. Efforts will be made to contain construction within the existing right-of-way and to minimize construction impacts to adjacent properties. During the preliminary design phase, HCEI will identify any existing features or encroachments within the right-of-way that require special attention. These items will be brought to the Town's attention as soon as possible to mitigate impacts to property and to reduce any possible delays to the project.

It is anticipated that some private encroachments may exist onto the public right of way. For example, ornamental bushes, architectural lighting, etc. may have unknowingly been placed on the public right of way by adjacent property owners. Where these are found to occur, they will be identified and discussed with Town staff prior to consultation with the property owner.

In all cases, HCEI will identify PTE required for the project and provide this information to the Town's property agent to assist in property negotiations. Where individual discussions with property owners are required to resolve grading or encroachment issues, etc., HCEI recommends that these discussions be held prior to construction.

During construction activities, the contractor's layout will be checked and continuously monitored to avoid any encroachment onto privately owned lands. It is essential that a proper site survey captures the location of the trees and other existing vegetation and landscaping features. Doing so allows the design to avoid conflicts and to minimize damage to the root system of healthy mature trees, deter the root system from damaging the services, and preserve existing landscaping features.

Design Meetings

HCEI will meet with the Town on a regular basis, to ensure the project is progressing on schedule and on budget. Successful design projects are based on a system where issues are identified early into the project and design decisions are clearly communicated to the client, and reviewed and approved by the client during the design process. Regular meetings will assist in this process. It is our experience that bi-weekly conference calls incorporated into the schedule are useful in communicating progress updates, in discussing upcoming project tasks and in resolving any design issues.

Agency Approvals

As part of the preliminary design, the Town, MNRF, MOECP, and ERCA will be contacted to discuss the proposed designs relative to certain MOE, MNRF, ERCA and DFO approvals.

Approvals may be required from:

MNRF:	Land Disposition & Acquisition
MNRF:	Species at Risk Review and Clearance
ERCA:	Watershed Impacts, Wetlands and Construction within and adjacent to a floodplain
DFO:	Fish Habitat Impacts

As this project is a replacement of the existing infrastructure with similar size and location, the regulatory approval process is expected to be minimal and should not have a significant impact on the project schedule or deliverables.

It should be noted that some permits have a "shelf life" and early approvals may expire before construction proceeds, requiring re-submissions. Also, some approvals have a lengthy review period; in some cases up to a year. Therefore, HCEI proposes to coordinate with the Town and approving agencies at the optimum time when approvals are sought.

Environmental Management Plan

HCEI will prepare an Environmental Management Plan (EMP) to present the environmental protection procedures to be implemented during construction of the project. It will be structured to make it easy for personnel in the field to implement the relevant environmental protection procedures, mitigation for sediment and erosion control, contingency response plan and environmental monitoring. As part of the EMP, the Sediment and Erosion Control Plan will set out the mitigation measures that will be taken by the contractor to control erosion and release of sediment during construction. The conditions and techniques set out on the plan will be followed in conjunction with any conditions outlined by the regulatory agencies.

As part of the contract drawings, the EMP contract specifications will be prepared. This specification will specifically include measures to mitigate erosion and sedimentation as well as note steps to protect wildlife, flora and fauna during construction within the project limits. Contract items will direct the Contractor on how to carry out the work in accordance with the EMP.

Construction Staging and Traffic Control

HCEI will develop a traffic control plan to minimize the disruption to adjacent properties and roadways and include these plans as part of the contract documents and prepared in accordance with Ontario Traffic Manual Book 7 – Temporary Conditions. Public notification of the construction and potential impacts is considered paramount by HCEI to ensure a successful project with minimal construction inconvenience to the community. Due to the rural nature of the project site, HCEI recommends that the traffic control plans for construction works take into consideration not only motorized vehicles but non-motorized vehicles (i.e., cyclists), and school bus routes as well.

Maintenance

During the selection of design components, it is important to consider not only initial costs and life cycles, but ongoing maintenance costs associated with the final design. This is especially relevant when incorporating design elements that feature new technology or methods. HCEI recommends that the Town's roadway maintenance staff be consulted during the design stages to ensure that all potential maintenance issues can be identified and resolved or minimized (e.g., ditch/swale access, snow plough clearance and snow storage, etc.).

4.3 Value Engineering, Innovation & Communications

All projects are exposed to risks. For most clients, the most significant of these are increases in project costs and/or delays in completion of the project. Selecting an experienced firm with an experienced project team with sound methodology is the best approach to managing these project risks. Experienced professionals will anticipate typical problems and are well equipped to mitigate issues that arise unexpectedly. A key tool in ensuring client satisfaction is communication. At the beginning of the process, client expectations need to be clearly identified and communicated. As the project proceeds, regular and clear communication between parties will ensure decisions affecting the outcome are acceptable to the client. This type of communication will ensure that the end product is consistent with the client's expectations. HCEI will also rely on a number of internal processes (i.e. quality control) to ensure the integrity of its work product.

4.4 Schedule of Work

HCEI is committed to completing this project in a timely and cost-effective manner. We understand that the project must be constructed in the 2023 construction year. A detailed breakdown of the project tasks and deliverables is provided in **Figure 1: Project Schedule**.

Individual team member time commitment as it relates to schedule tasks, including a breakdown of the time and cost allotted for each task, has been included as **Figure 2: Project Hours**. Employee costs for these tasks are submitted under separate submission in Submission #2 – Financial Proposal.

5.0 Organization of the Project Team

5.1 Project Manager

Our Project Manager, Scott Rahm, P.Eng, will lead the proposed project team and act as the lead design engineer. Scott is a graduate from The University of Windsor with a Bachelor of Applied Science, Civil Engineering with technical knowledge and experience in project management, surveying, quality control and heavy civil construction. Scott has experience on both design and contracting side of many projects, including the Herb Gray Parkway and the Highway 407 Expansion as well as municipal projects for various local municipalities, including City of Windsor, Municipality of Chatham-Kent, Town of Lasalle and Town of Amherstburg. He has working experience with design standards, (MTO and municipal) and has familiarized himself with the Ontario Provincial Standard Specifications and Drawings (OPSS's and OPSD's). He has wide-ranging experience with extensive survey and quality control background as well as design and project management experience. Scott has attended conferences regarding surveying and engineering software, teaching classes at each.

Relevant project experience includes planning, detail design and contract administration of road and infrastructure reconstruction, road improvement and structure rehabilitation projects, active transportation studies, bicycle and pedestrian safety and facility design, parking control design and motor vehicle accident investigation and analysis. He is familiar with transportation design standards and regulations.

Scott has been involved in the design and administration of numerous projects of similar scope and size that are especially applicable to the final design and project management of this project.

As Project Manager, Scott will be supported throughout the project by other team members including the Senior Technical Advisor, Technical Advisor, Lead Design Engineer and Technical Support Staff.

Scott has project experience in the following areas:

- Road Design and Construction
- Structural Design
- Sanitary Sewer Design
- Storm Sewer and Stormwater Management Design
- Watermain Design
- Utility Coordination and Relocation
- Contract Administration and Construction Project Management
- Field Work, Site Inspection and Topographic Surveys

More specifically, the Project Manager will be directly responsible for:

- Direct communications with the client and Project Team;
- Supervision of all components of the project;
- Maintaining the necessary level of communication throughout the duration of the project; and,
- Coordination of the project's technical and scheduling requirements.

Appendix A contains Curriculum Vitae for the key team members identified in the following section. As per the RFP, each team member's cost commitment to the project is included as a separate submission.

5.2 Professional Staff

HCEI believes that the success of a project is inextricably linked with the project team members. Each individual brings with them their own unique perspective and experience that can be applied to every project to achieve successful, innovative results.

HCEI will direct and assume responsibility for the project from the project award through to construction completion. Good team communication is essential to the success of this project. The HCEI team has the experience and ability to carry out this project in an efficient and effective manner. Below is a brief narrative on HCEI employees who would be directly involved in the project and their assigned role.

Specifically, we will:

- Commit a qualified and dedicated team of professionals with direct experience in projects of similar scope and size;
- Work proactively to identify key project issues and potential solutions from the project outset in order to minimize impacts to schedule and budget;
- Apply best industry practices for project management, design and construction administration/inspection;
- Look to identify design solutions that suit the Region and City's long-term needs and promote community development;
- Recognize the important role of active collaboration with the public in order to deliver a project that the community can support; and
- Explore design solutions that minimize the environmental and construction impact, community disruption and cost while still providing an improvement to the existing infrastructure.

Senior Technical Advisor – James R. Hrycay, M.A.Sc., P.Eng

James R. Hrycay, P.Eng, will act as the Senior Technical Advisor for this project, and will assist the design team throughout the project. As President of HRYCAY Consulting Engineers Inc., James Hrycay has more than 30 years of engineering experience in transportation safety including roadway design, construction, Municipal Class Environmental Assessments, operations and maintenance as well as motor vehicle accident investigation and analysis. James is a recognized expert in traffic and transportation safety who is uniquely qualified to assess the horizontal and vertical geometric components of roadway design and the traffic signing and other safeguards required for the project. James will have corporate responsibility for the project, ensuring the Town's highest satisfaction with the project quality and deliverables as well as making certain that the project team has sufficient resources to maintain the project schedule.

James has been involved in the design and administration of numerous projects of similar scope and size that are especially applicable to the final design and project management of this project.

James is knowledgeable in the following areas:

- Road Design and Construction
- Bridge Design and Rehabilitation
- Sanitary Sewer Design
- Storm Sewer and Stormwater Management Design
- Watermain Design
- Traffic Signal Design
- Utility Coordination and Relocation
- Contract Administration and Construction Project Management
- Field Work, Site Inspection and Topographic Surveys
- Environmental Assessments

Technical Advisor, Contract Administrator – Justine E. Arbour, P.Eng

Justine E. Arbour, P.Eng, will act as the Technical Advisor, Contract Administrator for this project, and will assist the design team throughout the project. Justine has experience in highway design, municipal infrastructure design, traffic signal design, traffic engineering and safety, tender preparation, contract administration and construction project management.

She has extensive working experience with Ministry of Transportation (MTO), Transportation Association of Canada (TAC) and American Association of State Highway and Transportation Officials (AASHTO) geometric design standards, application of the MTO Roadside Safety Manual, Municipal Class Environmental Assessments and design and construction methodology for both large-scale MTO projects and municipal projects.

Justine has participated in numerous motor vehicle accident investigations including site visits, field surveys, collection of evidence, and detail drawings. She has reported on deficient warning, regulatory and construction zone signage, geometric design, sightlines (stopping distance, passing distance and intersection sightlines), roadway maintenance, snow and ice maintenance standards, and deficient and inadequate guide rail design.

Justine has project experience in the following areas:

- Road Design and Construction
- Bridge Rehabilitation
- Sanitary Sewer Design
- Storm Sewer and Stormwater Management Design
- Watermain Design
- Traffic Signal Design
- Utility Coordination and Relocation
- Active Transportation
- Pedestrian and Bicycle Facilities
- Contract Administration and Construction Project Management
- Construction Inspection
- Field Work, Site Inspection and Topographic Surveys
- Environmental Assessments

Design Support & Construction Inspection – William Monroy, EIT

Our design support and construction inspection will be provided by William Monroy. William graduated with distinction from The University of Windsor with a Bachelor of Applied Science, Civil Engineering degree with technical knowledge and experience in heavy civil construction. William has been involved with various municipal infrastructure projects which has provided the opportunity to familiarize himself with municipal design standards, Ontario Provincial Standard Specifications and Drawings (OPSS and OPSD), and has gained design and construction methodology experience for municipal projects.

As an Engineer-in-Training with HRYCAY Consulting Engineers Inc, William is involved in contract administration, construction inspection, cost estimates, shop drawing reviews, surveying, roadside safety design, and transportation planning and design.

In his design support and construction inspection roles for the project, William will be supported by Technical Support Staff as well as the Project Manager and Senior Technical Advisor.

William has project experience in the following areas:

- Preliminary and Detailed Drafting
- Road Design and Construction
- Sanitary Sewer Design and Inspection
- Storm Sewer and Stormwater Management Design and Inspection
- Watermain Design and Inspection
- Utility Coordination and Relocation
- Field Work, Site Inspection and Topographic Surveys
- Construction Inspection & Contract Administration

Drafting and Technical Support – Anna Simone, EIT

Our drafting and technical support will be provided by Anna Simone. Anna graduated with distinction from The University of Windsor with a Bachelor of Applied Science, Civil Engineering degree with technical knowledge and experience in heavy civil construction.

As an Engineer-in-Training with HRYCAY Consulting Engineers Inc, Anna is involved with contract administration, construction inspection, cost estimation, drafting, surveying, and transportation planning and design.

In her drafting and technical support role for the project, Anna will be assisted by the Project Manager and Design Support lead throughout the project.

Anna has project experience in the following areas:

- Preliminary and Detailed Drafting
- Road Design and Construction
- Sanitary Sewer Design and Inspection
- Storm Sewer and Stormwater Management Design and Inspection
- Watermain Design and Inspection
- Utility Coordination and Relocation
- Field Work, Site Inspection and Topographic Surveys
- Construction Inspection & Contract Administration

Additional Engineering Support

In addition to the personnel noted above, HCEI has approximately 25 staff providing engineering analysis, surveying, CAD drafting, and clerical functions. Our staff complement allows us the opportunity of adjusting staff resource allocations when conditions change or circumstances require additional personnel for a project.

6.0 Experience and References

HCEI's staff has extensive experience with infrastructure design and construction and has been involved in a diverse range of infrastructure projects which were successfully completed on-time and within budget. These projects have included roadway design and reconstruction, watermain construction and water service extensions, sanitary sewer design, stormwater drainage design (storm sewers and open ditches), site servicing requirements, slope rehabilitation, and agency approvals and permitting (Department of Fisheries and Oceans; Ministry of the Environment, Conservation and Parks; Ministry of Northern Development, Mines, Natural Resources, and Forestry, etc.).

Each of the referenced projects below involved services that are directly applicable to the 2nd Concession Road North Rehabilitation project. A client reference has been provided along with a summary of services provided for each project. Additional details for select fully completed projects are contained in the Case Studies provided in **Appendix B**.

Seymour Street and George Street Sanitary Sewer Replacement, Town of Amherstburg, Ontario – ongoing

Town of Amherstburg – Todd Hewitt, (519) 736-3664

The Seymour Street and George Street Sanitary Sewer Replacement project includes the replacement of 900 metres of 200mm diameter sanitary sewer, including reconnecting 65 sanitary connections, replacement of 150m of 300mm storm sewer, including reconnection of 20 storm connections, replacement of 125m of watermain, including 12 water services, and the replacement of asphalt pavement and concrete curb and gutter along Seymour and George Street in the Town of Amherstburg. Minimal disruption to the existing roadway and residential properties is being considered during the design and construction stages. Construction is anticipated to commence during the 2023 construction season.

Original Contract Price – TBD

Final Contract Price – TBD

Gladstone Avenue and Dovercourt Street Sewer Separation, Municipality of Chatham-Kent, Ontario – ongoing

Municipality of Chatham-Kent – Debbie Cooper, C.Tech, (519) 360-1998

The Gladstone Avenue and Dovercourt Street Sewer Separation project entails removal of 115m of 300mm diameter combined sewer, replacement of 200m of 200mm sanitary sewer, 235m of 900mm and 750mm storm sewer and 260m of existing 150mm cast iron watermain on Gladstone Avenue, and the removal of 100m of 300mm combined sewer, installation of 110m of sanitary sewer, and installation of 100m of new storm sewer on Dovercourt Street, with reconnection of sanitary and storm service and water services. The project also includes the replacement of asphalt roadway, with concrete curb and gutter, and concrete sidewalks. Construction is anticipated to commence during the 2023 construction season.

Original Contract Price - TBD

Final Contract Price – TBD

Ventnor Avenue Watermain Replacement, Town of Amherstburg, Ontario – ongoing
Town of Amherstburg – Todd Hewitt, (519) 736-3664

The Ventnor Avenue Watermain Replacement project includes the replacement of 550 metres of 150mm diameter watermain, including service reconnections, and the replacement of asphalt pavement and concrete curb and gutter along Ventnor Avenue in the Town of Amherstburg. Minimal disruption to the existing roadway and residential properties is being considered during the design and construction stages. Construction is anticipated to commence during the 2023 construction season.

Original Contract Price – TBD

Final Contract Price - TBD

8th Concession North Reconstruction, Town of Amherstburg, Ontario – ongoing
Town of Amherstburg – Todd Hewitt, (519) 736-3664

The 8th Concession North Reconstruction project between Alma Street and County Road 10 is approximately 3.7 km in length and consists of road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas. Construction is anticipated to commence during the 2023 construction season.

