Categories of Work

For Prequalification Under Manitoba Infrastructure and Transportation's Procedure for the Procurement of Engineering Services

April 2010

Manitoba

Categories of Work

Prequalification Category Definitions

Highway Planning and Design Branch

Materials Engineering Branch

Traffic Engineering Branch

Transportation Systems Planning and Development Branch

Water Control and Structures

Highway Planning and Design Branch

Prequalification Category Definitions

Detailed Design – High Complexity Roadway

Detailed Design – Low Complexity Roadway

Environmental Site Assessment and Remediation

Functional Design – High Complexity Roadway

Functional Design – Low Complexity Roadway

Safety Audits and Safety Operational Reviews

Prequalification Requirements
Highway Planning and Design Branch
Detailed Design – High Complexity Roadway

Work Type Name	**Detailed Design – High Complexity Roadway**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	*Detailed Design* involves production of drawings and tender documents in sufficient detail to allow construction of roadway facilities conforming to acceptable design standards and meeting specific requirements of MIT. *High Complexity* may include: • Roadway facilities with a capital construction cost greater than $25,000,000, or • Incorporates an interchange/grade separation, or • Four lanes or more grade widening and reconstruction, or • New roads in difficult/rough terrain, or • New roads in remote location, or • Multi-lane urban roadways, or • Multi-lane channelized intersections, or • Roundabouts.
Deliverables	Detailed Design Notes, Tender package (including drawings, Engineer's Estimate and Special Provisions)
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineers:
	  ○ Registered in the Province of Manitoba.
	  ○ One of the Professional Engineers is required to perform independent review of data, calculations and reports of the other.

	• Certified Engineering Technician or Technologist: ○ Registered in the Province of Manitoba. • The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineers:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Prequalification Requirements
Highway Planning and Design Branch
Detailed Design – Low Complexity Roadway

Work Type Name	**Detailed Design – Low Complexity Roadway**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	*Detailed Design* involves production of drawings and tender documents in sufficient detail to allow construction of roadway facilities conforming to acceptable design standards and meeting specific requirements of MIT. *Low Complexity* may include: • Roadway facilities with a capital construction cost less than $25,000,000, or • At-grade intersections without channelization, or • Two-lane grade widening and reconstruction, or • New two-lane rural or urban roadways.
Deliverables	Detailed Design Notes, Tender package (including drawings, Engineer's Estimate and Special Provisions)
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Prequalification Requirements
Highway Planning and Design Branch
Environmental Site Assessment and Remediation

Work Type Name	**Environmental Site Assessment and Remediation**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	Environmental Site Assessments (ESA) are usually required for sites where the quality of groundwater, surface water, sediments and/or soils may have been affected by contaminants as a result of past or present usage of the site. The work may consist of: • Phase I ESAs including site inspection, historical review and interviews • Phase II / III ESAs including preparation of an effective investigation/sampling plan, proper collection of representative samples, and interpretation of results. • Preparation of Risk Management and / or Remedial Action Plans.
Deliverables	• Environmental Site Assessment Reports and related technical documentation • Risk Management and / or Remedial Action Plans
Quality Attributes of Deliverables	• Environmental Site Assessment reports and Remedial Action Plans must be prepared in accordance with accepted industry practices that conform to procedures acceptable to MIT and to Manitoba Conservation.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer / Geoscientist is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineer / Geoscientist:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	Satisfactory experience must be demonstrated on at least two projects of suitable complexity in the last five years in each of the subcategories of Phase I ESAs, Phase II / III ESAs and Risk Management / Remedial Action Plans.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two projects of suitable complexity in the last five years in each of the subcategories of Phase I ESAs, Phase II / III ESAs and Risk Management / Remedial Action Plans.

Prequalification Requirements
Highway Planning and Design Branch
Functional Design – High Complexity Roadway

Work Type Name	**Functional Design – High Complexity Roadway**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	*Functional Design* involves the development and evaluation of alternative solutions for road transportation infrastructure which may include corridor selection, access management, traffic operational reviews, traffic impact reviews and traffic modeling and forecasting. It also involves the production of a functional design report in sufficient detail to allow detailed design of roadway facilities conforming to acceptable design standards and meeting specific requirements of MIT. *High Complexity* may include: • Roadway facilities with a capital construction cost greater than $25,000,000, or • Incorporates an interchange/grade separation, or • Four-laning of existing two-lane roadways, or • New roads in difficult/rough terrain, or • New roads in remote location, or • Multi-lane urban roadways, or • Multi-lane channelized intersections, or • Roundabouts.
Deliverables	Functional Design Report, Functional Drawings
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineers:
	  ○ Registered in the Province of Manitoba.
	  ○ One of the Professional Engineers is required to perform independent review of data, calculations and reports of the other.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineers:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Prequalification Requirements
Highway Planning and Design Branch
Functional Design – Low Complexity Roadway

Work Type Name	**Functional Design – Low Complexity Roadway**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	*Functional Design* involves the development and evaluation of alternative solutions for road transportation infrastructure which may include corridor selection, access management, traffic operational reviews, traffic impact reviews and traffic modeling and forecasting. It also involves the production of a functional design report in sufficient detail to allow detailed design of roadway facilities conforming to acceptable design standards and meeting specific requirements of MIT. *Low Complexity* may include: • Roadway facilities with a capital construction cost less than $25,000,000, or • At-grade intersections without channelization, or • New or realigned two-lane rural, or • New or reconstructed urban roadways.
Deliverables	Functional Design Report, Functional Drawings
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Prequalification Requirements
Highway Planning and Design Branch
Safety Audits and Safety Operational Reviews

Work Type Name	**Safety Audits and Safety Operational Reviews**
Work Type Owner	Highway Planning and Design Branch and Regional Operations
Work Type Definition	*Safety Audits* involve a formal safety performance examination of a roadway design or new roadway by an independent auditor. It also involves the documentation of the audit findings. *Safety Operational Reviews* involves a formal safety performance examination of an existing roadway by an independent auditor. It also involves the documentation of the review findings.
Deliverables	Report
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) must verify their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office.
Professional Requirements	• Professional Engineer: ○ Registered in the Province of Manitoba. • The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 20 years of transportation engineering experience and extensive experience in leading roadway safety audits and safety operational reviews.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least four projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of four similar projects in the last five years.

Materials Engineering Branch

Prequalification Category Definitions

Geotechnical Contract Administration

Geotechnical Investigation and Design – High Complexity

Geotechnical Investigation and Design – Low Complexity

Prequalification Requirements
Materials Engineering Branch
Geotechnical Contract Administration

Work Type Name	**Geotechnical Contract Administration**
Work Type Owner	Materials Engineering Branch
Work Type Definition	*Contract Administration* involves management and administration of all aspects of a construction contract including ensuring adherence to construction specifications and special provisions, provision of quality control and testing services, management of a project capital budget and reporting. *Geotechnical Contract Administration* includes the management of geotechnical risk or the monitoring and/or inspection of geotechnical infrastructure over the course of construction.
Deliverables	• Weekly Construction Reports and applicable Progressive Payments. Geotechnical Monitoring/Inspection Reports shall also be provided in accordance with the schedule recommended in the functional and/or detailed design. • The Engineering Service Provider is also responsible for ensuring adherence to MIT policies, procedures, practices, standards and specifications.
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • At least one engineering support team including surveyor and grade inspector is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	  ○ Specialized post graduate training in geotechnical engineering (M. Eng., M. Sc. or Ph.D.).
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team (including surveyor and grade inspector):
	  ○ Minimum of 3 years of relevant experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The supporting laboratory testing facility shall be able to perform basic soil testing such as soil classification tests, proctors, etc. on a regular basis for ensuring adherence to the quality assurance program. • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Materials Engineering Branch
Geotechnical Investigation and Design – High Complexity

Work Type Name	**Geotechnical Investigation and Design – High Complexity**
Work Type Owner	Materials Engineering Branch
Work Type Definition	*Geotechnical Investigation and Design* involves the planning, management, execution and delivery of field programs, laboratory programs, site reconnaissance, stakeholder consultation, geotechnical analysis and design, design alternative assessments, risk assessments and production of a geotechnical report with recommendations, and/or a tender package. *High Complexity* may include: • Geotechnical design of engineered embankments or natural slopes greater than four (4) meters in height and requiring extensive stability analysis, groundwater study and settlement, or, • Geotechnical designs involving extensive licensing requirements, legal issues or legislated approval processes (e.g. land acquisition, Navigable Waters Protection Act, Environment Act, etc.) , or, • Geotechnical design of an interchange, grade separation, and areas with historical geotechnical issues, or, • Geotechnical designs involving extensive monitoring, inspection or risk over the course of construction.
Deliverables	• In the case of *Functional Design*, a Geotechnical Report (including executive summary, field and laboratory testing results, assessments, stakeholder commentary, drawings, estimates and if applicable, approvals and licenses and all other documentation identified in the terms of reference). • In the case of *Detailed Design*, a Tender Package (including special provisions, material specifications if applicable, detailed design drawings, erosion and sedimentation control plans and estimates) and a Geotechnical Report (including executive summary, construction procedure, risk assessment, monitoring schedule, field and laboratory testing results and all other documentation identified in the terms of reference). • In the case of a third party pursuing *Detailed Design* based on the Engineering Service Provider's (ESP) *Functional Design*, a Certification Letter from the ESP, confirming that the *Detailed Design* is in accordance with the intent of the *Functional Design*.