Original Contract Price – TBD

Final Contract Price - TBD

Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario – ongoing
Municipality of Chatham-Kent – Debbie Cooper, C.Tech, (519) 360-1998

The Galbraith Street Reconstruction project entails watermain replacement, assessment of the existing storm sewer for replacement or rehabilitation, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements. Scope of work included pre-engineering survey and data collection, public consultation, co-ordination with utilities and regulatory authorities, conceptual and detailed design, cost estimates, preparation of contract drawings and documents, contract administration, and inspection services. Construction was completed during the 2021 construction season.

Original Contract Price - \$987,620.00

Final Contract Price – \$904,340.64

Pacific Avenue Watermain and Pavement Replacement, Town of Amherstburg, Ontario - completed 2020
Town of Amherstburg – Todd Hewitt, (519) 736-3664

The Pacific Avenue Watermain Replacement project includes the replacement of 620m of 200mm diameter watermain between Richmond Avenue and Simcoe Street, including residential service reconnections, new curb and gutter, new concrete sidewalk on the east side and new asphalt pavement.

Minimal disruption to the existing roadway and residential properties was considered during the design and construction stages. Construction was completed during the 2020 construction season.

Original Contract Price - \$1,019,009.00

Final Contract Price – \$882,205.00

4th Concession North Reconstruction, Alma Street to County Road 10, Town of Amherstburg, Ontario - completed 2020

Town of Amherstburg – Todd Hewitt, (519) 736-3664

The 4th Concession North Reconstruction project is approximately 3.70 km in length and includes road widening to upgrade granular shoulders to current standards, new asphalt, and other roadway improvements. Consultation with local businesses located within the project limits was undertaken to ensure minimal disruption to key stakeholders. Construction was completed during the 2020 construction season.

Original Contract Price - \$1,900,899.00

Final Contract Price – \$ 1,977,023.80

5th Concession North Reconstruction, Alma Street to County Road 10, Town of Amherstburg, Ontario - completed 2019

Town of Amherstburg – Todd Hewitt, (519) 736-3664

The 5th Concession North Reconstruction project is approximately 3.70 km in length and includes road widening to upgrade granular shoulders to current standards, new asphalt, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which required great care during the design phases so as to not negatively impact sensitive natural areas. Consultation with local businesses located within the project limits was undertaken to ensure minimal disruption to key stakeholders. Construction was completed in 2019.

Original Contract Price - \$2,293,647.40

Final Contract Price – \$2,023,199.89

Texas Road Reconstruction, Thomas Road to 3rd Concession North, Town of Amherstburg, Ontario - completed 2019

Town of Amherstburg – Todd Hewitt, (519) 736-3664

The Texas Road Reconstruction project is approximately 1.40 km in length and includes road widening to upgrade granular shoulders to current standards, new asphalt roadway, vertical alignment upgrades, and drainage improvements. The limits of this project takes place within environmentally sensitive areas which required great care during the design phases so as to not negatively impact sensitive natural areas. Consultation with local businesses located within the project limits was undertaken to ensure minimal disruption to key stakeholders. Construction was completed during the 2019 construction season.

Original Contract Price - \$687,158.00

Final Contract Price – \$ 635,249.94

McNaughton Avenue West Improvements, Community of Chatham, Municipality of Chatham-Kent, Ontario – completed 2020

Municipality of Chatham-Kent – Matthew Link, Engineering Technologist, (519) 360-1998

The McNaughton Avenue West Improvements project entailed updates to the road cross-section to include new curb and gutter, storm sewers, sidewalks, traffic signalization, intersection improvements, a new Type B Level 2 pedestrian crossover, updated streetlighting, watermain replacement, and other roadway improvements.

Scope of work included pre-engineering survey and data collection, public consultation, co-ordination with utilities and regulatory authorities, conceptual and detailed design, cost estimates, preparation of contract drawings and documents, contract administration, and inspection services. Construction was completed in 2020.

Original Contract Price - \$2,199,000.00

Final Contract Price – \$2,339,705.99

Bloomfield Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario – completed 2018

Municipality of Chatham-Kent – Matthew Link, Engineering Technologist, (519) 360-1998

The Bloomfield Reconstruction project entailed the reconstruction of 1,360 m of an existing rural collector road with granular shoulders and roadside ditches to a rural collector cross-section with curb and gutter, storm sewer, shallow roadside swales and a multi-use pathway.

Scope of work included pre-engineering survey and data collection, public consultation, co-ordination with utilities and regulatory authorities, conceptual and detailed design, cost estimates, preparation of contract drawings and documents, contract administration, and inspection services. Construction was substantially completed in 2018 with minor deficiency work taking place in 2019.

Original Contract Price - \$4,575,270.00

Final Contract Price – \$4,626,025.57

Meloche Road Rehabilitation, Town of Amherstburg, Ontario – completed 2017

Town of Amherstburg – Todd Hewitt, (519) 736-3664

The Meloche Road project involved engineering services for the rehabilitation of Meloche Road between Alma Street to Lowes Side Road. The reconstruction works included new asphalt roadway, new storm sewers from Simcoe Street to Lowes Side Road, new on-road bike lanes, asphalt multi-use recreational trails, and new and updated streetlighting. The limits of this project takes place within the Big Creek Watershed which required extensive consultation with MNR, DFO and ERCA in addition to thorough public consultation.

Original Contract Price - \$3,929,700

Final Contract Price – \$3,797,535

7.0 Fee Schedule

HCEI's Fee Schedule has been submitted in Submission #2 – Financial Proposal as well as the completed Schedule of Pricing Document which was provided with the RFP.

8.0 Summary

In conclusion, HCEI believes we have a complete understanding of the project and have assembled a team of qualified individuals who have the skills, experience and knowledge to complete this assignment on time, within budget and to the satisfaction of the Town of Amherstburg. We appreciate the opportunity to submit this proposal for your consideration and look forward to the opportunity of working with the Town of Amherstburg on this project.

Respectfully submitted,

HRYCAY Consulting Engineers Inc.

A handwritten signature in black ink, appearing to read 'J. Arbour', with a large loop at the end.

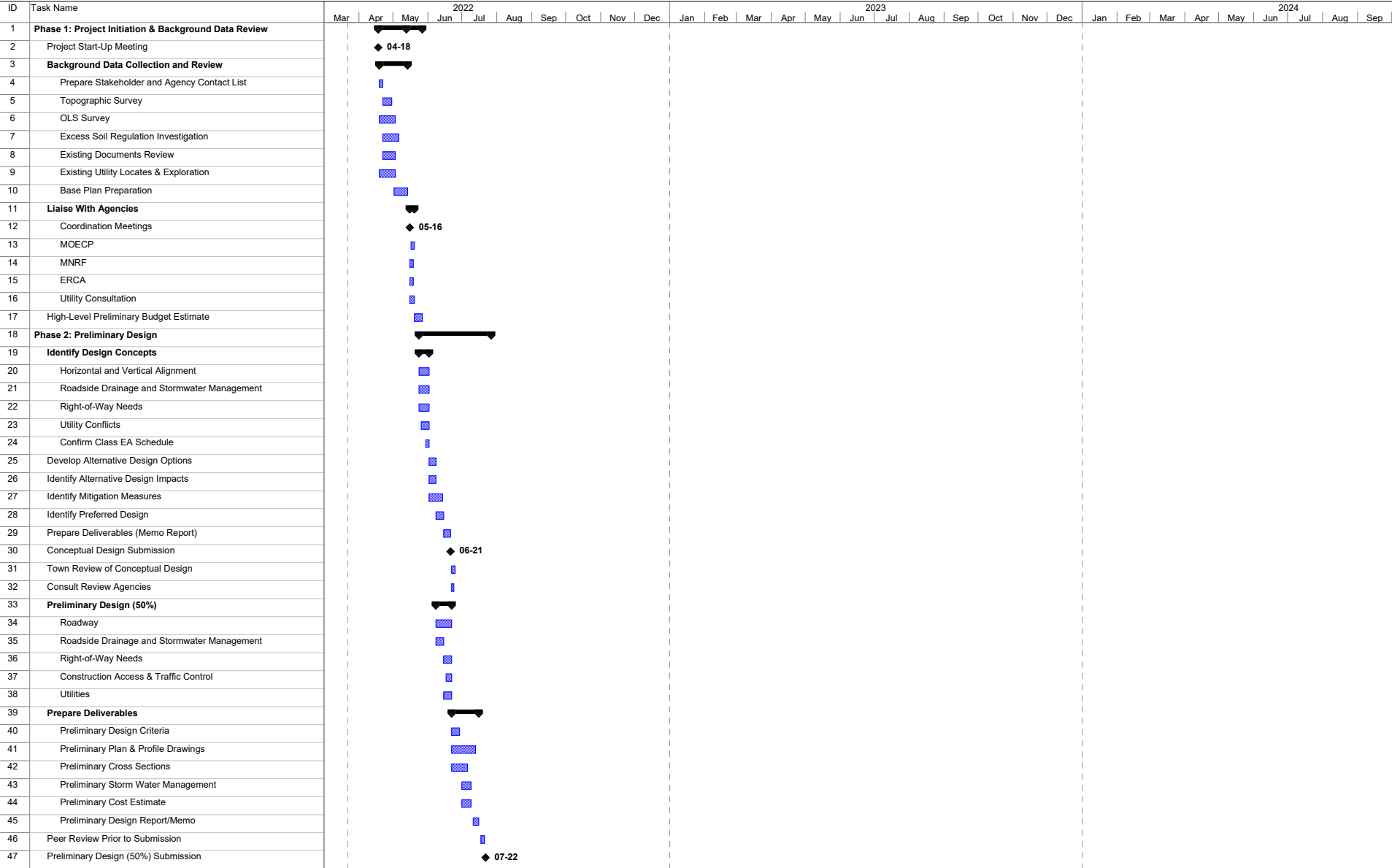
Justine Arbour, B.A.Sc., M.E.M., P.Eng

Civil Engineering Manager

JEA/ams

The Town of Amherstburg
RFP T04-2022-002
Engineering Services for 2nd Concession North Rehabilitation

Figure 1: Proposed Schedule



Project: T04-2022-002
Date: 24 March 2022

Task

Split

Milestone

Summary

Project Summary

External Tasks

External Milestone

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Start-only

Finish-only

External Tasks

External Milestone

Progress

Deadline

Page 1

HRYCAY Consulting Engineers Inc.

The Town of Amherstburg
RFP T04-2022-002
Engineering Services for 2nd Concession North Rehabilitation

Figure 1: Proposed Schedule

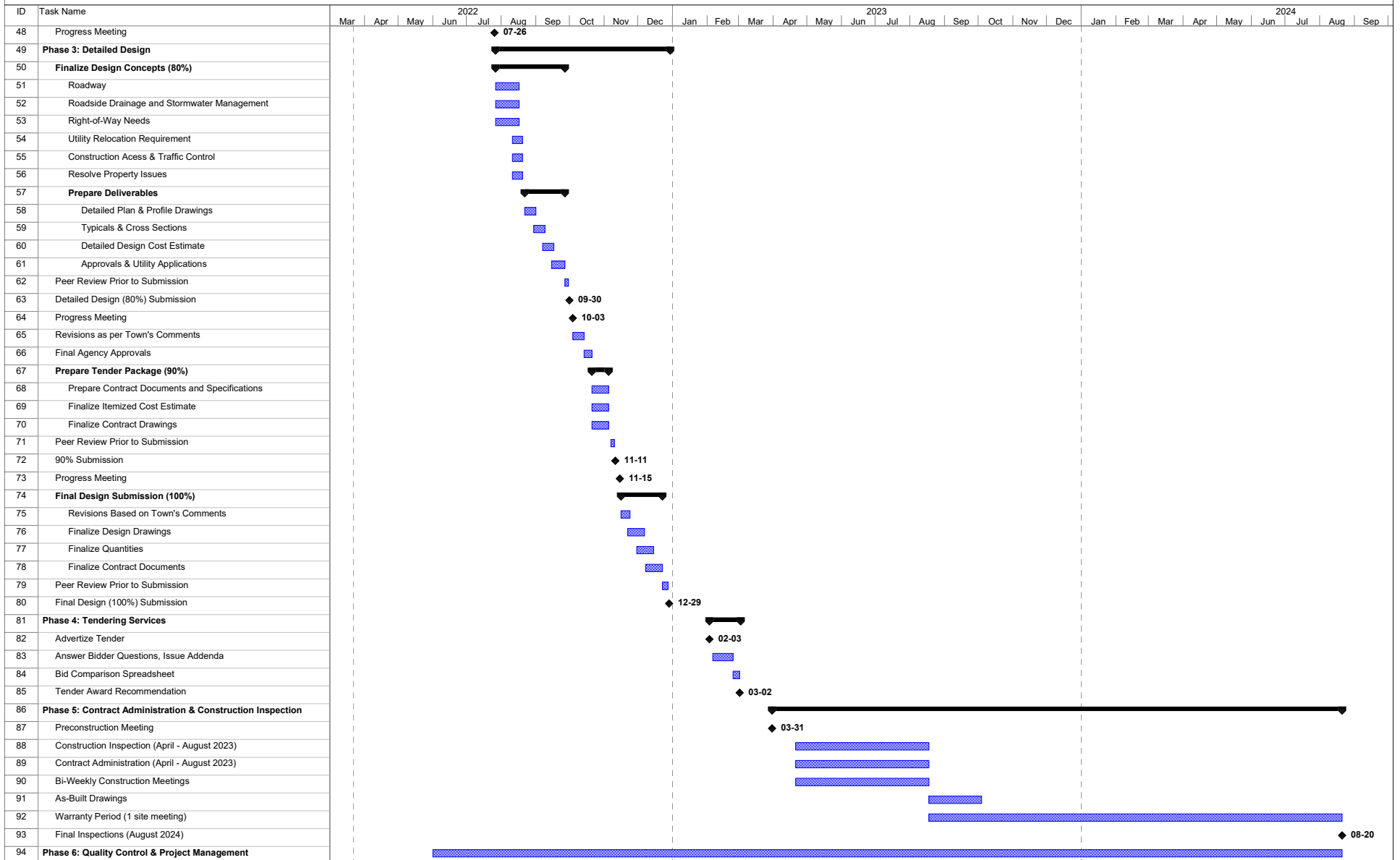


Figure 2: Time and Task Schedule - Town of Amherstburg
RFP #T04-2022-002: Engineering Services for 2nd Concession North Rehabilitation