Quality Attributes of Deliverables	• ESP to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify drawings in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required at the applying office • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineers:
	  ○ At least one of which is registered in the Province of Manitoba.
	  ○ One of the Professional Engineers is required to perform independent review of data, calculations and reports of the other.
	  ○ The reviewing Professional Engineer must have specialized post graduate training in geotechnical engineering (M. Eng., M. Sc. or Ph.D.).
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineers:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects of at least the same level of complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project completion on a minimum of three similar projects in the last five years.

Prequalification Requirements
Materials Engineering Branch
Geotechnical Investigation and Design – Low Complexity

Work Type Name	**Geotechnical Investigation and Design – Low Complexity**
Work Type Owner	Materials Engineering Branch
Work Type Definition	*Geotechnical Investigation and Design* involves the planning, management, execution and delivery of field programs, laboratory programs, site reconnaissance, stakeholder consultation, geotechnical analysis and design, design alternative assessments, risk assessments and production of a geotechnical report with recommendations, and/or a tender package. *Low Complexity* may include: • Geotechnical design of engineered embankments or natural slopes greater than four (4) meters in height and requiring limited stability analysis, groundwater study and settlement, or, • Geotechnical designs involving limited monitoring, inspection or risk over the course of construction and may, • Involve legal issues, licensing requirements or legislated approval processes (e.g. land acquisition, Navigable Waters Protection Act, Environment Act, etc.).
Deliverables	• In the case of *Functional Design*, a Geotechnical Report (including executive summary, field and laboratory testing results, assessments, stakeholder commentary, drawings, estimates and if applicable, approvals and licenses and all other documentation identified in the terms of reference). • In the case of *Detailed Design*, a Tender Package (including special provisions, material specifications if applicable, detailed design drawings, erosion and sedimentation control plans and estimates) and a Geotechnical Report (including executive summary, construction procedure, risk assessment, monitoring schedule, field and laboratory testing results and all other documentation identified in the terms of reference). • In the case of a third party pursuing *Detailed Design* based on the Engineering Service Provider's (ESP) *Functional Design*, a Certification Letter from the ESP, confirming that the *Detailed Design* is in accordance with the intent of the *Functional Design*.

Quality Attributes of Deliverables	• ESP to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify drawings in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	  ○ Specialized post graduate training in geotechnical engineering (M. Eng., M. Sc. or Ph.D.).
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects of at least the same level of complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Traffic Engineering Branch

Prequalification Category Definitions

Electrical Plant Inspection, Design and Contract Administration

Roadside Hazardous Protection Design and Contract Administration

Speed Zone Studies

Traffic Control Design and Contract Administration

Traffic Control Device Plant Structural Inspection, Design and Contract Administration

Traffic Operations Engineering

Traffic Signal System Design

Prequalification Requirements
Traffic Engineering Branch
Electrical Plant Inspection, Design and Contract Administration

Work Type Name	**Electrical Plant Inspection, Design and Contract Administration**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Electrical Plant Inspection, Design and Contract Administration* regards: • The inspection and assessment of existing electrical installations. • The electrical design and installation of new plant related to roadway illumination. • The electrical design and installation of new plant related to traffic signals and various internally illuminated traffic control devices. • The electrical design and installation of flashing traffic control devices. • The electrical design and installation of traffic monitoring equipment. Specific activities may include: • Field inspections and condition assessments of existing electrical installations along with functional recommendations for improvements. • Detailed electrical design or selection of electrical hardware. • Development of tender documents for the installation of electrical hardware. • Contract administration and quality control.
Deliverables	• Design drawings • Design notes • Tender documents • Contract administration documentation including quality control reporting
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Roadside Hazard Protection Design and Contract Administration

Work Type Name	**Roadside Hazard Protection Design and Contract Administration**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Roadside Hazard Protection Design and Contract Administration* regards the assessment of potential roadside safety hazards, the design of appropriate protection measures and supervision of their construction or implementation. Specific activities may include: • Roadside hazard mitigation • Guardrail design • Crash attenuation / guardrail end treatment design • Development of tender documents for roadside hazard protection infrastructure or mitigation • Administration and quality control of contracts for the construction of roadside hazard protection infrastructure or mitigation
Deliverables	• Design drawings • Design notes • Tender documents • Contract administration documentation including quality control reporting
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Speed Zone Studies

Work Type Name	**Speed Zone Studies**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Speed Zone Studies* regard the investigation, assessment and functional recommendations for speed zones to address site specific traffic engineering matters for an existing facility.
Deliverables	The primary deliverable is a report summarising the study findings and recommendations for possible considerations by MIT.
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office.
Professional Requirements	• Professional Engineer: ○ Registered in the Province of Manitoba. • The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 20 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of three projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Traffic Control Design and Contract Administration

Work Type Name	**Traffic Control Design and Contract Administration**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Traffic Control Design and Contract Administration* regards the design, construction and/or implementation of all aspects of traffic control for a given roadway section with the exception of signalisation. Specific activities may include: • Development of permanent signing and pavement marking plans • Development of temporary work zone signing and pavement marking plans • Development of temporary detour signing and pavement marking plans • Development of tender documents • Contract administration and quality control for the construction or implementation of traffic control devices such as signs and pavement markings.
Deliverables	• Design drawings • Design notes • Tender documents • Contract administration documentation Including quality control reporting
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • The QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Traffic Control Device Plant – Structural Inspection, Design and Contract Administration

Work Type Name	**Traffic Control Device Plant – Structural Inspection, Design and Contract Administration**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Traffic Control Device Plant Structural Inspection, Design and Contract Administration* regards: • The structural inspection and assessment of existing above ground traffic control device installations. • The structural detailed design or selection of sign posts, overhead sign structures (OHSS), traffic signal poles and foundations associated with traffic control devices. • The subsequent inspection of structural component fabrication and contract administration of installations. Specific activities may include: • Structural field inspections and condition assessments of existing signs including surface mount and OHSS and signal plant installations along with functional recommendations for improvements. • Detailed structural design or selection of hardware for traffic control devices including traffic signal poles, sign posts and foundations. • Detailed structural design of repairs, rehabilitation or new construction of bridge and cantilever type OHSS including preparation of drawings and tender documents. • Development of tender documents for the fabrication of hardware related to structural components. • Advisory services during construction and quality control inspections for fabrication of structural components. • Contract administration and quality control for installations. • Preparation of “As-Constructed” drawings.
Deliverables	• Project Design Brief • Detailed Design package including Design notes • Tender package including design drawings and tender documents • Contract Administration Package including documentation and quality control reporting

Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify design and reports are in conformance with American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (AASHTO Sign Support Specifications) – latest edition, CAN/CSA S16 – latest edition where applicable as identified in the Project TOR, the Project TOR, MIT's standards and the QAP (in some cases, this requires a complete, independent design check).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • In addition, one Professional Engineer is required to complete an independent review of data, calculations, analysis and report for the design assignment. The Engineer conducting the independent review is not required to be in the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ At least one with a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to do the project in accordance with AASHTO Sign Support Specifications, CAN/CSA S-16 (where applicable), the Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices..
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects of at least the same complexity in the last five years.
	• Provide a list of all relevant project experience for all professional engineers, technologists and support staff.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Traffic Operations Engineering

Work Type Name	**Traffic Operations Engineering**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Traffic Operations Engineering* regards the investigation, assessment and functional recommendations for traffic control improvements to address traffic conditions for an existing facility. Specific activities may include: • Speed zone studies • Origin/destination studies • Collision analysis • Capacity/level of service analysis • Parking studies • Railway crossing studies • Pedestrian studies
Deliverables	The primary deliverable is a report summarising the study findings. Secondary deliverables can include engineered drawings of recommended traffic control improvements at a functional level.
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • The QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered in the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Prequalification Requirements
Traffic Engineering Branch
Traffic Signal System Design

Work Type Name	**Traffic Signal System Design**
Work Type Owner	Traffic Engineering Branch
Work Type Definition	*Traffic Signal System Design* regards the design of signalisation requirements for individual intersections and networked signalisation configurations for multiple intersections. It does not include the design of physical plant or hardware. Specific activities may include: • Capacity/level of service analysis • Signal timing and phasing design • Signal timing synchronisation between multiple intersections
Deliverables	• The primary deliverable is a report summarising the analysis, design recommendations, signal phasing, signal timing and engineered drawings. • Secondary deliverables may be Synchro (MIT current version) data files.
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify reports are in conformance with MIT's standards and the QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • An engineering support team, including at least one staff qualified for CADD drawing production and Synchro analysis, is required at the applying office.