Project Tasks	Employee Assignment - Time (hrs)									Total Time Assignment (hrs.)
	JEA	JRH	SRR	WAM	Survey	AMS	Insp.	QC	Clerical	
Phase 1: Project Initiation & Background Data Review										
Project Start-up Meeting			3.0	3.0					0.5	6.5
Background Data Collection and Review										
Prepare Stakeholder and Agency Contact List			1.0						0.5	1.5
Topographic Survey					90.0					90.0
OLS Survey				0.5						0.5
Excess Soil Regulation Investigation			1.0	3.0						4.0
Existing Documents Review			1.0	2.0						3.0
Existing Utility Locates & Exploration				2.0						2.0
Base Plan Preparation			5.0	10.0		30.0				45.0
Liaise with Agencies										
Coordination Meetings			1.0						0.5	1.5
MOECP			0.5	1.0						1.5
MNRF			0.5	1.0						1.5
ERCA			0.5	1.0						1.5
Utility Consultation				1.0		4.0				5.0
High-Level Preliminary Budget Estimate			1.0	2.0		4.0				7.0
Project Management & Quality Control	6.0									6.0
Phase 1 Sub-Total										176.5
Phase 2: Preliminary Design										
Identify Design Concepts										
Horizontal and Vertical Alignment			2.0	5.0		5.0				12.0
Roadside Drainage and Stormwater Management			2.0	5.0		5.0				12.0
Right-of-Way Needs			1.0	4.0						5.0
Utility Conflicts			0.5	5.0						5.5
Confirm Class EA Schedule				1.0						1.0
Develop Alternative Design Options			1.5	3.0						4.5
Identify Alternative Design Impacts			1.5	2.0						3.5
Identify Mitigation Measures			1.5	2.0						3.5
Identify Preferred Design			1.5	1.0						2.5
Prepare Deliverables (Memo Report)			0.5	2.0		2.0			0.5	5.0
Conceptual Design Submission			0.5	1.5					0.5	2.5
Town Review of Conceptual Design										
Consult Review Agencies			1.0	3.0						4.0
Preliminary Design (50%)										
Roadway			4.0	6.0						10.0
Roadside Drainage and Stormwater Management			4.0	4.0						8.0
Right-of-Way Needs			1.0	2.0						3.0
Construction Access & Traffic Control			1.0			4.0				5.0
Utilities			0.5	2.0		2.0				4.5
Prepare Deliverables										
Preliminary Design Criteria			4.0	2.0						6.0
Preliminary Plan & Profile Drawings			4.0	4.0		20.0				28.0
Preliminary Cross Sections			4.0	2.0		8.0				14.0
Preliminary Storm Water Management			4.0	2.0		4.0				10.0
Preliminary Cost Estimates			4.0	8.0						12.0
Preliminary Design Report/Memo			2.0	6.0					0.5	8.5
Peer Review Prior to Submission								6.0		6.0
Preliminary Design (50%) Submission			1.0	1.0					0.5	2.5
Progress Meeting			3.0	3.0					0.5	6.5
Project Management & Quality Control	10.0	4.0								14.0
Phase 2 Sub-Total										199.0
Phase 3: Detailed Design										
Finalize Design Concepts (80%)										
Roadway			5.0	6.0						11.0
Roadside Drainage and Stormwater Management			5.0	4.0						9.0
Right-of-Way Needs			2.0	3.0						5.0
Utility Relocation Requirements			2.0	3.0						5.0
Construction Access & Traffic Control			2.0	3.0						5.0
Resolve Property Issues			2.0	3.0						5.0
Prepare Deliverables										
Detailed Plan & Profile Drawings			2.0	4.0		8.0				14.0
Typicals & Cross Sections			2.0	2.0		8.0				12.0
Detailed Design Cost Estimate			3.0	6.0						9.0
Approvals & Utility Applications			2.0	4.0						6.0
Peer Review Prior to Submission								6.0		6.0
Detailed Design (80%) Submission			3.5	6.0					0.5	10.0
Progress Meeting			3.0	3.0					0.5	6.5
Final Agency Approvals			3.0	3.0						6.0
Prepare Tender Package (90%)										
Prepare Contract Documents and Specifications			2.0	8.0		8.0				18.0
Finalize Itemized Cost Estimates			4.0	4.0						8.0
Finalize Contract Drawings			2.0	2.0		8.0				12.0
Peer Review Prior to Submission								6.0		6.0
90% Submission			3.5	6.0						9.5
Progress Meeting			3.0	3.0					0.5	6.5
Final Design Submission (100%)										
Revisions Based on Town's Comments			1.0	2.0		4.0				7.0
Finalize Design Drawings			1.0	2.0		4.0				7.0
Finalize Quantities			1.0	4.0						5.0
Finalize Contract Documents			1.0	2.0						3.0
Peer Review Prior to Submission								2.0		2.0
Final Design (100%) Submission			1.0	2.0					0.5	3.5
Project Management & Quality Control	8.0	4.0								12.0
Phase 3 Sub-total										209.0

Figure 2: Time and Task Schedule - Town of Amherstburg
RFP #T04-2022-002: Engineering Services for 2nd Concession North Rehabilitation

Project Tasks	Employee Assignment - Time (hrs)									Total Time Assignment (hrs.)
	JEA	JRH	SRR	WAM	Survey	AMS	Insp.	QC	Clerical	
Phase 4: Tendering Services										
Advertise Tender			1.0							1.0
Answer Bidder Questions, Issue Addenda			4.0	4.0					0.5	8.5
Bid Comparison Spreadsheet			1.0			3.0			0.5	4.5
Tender Award Recommendation			1.0			1.0				2.0
Project Management & Quality Control	4.0									4.0
Phase 4 Sub-Total										20.0
Phase 5: Contract Administration & Construction Inspection										
Preconstruction Meeting			3.0				3.0			6.0
Construction Inspection							800.0			800.0
Contract Administration			20.0							20.0
Construction Meetings (bi-weekly)			8.0				8.0			16.0
As-Built Drawings			2.0	2.0		10.0	6.0			20.0
Warranty Period (1 site meeting)			3.0				3.0			6.0
Final Inspections			2.0				2.0			4.0
Project Management & Quality Control	4.0	2.0								6.0
Phase 5 Sub-Total										878.0
Phase 6: Quality Control & Project Management										
Quality Control & Project Management		6.0						8.0		14.0
Phase 6 Sub-Total										14.0

Total Engineering Hours	1496.5
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Project Team - Rates per hour	
JEA	Justine Arbour P.Eng - Technical Advisor
JRH	James R. Hrycay, M.A.Sc., P.Eng - Sr. Technical Advisor
SRR	Scott Rahm, P.Eng - Project Manager, Lead Engineer, Contract Administrator
WAM	William Monroy, EIT - Design Support
AMS	Anna Simone, EIT - Drafting and Technical Support
Survey	Surveying Crew (2 surveyors)
Insp.	Construction Inspection Staff
QC	Quality Control Team
Clerical	Clerical Staff

Appendix A

Curriculum Vitae

Profession

Civil Engineer

Education

B.A.Sc., Civil Engineering, University of Windsor, 1979

M.A.Sc., Civil Engineering, University of Windsor, 1986

Professional Societies

Professional Engineers Ontario (PEO)

Association of Professional Engineers Geologists and Geophysicists of Alberta (APEGGA)

Institute of Transportation Engineers (ITE)

Ontario Good Roads Association (OGRA), Corporate Membership

Distinctions

2011 Professional Engineers of Ontario Engineer of the Year Award (Windsor – Essex County Chapter)

Employment Record

Principal, HRYCAY Consulting Engineers Inc., Windsor, ON (2003 – Present)

Principal, BTS Consulting Engineers, Windsor, ON (1988 – 2003)

Principal, N.K. Becker & Associates Ltd., Windsor, ON (1979 – 1988)

Engineer, M.M. Dillon Ltd., Windsor, ON (1976 – 1979)

Citizenship

Canadian

Languages

English

James R. Hrycay, M.A.Sc., P. Eng.

Mr. Hrycay is currently a principal with HRYCAY Consulting Engineers, Inc. He has been involved in the investigation and/or engineering analysis of more than 2680 motor vehicle accidents, of which over 1980 he was the principal engineer. These accidents have taken him across 7 Provinces, one Territory and all 48 contiguous States of the United States except for Rhode Island. The investigations included transportation and traffic issues as they relate to accident causation as well as vehicle kinematics and dynamics, roadway design and maintenance, and occupant kinematics. He has also given expert evidence relative to motor vehicle accident analysis at various trials and hearings in Canada and the United States.

In addition to the investigation and/or engineering analysis of motor vehicle accidents, Mr. Hrycay has work on a broad range of projects including highway and roadway design for various municipal transportation networks. Design work included collector roads, subdivision roads, access and egress studies onto major arterials or highways for subdivisions and commercial plazas, traffic and transportation studies for official and secondary plan amendments, etc.

He was also involved in building design, bridge design, and heavy construction projects as a scheduling engineer including the Upper Salmon Hydro Electric project in Newfoundland, the Annapolis Tidal Power project in Nova Scotia, and the water reservoir and distribution system in Yaounde Cameroon, Africa.

Mr. Hrycay was a resident engineer on road and highway projects with M.M. Dillon Ltd., Consulting Engineers and Planners. He also spent several undergraduate work terms as a surveyor with the Ontario Ministry of Transportation and Communications.

Civil Engineering

Technical Advisor, Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-present)

Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.



Technical Advisor, Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Technical Advisor, County Road 31 at Irwin Drain, Culvert C-31-147 Replacement, County of Essex, Ontario (2021 - present)

Currently providing engineering services for the replacement of Culvert C-31-147 of the Irwin Drain at County Road 31 in the Municipality of Leamington, County of Essex. The existing cast-in-place rigid frame, vertical leg concrete structure was originally constructed in 1980 with no record of remedial work undertaken. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete three-sided culvert, engineered retaining walls, relocation of underground utilities, and general site improvements. Consultations include meetings with the County of Essex, Essex Region Conservation Authority, Municipality of Leamington, and various utility agencies.

Technical Advisor, 8th Concession North Reconstruction, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the reconstruction of 8th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, County Road 50 at Wigle Creek, Bridge B-50-27 Rehabilitation, County of Essex, Ontario (2020 – present)

Currently providing engineering services for the rehabilitation of Bridge B-50-27 over Wigle Creek on County Road 50. The existing structure is a two-lane single-span bridge with steel I-Beam girders and was originally constructed in 1931, with the structure undergoing rehabilitation on 1976 and 2009. Since then, the structure has experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involves the design of structure rehabilitation works that include removal and replacement of exterior girders and bearing pads, repairs to deteriorated concrete bearing seats (including jacking of superstructure), replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway. Consultations include meetings with the County of Essex, Essex Region Conservation Authority, and various utility agencies.

Technical Advisor, Ventnor Avenue Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 550 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement and concrete curb and gutter along Ventnor Avenue in the Town of Amherstburg.

Technical Advisor, Alma Street Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 400 metres of 100mm diameter watermain with 200mm diameter watermain, including decommissioning of the redundant line and service reconnections, along Alma Street in the Town of Amherstburg. This project required ongoing consultation with affected property owners and proposed new ratepayers.

Technical Advisor, County Road 27 at Belle River, Bridge B-27-12 Rehabilitation, County of Essex, Ontario (2020 – present)

Currently providing engineering services for the rehabilitation of Bridge B-27-12 over Belle River on County Road 27. The existing structure is a two-lane single-span bridge with steel I-Beam girders and was originally constructed in 1949, with the structure undergoing a deck replacement in 2001. Since then, the structure has experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involves the design of structure rehabilitation works that include repairs to the concrete abutment walls, bearing seats (including jacking of superstructure), ballast walls, wingwalls and fascia, conversion of the existing expansion joints to semi-integral abutments, replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway. Consultations include meetings with the County of Essex, Town of Kingsville, Essex Region Conservation Authority, and various utility agencies.

Project Manager, County Road 46 at Rochester Townline Intersection Improvements, County of Essex, Ontario (2020-2021)

Provided engineering services for preliminary design options for intersection improvements at County Road 46 and Rochester Townline in the Town of Lakeshore, County of Essex, Ontario. This intersection has experienced a high number of motor vehicle collisions related to non-compliance of stop control on the minor street. As an extension of the Intersection Safety Review performed by HCEI in 2016, the study team reviewed interim safety improvement measures, provided design options, cost estimates, and construction schedules, and prepared recommendations for the County's consideration. Design considerations included integration with the ultimate roundabout design option, limiting impact to adjacent property, cost effectiveness of proposed measures, and coordination with the Essex Region Conservation Authority on impacts to adjacent municipal drains.

Technical Advisor, Bloomfield Road and Richmond Street Sanitary Sewer Rehabilitation, Community of Chatham, Municipality of Chatham-Kent, Ontario (2019-present)

Currently providing engineering services for the trenchless rehabilitation of approximately 1700 metres of existing sanitary sewer deemed to be in condition ranging from moderate to severe. A main component of this project was that the work be compliant with NSF-61 requirements or employ re-capture methods to produce safe discharge into the system so as to not affect the downstream water treatment plant. This project involved liaising with trenchless technologies contractors and material manufacturers to discuss trenchless methodologies that satisfy the Municipality's requirements, detailed survey of the existing sanitary sewer system including structure measurements, identification of private services, and preparation of contract documents.

Technical Advisor, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2020-present)

Currently providing engineering services for the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works watermain replacement, assessment of the existing storm sewer for replacement or rehabilitation, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Technical Advisor, 4th Concession North Reconstruction, Town of Amherstburg, Ontario (2019-2021)

Provided engineering services for the reconstruction of 4th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, Pacific Avenue Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2019 - 2021)

Provided engineering services for the replacement of 620 metres of 200mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Pacific Avenue, from Richmond Street to Simcoe Street, in the Town of Amherstburg.

Technical Advisor, Culvert No. 3, Collision Drain Culvert at Collision Sideroad, Town of Amherstburg, Ontario (2019 – 2021):

Provided engineering services for the replacement of Culvert No. 3 of the Collision Drain at Collision Sideroad in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1930. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies.

Technical Advisor, Culvert No. 59, Hamel Bezaire Drain South Branch Culvert at 4th Concession North, Town of Amherstburg, Ontario (2019 – present)

Currently providing engineering services for the replacement of Culvert No. 59 of the south branch of the Hamel Bezaire Drain at 4th Concession North in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies

Technical Advisor, County Road 14 at Lovelace Drain, Culvert C-14-043 Replacement, County of Essex, Ontario (2019-2020)

Project manager for the replacement of Culvert C-14-043 of the Lovelace Drain at County Road 14 in the Town of Kingsville, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1930 with rehabilitation work taking place in 1950 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the County of Essex, Town of Kingsville, and various utility agencies.

Technical Advisor, County Road 34 at Pelee Creek Drain, Culvert C-34-379 Replacement, County of Essex, Ontario (2018-2020)

Project manager for the replacement of Culvert C-34-379 of the Pelee Creek Drain at County Road 34 in the Municipality of Leamington, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940 with rehabilitation work taking place in 1960 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, and general site improvements. Consultation included meetings with the County of Essex, Municipality of Leamington, and various utility agencies.

Technical Advisor, McLeod Avenue and South Riverview Drive Reconstruction, Town of Amherstburg, Ontario (2019-present)

Currently providing engineering services for the reconstruction of McLeod Avenue between 3rd Concession South and Lakewood Drive, and South Riverview Drive between Beneteau Drive and 3rd Concession North. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, McNaughton Avenue West Improvements, Community of Chatham, Municipality of Chatham-Kent, Ontario (2018-2019)

Provided engineering services for the reconstruction of McNaughton Avenue West and Keil Drive North. The reconstruction works include updates to the road cross-section to include new curb and gutter, storm sewers, sidewalks, traffic signalization, intersection improvements, a new Type B Level 2 pedestrian crossover, updated streetlighting, and other roadway improvements.

Technical Advisor, 5th Concession North and Texas Road Reconstruction, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the reconstruction of Texas Road between 2nd Concession and 3rd Concession and 5th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, Walnut Drive Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the replacement of 180 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Walnut Drive, from Hawthorne Crescent to McCurdy Drive, in the Town of Amherstburg.

Technical Advisor, Creek Road Rehabilitation, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the rehabilitation of Creek Road between County Road 20 and Meloche Road / Lowes Side Road. The reconstruction works included in-place full depth pulverization of existing asphalt pavement and granulars, road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within the Big Creek Watershed which required great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, Bloomfield Road Rehabilitation, Municipality of Chatham-Kent, Ontario (2017-2019)

Provided engineering services for the rehabilitation of Bloomfield Road between Riverview Drive to Richmond Street. The reconstruction works include new asphalt roadway, new storm sewers from Riverview Drive to Richmond Street, new sidewalk, curb and gutters, and updated streetlighting.

Technical Advisor, County Road 20 at Wigle Creek, Bridge B-20-54 Rehabilitation, County of Essex, Ontario (2017-2018)

Provided engineering services for the rehabilitation of Bridge B-20-54 over Wigle Creek on County Road 20. This project involved the design of structure rehabilitation works that included include repairs to the concrete soffits, abutment walls and wingwalls, deteriorated concrete cold joints, replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway.

Technical Advisor, Meloche Road Rehabilitation, Town of Amherstburg, Ontario (2016-2017)

Provided engineering services for the rehabilitation of Meloche Road between Alma Street to Lowes Sideroad. The reconstruction works include new asphalt roadway, new storm sewers from Simcoe Street to Lowes Sideroad, new on-road bike lanes, asphalt multi-user recreational trails, and updated streetlighting.

Technical Advisor, O'Neil Street Reconstruction, Municipality of Chatham-Kent, Ontario (2016-2017)

Provided engineering services for the reconstruction of O'Neil Street, from Tweedsmuir Avenue to Park Avenue West, in the Community of Chatham. The Scope of work includes new asphalt roadway, replacement of storm sewers, sanitary sewers, and watermain and all associated appurtenances.

Technical Advisor, Pickering Drive Watermain Replacement, Town of Amherstburg, Ontario

Provided engineering services for the replacement of 1165 metres of 300mm diameter watermain, including service reconnections, along Pickering Drive, from Dalhousie Street to Fryer Street, in the Town of Amherstburg. Minimal disruption to the existing roadway and residential properties is being considered during the design stages. Design and construction two completed in two phases, with construction tentatively scheduled for 2017 and 2018.

Technical Advisor, County Road 42 at 8th Concession Drain Culvert Replacement, County of Essex, Ontario (2015-16)

Replacement of Culvert C-42-052 of the 8th Concession Drain at County Road 42 in the Town of Lakeshore, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940 with no record of rehabilitation work being performed. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, and general site improvements.