Professional Requirements	• Professional Engineer:
	  ○ Registered the Province of Manitoba.
	• Certified Engineering Technician or Technologist:
	  ○ Registered in the Province of Manitoba.
	• The professional and supporting technical staff shall have engineering training, experience, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Engineering support team:
	  ○ Minimum of 3 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be experienced in the use of Synchro for signalisation design and capable of providing design outputs in Synchro (MIT current version) file formats.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years.

Transportation Systems Planning and Development Branch

Prequalification Category Definitions

Transportation Economic Analysis Studies

Transportation Planning Studies

Prequalification Requirements
Transportation Systems Planning and Development Branch
Transportation Economic Analysis Studies

Work Type Name	**Transportation Economic Analysis Studies**
Work Type Owner	Transportation Systems Planning and Development Branch
Work Type Definition	*Transportation Economic Analysis Studies* is an integral component of the transportation network planning and decision making process and may include business case development, cost/benefit analysis, economic impact analysis or modal comparison and analysis.
Deliverables	Study Reports (including analysis results and drawings)
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify drawings, calculations, reports and any other engineering work is in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office. • At least one Economist, Planner or Statistician is required at the applying office.
Professional Requirements	• Professional Engineer: ○ Registered in the Province of Manitoba. • The professional and supporting technical staff (such as an Economist, Planner or Statistician) shall have training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two similar projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Prequalification Requirements
Transportation Systems Planning and Development Branch
Transportation Planning Studies

Work Type Name	**Transportation Planning Studies**
Work Type Owner	Transportation Systems Planning and Development Branch
Work Type Definition	*Transportation Planning Studies* refers to a wide range of the planning studies which may include Area Planning Transportation Study, Urban Transportation Study, Freight Transportation Studies, Government Policy Impact Studies, Road Network Development Studies, New Corridor Selection Studies, Multi-Modal Studies, Special Facility Studies (i.e. border facilities, inter-modal facilities). *Transportation Planning Studies* may include tasks such as: • Conceptual Planning/Design/Engineering • Alternative/New Corridor Analysis • Land Use and Transportation Analysis • Modal Comparison and Analysis • Traffic Modeling or Surveys (Traffic Analysis, Origin/Destination, Production/Attraction) • Area-Specific Functional Classification Analysis • Area-Specific Basic Planning and Design Standards • Economic, Cost/Benefit Analysis • Social Analyses • Environmental and Sustainability Analysis • Green House Gas Impact Assessment • Business Case Development • Public/Stakeholder Consultation
Deliverables	Study Reports (including analysis results and drawings)
Quality Attributes of Deliverables	• Engineering Service Provider (ESP) to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables. • ESP to check/verify drawings, calculations, reports and any other engineering work is in conformance with MIT's standards and the ESP's QAP (in some cases, this requires a complete, independent review).

Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office.
Professional Requirements	• Professional Engineer: ○ Registered in the Province of Manitoba. • The professional and supporting technical staff shall have engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with applicable policies, procedures, practices, standards and all other MIT requirements.

Qualifying Experience of Staff	• Professional Engineer:
	  ○ Minimum of 10 years of relevant experience.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must have been obtained by staff on a minimum of two similar projects in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years.

Water Control and Structures

Prequalification Category Definitions

Concrete Detailed Condition Surveys (Level III Inspections) – Major and Minor Structures

Condition Assessment – Major Structures

Condition Assessment – Minor Structures

Contract Administration and Construction Inspection – Major Structures

Contract Administration and Construction Inspection – Minor Structures

Dam Safety Review

Detailed Design – Dams

Detailed Design – Major Structures

Detailed Design – Minor Structures

Detailed Visual Inspections (Level II) – Major and Minor Structures

Emergency Response Plan Preparation – Dams

Engineering Inspections – Dams

Geotechnical Investigation and Design – Structure Foundations

Preliminary Design – Dams

Preliminary Design – Major Structures

Preliminary Design – Minor Structures

Structural Assessment – Dams

Prequalification Requirements
Water Control and Structures
Concrete Detailed Condition Surveys (Level III Inspections) - Major and Minor Structures

Work Type Name	**Concrete Detailed Condition Surveys (Level III Inspections) – Major and Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Concrete Detailed Condition Surveys* (Concrete DCS) involve the site reconnaissance, planning, management and execution of field inspection and laboratory testing, interpretation of inspection and testing data and the production of a detailed condition survey report including drawings, with recommendations for the concrete components of Major and Minor Structures. Field Inspection may include component surveys, concrete cover surveys, delamination / surface defects surveys, concrete coring and copper-copper sulphate half cell corrosion potential testing. Laboratory testing may include determination of water soluble chloride content, air void analysis, compressive strength testing, petrographic analysis and other site specific testing requirements. The data collected will be used in the preliminary and detailed design phases and assist in tender quantity determination. *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or o Major river crossings with unique geotechnical conditions, or o Post-tensioned concrete box girders supported on falsework during construction, or o Truss bridges, concrete or steel arch bridges, or o Rigid frames, or o Bridges with extensive aesthetic treatments or complex geometry, or o Structures with significant staging, or o Highway overpasses or underpasses, or o Railway overpasses or underpasses. *Minor Structures* is defined as: o Culverts – SPCSP and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges.
Deliverables	The Concrete Detailed Condition Survey Report.

Quality Attributes of Deliverables	• The Concrete DCS report shall include inspection information, defect quantities, standard report forms, core log worksheets with photos and sketches, drawings supporting inspection findings, field & laboratory testing results, a summary of significant findings and all other documentation identified in the Project Terms of Reference (TOR) • ESP to ensure all aspects of the project are completed in conformance with the Ontario Structure Rehabilitation Manual (OSRM), Ontario Structure Inspection Manual (OSIM), Project TOR, MIT's Structures Design Manual, MIT's CADD Standards Manual and the Quality Assurance plan (QAP) prepared by the ESP. • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• Out-of-office personnel may contribute to complete the project; however, the applying office must have an office and in-house staff capable of overall project management and Professional Engineering for the Concrete DCS as a minimum extent of participation. • At least one Professional Engineer is required at the applying office • In addition, one Professional Engineer is required to complete an independent review of the Concrete DCS Report. The Engineer conducting the independent review is not required to be in the applying office. • At least one Certified Engineering Technician or Technologist is required at the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineer at the applying office: o Registered in the Province of Manitoba. • Professional Engineer conducting the independent review: o Registered in the Province of Manitoba. • Certified Engineering Technician or Technologist: o Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineer at the applying office:
	  ○ At least one with a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with Ontario Structure Rehabilitation Manual (OSRM), Ontario Structure Inspection Manual (OSIM), the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices..
	• Professional Engineer conducting the Independent Review:
	  ○ A Minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with Ontario Structure Rehabilitation Manual (OSRM), Ontario Structure Inspection Manual (OSIM), the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices.
	• Certified Engineering Technician or Technologist:
	  ○ Minimum of 10 years of relevant experience.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of three similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • Laboratories that the ESP intends to use to complete testing must be identified in Request for Qualifications and be CSA Certified. • The applying office must be capable of delivering the drawings in Microstation (current MIT version) and reports in Microsoft Word and Microsoft Excel (current MIT versions).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years. • The applying office must be qualified to inspect the structures in accordance with the OSIM and OSRM manuals (current versions). • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Condition Assessment – Major Structures

Work Type Name	**Condition Assessment – Major Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Condition Assessment* involves a formal assessment of a structure's condition by completing some or all of the following tasks: o Level III specialized assessment inspection (e.g. detailed condition survey, underwater investigation, fatigue investigation, etc); o Strength Evaluation; o Functionality review; o Estimate of expected remaining service life, and o Preparation of Structure Management Strategy. The data collected will be used in the preliminary and detailed design phases and assist in tender quantity determination. The ESP may complete detailed condition surveys for Level III Specialized Inspections with internal resources or external sub-ESP(s). These internal resources or external sub-ESP(s) will have to be prequalified as an applying office under the prequalification category for Concrete Detailed Condition Surveys (Level III Inspections) through this prequalification process. *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or o Major river crossings with unique geotechnical conditions, or o Post-tensioned concrete box girders supported on falsework during construction, or o Truss bridges, concrete or steel arch bridges, or o Rigid frames, or o Bridges with extensive aesthetic treatments or complex geometry, or o Structures with significant staging, or o Highway overpasses or underpasses, or o Railway overpasses or underpasses.
Deliverables	Condition Assessment Report

Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with the Project Terms of Reference (TOR), MIT's "Structures Design Manual", ESP's documented Quality Control / Quality Assurance (QC/QA) Plan, and specifically Ontario Structure Inspection Manual (OSIM), Ontario Structure Rehabilitation Manual (OSRM) and American Association of State Highway and Transportation Officials Manual for Bridge Evaluation (AASHTO MBE). This will require a complete, independent review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• Out-of-office personnel may contribute to complete the project; however, the applying office must have an office and in-house staff capable of the project management and either the Professional Engineering inspection and analysis, or the independent review of these items as a minimum extent of participation. • At least two Professional Engineers are required at the applying office. • In addition, one Professional Engineer is required to complete an independent review of data, calculations, analysis and report for the assignment. The Engineer conducting the independent design review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers must be registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers at the applying office:
	  ○ At least one Engineer with a minimum of 15 years, and one Engineer with a minimum of 7 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas to do the project in accordance with OSIM, OSRM, AASHTO MBE, the Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineer conducting Project Review:
	  ○ Minimum of 15 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas to do the project in accordance with OSIM, OSRM, AASHTO MBE, the Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineers conducting Inspections:
	  ○ Minimum of 5 years of experience in bridge inspections.
	  ○ Experienced and knowledgeable with the OSIM and OSRM manuals.
	• Professional Engineers (Strength Evaluations):
	  ○ Experienced and knowledgeable with the AASHTO MBE.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • The applying office must be qualified to inspect the structure in accordance with the OSIM and OSRM manuals (current versions) and conduct strength evaluations in accordance with AASHTO MBE. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Condition Assessment – Minor Structures

Work Type Name	**Condition Assessment – Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Condition Assessment* involves a formal assessment of a structure's condition by completing some or all of the following tasks: o Level 3 specialized assessment inspection (e.g. detailed condition survey, underwater investigation, etc); o Strength Evaluation; o Functionality review; o Estimate of expected remaining service life, and o Preparation of Structure Management Strategy. The ESP may complete detailed condition surveys for Level III Specialized Inspections with internal resources or external sub-ESP(s). These internal resources or external sub-ESP(s) will have to be prequalified as an applying office under the prequalification category for Concrete Detailed Condition Surveys (Level III Inspections) through this prequalification process. The data collected will be used in the preliminary and detailed design phases and assist in tender quantity determination. *Minor Structures* is defined as: o Culverts – Structural Plate Corrugated Steel Pipe (SPCSP) and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges, or o Timber bridges.
Deliverables	Condition Assessment Report
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with the Project Terms of Reference (TOR), MIT's "Structures Design Manual", ESP's documented Quality Control / Quality Assurance (QC/QA) Plan, and specifically Ontario Structure Inspection Manual (OSIM), Ontario Structure Rehabilitation Manual (OSRM) and American Association of State Highway and Transportation Officials Manual for Bridge Evaluation (AASHTO MBE). This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• The applying office must have an office and in-house staff capable of total completion of project that meets MIT's schedule, budget and quality requirements for deliverables. • At least two Professional Engineers are required at the applying office. One of the Professional Engineers is required to perform an independent design review of data, calculations, analysis and reports of the other. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers must be registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers at the applying office:
	  ○ At least one of which has a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas to complete the project in accordance with OSIM, OSRM, AASHTO MBE, the Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineers conducting inspections:
	  ○ Minimum of 5 years of experience in bridge inspections.
	  ○ Experienced and knowledgeable with the OSIM and OSRM manuals.
	• Professional Engineers conducting Strength Evaluations:
	  ○ Experienced and knowledgeable with AASHTO MBE.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years.
	• All professional staff shall provide a list of relevant qualifying experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be qualified to inspect the structure in accordance with the OSIM and OSRM manuals (current versions) and undertake strength evaluations in accordance with AASHTO MBE. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Contract Administration and Construction Inspection – Major Structures

Work Type Name	**Contract Administration and Construction Inspection – Major Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Contract Administration* involves the services necessary to ensure that proper management of construction inspection, surveying, materials testing and contract administration activities are completed in accordance with the Project Terms of Reference (TOR), MIT requirements, the Contract, Workplace Safety and Health (WSH) requirements and all other applicable laws and regulations. This may include some or all of the following: • Ensure that the Contractor performs all Work in accordance with the Contract; • Maintain complete and accurate records of the activities and events relating to the project including as-constructed records of construction; • Obtain necessary approvals and document significant changes to the project; • Interpret Drawings, Specifications (Construction and material) and Special Provisions for the project; • Review all submittals from the Contractor for conformance to the contract and Workplace Safety and Health requirements. • Make recommendations to MIT to resolve disputes which arise in relation to the Contract; • Resolve field problems as quickly as possible, including situations such as: out-of-place piling, out-of-tolerance Work, out-of-specification materials, structural defects, accidental damage, underground obstructions, etc. These problems may have a significant impact on the execution, progress or overall cost of the project. It is, therefore, extremely important to resolve issues as expeditiously as possible. Generally, field problems require some degree of engineering evaluation and decision. • Assist MIT in preparing for dispute resolution or litigation regarding the project. *Construction Inspection* involves the services necessary to ensure that the structure is constructed in accordance with the Contract, MIT requirements, WSH requirements and all other applicable laws and regulations. On-site construction inspection is provided on a full-time basis. *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or

	○ Major river crossings with unique geotechnical conditions, or ○ Post-tensioned concrete box girders supported on falsework during construction, or ○ Truss bridges, concrete or steel arch bridges, or ○ Rigid frames, or ○ Bridges with extensive aesthetic treatments or complex geometry, or ○ Structures with significant staging, or ○ Highway overpasses or underpasses, or ○ Railway overpasses or underpasses.
Deliverables	Weekly Construction Inspection Reports, Monthly Project Expenditure Reports, Final Contract Administration Package (including Project Summary Report) and all other record documents as specified in MIT's "Contract Administration and Construction Inspection Manual".
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to complete all work in compliance with MIT's "Contract Administration and Construction Inspection Manual", the Contract, the Project TOR, the Agreement and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. The work shall comply with all project specific requirements and include sufficient level of detail. ESP's QC/QA plan must address their methods of verifying their work, including: • Work is properly measured and documented in a timely manner, • materials testing for quality assurance purposes, • survey control, • quality of reports and final deliverables, • timely resolution of issues and communication with MIT's Project Manager, and • meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• The applying office must have an office and in-house staff capable of total completion of project that meets MIT's schedules. • At least one Professional Engineer is required at the applying office. • At least one Construction Inspector is required at the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Contract Administrator: ○ Professional Engineer, registered in the Province of Manitoba. • Resident Engineer: ○ Professional Engineer, registered in the Province of Manitoba. • Construction Inspector: ○ ACI Certified as ACI CSA-Based Concrete Field Testing Technician – Grade 1.

Qualifying Experience of Staff	• Contract Administrator:
	  ○ Minimum of 15 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas to do the project in accordance with Project TOR, MIT requirements and all applicable design and construction policies, procedures, standards and good engineering practices.
	• Resident Engineer:
	  ○ Minimum of 2 years of relevant experience and engineering training and knowledge in the appropriate areas necessary to do the project in accordance with Project TOR, MIT requirements and all applicable design and construction policies, procedures, standards and good engineering practices.
	• Construction Inspector:
	  ○ Minimum of 10 years of relevant experience in structure construction inspection.
	  ○ Familiarity with MIT requirements for construction inspection.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Contract Administration and Construction Inspection – Minor Structures

Work Type Name	**Contract Administration and Construction Inspection – Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Contract Administration* involves the services necessary to ensure that proper management of construction inspection, surveying, materials testing and contract administration activities are completed in accordance with the Project Terms of Reference (TOR), MIT requirements, the Contract, Workplace Safety and Health (WSH) requirements and all other applicable laws and regulations. This may include some or all of the following: • Ensure that the Contractor performs all Work in accordance with the Contract; • Maintain complete and accurate records of the activities and events relating to the project including as-constructed records of construction; • Obtain necessary approvals and document significant changes to the project; • Interpret Drawings, Specifications (Construction and material) and Special Provisions for the project; • Review all submittals from the Contractor for conformance to the contract and Workplace Safety and Health requirements. • Make recommendations to MIT to resolve disputes which arise in relation to the Contract; • Resolve field problems as quickly as possible, including situations such as: out-of-place piling, out-of-tolerance Work, out-of-specification materials, structural defects, accidental damage, underground obstructions, etc. These problems may have a significant impact on the execution, progress or overall cost of the project. It is, therefore, extremely important to resolve issues as expeditiously as possible. Generally, field problems require some degree of engineering evaluation and decision. • Assist MIT in preparing for dispute resolution or litigation regarding the project. *Construction Inspection* involves the services necessary to ensure that the structure is constructed in accordance with the Contract, MIT requirements, WSH requirements and all other applicable laws and regulations. On-site construction inspection is provided on a full-time basis. *Minor Structures* is defined as: o Culverts – Corrugated Metal Pipe (CMP), Structural Plate Corrugated Steel Pipe (SPCSP) and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges.