This project also included the relocation of the existing 200 mm cast iron watermain in order to avoid conflict with the proposed design. Consultation included meetings with the County of Essex, Town of Lakeshore, and various utility agencies.

Technical Advisor, Riviera Drive / Riviera Place Watermain Rehabilitation, Town of Amherstburg, Ontario (2013-15)

Provided engineering services to the Town for watermain rehabilitation on Riviera Drive and Riviera Place. Assessment and design included replacement of the existing ductile iron watermain and looping the watermain network. This work also included resurfacing of the existing roadway, with curb and gutter and granular base repairs performed as necessary. Minimal disruption to residential properties was considered during the design stages and construction. Construction completed November 2015 with contract administration and construction inspection services provided. Consultation included meetings with the Town of Amherstburg and the public.

Technical Advisor, Indian Creek Road East Bridge at Indian Creek Drain, Municipality of Chatham-Kent, Ontario (2014-Present)

Rehabilitation of the bridge over the Indian Creek Drain at Indian Creek Road East in the Community of Raleigh, in the Municipality of Chatham-Kent. This slab on box girder bridge carries two-lanes of traffic over one continuous span and was originally constructed in 1967, with no record of rehabilitation work being performed on this structure since initial construction. A 2013 OSIM Bridge Inspection Report identified heavy cracking on the underside of the box beams combined with heavy leakage, spalling of the exterior barrier seats and the absence of an approach traffic barrier. A detailed structural inspection was performed and it was recommended that the superstructure be replaced, along with ancillary replacement of the bearings, bridge deck, parapet walls and asphalt surface, including localized repairs to the bearing seats. Construction TBD.

Technical Advisor, Kent Bridge Road Bridge at McLean Drain, Municipality of Chatham-Kent, Ontario (2014-15)

Replacement of the bridge over the McLean Drain at Kent Bridge Road in the Community of Harwich, in the Municipality of Chatham-Kent. This two-lane single-span slab on I-Girder bridge was originally constructed in 1965, with no record of rehabilitation work being performed since initial construction. A 2013 OSIM Bridge Inspection Report identified very severe deterioration of the steel girders and bearing seats, with extensive structural evaluation required to determine the extent of rehabilitation works, or complete span replacement. It was determined that full removal and replacement of the structure with a suitably sized precast box culvert would suit the Municipality's drainage and economic requirements. Construction completed in December 2015 with contract administration and construction inspection services provided.

Technical Advisor, County Road 46 at Gzowski Drain, Culvert C-46-055 Replacement, County of Essex, Ontario (2014-15)

Replacement of Culvert C-46-055 of the Gzowski Drain at County Road 46 in the Town of Tecumseh, County of Essex. The existing original culvert section was constructed in 1930, with rehabilitation work taking place in 1950 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structure rehabilitation works included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, enclosure of the north ditch, and general site improvements. Construction completed in August 2015 with contract administration and construction inspection services provided.

Technical Advisor, County Road 8 at Belle River, Bridge B-08-31 Rehabilitation, County of Essex, Ontario (2013-15)

Rehabilitation of Bridge B-08-31 over Belle River on County Road 8. The existing structure is a two-lane single-span bridge with pre-cast T-beams and was originally constructed in 1964, with rehabilitation work taking place in 1994. Since then, the bridge had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involved the design of structure rehabilitation works that included repairs to the concrete bearing seat, abutment walls, wingwalls, T-beam flanges and webs, and cast-in-place diaphragms and ballast walls, removal of the existing concrete post and rail barrier, replacement of the asphalt road surface complete with waterproofing, deck drainage improvements, and the design and installation of an approved barrier system on the structure and for all approaches. Construction for this project is scheduled to commence in June 2015.

Technical Advisor, Concession 6 North Watermain Rehabilitation, Town of Amherstburg, Ontario (2013)

Provided engineering services to the Town for watermain rehabilitation on Concession 6 North. Assessment and design included replacement of approximately 400 metres of existing ductile iron watermain. This project required horizontal directional drilling at two watercourse crossings, with new lateral service lines connected via boring methods with minimal disruption to the existing roadway and adjacent properties. Construction completed November 2014 with contract administration and construction inspection services provided. Consultation included meetings with the Town of Amherstburg and the public.

Project Manager, Thomas Road Reconstruction Alma Street to Texas Road, Town of Amherstburg, Ontario (2011)

The Thomas Road Reconstruction project entailed the reconstruction of 1,800m of an existing gravel road to an asphalt road with concrete curb and gutter and gravel shoulders. Other project components included in the scope were the replacement of an at-grade railway crossing, the addition of bike lanes, various drainage enclosures and improvements, and the construction of an enhanced natural filtration area.

During construction, a number of improvements at the Town's Department of Public Works yard, located within the project's limits, were added to the contract at the Town's direction. These improvements account for a large majority of the increase to the final contract price.

Project Manager, Sagamok Biidaaban School Sceptic Repairs, Sagamok Anishnawbek First Nation (2010)

The Sagamok Biidaaban School Sceptic Repairs was a design-build project for the construction of a 7,500 L/day sewage treatment system on a fast track basis to replace a failed system that was leaking sewage into the schoolyard. The project included an interceptor sewer, two septic tanks, a sewage pump station, forcemain, and remote 16,000 ft² absorption bed with 2,600 ft of tiles. Scope of work included design, contract administration and inspection services.

Project Manager, Walker Road Watermain Extension, County Road 12 to Alma Street, Town of Amherstburg, Ontario (2008)

The Walker Road watermain Extension project entailed the construction of 500 meters of a 150 mm water main extension for the completion of a water main loop. Also included was a jack and bore to avoid an open cut of County Road 12. Scope of work included design, contract administration and inspection services.

Project Manager, North Branch Cedar Creek Geothermal Bridge, County of Essex, Ontario (2007)

The Becker Engineering Group researched, developed, design and built this unique geothermally-heated highway bridge under a fixed-price, design-build contract for the County of Essex. Heat collected from the bridge deck and the caissons in the summer months is stored underground and recovered during the winter to prevent ice from forming on the bridge deck and to protect the bridge from the damaging effects of de-icing salts and freeze-thaw cycles.

This prototype structure is fully instrumented with temperature sensors and strain gauges, a weather station and a video camera that monitor its performance and control its operation in real-time, via the internet. The Becker Engineering Group was responsible for all aspects of design and construction.

This project included close consultation with the Essex Region Conservation Authority (ERCA), Transport Canada under the Navigable Waters Protection Act, and the preparation of an Environmental Screening Report under the Canadian Environmental Assessment Act.

This is the first geothermally-heated highway bridge to be built in Ontario and has been extensively tested since construction completion. It was honoured with the Peter J. Marshall award by the Association of Municipalities of Ontario and the Ministry of Municipal Affairs and Housing in August 2009.

Project Manager, Windsor Riverfront Shoreline Improvements, City of Windsor, Ontario (2006)

The Windsor Riverfront Shoreline Improvement project entailed the construction of shoreline improvements in accordance with the City's Master Plan in an effort to create more useable space along the waterfront while providing aquatic features to benefit the natural environment. A Schedule 'C' Municipal Class Environmental Assessment commencing at Phase 3 was conducted to gather input on the alternative shoreline improvements proposed for the project. Scope of work included design, contract administration and inspection services.

Project Manager, County Road 8 and County Road 9 Intersection Improvements, County of Essex, Ontario (2006)

The County Road 8 & 9 Intersection Improvements were carried out to improve the intersection level of service by installing designated left turn lanes for all four approaches. Intersection improvements included traffic signal design and relocation, asphalt road widening, updated road barriers and Green Terramesh retaining walls. Scope of work included design, tender and contract administration and inspection services.

Project Manager, South Cedar Creek / County Road 23 Bridge Rehabilitation, County of Essex, Ontario (2004)

This project included design, tender services and contract administration for the rehabilitation of the County Road 23 bridge over the south branch of Cedar Creek. The existing bridge structure had deteriorated to an advanced state, thereby necessitating major reconstruction works.

The South Cedar Creek / County Road 23 Bridge Rehabilitation involved the removal of the existing bridge deck and abutments and the installation of new precast slabs, precast abutments, cast-in-place barrier walls, steel guide rails, expansion joints, and asphalt paving.

This project included close consultation with the Essex Region Conservation Authority (ERCA) and the preparation of an Environmental Impact Assessment due to the bridge's location within a Provincially Significant wetland.

Project Manager, Merrick Creek at County Road 8 Bridge Rehabilitation, County of Essex, Ontario (2003)

This project involved a detailed condition assessment and replacement of the existing bridge deck on County Road 8 at Merrick Creek (approximately 75 metres west of Howard Avenue), including the replacement of the existing guardrails and spot repairs to the bridge sub-structure.

Consultation with the Essex Regional Conservation Authority (ERCA) was required for this project. Scope of work included design, tender and contract administration and inspection.

Motor Vehicle Accident Investigation & Analysis

Mr. Hrycay has been involved in the investigation and/or engineering analysis of more than 2680 motor vehicle accidents, of which over 1980 he was the principal engineer. These accidents have taken him across 7 Provinces, one Territory and all 48 contiguous States of the United States except for Rhode Island. The investigations included transportation and traffic issues as they relate to accident causation as well as vehicle kinematics and dynamics, roadway design and maintenance, and occupant kinematics. He has also given expert evidence relative to motor vehicle accident analysis at various trials and hearings in Canada and the United States including the Ontario Provincial Offences Court, the former Supreme Court of Ontario, Ontario District Court, the Alberta Court of Queen's Bench, Michigan District Court, Wayne County Michigan Circuit Court, Washtenaw County Michigan Circuit Court, Oakland County Michigan Circuit Court, Berrien County Michigan Circuit Court, Ingham County Michigan Circuit Court, U.S. Federal District Court of Oregon, Erie County Court State of New York, Genessee County Court New York, State of New York Court of Claims, U.S. Federal District Court for the Western District of Pennsylvania, Court of Common Pleas of Cumberland County Pennsylvania, United States District Court for the Northern District of Ohio Western Division, Court of Claims State of Ohio, U.S. Federal District Court for the District of New Jersey, Circuit Court of Kanawha County, West Virginia, In The Superior Court of The State of Washington In and For The County of King, Circuit Court of St. Louis City 22nd Judicial Circuit State of Missouri, the 18th Judicial Court for the Parish of West Baton Rouge, State of Louisiana, In The Circuit Court, Twentieth Judicial Circuit, St. Clair County, Illinois, the United States District Court, Northern District of Iowa, the Superior Court Judicial District of New Haven, Connecticut and The Superior Court Commonwealth of Massachusetts, Worcester Mass.

Invited Lectures and Technical Publications

- "Geothermal Heated Bridge Deck" Tom Bateman, P. Eng., James Hrycay, P. Eng., Dr. Norm Becker, P. Eng., 2007 Ontario Good Roads Association Snow and Ice Colloquium, Mississauga, Ontario, October 2007.
- "Municipal Liability" presented at the Municipal Engineer's Association of Ontario 33rd Annual Workshop, Windsor, Ontario, November 1992.
- Routine Lectures in "Occupational Health and Safety in the Workplace" to employees in all departments of various municipalities in Windsor, Essex, Kent, and Lambton counties. Windsor and Chatham, Ontario, December 1990 to June 1992.
- "Risk Management with Respect to Motor Vehicle Accidents", presented to the Zone 1 Conference of the Ontario Association of Municipal Clerks and Treasurers, Chatham, Ontario April 1985.
- "Taking the Initiative for Road Hazard Removal" presented to Essex County Officials, Road Superintendant's and Municipal Engineers, Windsor, Ontario October 1984.
- "Hidden Highway Design Defects that Contribute to Motor Vehicle Accidents", Becker, N.K. and Hrycay, J.R., published in the Annual Proceedings of the Canadian Society of Civil Engineers, Vol. 1, Halifax, N.S. 1984.

Continuing Education Courses and Seminars

- "APWA North American Snow Conference" by the American Public Works Association, Milwaukee, Wisconsin, April 2012.
- APWA Winter Maintenance Supervisor Workshop Certificate by the American Public Works Association, Milwaukee, Wisconsin, April 2012
- "Orientation to the Canadian Environmental Assessment Act", by the Canadian Environmental Assessment Agency, Edmonton, Alberta, November 2005.
- "Perception, Reaction, Conspicuity" by the University of Iowa, Iowa City, Iowa, November 1997.
- "Concept of Day/Night Visibility for Traffic Accident Investigators" by Dr. Bernard Abrams of the Institute of Vehicular Safety, Edmonton, Alberta, August 1995.
- "Road Safety in Canada, The Challenge" by the Canadian Council of Motor Transport Administrators, Montreal, Quebec, December 1988.

Profession

Civil Engineer

Education

B.A.Sc., Civil Engineering,
University of Windsor, 2007

Master of Engineering
Management, University of
Windsor, 2018

Professional Societies

Professional Engineers Ontario

Institute of Transportation
Engineers (ITE)

American Public Works
Association (APWA)

Canadian Association of Road
Safety Professionals (CARSP)

Employment Record

Project Engineer, HRYCAY
Consulting Engineers Inc.,
Windsor, ON (2012 – Present)

Project Engineer, R.J. Burnside &
Associates Ltd., Collingwood, ON
(2010 – 2012)

Assistant Project Manager, Coco
Paving Inc., Windsor, ON (2009)

EIT, Wade Trim & Associates,
Taylor, MI (2008)

EIT, Urban & Environmental
Management Inc., Niagara Falls,
ON (2007)

Citizenship

Canadian

Languages

English

Justine E. Arbour, P.Eng

Justine Arbour is a Project Engineer with HRYCAY Consulting Engineers Inc. with experience in highway design, traffic signal design, traffic engineering, tender preparation, contract administration and construction project management. She has extensive working experience with geometric design standards (MTO and TAC), application of the Roadside Safety Manual, design and construction methodology for both large-scale Ministry of Transportation of Ontario (MTO) projects and municipal projects, and has had experience with the Michigan Department of Transportation (MDOT) design standards.

As a Project Engineer with HRYCAY Consulting Engineers Inc, Ms. Arbour is involved in transportation planning and design, roadside safety design and review, contract administration, cost estimation, design review, and active transportation studies.

Ms. Arbour has been extensively involved in the field of active transportation including bicycle facilities, trail network design and pedestrian & bicycle safety. Representative projects in this field include the Township of Ramara Active Transportation Plan, active transportation facility design for the Hume Street and High Street Reconstruction in the Town of Collingwood, and the Black Ash Trail crossing in the Town of Collingwood.

Ms. Arbour has attended numerous conferences and workshops on intersection and roadway safety, active transportation, bicycle facilities, traffic signal design, roundabout design, highway inspection, traffic engineering and transportation planning.

Municipal & Transportation Engineering

Technical Advisor, Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-present)

Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.



Technical Advisor, Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Technical Advisor, 8th Concession North Reconstruction, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the reconstruction of 8th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Technical Advisor, Ventnor Avenue Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 550 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement and concrete curb and gutter along Ventnor Avenue in the Town of Amherstburg.

Technical Advisor, Alma Street Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 400 metres of 100mm diameter watermain with 200mm diameter watermain, including decommissioning of the redundant line and service reconnections, along Alma Street in the Town of Amherstburg. This project required ongoing consultation with affected property owners and proposed new ratepayers.

Project Manager, County Road 46 at Rochester Townline Intersection Improvements, County of Essex, Ontario (2020-2021)

Provided engineering services for preliminary design options for intersection improvements at County Road 46 and Rochester Townline in the Town of Lakeshore, County of Essex, Ontario. This intersection has experienced a high number of motor vehicle collisions related to non-compliance of stop control on the minor street. As an extension of the Intersection Safety Review performed by HCEI in 2016, the study team reviewed interim safety improvement measures, provided design options, cost estimates, and construction schedules, and prepared recommendations for the County's consideration. Design considerations included integration with the ultimate roundabout design option, limiting impact to adjacent property, cost effectiveness of proposed measures, and coordination with the Essex Region Conservation Authority on impacts to adjacent municipal drains.

Technical Advisor, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2020-present)

Currently providing engineering services for the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works include watermain replacement, assessment of the existing storm sewer for replacement or rehabilitation, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Technical Advisor, Bloomfield Road and Richmond Street Sanitary Sewer Rehabilitation, Community of Chatham, Municipality of Chatham-Kent, Ontario (2019 - 2021)

Provided engineering services for the trenchless rehabilitation of approximately 1700 metres of existing sanitary sewer deemed to be in condition ranging from moderate to severe. A main component of this project was that the work be compliant with NSF-61 requirements or employ re-capture methods to produce safe discharge into the system so as to not affect the downstream water treatment plant. This project involved liaising with trenchless technologies contractors and material manufacturers to discuss

trenchless methodologies that satisfy the Municipality's requirements, detailed survey of the existing sanitary sewer system including structure measurements, identification of private services, and preparation of contract documents.

Project Manager, 4th Concession North Reconstruction, Town of Amherstburg, Ontario (2019-2021)

Provided engineering services for the reconstruction of 4th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Project Manager, Pacific Avenue Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2019 - 2021)

Provided engineering services for the replacement of 620 metres of 200mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Pacific Avenue, from Richmond Street to Simcoe Street, in the Town of Amherstburg.

Technical Advisor, McLeod Avenue and South Riverview Drive Reconstruction, Town of Amherstburg, Ontario (2019-present)

Currently providing engineering services for the reconstruction of McLeod Avenue between 3rd Concession South and Lakewood Drive, and South Riverview Drive between Beneteau Drive and 2nd Concession North. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Project Manager, McNaughton Avenue West Improvements, Community of Chatham, Municipality of Chatham-Kent, Ontario (2018-2019)

Provided engineering services for the reconstruction of McNaughton Avenue West and Keil Drive North. The reconstruction works include updates to the road cross-section to include new curb and gutter, storm sewers, sidewalks, traffic signalization, intersection improvements, a new Type B Level 2 pedestrian crossover, updated streetlighting, watermain replacement, and other roadway improvements.

Project Manager, 5th Concession North and Texas Road Reconstruction, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the reconstruction of Texas Road between 2nd Concession and 3rd Concession and 5th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Project Manager, Walnut Drive Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the replacement of 180 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Walnut Drive, from Hawthorne Crescent to McCurdy Drive, in the Town of Amherstburg.

Project Manager, Creek Road Rehabilitation, Town of Amherstburg, Ontario (2018)

Provided engineering services for the rehabilitation of Creek Road between County Road 20 and Meloche Road / Lowes Side Road. The reconstruction works included in-place full depth pulverization of existing asphalt pavement and granulars, road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes

place within the Big Creek Watershed which required great care during the design phases so as to not negatively impact sensitive natural areas.

Project Manager, Bloomfield Road Rehabilitation, Municipality of Chatham-Kent, Ontario (2017-2019)

Provided engineering services for the rehabilitation of Bloomfield Road between Riverview Drive to Richmond Street. The reconstruction works include new asphalt roadway, new storm sewers from Riverview Drive to Richmond Street, new sidewalk, curb and gutters, and updated streetlighting.

Project Manager, Meloche Road Rehabilitation, Town of Amherstburg, Ontario (2016-2017)

Provided engineering services for the rehabilitation of Meloche Road between Alma Street to Lowes Sideroad. The reconstruction works include new asphalt roadway, new storm sewers from Simcoe Street to Lowes Sideroad, new on-road bike lanes, asphalt multi-user recreational trails, and updated streetlighting.

Project Manager, O'Neil Street Reconstruction, Municipality of Chatham-Kent, Ontario (2016-2017)

Provided engineering services for the reconstruction of O'Neil Street, from Tweedsmuir Ave to Park Avenue West, in the Community of Chatham. The Scope of work included new asphalt roadway, replacement of storm sewers, sanitary sewers, and watermain and all associated appurtenances.

Project Manager, Pickering Drive Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2015-2019)

Provided engineering services for the replacement of 1165 metres of 300mm diameter watermain, including service reconnections, along Pickering Drive, from Dalhousie Street to Fryer Street, in the Town of Amherstburg. Additional works included road improvements and traffic signal design for the Pickering Drive / Sandwich Street intersection. Minimal disruption to the existing roadway and commercial and residential properties was considered during the design and construction stages. Design and construction was completed in two phases, with Phase 1 construction completed in 2018 and Phase 2 construction completed in 2019.

Construction Inspector, Golfview Park Estates Phase 4C & 4D, Town of Amherstburg (2015)

Provided third-party construction inspection services on behalf of the Town of Amherstburg for Phase 4C and 4D of the Golfview Park Estates sub-division. This project consisted of new storm and sanitary sewer complete with service laterals, new watermain including service connections, utility conduit crossings, curb and gutter, grading, and new roadway. Primary responsibilities were verifying construction progress and methods, acting as liaison between the Town and Developer, organizing necessary testing procedures such as granular compaction and asphalt densities, and acting as Town representative with the general public.

Project Manager, Meloche Road Pavement Condition Index, Town of Amherstburg, Ontario (2015)

Provided engineering services for a pavement condition index assessment of Meloche Road, from Alma Street to Lowes Side Road, in the Town of Amherstburg. Associated works included site visits to document the existing conditions, including measurements, photographs and field evaluation forms, data analysis to calculate a pavement condition index, and final report to the Town. This study was part of a successful submission by the Town to the Ontario Community Infrastructure Fund for funding to reconstruct Meloche Road.

Lead Project Engineer, Riviera Drive / Riviera Place Watermain Rehabilitation, Town of Amherstburg, Ontario (2013-15)

Provided engineering services to the Town for watermain rehabilitation on Riviera Drive and Riviera Place. Assessment and design included replacement of the existing ductile iron watermains and looping the watermain network. This work also included resurfacing of the existing roadway, with curb and gutter and granular base repairs performed as necessary. Minimal disruption to residential properties

was considered during the design stages and construction. Construction completed November 2015 with contract administration and construction inspection services provided. Consultation included meetings with the Town of Amherstburg and the public.

Lead Project Engineer, Concession 6 North Watermain Rehabilitation, Town of Amherstburg, Ontario (2013-14)

Provided engineering services to the Town for watermain rehabilitation on Concession 6 North. Assessment and design included replacement of approximately 400 metres of existing ductile iron watermain. This project required horizontal directional drilling at two watercourse crossings, with new lateral service lines connected via boring methods with minimal disruption to the existing roadway and adjacent properties. Construction completed November 2014 with contract administration and construction inspection services provided. Consultation included meetings with the Town of Amherstburg and the public.

Project Engineer, County Road 10/90 Intersection Improvements, County of Simcoe, Ontario (2012)

Provided environmental assessment and engineering services to the County for intersection improvements of County Road 10/90 & Cambrai Road. Assessment and design options for the intersection included full signalization, road realignment, traffic slip-by lanes, right turn channelization, and roundabout design, complete with traffic analysis and impact. Consultation included meetings with concerned road authorities (i.e. Township of Essa and County of Simcoe), Canadian Forces Base Borden, local school boards, business associations and the public.

Project Engineer, High Street Reconstruction – Phase 2, Town of Collingwood, Ontario (2011-2012)

Project Engineer for the reconstruction design of High Street in the Town of Collingwood. Design included partial and full depth reconstruction, profile realignment, road widening, curb and gutter, traffic signals, drainage improvements, storm sewer, watermain, streetscaping features, landscaping, street lighting, trail realignment and pedestrian safety improvements.

Project Engineer, Hume Street Reconstruction, Town of Collingwood, Ontario (2010-2012)

Project Engineer for the reconstruction design of Hume Street in the Town of Collingwood. Design included partial and full depth reconstruction, road widening, curb and gutter, five signalized intersections, storm sewer, sanitary sewer, watermain, streetscaping features, landscaping, street lighting, trail realignment, on-road bicycle facilities and pedestrian safety improvements.

Assistant Project Manager, Grey Road 19 / 21 Intersection Improvements, Grey & Simcoe County, Ontario (2010-2012)

Assistant Project Manager for the intersection design of Grey Road 19 / 21 in the County of Simcoe. Design options explored auxiliary left- and right-turn lanes, dual north-bound left-turn lanes, intersection realignment to reduce impact to property owners and a single-lane roundabout. Consideration was given to stormwater drainage, traffic signals, and pedestrian safety.

Assistant Project Manager, Town of Collingwood Downtown Revitalization, Town of Collingwood, Ontario (2010-2012)

Assistant Project Manager for the reconstruction of downtown Collingwood. Road works included partial depth reconstruction, installation of new curb and gutter, streetscaping features, landscaping, street lighting and pedestrian safety improvements. A considerable amount of public relations and co-ordination with various affected parties was a major component due to the centralized urban nature of this project.

Assistant Project Manager, First Street / Huron Street Reconstruction, Town of Collingwood, Ontario (2010-2012)

Assistant Project Manager for the construction of First Street / Huron Street (Highway 26) in Collingwood. This project consisted of reconstruction of 2.0 km of the existing 4-lane roadway to a 5-

lane urban connecting link highway, watermain, sanitary sewer, storm sewer, curb & gutter, sidewalk and 6 signalized intersections. The project included the widening of the roadway from four lanes to five lanes, traffic signals, watermain, storm sewer and sanitary work, streetscape improvements and upgrades to roadside safety.

Project Manager, Osler Bluff Ski Club Parking Lot Study, Blue Mountains, Ontario (2010)

Project manager for the Osler Bluff Ski Club (OBSC) Parking Lot Study. This project investigated two parking lots that were at maximum capacity and offered parking layouts and strategies to maximize parking capacity and reduce incidences of parking violations.

Assistant Project Manager, County Road 79 Reconstruction, Lambton County, Wyoming, Ontario (2009)

Assistant Project Manager for the reconstruction of CR 79 in Lambton County. Road works included full depth reconstruction, structure rehabilitation over Hwy 402, installation of new entrances to waste management facility, and watermain work.

Assistant Project Manager, Highway 401 Reconstruction, Essex County, Ontario (2009)

Assistant Project Manager for the reconstruction of Highway 401 between Talbot Road (Highway 3) and Belle River Road (County Road 27) in Essex County. Road works included full depth reconstruction, structure rehabilitation on overpasses, reconstruction of on- and off-ramps, and supervision of installation for advanced traffic management systems (ATMS). Project responsibilities were management of construction schedule, co-ordination of construction activities and co-ordination with contract administrator and other involved authorities.

Assistant Project Manager, Highway 401 Reconstruction, Essex County, Ontario (2009)

Assistant Project Manager for the reconstruction of Highway 401 between Talbot Road (Highway 3) and Belle River Road (County Road 27) in Essex County. Road works included full depth reconstruction, structure rehabilitation on overpasses, reconstruction of on- and off-ramps, and supervision of installation for advanced traffic management systems (ATMS). Project responsibilities were management of construction schedule, co-ordination of construction activities and co-ordination with contract administrator and other involved authorities.

Assistant Project Manager, Highway 3 Reconstruction, Essex County, Ontario (2009)

Assistant Project Manager for the reconstruction of Highway 3 (Talbot Road) between Essex County Road 31 and Essex County Road 11 in Essex County. Road works included full depth reconstruction, structure rehabilitation, and intersection reconstruction. Project responsibilities were management of construction schedule, co-ordination of construction activities and co-ordination with contract administrator and other involved authorities.

Junior Project Engineer, Fort Street/M-85, Michigan Department of Transportation, Detroit, Michigan, USA (2008)

Junior Project Engineer for roadway design of Fort Street (M-85) from Miller Road to west of Springwells Street. This project included full depth reconstruction, stormwater mitigation and management, updated lighting, improved local street access, construction of a non-motorized path and aesthetic improvements. Collision analysis was also an integral part for intersection improvements.

Junior Project Engineer, M-19 & M-136, Michigan Department of Transportation, St. Clair County, Michigan, USA (2008)

Junior Project Engineer for highway improvements to M-19 & M-136. This project comprised of roadway design of approximately 10 miles of M-19 and M-136 in St. Clair County, Michigan. An overlay with profile milling was designed to strengthen the structural integrity of the highway and included upgrading of shoulder widths, roadway crown and superelevations, as well as re-configuration of some intersections.

Junior Project Engineer, M-53, Michigan Department of Transportation, Macomb County, Michigan, USA (2008)

Junior Project Engineer for highway improvements to M-53. This project included the rehabilitation of six miles of M-53 and three interchanges in Macomb County for the Michigan Department of Transportation (MDOT) to bring the freeway up to current standards and extend the facility's service life. The project included pavement repairs and resurfacing, geometric improvements including underclearance improvements and permanent signing upgrades. Ramps at the 23 Mile Road interchange were reconfigured to include an additional loop ramp that allows access to the freeway without the need to make left-hand turns. This eliminated backups across the bridge, allowed for safer freeway access and a more operationally-efficient interchange.

Construction Inspector, Regional Road 87 (Lakeshore Road), Region of Niagara, Ontario (2007)

Construction inspector for the reconstruction of Regional Road 87, from Welland Road to Read Road, in the Region of Niagara. This project consisted of partial depth removal of asphalt and reinstatement, new curb and gutter, grading, and drainage improvements. Primary responsibilities were verifying quantities and work completed, acting as liaison between project engineer and contractor, and organizing necessary testing procedures such as granular compaction and asphalt density.

Project Member, Peer Review of Traffic Impact Study for the Proposed Fort Erie Speedway, Fort Erie, Ontario (2007)

Assisted in the peer review of the Fort Erie Speedway Traffic Impact Study. The study was completed by a third party for a proposed raceway in Fort Erie and was peer-reviewed for accuracy of data, accuracy of traffic projection methods, and consistency with the Ministry of Transportation Ontario's General Guidelines for the Preparation of Traffic Impact Studies.

Project Member, Schedule B Class EA to Examine Alternative Road Access for River Road at Newport Road, County of Brant, Ontario (2007)

Project member for the Schedule B Class EA of River Road at Newport Road. A section of River Road from Newport Road to Fawcett Road in the County of Brant was closed due to safety concerns raised by bank slippage. An EA was undertaken to study possible alternatives along this section of River Road. Tasks completed for this EA included an analysis of traffic flow diversion using traffic simulation software, generation of traffic volume figures and data, preparation of a draft progress report detailing existing traffic conditions, levels of service and future anticipated traffic conditions, assembled and organized correspondence as per EA requirements, consultation with the Transportation Association of Canada's (TAC) geometric guidelines for various solution alternatives, and preparation of materials for Public Information Centres (PIC) and other various presentations.

Co-Op Student, Policy Recommendation Reports, Corporation of the City of Windsor, Ontario (various work terms 2004 through 2006)

Engineering co-op student for draft proposals pertaining to Traffic Calming policy, School Zone policy, and Bollard Improvement and Installation Program for the City of Windsor for future use.

Traffic Signals

Carried out the design, contract preparation and administration of numerous traffic signal installations. These projects involved intersection traffic studies for the determination of signal warrants, preparation of PHM-125 drawings for legal approval, partial illumination design, utility coordination, traffic signal design including layout, ductwork, power supply and vehicle detection, preparation of contract drawings and specifications, tendering and construction administration and traffic signal activation. All the signal contracts included the design of the associated pavement markings and roadway signage. Some projects also involved the design of pedestrian signals, transit priority signals and optically programmable signal heads. Traffic signal projects were undertaken in Counties of Simcoe & Grey, Cities of Barrie, Brampton and Guelph, Towns of Bradford West Gwillimbury, Collingwood, Innisfil, New Tecumseth, and Wasaga Beach, Municipality of South Bruce, and Township of Tyny.

Representative projects include:

- McNaughton Avenue West & Keil Drive North Intersection Improvements, Municipality of Chatham-Kent, Ontario (2019)
- McNaughton Avenue West Type B Level 2 Pedestrian Crossover, Municipality of Chatham-Kent, Ontario (2019)
- Pickering Drive & Sandwich Street Intersection Improvements, Town of Amherstburg, Ontario (2017)
- County Road 10/90 Intersection Improvements, County of Simcoe, Ontario (2012)
- Dayfoot Street and Tecumseth Street, Town of New Tecumseth, Ontario (2012)
- County Road 27 & Mapleview Drive, County of Simcoe, Ontario (2012)
- County Road 90 Reconstruction, County of Simcoe, Ontario (2012)
- Innisfil Beach Road Precinct 2A, Town of Innisfil, Ontario (2012) – Contract Administration only
- Mildmay Intersection Pedestrian Signals, Municipality of South Bruce, Ontario (2012)
- Wyevale Intersection Pedestrian Signals & School Zone Warning Signs, Township of Tiny, Ontario (2012)
- Mattamy (Lockwood) Subdivision, City of Brampton, Ontario (2012)
- Allandale GO Station Improvements, City of Barrie, Ontario (2012)
- Disette Street / 8th Line Reconstruction, Town of Bradford West Gwillimbury, Ontario (2011)
- Holland Street West Construction, Town of Bradford West Gwillimbury, Ontario (2011)
- Guelph Transit Terminal, City of Guelph, Ontario (2011)
- River Road West Reconstruction, Town of Wasaga Beach, Ontario (2011-2012)
- Hume Street Reconstruction, Town of Collingwood, Ontario (2010-2012)
- High Street Reconstruction, Phase 1 & 2, Town of Collingwood, Ontario (2010-2012)
- Grey Road 19 / 21 Intersection Improvements, Grey & Simcoe County, Ontario (2010-2012)
- Town of Collingwood Downtown Revitalization, Town of Collingwood, Ontario (2010-2011)
- First Street / Huron Street Reconstruction, Town of Collingwood, Ontario (2010-2011)

Transportation Safety Engineering

Project Manager, Cherrylawn at Pickering Stop Control Study, Town of Amherstburg (2020)

Provided engineering services for the evaluation of the intersection of Cherrylawn Crescent (West) and Pickering Drive as it relates to the installation of all-way stop intersection controls. This project involved a review of background data, analysis of current standards and warrants, collection of traffic data using remote video data collection equipment and software, application of warrants, synthesis of results and final recommendations for the Town's consideration. The resulting report was provided to Town Council for their deliberation and implementation.