Deliverables	Weekly Construction Inspection Reports, Monthly Project Expenditure Reports, Final Contract Administration Package (including Project Summary Report) and all other record documents as specified in MIT's "Contract Administration and Construction Inspection Manual".
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to complete all work in compliance with MIT's "Contract Administration and Construction Inspection Manual", the Contract, the Project TOR, the Agreement and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. The work shall comply with all project specific requirements and include sufficient level of detail. ESP's QC/QA plan must address their methods of verifying their work, including: • Work is properly measured and documented in a timely manner, • materials testing for quality assurance purposes, • survey control, • quality of reports and final deliverables, • timely resolution of issues and communication with MIT's Project Manager, and • meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• The applying office must have an office and in-house staff capable of total completion of project that meets MIT's schedules. • At least one Professional Engineer is required at the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Contract Administrator: o Professional Engineer, registered in the Province of Manitoba.
Qualifying Experience of Staff	• Contract Administrator: o Minimum of 7 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas to do the project in accordance with Project TOR, MIT requirements and all applicable design and construction policies, procedures, standards and good engineering practices. • Construction Inspector: o Minimum of 5 years of relevant experience in structure construction inspection. o Familiarity with MIT requirements for construction inspection. • Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years. • All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Dam Safety Review

Work Type Name	**Dam Safety Review**
Work Type Owner	Water Control and Structures
Work Type Definition	*Dam Safety Review* involves the systematic review and evaluation of all aspects of design, construction, operation, maintenance and systems affecting a Dam's safety based on current knowledge and methodology in accordance with the most current Canadian Dam Association (CDA) guidelines. The review shall include: • Detailed condition survey (including underwater components) of the Structure, and all appurtenant infrastructure • Detailed condition survey (including underwater components) of the Structure, and all appurtenant infrastructure • Interview with operation and maintenance staff • Review of all investigation documentation, inflow design flood levels, seismic loads, live and dead loads combinations, and reliability and functionality of discharge facilities • Review of the Operation/Maintenance/Surveillance (OMS) manual, Emergency Preparedness and Response Plans (EPP and ERP), overall effectiveness of the safety management plan, and any previously conducted Dam Safety Reviews or consequence of failure analysis • Review of records of any dam safety incidents, and follow-up actions, since the previous review • Stability analysis based on current industry standards and evaluation of the consequences of failure • Observe operation of the flow control equipment
Deliverables	Dam Safety Report (including summary of inspection observations, materials reviewed, results of stability and consequence of failure analyses, and any operational testing)
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with Project TOR, MIT's "Structures Design Manual", CDA guidelines, and the ESP's documented QC/QA Plan. This will require a complete, independent review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required *for each of the geotechnical, hydraulic and structural disciplines; two of which must be from the applying office.* • In addition, one Professional Engineer is required to complete an independent check of the data, calculations, analysis and reports for the assignment. The Engineer conducting the independent review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • A minimum of 10 years relevant engineering work experience.
	  • The Professional Engineer designated as the Reviewer shall have a minimum of 20 years relevant engineering work experience with the design, construction and operations of water control structures.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices.
	• The Professional Engineers identified in the “Minimum Number of Staff” (above) must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• Out of office personnel may contribute to complete the project; however, staff of the applying office must provide overall project management. • The applying office must be capable of delivering drawings in MicroStation (current MIT version) and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT’s schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Detailed Design – Dams

Work Type Name	**Detailed Design – Dams**
Work Type Owner	Water Control and Structures
Work Type Definition	*Detailed design* involves detailed design and production of professionally engineered drawings and tender package(s) for rehabilitation or new construction projects. The work shall conform to acceptable design standards and meet the specific requirements of MIT, Canadian Dam Association (CDA) guidelines, National Building Code of Canada (NBCC) and Manitoba Workplace health and Safety Act, where applicable as identified in the Project TOR.
Deliverables	Project Design Brief, Detailed Design Package and Tender Package (including drawings)
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with CDA guidelines, NBCC (where applicable), Manitoba Workplace Health and Safety Act, Project TOR, MIT's "Structures Design Manual", and the ESP's documented QC/QA Plan. This will require a complete, independent review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required *at the applying office for each of the geotechnical, hydraulic and structural disciplines.* • One Professional Engineer is required to complete an independent check of the data, calculations, analysis and reports for the assignment. The Engineer conducting the independent review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • One of the Professional Engineers in each of the disciplines identified in "Minimum Number of Staff" (above) shall have a minimum of 10 years relevant engineering work experience. The others shall have a minimum of 5 years relevant engineering work experience.
	  • The Professional Engineer designated as Reviewer shall have a minimum of 20 years relevant engineering work experience.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices, and
	• Satisfactory experience with the prevalent soil conditions and construction practices in Manitoba, or accepted equivalent, must be demonstrated.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must have staff capable of total completion of project that meets MIT's schedule, budget and required quality for deliverables. • The applying office must be capable of delivering drawings in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Detailed Design – Major Structures

Work Type Name	**Detailed Design – Major Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Detailed design* involves detailed design and production of professionally engineered drawings and tender package(s) for rehabilitation or new construction projects. The work shall conform to acceptable design standards and meet the specific requirements of MIT [as described in MIT's "Structures Design Manual" and Project Terms of Reference (TOR)], American Association of State Highway and Transportation Officials LRFD Bridge Design Specifications (AASHTO LRFD) and the Canadian Highway Bridge Design Code (CHBDC) where applicable as identified in the Project TOR. *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or o Major river crossings with unique geotechnical conditions, or o Post-tensioned concrete box girders supported on falsework during construction, or o Truss bridges, concrete or steel arch bridges, or o Rigid frames, or o Bridges with extensive aesthetic treatments or complex geometry, or o Structures with significant staging, or o Highway overpasses or underpasses, or o Railway overpasses or underpasses.
Deliverables	Project Design Brief, Detailed Design Package and Tender Package (including drawings)

Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with ASSHTO LRFD, CHBDC (where applicable), Project TOR, MIT's "Structures Design Manual" and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• Out-of office personnel may contribute to complete the project; however, the applying office must have an office and in-house staff capable of project management and Professional Engineering design or independent design review as a minimum extent of participation. • At least two Professional Engineers are required at the applying office. • In addition, one Professional Engineer is required to complete an independent design review of data, calculations and analysis for the design assignment. The Engineer conducting the independent design review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• Professional Engineers at the applying office:
	  ○ Registered in the Province of Manitoba.
	• Professional Engineer conducting the Independent Design Review:
	  ○ Registered in the Province of Manitoba

Qualifying Experience of Staff	• Professional Engineers at the applying office:
	  ○ At least one Engineer with a minimum of 15 years, and one Engineer with a minimum of 7 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all other applicable design policies, procedures, standards and good engineering practices.
	• Professional Engineer conducting the Independent Design Review:
	  ○ A Minimum of 15 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all other applicable design policies, procedures, standards and good engineering practices.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Detailed Design – Minor Structures

Work Type Name	**Detailed Design – Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Detailed design* involves detailed design and production of professionally engineered drawings and tender package(s) for rehabilitation or new construction projects. The work shall conform to acceptable design standards and meet the specific requirements of MIT (as described in MIT's "Structures Design Manual" and Project Terms of Reference (TOR)), American Association of State Highway and Transportation Officials LRFD Bridge Design Specifications (AASHTO LRFD) and the Canadian Highway Bridge Design Code (CHBDC) where applicable as identified in the Project TOR. *Minor Structures* is defined as: o Culverts – Structural Plate Corrugated Steel Pipe (SPCSP) and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges.
Deliverables	Project Design Brief, Detailed Design Package and Tender Package (including drawings)
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with ASSHTO LRFD, CHBDC (where applicable), Project TOR, MIT's "Structures Design Manual" and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• The applying office must have an office and in-house staff capable of total completion of project that meets MIT's schedule, budget and quality requirements for deliverables. • At least two Professional Engineers are required at the applying office. • One of the Professional Engineers, for each of the structural and transportation disciplines, is required to perform an independent design review of data, calculations and analysis of the other. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	Professional Engineers must be registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers: ○ At least one Engineer with a minimum of 10 years, and one Engineer with a minimum of 5 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all other applicable design policies, procedures, standards and good engineering practices. • Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years. • All professional staff shall provide a list of relevant project experience.
Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Detailed Visual Inspections (Level II) - Major and Minor Structures