Lead Engineer, County Road 46 at Rochester Townline Intersection Safety Review, County of Essex, Ontario (2016)

Lead engineer for the intersection safety review at County Road 46 at Rochester Townline in the County of Essex, Ontario. This study involved site visits, measurements, and documentation, review of collision histories and traffic volumes, preparation of a safety performance assessment, review and discussion of causal factors, calculation of predicted average crash frequencies for existing conditions and proposed countermeasures, and safety improvement recommendations for the subject intersection.

Project Member, County Road 44 Reconstruction, Simcoe County, Ontario (2010)

Project member for the reconstruction of County Road 44. Project included redesign to bring roadway geometrics up to present standards, to eliminate existing safety hazards and ensure safe traffic operations, to correct existing storm water drainage concerns and to meet present and future transportation demands. Primary focus for this project was directed towards guiderail warrants and installation recommendations.

Project Member, Collision Study, Lakeshore Road Corridor, Niagara-on-the-Lake, Ontario (2007)

Project member for the collision study of the Lakeshore Road Corridor in Niagara-on-the-Lake, Ontario. This study involved site visits to audit the local road conditions, traffic volume studies, collision history analysis and a report outlining recommended safety improvements for the overall corridor.

Motor Vehicle Accident Investigation

Investigated and provided analysis on numerous Motor Vehicle Accident (MVA) cases throughout Canada and the United States. Investigative tasks include site visits, field surveys, collection of evidence, engineering analysis and detail drawings for generating reports on deficient warning, regulatory and construction zone signage, geometric design, traffic signal operation, traffic exposure, sightlines (stopping distance, passing distance and intersection sightlines), winter maintenance operations and practices, and deficient and inadequate guide rail design. MVA investigations within Ontario have been conducted in the Counties of Lambton, Middlesex, Elgin / Malahide, Essex, and Haldimand, the Cities of Windsor, London, Ottawa, Barrie, Kawartha Lakes, and Welland, the Municipality of Chatham-Kent, the Townships of Dawn-Euphemia, Amaranth, King, and Innisfil, and the Town of East Gwillimbury.

Active Transportation

Project Manager and Lead Engineer, South Riverview Drive Functional Design Study, Town of Amherstburg, Ontario (2020 – present)

Provided engineering services for the evaluation of the existing roadway infrastructure to accommodate the installation of various active transportation options on South Riverview Drive, from 2nd Concession North to Beneteau Drive. Design tasks include an evaluation of existing geometry, effect of watercourse encroachment within the existing ROW, a review of traffic safety measures, recommendation of a preferred design approach, and implementation of the recommended design into the overall road reconstruction scope.

Project Manager and Lead Engineer, Sandwich Street Bike Lane Installations, Town of Amherstburg, Ontario (2018 – 2019)

Provided engineering services for the evaluation of the existing roadway infrastructure to accommodate the installation of on-road bike lanes on Sandwich Street, from Lowes Sideroad to Park Street, in the Town of Amherstburg. Design tasks included an evaluation of existing geometry, a review of traffic safety measures, recommendation of a preferred design approach, and coordination with the contractor to install appropriate lane markings and signage.

Project Manager, Black Ash Trail at Mountain Road Crossing, Town of Collingwood, Ontario (2012)

Project manager for the design of safe pedestrian crossing facilities of the Black Ash Trail crossing Mountain Road in the Town of Collingwood. Project included horizontal and vertical sightline assessments, guide rail design and safe crossing strategies.

Project Member, Township of Tiny Traffic Calming Report, Township of Tiny, Ontario (2012)

Prepared a Traffic Calming Report and presentation to Township Council regarding traffic calming strategies and approaches for the Township of Tiny.

Project Manager, Township of Ramara Active Transportation Plan, Township of Ramara, Ontario (2010)

Project manager for the development of an Active Transportation Plan for the Township of Ramara. This project examined the township's transportation needs and recommended active transportation strategies, improvements and new additions to the current township trail network, including trail design standards. The active transportation plan included site visits, various methods of data collection, and a public consultation session. The final report identified the current transportation network's assets and

needs, provided recommendations for a safe, integrated and uninterrupted transportation network that serves all users, examined barrier issues with the current network and proposed a set of solutions, proposed design standards for the trail network, recommended enforcement strategies and recommended potential funding and promotion partnerships.

Structural

Technical Advisor, County Road 31 at Irwin Drain, Culvert C-31-147 Replacement, County of Essex, Ontario (2021 - present)

Currently providing engineering services for the replacement of Culvert C-31-147 of the Irwin Drain at County Road 31 in the Municipality of Leamington, County of Essex. The existing cast-in-place rigid frame, vertical leg concrete structure was originally constructed in 1980 with no record of remedial work undertaken. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete three-sided culvert, engineered retaining walls, relocation of underground utilities, and general site improvements. Consultations include meetings with the County of Essex, Essex Region Conservation Authority, Municipality of Leamington, and various utility agencies.

Technical Advisor, County Road 50 at Wigle Creek, Bridge B-50-27 Rehabilitation, County of Essex, Ontario (2020 – present)

Currently providing engineering services for the rehabilitation of Bridge B-50-27 over Wigle Creek on County Road 50. The existing structure is a two-lane single-span bridge with steel I-Beam girders and was originally constructed in 1931, with the structure undergoing rehabilitation on 1976 and 2009. Since then, the structure has experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involves the design of structure rehabilitation works that include removal and replacement of exterior girders and bearing pads, repairs to deteriorated concrete bearing seats (including jacking of superstructure), replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway. Consultations include meetings with the County of Essex, Essex Region Conservation Authority, and various utility agencies.

Technical Advisor, County Road 27 at Belle River, Bridge B-27-12 Rehabilitation, County of Essex, Ontario (2020 – present)

Currently providing engineering services for the rehabilitation of Bridge B-27-12 over Belle River on County Road 27. The existing structure is a two-lane single-span bridge with steel I-Beam girders and was originally constructed in 1949, with the structure undergoing a deck replacement in 2001. Since then, the structure has experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involves the design of structure rehabilitation works that include repairs to the concrete abutment walls, bearing seats (including jacking of superstructure), ballast walls, wingwalls and fascia, conversion of the existing expansion joints to semi-integral abutments, replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway. Consultations include meetings with the County of Essex, Town of Kingsville, Essex Region Conservation Authority, and various utility agencies.

Project Manager and Lead Engineer, Culvert No. 3, Collision Drain Culvert at Collision Sideroad, Town of Amherstburg, Ontario (2019 – 2021):

Provided engineering services for the replacement of Culvert No. 3 of the Collision Drain at Collision Sideroad in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1930. Since then, the structure had experienced concrete deterioration through

cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies.

Project Manager and Lead Engineer, Culvert No. 59, Hamel Bezaire Drain South Branch Culvert at 4th Concession North, Town of Amherstburg, Ontario (2019 – present)

Currently providing engineering services for the replacement of Culvert No. 59 of the south branch of the Hamel Bezaire Drain at 4th Concession North in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies

Project Manager, County Road 14 at Lovelace Drain, Culvert C-14-043 Replacement, County of Essex, Ontario (2019-2020)

Provided engineering services for the replacement of Culvert C-14-043 of the Lovelace Drain at County Road 14 in the Town of Kingsville, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1930 with rehabilitation work taking place in 1950 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the County of Essex, Essex Region Conservation Authority, Town of Kingsville, and various utility agencies.

Project Manager, County Road 34 at Pelee Creek Drain, Culvert C-34-379 Replacement, County of Essex, Ontario (2018-2020)

Provided engineering services for the replacement of Culvert C-34-379 of the Pelee Creek Drain at County Road 34 in the Municipality of Leamington, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940 with rehabilitation work taking place in 1960 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, and general site improvements. Consultation included meetings with the County of Essex, Municipality of Leamington, and various utility agencies.

Project Manager, County Road 20 at Wigle Creek, Bridge B-20-54 Rehabilitation, County of Essex, Ontario (2017-2018)

Provided engineering services for the rehabilitation of Bridge B-20-54 over Wigle Creek on County Road 20. The existing structure is a two-lane single-span rigid frame bridge and was originally constructed in 1964, with no record rehabilitation work being performed. Since then, the bridge had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involved the design of structure rehabilitation works that included include repairs to the concrete soffits, abutment walls and wingwalls, deteriorated concrete cold joints, replacement of asphalt road surface complete with waterproofing, replacement deck drains, curbs and roadside barriers, assessment of the adjacent roadside ditches, watercourse and embankments, the design of an approved barrier system on the structure with applicable steel beam guide rail approaches/attenuators, and roadside safety assessments of the roadway.

Project Manager, County Road 42 at 8th Concession Drain Culvert Replacement, County of Essex, Ontario (2015-2016)

Provided engineering services for the replacement of Culvert C-42-052 of the 8th Concession Drain at County Road 42 in the Town of Lakeshore, County of Essex. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940 with no record of rehabilitation work being performed. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, and general site improvements. This project also included the relocation of the existing 200 mm cast iron watermain in order to avoid conflict with the proposed design. Construction completed in 2016. Consultation included meetings with the County of Essex, Town of Lakeshore, and various utility agencies.

Lead Project Engineer, Indian Creek Road East Bridge at Indian Creek Drain, Municipality of Chatham-Kent, Ontario (2014-Present)

Provided engineering services for the rehabilitation of the bridge over the Indian Creek Drain at Indian Creek Road East in the Community of Raleigh, in the Municipality of Chatham-Kent. This slab on box girder bridge carries two-lanes of traffic over one continuous span and was originally constructed in 1967, with no record of rehabilitation work being performed on this structure since initial construction. A 2013 OSIM Bridge Inspection Report identified heavy cracking on the underside of the box beams combined with heavy leakage, spalling of the exterior barrier seats and the absence of an approach traffic barrier. A detailed structural inspection was performed and it was recommended that the superstructure be replaced, along with ancillary replacement of the bearings, bridge deck, parapet walls and asphalt surface, including localized repairs to the bearing seats. Construction TBD.

Lead Project Engineer, Kent Bridge Road Bridge at McLean Drain, Municipality of Chatham-Kent, Ontario (2014-2015)

Provided engineering services for the replacement of the bridge over the McLean Drain at Kent Bridge Road in the Community of Harwich, in the Municipality of Chatham-Kent. This two-lane single-span slab on I-Girder bridge was originally constructed in 1965, with no record of rehabilitation work being performed since initial construction. A 2013 OSIM Bridge Inspection Report identified very severe deterioration of the steel girders and bearing seats, with extensive structural evaluation required to determine the extent of rehabilitation works, or complete span replacement. It was determined that full removal and replacement of the structure with a suitably sized precast box culvert would suit the Municipality's drainage and economic requirements. Construction completed in December 2015 with contract administration and construction inspection services provided.

Lead Project Engineer, County Road 46 at Gzowski Drain, Culvert C-46-055 Replacement, County of Essex, Ontario (2014-2015)

Provided engineering services for the replacement of Culvert C-46-055 of the Gzowski Drain at County Road 46 in the Town of Tecumseh, County of Essex. The existing original culvert section was constructed in 1930, with rehabilitation work taking place in 1950 to extend either end to accommodate a widened roadway. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structure rehabilitation works included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, enclosure of the north ditch, and general site improvements. Construction completed in August 2015 with contract administration and construction inspection services provided.

Lead Project Engineer, County Road 8 at Belle River, Bridge B-08-31 Rehabilitation, County of Essex, Ontario (2013-2015)

Provided engineering services for the rehabilitation of Bridge B-08-31 over Belle River on County Road 8. The existing structure is a two-lane single-span bridge with pre-cast T-beams and was originally constructed in 1964, with rehabilitation work taking place in 1994. Since then, the bridge had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involved the design of structure rehabilitation works that included repairs to the

concrete bearing seat, abutment walls, wingwalls, T-beam flanges and webs, and cast-in-place diaphragms and ballast walls, removal of the existing concrete post and rail barrier, replacement of the asphalt road surface complete with waterproofing, deck drainage improvements, and the design and installation of an approved barrier system on the structure and for all approaches. Construction completed in September 2015 with contract administration and construction inspection services provided.

Project Member, ESIA Water Supply, Mocuba, Mozambique (2011)

Designed and specified various methods for suspending a 600 mm ductile iron watermain underneath an existing 330 m bridge in the City of Mocuba, Mozambique. Support options included a suspended pipe roller hanger and spans of steel beam with pipe seat support. Design consisted of calculation of bearing strength of pipe rollers and cradles, support rods, anchorage bolts and steel beams, taking into account pipe thrust forces, thermal expansion and increased required factors of safety for overhead installations.

Invited Lectures and Technical Publications

1. "Development of Crash Modification Factors for Cycling Facilities" Canadian Association of Road Safety Professionals Annual Conference (2014)

Continuing Education Courses, Seminars and Lectures

1. "Designing Signalized Intersections Training Program" – Institute of Transportation Engineers Education Foundation (2021)
2. "Design of Concrete Bridges in Ontario" – EPIC Educational Program Innovations Center (October 2021)
3. "Sanitary Sewer Design Course" Ontario Good Roads Association – Mississauga, ON (April 2019)
4. "Transportation Association of Canada Annual Conference" – TAC, Toronto, ON (September 2016)
5. "Bridge and Structure Inspection Course" Ontario Good Roads Association – Mississauga, ON (April 2016)
6. "Highway Construction Inspection Course" Consulting Engineers of Ontario – Toronto, ON (March 2015)
7. "2014 Snow School" Ontario Good Roads Association – New Tecumseth, Ontario (September 2014)
8. "2014 APWA International Public Works Congress & Exposition" American Public Works Association – Toronto, ON (August 2014)
9. "Traffic Signal Design and Operation" Ontario Society of Professional Engineers & EPIC Educational Program Innovations Center – Mississauga, ON (September 2012)
10. "Intersection Safety Course" Ontario Traffic Council – Markham, Ontario (November 2010)

Profession

Civil Engineer

Education

B.A.Sc., Civil Engineering,
University of Windsor, 1995

Professional Societies

Professional Engineers Ontario

Employment Record

Project Engineer, HRYCAY
Consulting Engineers Inc.,
Windsor, ON (2018 – Present)

Quality Verification Engineer, The
Prestressed Group (PSI), Windsor,
ON (2013 – 2018)

Survey Manager, Amico
Infrastructures, Oldcastle, ON
(2004-2013)

Crew Chief, Coco Paving,
Windsor, ON (2003-2003)

Party Chief, Giffels Webster
Engineers, Rochester Hills, MI
(1998-2003)

Survey Leader, Eastern
Construction, Windsor, ON (1996-
2003)

Citizenship

Canadian

Languages

English

Scott Rahm, P.Eng.

Mr. Rahm is a graduate in from The University of Windsor with a Bachelor of Applied Science, Civil Engineering with technical knowledge and experience in project management, surveying, quality control and heavy civil construction.

Being exposed to both the design and the contracting side of the profession, Mr. Rahm has worked on large scale MTO projects, such as the Herb Gray Parkway and the Highway 407 Expansion as well as municipal projects for various local municipalities, including City of Windsor, Municipality of Chatham-Kent, Town of Lasalle and Town of Amherstburg. He has working experience with design standards, (MTO and municipal) and has familiarized himself with the Ontario Provincial Standard Specifications and Drawings (OPSS's and OPSD's). He has wide-ranging experience with extensive survey and quality control background as well as design and project management experience. Mr. Rahm has attended conferences regarding surveying and engineering software, teaching classes at each.

As a Project Engineer with HRYCAY Consulting Engineers Inc, Mr. Rahm is involved in contract administration, cost estimation, shop drawing reviews, roadwork and underground utility design, survey, inspection and as-builts throughout the project.

Municipal and Transportation Engineering

Design Engineer, Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-present)

Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.



Design Engineer, Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Design Engineer, 8th Concession North Reconstruction, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the reconstruction of 8th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Design Engineer, Ventnor Avenue Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 550 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement and concrete curb and gutter along Ventnor Avenue in the Town of Amherstburg.

Design Engineer, Alma Street Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 400 metres of 100mm diameter watermain with 200mm diameter watermain, including decommissioning of the redundant line and service reconnections, along Alma Street in the Town of Amherstburg. This project required ongoing consultation with affected property owners and proposed new ratepayers.

Project Manager, County Road 46 at Rochester Townline Intersection Improvements, County of Essex, Ontario (2020-2021)

Provided engineering services for preliminary design options for intersection improvements at County Road 46 and Rochester Townline in the Town of Lakeshore, County of Essex, Ontario. This intersection has experienced a high number of motor vehicle collisions related to non-compliance of stop control on the minor street. As an extension of the Intersection Safety Review performed by HCEI in 2016, the study team reviewed interim safety improvement measures, provided design options, cost estimates, and construction schedules, and prepared recommendations for the County's consideration. Design considerations included integration with the ultimate roundabout design option, limiting impact to adjacent property, cost effectiveness of proposed measures, and coordination with the Essex Region Conservation Authority on impacts to adjacent municipal drains.

Project Manager, Bloomfield Road and Richmond Street Sanitary Sewer Rehabilitation, Community of Chatham, Municipality of Chatham-Kent, Ontario (2019-present)

Currently providing engineering services for the trenchless rehabilitation of approximately 1700 metres of existing sanitary sewer deemed to be in condition ranging from moderate to severe. A main component of this project was that the work be compliant with NSF-61 requirements or employ re-capture methods to produce safe discharge into the system so as to not affect the downstream water treatment plant. This project involved liaising with trenchless technologies contractors and material manufacturers to discuss trenchless methodologies that satisfy the Municipality's requirements, detailed survey of the existing sanitary sewer system including structure measurements, identification of private services, and preparation of contract documents.

Design Engineer, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2020-present)

Currently providing engineering services for the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works watermain replacement, assessment of the existing storm sewer for replacement or rehabilitation, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Design Engineer, 4th Concession North Reconstruction, Town of Amherstburg, Ontario (2019-present)

Currently providing engineering services for the reconstruction of 4th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Designer Engineer, Pacific Avenue Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2019 - present)

Currently providing engineering services for the replacement of 620 metres of 200mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Pacific Avenue, from Richmond Street to Simcoe Street, in the Town of Amherstburg.

Design Engineer, McLeod Avenue and South Riverview Drive Reconstruction, Town of Amherstburg, Ontario (2019-present)

Currently providing engineering services for the reconstruction of McLeod Avenue between 3rd Concession South and Lakewood Drive, and South Riverview Drive between Beneteau Drive and 3rd Concession North. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Design Engineer, McNaughton Avenue West Improvements, Community of Chatham, Municipality of Chatham-Kent, Ontario (2018-2019)

Provided engineering services for the reconstruction of McNaughton Avenue West and Keil Drive North. The reconstruction works include updates to the road cross-section to include new curb and gutter, storm sewers, sidewalks, traffic signalization, intersection improvements, a new Type B Level 2 pedestrian crossover, updated streetlighting, and other roadway improvements.

Design Engineer, 5th Concession North and Texas Road Reconstruction, Town of Amherstburg, Ontario (2018-2019)

Provided engineering services for the reconstruction of Texas Road between 2nd Concession and 3rd Concession and 5th Concession North between Alma Street and County Road 10. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Design Engineer, Walnut Drive Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2018-present)

Provided engineering services for the replacement of 180 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Walnut Drive, from Hawthorne Crescent to McCurdy Drive, in the Town of Amherstburg.

Design Engineer, Creek Road Rehabilitation, Town of Amherstburg, Ontario (2018)

Provided engineering services for the rehabilitation of Creek Road between County Road 20 and Meloche Road / Lowes Side Road. The reconstruction works included in-place full depth pulverization of existing asphalt pavement and granulars, road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project takes place within the Big Creek Watershed which required great care during the design phases so as to not negatively impact sensitive natural areas.

Design Engineer, Bloomfield Road Reconstruction, Municipality of Chatham-Kent, Ontario (2018-2019)

Provided engineering services for the reconstruction of Bloomfield Road, between Riverview Line and Richmond Street. The work included new asphalt roadway, with new concrete curbs and an asphalt multi-use recreational trail. There is also a new storm sewer from Riverview up to the CPR tracks and new manholes on the existing storm sewer from the CPR tracks up to Richmond. New lighting will also be installed on the project.

Survey Manager, Construction of E.C. Row Expressway from Dominion Road to Walker Road, Windsor, ON (2010)

Survey manager for the reconstruction of a 4-lane 100Km/h highway and rehabilitation of 3 bridges. Road works included installation of road base granular, shoulders, asphalt pavement and regrading of roadside swales. Rehabilitation of bridges consisted of new decking and repair of existing concrete bridge structure. Steel beam guiderail barriers and overhead luminaries were also installed.

Survey Manager, Construction of Right Honorable Herb Gray Parkway, LaSalle, ON (2011-2013)

The \$1.4 Billion Right Honourable Herb Gray Parkway Project in Southwestern Ontario which is a Public-Private Partnership (PPP) project for the Ministry of Transportation – Ontario (MTO). is unprecedented in terms of its combination of transportation, community and environmental features, not only for this area, but is one of the largest roadway projects undertaken in the country. As Survey Manager who oversaw the layout, excavation, grading and quantity takeoffs for the Herb Gray Parkway Project. The roadway was over 11km of a new urban 6-lane highway alongside a local realigned 4-lane service road. Several diversion roads were built to maintain existing traffic flow while the new roadways were being constructed. Many storm and sanitary sewers were rerouted to accommodate the new roadways. There were over 20km of trails were built for the project.

Contract Administration

Survey Manager, Construction of Right Honorable Herb Gray Parkway, LaSalle, ON (2011-2013)

Measured survey quantities for road building (including earth excavation, build up and reshaping, granular, asphalt paving, curbs/sidewalks), underground utilities and reshaping areas for landscape features were taken on a daily basis and compared with contract values with client for payment certificates.

Geotechnical

Quality Verification Engineer, Various Jobs, The Prestressed Group, Windsor, ON (2013-2018)

Responsible to coordinate, oversee and verify that the proper testing (Concrete Slump, Air and Plastic Temperature) was performed by certified quality technicians and results within specification for MTO projects. Coordinated with third party concrete testing companies when required by client and/or MTO for provincial structural projects.

Structural

Design Engineer, Culvert No. 3, Collision Drain Culvert at Collision Sideroad, Town of Amherstburg, Ontario (2019 – present):

Currently providing engineering services for the replacement of Culvert No. 3 of the Collision Drain at Collision Sideroad in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1930. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies.

Design Engineer, Culvert No. 59, Hamel Bezaire Drain South Branch Culvert at 4th Concession North, Town of Amherstburg, Ontario (2019 – present)

Currently providing engineering services for the replacement of Culvert No. 59 of the south branch of the Hamel Bezaire Drain at 4th Concession North in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements. Consultations include meetings with the Town of Amherstburg, the Essex Region Conservation Authority, and various utility agencies.

Quality Verification Engineer, Various Jobs, The Prestressed Group, Windsor, ON (2013-2018)

Responsible to oversee and physically measure quality of girders for the Herb Gray Parkway, Highway 407 Expansion and other MTO structural projects. Girders were checked both pre and post pour to ensure girders were fabricated to MTO and OPSS specifications. A Certificate of Completion (CoC) was issued after the girders were inspected on site after erection as per plans.

Construction Inspector, Wigle Creek at County Road 20, Bridge Rehabilitation, County of Essex, Ontario (2018)

Construction Inspector for the rehabilitation of Wigle Creek Bridge at County Road 20. This bridge rehabilitation includes repairs to concrete soffits, abutment walls and wingwalls. Replacement of the asphalt road surface complete with waterproofing, deck drains, curbs and design and installation of a new barrier system with applicable steel beam guide rail approaches. Construction to be completed in 2018.

Motor Vehicle Accident Investigation (2018)

Mr. Rahm has assisted in investigations of Motor Vehicle Accident (MVA) cases in Ontario. Investigative tasks include site visits, field surveys, collection of evidence, and producing detail drawings for generating reports on regulatory and construction zone signage, geometric design, traffic signal operation, traffic exposure, and sightlines.

Surveying

Survey Manager, Construction of Right Honorable Herb Gray Parkway, LaSalle, ON (2011-2013)

Survey Manager was responsible for taking existing drawings and creating three-dimensional TIN models capable for machine control to allow the contractor to easily excavate to build roadwork to proper grade without the need for an on-site grade checker. Quantity surveys to verify tender quantities were taken daily as well as layout and as-built surveys of underground utilities.

Profession

Civil Engineer-in-Training (EIT)

Education

B.A.Sc., Civil Engineering,
University of Windsor, 2015

Professional Societies

Professional Engineers Ontario,
Engineering Intern (EIT) Program

Employment Record

EIT, HRYCAY Consulting
Engineers Inc., Windsor, ON (2019
– Present)

Mechanical Designer, EnerQuest
Services Inc., Harrow, ON (2017 –
2019)

Citizenship

Canadian

Languages

English

William Monroy, EIT

Mr. Monroy graduated with distinction from The University of Windsor with a Bachelor of Applied Science, Civil Engineering degree with technical knowledge and experience in heavy civil construction.

From 2017 to 2019, he worked as a Mechanical Designer designing custom switchgears and products while developing a strong disciplined work ethic. While at EnerQuest Mr. Monroy improved his communication and social skills and developed transferable project management skills while working closely with several Project Managers.

Mr. Monroy has been exposed to various municipal infrastructure projects which has provided the opportunity to familiarize himself with municipal design standards, Ontario Provincial Standard Specifications and Drawings (OPSS's and OPSD's), and has gained design and construction methodology experience for municipal projects.

As an Engineer-in-Training with HRYCAY Consulting Engineers Inc, Mr. Monroy is involved in contract administration, construction inspection, cost estimate, shop drawing reviews, surveying, roadside safety design, and transportation planning and design.

Construction Inspection

Construction Inspector, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021)

Lead Construction Inspector for the street reconstruction of Galbraith Street. The reconstruction works included watermain replacement, storm sewer replacement, sanitary sewer replacement with new private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Construction Inspector, Bridge Rehabilitation, Bridge B-27-12 over Belle River on County Road 27, Lakeshore, Ontario (2021)

Construction Inspector for the rehabilitation of Bridge B-27-12 over Belle River on County Road 27. Rehabilitation work included conversion of expansion joints to semi-integral abutments, concrete repairs to abutment walls, bearing seats, ballast walls, and wing walls, installation of concrete approach slabs, the replacement of steel beam guide rail systems, replacement of asphalt road surface, and general site improvements.



Construction Inspector, Bloomfield Road and Richmond Street Sanitary Sewer Rehabilitation, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021)

Construction Inspector for the rehabilitation of sanitary sewers on Bloomfield Road and Richmond Street. Rehabilitation work included lining of 675mm, 750mm, and 900mm sewer mains with cured-in-place-pipe totaling over 1.7km and lining of 15 maintenance holes under by-pass, and installation of 25 service cleanouts.

Construction Inspector, Culvert No. 3, Collision Drain Culvert at Collison Sideroad, Town of Amherstburg, Ontario (2020)

Construction Inspector for the replacement of Culvert No. 3 of the Collision Drain at Collison Sideroad in the Town of Amherstburg. The rehabilitation works include replacement of the existing structure with a new pre-cast concrete 3-sided culvert, engineered retaining walls, ditch redirection, and general site improvements.

Construction Inspector, 4th Concession North Reconstruction, Town of Amherstburg, Ontario (2020)

Construction Inspector for the reconstruction of Concession Road 4 North. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements.

Construction Inspector, County Road 34 at Pelee Creek Drain, Culvert C-34-379 Replacement, County of Essex, Ontario (2020)

Assisted the lead construction inspector for the replacement of Culvert C-34-379 of Pelee Creek Drain at County Road 34 in the Municipality of Leamington, County of Essex. The culvert replacement included replacement of the existing structure with a pre-cast concrete three-sided culvert, cast in-place footings, engineered retaining walls, ditch redirection, and general site improvements.

Municipal & Transportation Engineering

Designer (EIT), McLeod Avenue and South Riverview Drive Reconstruction, Town of Amherstburg, Ontario (2021-present)

Currently providing engineering services for the reconstruction of McLeod Avenue between 3rd Concession South and Lakewood Drive. The reconstruction works include road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project are within environmentally sensitive areas which required great care during the design phases so as to not negatively impact sensitive natural areas.

Designer (EIT), Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-present)

Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.

Designer (EIT), Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Designer (EIT), 8th Concession North Reconstruction, Town of Amherstburg, Ontario (2021-Present)

Currently providing engineering services for the reconstruction of 8th Concession Road North between Alma Street and County Road 10. The reconstruction works include removal and replacement of asphalt pavement and roadway base material, replacement of driveway approaches within municipal boulevards as required by condition of grading, and boulevard preservation, grading and restoration. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Designer (EIT), Ventnor Avenue Watermain and Pavement Replacement, Town of Amherstburg, Ontario (2021-Present)

Currently providing engineering services for the replacement of 550m of 150mm diameter watermain on Ventnor Avenue including new service connections, new fire hydrants, watermain tie-ins at Baltic Avenue, St Charles Place, and Gibb Street, and the restoration of asphalt pavement for the length of Ventnor Avenue including concrete curb replacement and repairs to granular base.

Designer (EIT), Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2020-2021)

Provided engineering services for the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works included replacement of watermain replacement, replacement of existing storm sewer and private service connections, replacement of sanitary sewer including installation of private service connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Designer (EIT), Bloomfield Road and Richmond Street Sanitary Sewer Rehabilitation, Community of Chatham, Municipality of Chatham-Kent, Ontario (2019-2020)

Provided engineering services for the trenchless rehabilitation of approximately 1700 metres of existing sanitary sewer deemed to be in condition ranging from moderate to severe. A main component of this project was that the work be compliant with NSF-61 requirements or employ re-capture methods to produce safe discharge into the system so as to not affect the downstream water treatment plant. This project involved liaising with trenchless technologies contractors and material manufacturers to discuss trenchless methodologies that satisfy the Municipality's requirements, detailed survey of the existing sanitary sewer system including structure measurements, identification of private services, and preparation of contract documents.

Designer (EIT), 4th Concession North Reconstruction, Town of Amherstburg, Ontario (2019-2020)

Provided engineering services for the reconstruction of 4th Concession North between Alma Street and County Road 10. The reconstruction works included road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements. The limits of this project took place within environmentally sensitive areas which required great care during the design phases so as to not negatively impact sensitive natural areas.

Designer (EIT), Pacific Avenue Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2019 - 2020)

Provided engineering services for the replacement of 620 metres of 200mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Pacific Avenue, from Richmond Street to Simcoe Street, in the Town of Amherstburg.

Continuing Education Courses, Seminars and Lectures

1. "Storm Sewer Design Course" Ontario Good Roads Association – Mississauga, ON (November 2021)

Profession

Civil Engineer-in-Training (EIT)

Education

B.A.Sc., Civil Engineering with
Co-op, University of Windsor, 2020

Professional Societies

Professional Engineers Ontario,
Engineering Intern (EIT) Program

Employment Record

EIT, HRYCAY Consulting
Engineers Inc., Windsor, ON
(Oct. 2020 - Present)

Civil Engineering Intern, HRYCAY
Consulting Engineers Inc.,
Windsor, ON (Sept. 2019 – Dec.
2019)

Engineering Co-op Student,
Highbury Canco Corporation,
Leamington, ON (Jan. 2019 – Apr.
2019)

Civil Engineering Co-op Student,
The Corporation of the County of
Essex, Essex, ON (Apr. 2018 –
Aug. 2018)

Citizenship

Canadian

Languages

English

Anna Simone, EIT

Miss Simone graduated with Academic Distinction from The University of Windsor with a Bachelor of Applied Science, Civil Engineering degree and has technical knowledge and experience in heavy civil construction.

She has been exposed to various municipal infrastructure projects having been the Civil Engineering Co-op Student at The Corporation of the County of Essex in 2018. This provided her the opportunity to familiarize herself with inspection techniques and gain surveying experience.

Miss Simone's employment at Highbury Canco Corporation allowed her to develop transferrable communication and project management skills. She affiliated with onsite equipment technicians, and worked closely with the Project Manager of a new state-of-the-art packaging and processing line during the installation and commissioning stages.