Work Type Name	**Detailed Visual Inspections (Level II) - Major and Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Detailed Visual Inspections (Level II)* involves the planning, management, execution and delivery of a large program of detailed visual inspections (Level II), production of detailed inspection reports with recommendations for future maintenance, rehabilitation or replacement and the production of the annual technical report. Execution of the inspection program will also include developing and implementing a safety program for undertaking field inspections. *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or o Major river crossings with unique geotechnical conditions, or o Post-tensioned concrete box girders supported on falsework during construction, or o Truss bridges, concrete or steel arch bridges, or o Rigid frames, or o Bridges with extensive aesthetic treatments or complex geometry, or o Structures with significant staging, or o Highway overpasses or underpasses, or o Railway overpasses or underpasses. *Minor Structures* is defined as: o Culverts – SPCSP and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges.
Deliverables	• Detailed Visual Inspection (Level II) reports. • Technical Reports and Executive Summary

Quality Attributes of Deliverables	• Inspection reports in hard copy and digital formats include inventory and historical data, scheduled improvements, field inspection information, additional investigations, element data, component condition, recommended work and associated digital photographs. • Technical Reports and Executive Summary include inspection information, maintenance recommendations, costs, inventory discrepancies, urgent/emergency sites, a summary of significant findings and all other documentation identified in the Project Terms of Reference (TOR). • The Engineering Service Provider (ESP) to ensure the inspections and reports conform to the Ontario Structure Inspection Manual (OSIM) as modified by MIT, the Project TOR and the Quality Assurance Plan (QAP) provided by the ESP. • The ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• Out-of-office personnel may contribute to complete the project; however, the applying office must have an office and in-house staff capable of overall project management and Professional Engineering for the detailed visual inspections as a minimum extent of participation. • As a minimum two Professional Engineers, two Certified Engineering Technicians or Technologists and two assistant inspectors are required at the applying office as specified below. • The Project Manager shall be a Professional Engineer. • Field Inspection (FI) teams shall be provided to carry out the inspections for each inspection program assignment. As a minimum, two FI teams are required at the applying office with the exact number dictated by the individual inspection program requirements defined in the Project TOR. Each FI Team shall be comprised of two inspectors: one senior inspector and one assistant inspector. Each senior Inspector shall be a Certified Engineering Technician or Technologist, as a minimum level of education. • Inspection Engineers (IE) shall be provided as required to manage the FI teams and participate in the inspection of critical structural components. Each IE shall manage no more than three FI teams. As a minimum one IE is required at the applying office with the exact number dictated by the individual inspection program requirements defined in the Project TOR. Each IE shall be a Professional Engineer stationed in the field. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• The Professional Engineer acting as the Project Manager at the applying office shall be:
	  ○ Registered in the Province of Manitoba
	• The Professional Engineer(s) acting in the role of an IE at the applying office shall be:
	  ○ Registered in the Province of Manitoba
	• The Certified Engineering Technicians or Technologists serving as the Senior Inspectors shall be:
	  ○ Registered in the Province of Manitoba.

Qualifying Experience	• Professional Engineer acting as the Project Manager at the applying office shall have:
	  ○ a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in Bridge Engineering and other appropriate areas necessary to complete the project in accordance with Ontario Structure Inspection Manual (OSIM), the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineer(s) acting in the role of an IE at the applying office shall have:
	  ○ a minimum of 10 years of relevant experience in Bridge Engineering, where a minimum of 5 years of bridge inspection background on large scale projects
	  ○ engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with Ontario Structure Inspection Manual (OSIM), the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices.
	• The Senior Inspectors shall have:
	  ○ attained standing as a Certified Engineering Technician or Technologist as a minimum level of education
	  ○ a minimum of 5 years of bridge inspection experience in accordance with OSIM.
	• The assistant Inspectors shall have:
	  ○ a high school education as a minimum level of education
	  ○ a minimum of 10 years of relevant experience
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of three similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
General	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering the detailed visual inspection reports in Microsoft Excel (current MIT version).
Qualifying Experience	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of three similar projects in the last five years. If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Emergency Response Plan Preparation - Dams

Work Type Name	**Emergency Response Plan Preparation - Dams**
Work Type Owner	Water Control and Structures
Work Type Definition	*Preparation of Emergency Response Plans (ERP) for Dams* involves documentation of the procedures the operations staff should follow in the event of an emergency at the structure, the key emergency response roles and responsibilities, in order of priority; and the necessary notification and contact information to cover the full range of flood management planning; including, but not limited to, the dam breach scenario; all in accordance with the Canadian Dam Association (CDA) guidelines. The ERP shall include: • Inundation Maps and Dam Break Analysis • Classification of the Structure • Emergency identification and evaluation • Identification of potential emergency indicators and associated response • Preventative and remedial actions • Notification procedures • Site access • Communication systems, equipment and materials • Warning Systems • Site plans showing site access and egress, potential breach locations, • Tables showing variation in flood stage with time Applying offices to note that the preparation of the Emergency Preparedness Plans (EPP) will be undertaken separately, and are not addressed as part of this prequalification category.
Deliverables	ERP document
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with Project TOR, MIT's "Structures Design Manual", CDA guidelines, and the ESP's documented QC/QA Plan. This will require a complete, independent review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required *for each of the geotechnical, hydraulic and structural disciplines; two of which must be from the applying office*. • In addition, one Professional Engineer is required to complete an independent check of the data, calculations, analysis and reports for the assignment. The Engineer conducting the independent review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • At least one of which, in each of the disciples identified in the "Minimum Number of Staff" (above), shall have a minimum of 15 years relevant engineering work experience and the others a minimum of 7 years relevant engineering work experience.
	  • The Professional Engineer designated as the Reviewer shall have a minimum of 20 years relevant engineering work experience with the design, construction and operations of water control structures.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices.
	• The Professional Engineers identified in the "Minimum Number of Staff" (above) must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• Out of office personnel may contribute to complete the project; however, staff of the applying office must provide overall project management. • The applying office must be capable of delivering drawings in Microstation (current MIT version) and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Engineering Inspection - Dams

Work Type Name	**Engineering Inspection - Dams**
Work Type Owner	Water Control and Structures
Work Type Definition	*Engineering inspection* of dams involves a visual assessment of the structure's condition, including identification of any deficiencies and associated remedial actions related to engineering stability, and worker and public safety, based on the Canadian Dam Association (CDA) guidelines and the Workplace Health and Safety Act, and in accordance with the template provided by MIT (in the project TOR). The Dam components to be inspected include: • Earthfill embankments • Concrete, wood and/or steel components • All Worker and Public Safety infrastructure at and adjacent to the site All field work shall be carried out in accordance with MIT's Workplace Health and Safety (WSH) guidelines, Department of Fisheries and Oceans (DFO) requirements for fish habitat protection, Navigable Waters and any other environmental considerations, as per MIT's direction. Coordination with DFO and other regulatory agencies will be the responsibility of the Engineering Service Provider (ESP). The data collected may be used in the preliminary and detailed design phases and assist in tender quantity determination.
Deliverables	Engineering Inspection Checklist and cover report, including photographs.
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with the Project TOR, CDA guidelines, Workplace Health and Safety Act, and the ESP's documented QC/QA Plan. This will require a complete, independent review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required *at the applying office for each of the geotechnical and structural disciplines.* • In addition, one Professional Engineer is required to complete an independent review of the data and reports for the assignment. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• Professional Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • A minimum of 10 years relevant engineering work experience.
	  • The Professional Engineer designated as the Reviewer shall have a minimum of 20 years relevant engineering work experience.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices, and
	• Satisfactory experience with the prevalent soil conditions and construction practices in Manitoba, or accepted equivalent, must be demonstrated.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must have staff capable of total completion of project that meets MIT's schedule, budget and required quality for deliverables. • The applying office must be capable of delivering reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Geotechnical Investigation and Design – Structure Foundations

Work Type Name	**Geotechnical Investigation and Design – Structure Foundations**
Work Type Owner	Water Control and Structures
Work Type Definition	*Geotechnical Investigation and Design* involves the planning, management, execution and delivery of field and laboratory programs, site reconnaissance, stakeholder consultation, geotechnical analysis and design of structure foundations, design alternatives assessment, risk assessment and production of a geotechnical report with recommendations, and/or a tender package. The work may include: • Establishing/conducting a site investigation program • Performing preliminary and detailed designs of shallow and deep foundations. • Evaluating site conditions and providing recommendations for mitigating adverse conditions. • Evaluating contractor proposals for the construction of foundations and providing recommendations. • Developing acceptance criteria for driven piles. • Evaluating the need for field testing of driven piles, developing the scope of work required and arranging for the testing, interpretation of results and providing recommendations. • Estimating settlement for structure foundations and embankments. • Designing stabilization measures for new or failed slopes (including rock caissons) and vertical drains for accelerated embankment settlement. • Designing and supervising the installation of geotechnical instrumentation to measure lateral movement, settlement and pore water pressure. • Assessing the hydrogeology of a site. • Designing dewatering systems for the control of groundwater.

Deliverables	• In the case of *Functional Design*, a Geotechnical Report which includes an executive summary, field and laboratory testing results, assessments, foundation or stabilization recommendations, stakeholder commentary, drawings, estimates and if applicable, approvals and licenses and all other documentation identified in the terms of reference. • In the case of *Detailed Design*, a Tender Package and a geotechnical Report are required. The Tender Package must include the special provisions, material specifications if applicable, detailed design drawings, erosion and sedimentation control plans and cost estimates. The Geotechnical Report must include an executive summary, construction procedure, risk assessment, monitoring schedule, field and laboratory testing results and all other documentation identified in the terms of reference. • In the case of a third party pursuing *Detailed Design* based on a the Engineering Service Provider's (ESP) *Functional Design*, a Certification Letter from the ESP, confirming that the *Detailed Design* is in accordance with the intent of the *Functional Design*.
Quality Attributes of Deliverables	• ESP to provide a documented Quality Assurance Plan (QAP). • ESP's QAP must address methods of verifying their work, including review of submissions, incorporation of stakeholder comments and review of final deliverables as well as meeting the specified schedule and budget.. • ESP to check/verify drawings in conformance with the American Association of State Highway and Transportation Officials LRFD Bridge Design Specifications (AASHTO LRFD), Canadian Highway Bridge Design Code (CHBDC - where applicable) the Canadian Foundation Engineering Manual (CFEM), Project TOR, MIT's Structures Design Manual and the ESP's QAP. This will require a complete, independent design review.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional Engineer is required at the applying office • In addition, one Professional Engineer is required to complete an independent design review of data, calculations, analysis and report for the design assignment. The Engineer conducting the independent design review is not required to be in the applying office. • The services of at least one Certified Engineering Technician or Technologist or Engineer-In-Training must be available to the applying office. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• Professional Engineers at the applying office:
	  ○ At least one Professional Engineers registered in the Province of Manitoba.
	  ○ Either the Engineer undertaking the work or the Engineer conducting the independent design review must have a specialized post graduate training in geotechnical engineering (M. Eng., M. Sc. or Ph.D.). Fifteen years relevant experience will be considered equivalent to post graduate training.
	• Certified Engineering Technician, Technologist or Engineer-In-Training
	  ○ Registered in Canada.

Qualifying Experience of Staff	• Professional Engineers at the applying office:
	  ○ At least one with a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC, CFEM, the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineer conducting the Independent Design Review:
	  ○ A Minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC, CFEM, the Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices.
	• Certified Engineering Technician, Technologist or Engineer-In-Training:
	  ○ Minimum of 5 years of relevant experience.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of three similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering structure plans in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Hydrologic and Hydraulic Assignments

Work Type Name	**Hydrologic and Hydraulic Assignments**
Work Type Owner	Water Control and Structures
Work Type Definition	*Hydrologic and Hydraulic Assignments* involve undertaking hydrologic and hydraulic assessments / designs for rehabilitation and/or new construction of proposed water control works or highway related drainage works. Proposed Water Control works involve rehabilitation or replacement of road crossings (culvert/bridge structures), channel construction (or reconstruction), rehabilitation or replacement of dam structures and slope stabilization works. The work may include: • Clear identification of contributing drainage area. • Site visit(s) to investigate/confirm drainage area, topographic information, drainage issues, affected areas, etc. • Development of a hydrologic model. • Determination of design flows for a range of frequencies. • Review of existing and relevant records/documentation related to the existing structure to be rehabilitated or replaced. • In consultation with MIT staff, review and/or determination of appropriate hydrologic and hydraulic design criteria. • Development of a hydraulic model. • Determination of required hydraulic opening, hydraulic assessment of existing conditions, hydraulic assessment of proposed conditions (for various structure alternatives).
Deliverables	Preliminary Hydraulic Design Report (including summary of site investigations, reference to existing and relevant documentation reviewed, selected design criteria, environmental considerations, engineering analysis and design – existing and proposed conditions, preliminary design drawings).
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with Project Terms of Reference (TOR), MIT's "Structure Design Manual", requirements of all regulatory and environmental approval authorities, and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. This will require a complete, independent design check. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• At least one Professional (Water Resources) Engineer is required at the applying office. • In addition, one Professional (Water Resources) Engineer is required to complete an independent design check of data, calculations, analysis and report for the design assignment. The Engineer conducting the independent design check is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• Professional Engineers (at applying office):
	  ○ Registered in the Province of Manitoba.
	• Professional Engineer (Design Check):
	  ○ Registered in the Province of Manitoba.
	  ○ Required to complete an independent design check of data, calculations, report, etc. for the design assignment.

Qualifying Experience of Staff	• Professional Engineers (applying office and design check):
	  ○ A minimum of 10 years of engineering experience and training where a minimum of 5 of these 10 years was spent gaining knowledge and expertise in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable design codes, procedures, standards and good engineering practices.
	  ○ Provide list of relevant project experience.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• Out-of-office personnel may contribute to complete the project; however, the applying office must have staff capable of project management and Professional Engineering design or design check as a minimum extent of participation. • The applying office must have local personnel capable of total completion of specialized work for the project. • The applying office must be capable of delivering drawings in Microstation (current MIT version) and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two projects of at least the same complexity in the last five years.

Prequalification Requirements
Water Control and Structures
Preliminary Design – Dams

Work Type Name	**Preliminary Design – Dams**
Work Type Owner	Water Control and Structures
Work Type Definition	*Preliminary design* involves preparing a preliminary design for either rehabilitation projects or new construction that conform to the specific design requirements of MIT, Canadian Dam Association (CDA) guidelines, National Building Code of Canada (NBCC), and the Manitoba Workplace Health and Safety Act, upon which detailed design can be based and may include: site surveys; hydrologic analysis; hydraulic analysis and design; historical high water level, normal summer water level, ice thickness and ice levels; preliminary geotechnical analysis and design (including conducting and coordinating subsurface investigation programs); evaluation and determination of worker and public safety infrastructure; evaluation of environmental and/or regulatory requirements; stakeholder and public consultation process (if required); traffic accommodation (if required); consideration of constructability issues and construction scheduling; consideration of site specific maintenance issues; development and evaluation of functional alternatives. Preliminary design involves a number of inter-disciplinary areas of expertise (i.e. hydraulics, geotechnical, and structural) the ESP is expected to be pre-qualified in all disciplines. The Dam Structures may include: • Earthfill embankments • Concrete, wood or steel components • All Worker and Public Safety infrastructure at and adjacent to the site
Deliverables	Preliminary Design Report (including summary of subsurface conditions, design criteria applied, engineering analysis, environmental considerations, stakeholder commentary, preliminary construction scheduling and cost estimate, Preliminary Drawings, Final Environmental Submission Package that will receive approvals.
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with Project TOR, MIT's "Structures Design Manual", CDA guidelines, NBCC, the Manitoba Workplace Health and Safety Act, requirements of all regulatory and environmental approval authorities, and the ESP's documented QC/QA Plan. This will require a complete, independent design check. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Engineers are required *at the applying office for each of the geotechnical, hydraulic and structural disciplines.* • In addition, one Professional Engineer is required to complete an independent check of the data, calculations, analysis and reports for the assignment. The Engineer conducting the independent review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • At least one of which, in each of the disciples identified in the "Minimum Number of Staff" (above), shall have a minimum of 10 years relevant engineering work experience and the others a minimum of 5 years relevant engineering work experience.
	  • The Professional Engineer designated as the Reviewer shall have a minimum of 20 years relevant engineering work experience.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to do the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices, and
	• Satisfactory experience with the prevalent soil conditions and construction practices in Manitoba, or accepted equivalent, must be demonstrated.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must have staff capable of total completion of project that meets MIT's schedule, budget and required quality for deliverables. • The applying office must be capable of delivering drawings in Microstation (current MIT version) and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Preliminary Design – Major Structures