As a student with HRYCAY Consulting Engineers Inc. in 2019, Miss Simone assisted the Civil Engineering department with day-to-day tasks, including revising drawings under the direction of the engineers, assisting in the preparation of contract paperwork, attending construction sites, assisting the lead inspector with inspection duties, and facilitating the Town of Amherstburg Crossing Guard Feasibility Study. As an Engineer-in-Training, she is involved with contract administration, construction inspection, cost estimation, surveying, and transportation planning and design.

Construction Inspection

Construction Inspector, Culvert No. 59, Hamel Bezaire Drain South Branch Culvert at 4th Concession North, Town of Amherstburg, Ontario (2021)

Provided third-party construction inspection services on behalf of the Town of Amherstburg for the replacement of Culvert No. 59 of the south branch of the Hamel Bezaire Drain at 4th Concession North in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements.

Construction Inspector, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021)

Assisted the lead construction inspector during the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works included watermain replacement, storm sewer replacement, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

Construction Inspector, 4th Concession North Reconstruction, Town of Amherstburg, ON (2020)

Assisted the lead construction inspector during the rehabilitation of 4th Concession North between Alma Street and County Road 10. The reconstruction works included road widening to upgrade granular shoulders to current standards, new asphalt roadway, and other roadway improvements.

Construction Inspector, Pacific Avenue Watermain Replacement and Road Improvements, Town of Amherstburg, Ontario (2020)

Assisted the lead construction inspector during the replacement of 620 metres of 200mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Pacific Avenue, from Richmond Street to Simcoe Street, in the Town of Amherstburg.

Municipal & Transportation Engineering

Designer (EIT), Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-present)

Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.

Designer (EIT), Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2021 - present)

Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Designer (EIT), 8th Concession North Reconstruction, Town of Amherstburg, Ontario (2021-Present)

Currently providing engineering services for the reconstruction of 8th Concession Road North between Alma Street and County Road 10. The reconstruction works include removal and replacement of asphalt pavement and roadway base material, replacement of driveway approaches within municipal boulevards as required by condition of grading, and boulevard preservation, grading and restoration. The limits of this project take place within environmentally sensitive areas which requires great care during the design phases so as to not negatively impact sensitive natural areas.

Designer (EIT), Ventnor Avenue Watermain and Pavement Replacement, Town of Amherstburg, Ontario (2021-Present)

Currently providing engineering services for the replacement of 550m of 150mm diameter watermain on Ventnor Avenue including new service connections, new fire hydrants, watermain tie-ins at Baltic Avenue, St Charles Place, and Gibb Street, and the restoration of asphalt pavement for the length of Ventnor Avenue including concrete curb replacement and repairs to granular base.

Project Lead, School Crossing Guard Feasibility Study, Amherstburg, ON (2019)

Reviewed and collected data for existing and potential school crossing locations including pedestrian and vehicular movement counts to determine if school crossing guards are warranted. Included the creation of a Warrant Method using exemplar crossings, warrant analysis of crossing locations using the Exposure Index and Gap Analysis, crossing treatment recommendations, review of conditions at existing crossings for safety concerns and propose recommended improvements, and the preparation of a final report detailing findings and recommendations. The study was performed in accordance with the Ontario Traffic Council School Crossing Guard Guide (May 2017 Edition), Highway Traffic Act (HTA) section 176, and OTM Books 5,6,11,12 and 15.

Structural

Designer (EIT), Wigle Creek Bridge (B-50-27) at County Road 50 Bridge Rehabilitation, County of Essex, Ontario (2020-Present)

Currently providing engineering services for the rehabilitation of Wigle Creek Bridge B-50-27 at County Road 50 in the Town of Kingsville, County of Essex. The existing structure is a two-lane single-span bridge with steel I-Beam girders and was originally constructed in 1931, with the structure undergoing rehabilitation in 1976 and 2009. Since then, the structure has experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. This project involves the design of structure rehabilitation works that include removal and replacement of exterior girders and bearing pads, repairs to deteriorated concrete bearing seats, and a roadside safety assessment of the structure and roadway as it relates to roadside protection on approaches to the structure.

Project Engineering Student, Kranicz Orchards' Timber Frame Barn Design, Harrow ON (2020)

Designed the structural frame of a timber facility as per the 2020 Ontario Building Code. The project scope included design of the superstructure, foundation design, connection design, preparing the necessary construction drawings, and grading and drainage. The team was tasked with choosing the framing and structural layout as well as proper member sizes and span lengths for the structure to withstand the applied loading. The final design consisted of: A gable roof system; Structural Insulated Panels (SIPs) for the Lateral Force Resisting System (LFRS); Douglas Fir No. 1 members for the Gravity Force Resisting System (GFRS); basement walls; and strip and spread footings.

Continuing Education Courses, Seminars and Lectures

1. "Designing Signalized Intersections Training Program" – Institute of Transportation Engineers Education Foundation (Fall 2021)
2. "Building CAD 1 Course" St. Clair College - Windsor, ON (Fall 2017)

Profession

Civil Engineer-in-Training (EIT)

Education

B.A.Sc., Civil Engineering with
Co-op, University of Windsor, 2021

B.Sc Biology with Anthropology
minor, University of Calgary, 2016

Professional Societies

Professional Engineers Ontario
Engineering Intern (EIT) Program

Employment Record

EIT, HRYCAY Consulting
Engineers Inc., Windsor, ON
(Oct. 2021 - Present)

Civil Engineering Co-op Student,
The Town of LaSalle, LaSalle, ON
(Sept. 2020 – Dec. 2020)

Civil Engineering Co-op Student,
The Town of LaSalle, LaSalle, ON
(Jan. 2020 – May. 2020)

Civil Engineering Co-op Student,
The Town of LaSalle, LaSalle, ON
(May. 2019 – Aug. 2019)

Citizenship

Canada

Languages

English

German (Conversational)

Aramaic (Conversational)

Sumer Yalda, EIT

Ms. Yalda graduated with Academic Distinction from The University of Windsor with a Bachelor of Applied Science, Civil Engineering degree and has technical knowledge and experience in heavy civil construction.

She has been exposed to various municipal infrastructure projects during her time as a Civil Engineering Co-op student at the Town of LaSalle in 2019 and 2020. This provided her with the opportunity to familiarize herself with inspection techniques and gain surveying experience.

Ms. Yalda's employment at the Town of LaSalle allowed her to develop key communication and project management skills. She coordinated with site managers and consultants to ensure project requirements and schedules were met. As a student, Ms. Yalda surveyed numerous construction project in various stages using GPS data collection unit and compiled and revised drawings under the direction of the engineers.

During her time at the Town of LaSalle, Ms. Yalda compiled reports on the Asset Management of the Town's Storm Sewers through a Storm Condition report and assisted in furthering the Town's goals of Active Transportation Facilities (AT Facilities) through a report and presentation to Council.

As an Engineer-in-Training with HRYCAY Consulting Engineers Inc, Ms. Yalda is involved in contract administration, construction inspection, surveying, and roadside safety design. She has been exposed to various municipal infrastructure projects which has provided the opportunity to familiarize himself with municipal design standards, Ontario Provincial Standard Specifications and Drawings (OPSS's and OPSD's), and has gained design and construction methodology experience for municipal projects.

Topographic Surveying

Surveyor, Culvert at Irwin Drain, Intersection of County Road 8 and County Road 31, Town of Leamington, Ontario (2022-present)

Assisted the lead surveyor in collection of necessary data and assets. Prepared base drawing for design and collaborated with utility companies to ensure most up-to-date information. Currently providing engineering services for the culvert replacement of Culvert C-31-147 of Irwin Drain at the intersection of County Road 8 and County Road 31 in the Municipality of Leamington, County of Essex. The culvert replacement included replacement of the existing structure with a pre-cast concrete three-sided culvert, footings, engineered retaining walls, and general site improvements.

Surveyor, Gladstone Avenue and Dovercourt Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2022-present)

Assisted the lead surveyor in collection of necessary data and assets. Examined previous records and evidence to ensure data accuracy. Prepared AutoCAD base drawing for design and collaborated with utility companies to ensure most up-to-date information. Currently providing engineering services for the abandonment of 215 metres of 300mm diameter combined sewer, design of 110m of new sanitary sewer and service connections, 100m of new storm sewer and service connections, replacement of 260m of 150mm diameter watermain including service reconnections, replacement of 200m of 200mm diameter sanitary sewer and service connections, replacement of 235m of 900mm and 750mm storm sewer including catch basin leads and service connections, full-depth road reconstruction, new curb and gutter, new concrete sidewalk, and boulevard grading and restoration, as required, along Gladstone Avenue and Dovercourt Street in the Community of Chatham.

Surveyor, Seymour Street and George Street Sanitary Sewer, Storm Sewer, and Watermain Replacement, Town of Amherstburg, Ontario (2022 - present)

Assisted the lead surveyor in collection of necessary data and assets. Examined previous records and evidence to ensure data accuracy. Currently providing engineering services for the replacement of 900 metres of 200mm diameter sanitary sewer, 150 metres of 300mm diameter storm sewer, and 125 metres of 150mm diameter watermain including service reconnections, and the replacement of asphalt pavement along Seymour Street and George Street, in the Town of Amherstburg.

Construction Inspection

Construction Inspector, Culvert No. 59, Hamel Bezaire Drain South Branch Culvert at 4th Concession North, Town of Amherstburg, Ontario (2021)

Assisting lead construction inspector during the replacement of Culvert No. 59 of the south branch of the Hamel Bezaire Drain at 4th Concession North in the Town of Amherstburg. The existing cast-in-place rigid frame concrete structure was originally constructed in 1940. Since then, the structure had experienced concrete deterioration through cracking and spalling due to age, wear, and freeze-thaw cycles. Structural inspections resulted in recommended rehabilitation works that included replacement of the existing structure with a new pre-cast concrete box culvert, engineered retaining walls, ditch redirection and/or enclosure, relocation of underground utilities, and general site improvements

Construction Inspector, Galbraith Street Reconstruction, Community of Chatham, Municipality of Chatham-Kent, Ontario (2021-2022)

Assisting the lead construction inspector during the reconstruction of Galbraith Street in the Community of Chatham. The reconstruction works include watermain replacement, storm sewer replacement, new sanitary sewer complete with private drain connections, installation of a new cul-de-sac, commercial entrance improvements, and general roadway improvements.

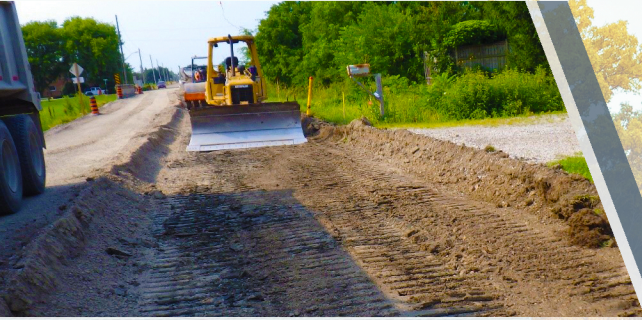
Continuing Education Courses, Seminars and Lectures

1. "AutoCAD: Construction Drawings" LinkedIn Learning – Online (March 2022)

Appendix B

Case Studies

5th Concession Rehabilitation

**Location:**

Amherstburg, Ontario

Client:

Town of Amherstburg

Scope of Services:

The 5th Concession North Reconstruction project is approximately 3.70 km in length and includes road widening to upgrade granular shoulders to current standards, new asphalt, and other roadway improvements. The limits of this project take place within environmentally sensitive areas which required great care during the design phases so as to not negatively impact sensitive natural areas. Consultation with local businesses located within the project limits was undertaken to ensure minimal disruption to key stakeholders.

**Construction Value:**

\$2,023,199.89

Project Status:

Construction completed in 2019



*Another Municipal
Infrastructure
Project by...*

HRYCAY
CONSULTING ENGINEERS INC.

1725 North Talbot Road, Oldcastle, Ontario, Canada N9G 0C2
Tel: 519.737.7234 . Fax: 519.737.7796 . www.hcei.ca

A Member of THE BECKER ENGINEERING GROUP

Meloche Road Reconstruction

**Location:**

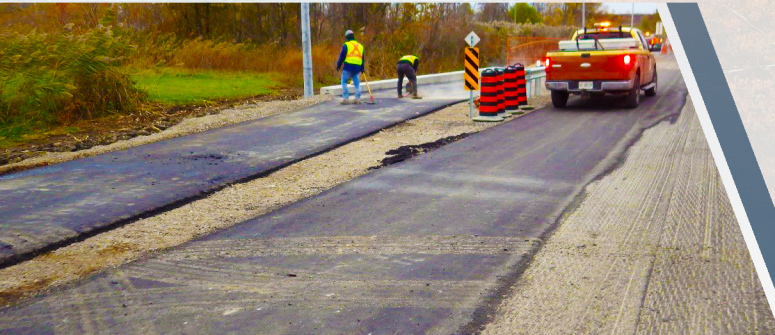
Meloche Road, Amherstburg, Ontario

Client:

The Town of Amherstburg

Scope of Services:

HCEI providing engineering design required for the reconstruction of Meloche Road including new bike lanes, storm sewer, street lighting, a multi-use trail & a pedestrian trail bridge to provide a safe and separated route over the Big Creek Drain. Under the Schedule A+ Environmental Assessment process a public information centre was held, complete with display boards, handouts, public engagement & discussion of input.

**Construction Value:**

\$3,797,535

Project Status:

Construction completed in 2017

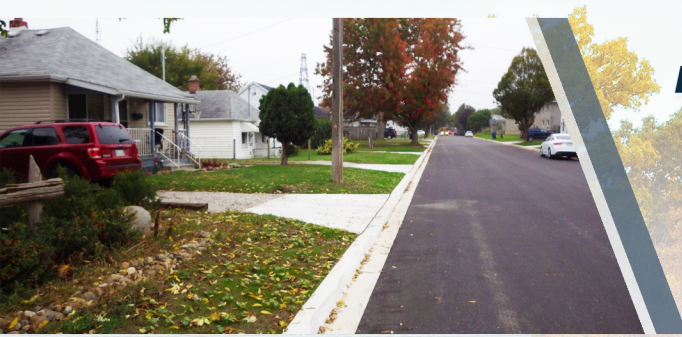
*Another Municipal
Infrastructure
Project by...*

HCRYCAY
CONSULTING ENGINEERS INC.

1725 North Talbot Road, Oldcastle, Ontario, Canada N9G 0C2
Tel: 519.737.7234 . Fax: 519.737.7796 . www.hcei.ca

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O'Neil Street Reconstruction

**Location:**

O'Neil Street, Chatham, Ontario

Client:

Municipality of Chatham-Kent

Scope of Services:

HCEI provided engineering design and contract administration services for the reconstruction of O'Neil Street, a two-lane residential road approximately 575m in length. After a detailed evaluation it was determined that a full replacement of surface asphalt, concrete curb and gutter, watermain and storm sewers and CIPP lining of the sanitary sewer system was necessary. Under the Schedule A+ Environmental Assessment process, a public information center was held, complete with display boards, handouts, and public engagement discussion of input.

**Construction Value:**

\$1,919,381

Project Status:

Construction completed in 2017

*Another Municipal
Infrastructure
Project by...*

HRYCAY
CONSULTING ENGINEERS INC.

1725 North Talbot Road, Oldcastle, Ontario, Canada N9G 0C2
Tel: 519.737.7234 . Fax: 519.737.7796 . www.hcei.ca

A Member of THE BECKER ENGINEERING GROUP

Appendix C

Design Criteria Template

DESIGN CRITERIA

PROJECT NO.

ROAD

TYPE OF PROJECT

LOCATION

LENGTH

	PRESENT CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS
ROAD CLASSIFICATION			
AADT			
MINIMUM STOPPING SIGHT DISTANCE			
EQUIVALENT MINIMUM 'K' FACTOR			
GRADES MAXIMUM			
MINIMUM RADIUS			
PAVEMENT WIDTH			
SHOULDER WIDTH			
SHOULDER ROUNDING			
MEDIAN WIDTH			
R.O.W. WIDTH			
POSTED/DESIGN SPEED			

Recommended By: _____

HRYCAY Consulting Engineers Inc.

Approved By: _____

(Municipality)

Approval Date: _____

DESIGN CRITERIA

PROJECT NO.

ROAD

TYPE OF PROJECT

LOCATION

LENGTH

TRAFFIC

REMARKS:

1. Scope
2. Environmental Assessment Category
3. Property
4. Commercial/Private Entrances
5. Roadside Safety
6. Utilities
7. Traffic Signals
8. Drainage
9. Railway Crossings
10. Illumination
11. Construction Staging and Detours
12. Structures