Work Type Name	**Preliminary Design – Major Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Preliminary design* involves preparing a preliminary design for either rehabilitation or new construction projects upon which detailed design can be based and may include: bridge site surveys; detailed condition surveys; hydrologic analysis; hydraulic analysis and design; historical high water level, normal summer water level, ice thickness and ice levels; preliminary foundation report (including soils investigation); satisfaction of environmental and/or regulatory requirements; stakeholder and public consultation process (if required); traffic accommodation; consideration of constructability issues; consideration of site specific maintenance issues; development and evaluation of functional alternatives; horizontal and vertical controls; and identification of structure type or structure modifications (including span lengths). Preliminary design typically includes the following inter-disciplinary areas of expertise; hydraulics, geotechnical, structural and transportation. Prequalification for Preliminary Design requires prequalification in all of these areas. The Engineering Service Provider (ESP) is expected to have in-office capability in the structural and transportation disciplines as a minimum, and will be prequalified in these areas under this Prequalification Category Definition. Any internal resources or external sub-ESP(s) for the detailed condition surveys on the hydraulics and geotechnical disciplines will have to be prequalified as an applying office under the following Prequalification Category Definitions through this prequalification process: o Detailed Condition Surveys (Level III Inspections) o Hydraulics: Hydrologic and Hydraulic Assignments o Geotechnical: Geotechnical Investigation and Design – Structure Foundations *Major Structures* is defined as: o Cast-in-place concrete box culverts, or o Prestressed concrete box or channel girder bridges with substructure units supported on pile or spread footings, or o I-girder or NU girder bridges, or o Structural steel girder bridges, or o Major river crossings with unique geotechnical conditions, or o Post-tensioned concrete box girders supported on falsework during construction, or o Truss bridges, concrete or steel arch bridges, or o Rigid frames, or o Bridges with extensive aesthetic treatments or complex geometry, or o Structures with significant staging, or

	○ Highway overpasses or underpasses, or ○ Railway overpasses or underpasses.
Deliverables	Preliminary Design Report, Final Environmental Submission Package that will receive approvals
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with American Association of State Highway and Transportation Officials LRFD Bridge Design Specifications (AASHTO LRFD), Canadian Highway Bridge Design Code (CHBDC – where applicable as identified in the Project TOR), Project Terms of Reference (TOR), MIT's "Structures Design Manual", requirements of all regulatory and environmental approval authorities, and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• Out-of-office personnel may contribute to complete the project; however, the applying office must have an office and in-house staff capable of overall project management and Professional Engineering for the preliminary design or independent design review as a minimum extent of participation. • At least two Professional Engineers are required at the applying office for each of the structural and transportation disciplines. • In addition, one Professional Engineer is required to complete an independent design review of data, calculations, analysis and report for the design assignment. The Engineer conducting the independent design review is not required to be in the applying office. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers at the applying office: ○ Registered in the Province of Manitoba. • Professional Engineer conducting the Independent Design Review licensed to practice: ○ Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers at the applying office:
	  ○ At least one Engineer with a minimum of 15 years, and one Engineer with a minimum of 7 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to do the project in accordance with AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices.
	• Professional Engineer conducting the Independent Design Check:
	  ○ A Minimum of 15 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to do the project in accordance with the AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all other applicable codes, policies, procedures, standards and good engineering practices.
	• Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years.
	• All professional staff shall provide a list of relevant project experience.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering drawings for Environmental Submission Package in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Preliminary Design – Minor Structures

Work Type Name	**Preliminary Design – Minor Structures**
Work Type Owner	Water Control and Structures
Work Type Definition	*Preliminary design* involves preparing a preliminary design for either rehabilitation or new construction projects upon which detailed design can be based and may include: bridge site surveys; detailed condition surveys; hydrologic analysis; hydraulic analysis and design; historical high water level, normal summer water level, ice thickness and ice levels; preliminary foundation report (including soils investigation); satisfaction of environmental and/or regulatory requirements; stakeholder and public consultation process (if required); traffic accommodation; consideration of constructability issues; consideration of site specific maintenance issues; development and evaluation of functional alternatives; horizontal and vertical controls; and identification of structure type or structure modifications (including span lengths). Preliminary design typically includes the following inter-disciplinary areas of expertise; hydraulics, geotechnical, structural and transportation. Prequalification for Preliminary Design requires prequalification in all of these areas. The Engineering Service Provider (ESP) is expected to have in-office capability in the structural and transportation disciplines as a minimum, and will be prequalified in these areas under this Prequalification Category Definition. Any internal resources or external sub-ESP(s) for the detailed condition surveys or the hydraulics and geotechnical disciplines will have to be prequalified as an applying office under the following Prequalification Category Definitions through this prequalification process: o Detailed Condition Surveys (Level III Inspections) o Hydraulics: Hydrologic and Hydraulic Assignments o Geotechnical: Geotechnical Investigation and Design – Structure Foundations *Minor Structures* is defined as: o Culverts – Structural Plate Corrugated Steel Pipe SPCSP and precast concrete, or o Precast prestressed concrete channel (PPCC) bridges.
Deliverables	Preliminary Design Report, Final Environmental Submission Package that will receive approvals
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work and drawings in conformance with American Association of State Highway and Transportation Officials LRFD Bridge Design Specifications (AASHTO LRFD), Canadian Highway Bridge Design Code (CHBDC – where applicable as identified in the Project TOR), Project Terms of Reference (TOR), MIT's "Structures Design Manual", requirements of all regulatory and environmental approval authorities, and the ESP's documented Quality Control / Quality Assurance (QC/QA) Plan. This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.

Requirements of the Professional Staff	
Minimum Number of Staff	• The applying office must have an office and in-house staff capable of total completion of project that meets MIT's schedule, budget and the quality requirements for deliverables. • At least two Professional Engineers are required at the applying office for each of the structural and transportation disciplines. • One of the Professional Engineers is required to perform an independent design review of data, calculations, analysis and reports of the other. • Number of professional and technical support personnel must be recorded and updated.
Professional Requirements	• Professional Engineers must be registered in the Province of Manitoba.
Qualifying Experience of Staff	• Professional Engineers: ○ At least one of which has a minimum of 10 years of relevant experience and engineering training, knowledge, and expertise in the appropriate areas necessary to complete the project in accordance with AASHTO LRFD, CHBDC (where applicable), Project TOR, MIT requirements and all applicable codes, policies, procedures, standards and good engineering practices. • Satisfactory experience and successful project execution must be demonstrated on a minimum of two similar projects in the last five years. • All professional staff shall provide a list of relevant qualifying experience.
Requirements of the Applying Office	
Applying Office Requirements	• The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba. • The applying office must be capable of delivering drawings for Environmental Submission Package in Microstation (current MIT version) and reports in Microsoft Word (current MIT version).
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience and successful project execution on a minimum of two similar projects in the last five years. • If the applying office has completed previous assignments with MIT, the projects must have met MIT's schedule, budget and quality requirements for deliverables.

Prequalification Requirements
Water Control and Structures
Structural Assessment – Dams

Work Type Name	**Structural Assessment – Dams**
Work Type Owner	Water Control and Structures
Work Type Definition	*Structural Assessment of the Dams* involves the formal assessment of all structural components of the dam by completing some or all of the following: o Detailed visual inspection and assessment (including underwater survey, where applicable), o Structural stability analysis based on current design standards, o Strength Evaluation, and o Recommendations for remedial repair. The design work shall conform to acceptable design standards and meet the specific requirements of MIT, Canadian Dam Association (CDA) guidelines, National Building Code of Canada (NBCC) and Manitoba Workplace Health and Safety Act, where applicable as identified in the Project TOR. All field work shall be carried out in accordance with MIT's Workplace Health and Safety guidelines, Department of Fisheries and Oceans (DFO) requirements for fish habitat protection, Navigable Waters and any other environmental considerations, as per MIT's direction. Coordination with DFO and other regulatory agencies will be the responsibility of the Engineering Service Provider (ESP).
Deliverables	Summary Report, including photographs, field observations, recommendation for remedial repair, and results of the stability analysis and strength evaluation.
Quality Attributes of Deliverables	Engineering Service Provider (ESP) to check/verify work in conformance with CDA guidelines, NBCC (where applicable), Manitoba Workplace Health and Safety Act, Project TOR, MIT's "Structures Design Manual", and the ESP's documented QC/QA Plan. This will require a complete, independent design review. ESP's QC/QA plan must address their methods of verifying their work, including review submittals, comments from previous submittals, and quality of final deliverables, as well as meeting the specified schedule and budget.
Requirements of the Professional Staff	
Minimum Number of Staff	• At least two Professional Structural Engineers are required *at the applying office.* • In addition, one Professional Engineer is required to complete an independent design review of the data, calculations, analysis and reports for the assignment. • Number of professional and technical support personnel must be recorded and updated.

Professional Requirements	• Professional Structural Engineers: • Registered in the Province of Manitoba.

Qualifying Experience of Staff	• Professional Engineers:
	  • At least one of which shall have a minimum of 15 years relevant engineering work experience and the other a minimum of 7 years relevant engineering work experience.
	  • The Professional Engineer undertaking the independent design review shall have a minimum of 20 years relevant engineering work experience.
	• Satisfactory experience must be demonstrated in the appropriate areas necessary to complete the project in accordance with the Project TOR, MIT requirements and all applicable codes, procedures, standards and good engineering practices.
	• Satisfactory experience with the prevalent soil conditions and construction practices in Manitoba, or accepted equivalent, must be demonstrated.
	• Satisfactory experience must be demonstrated on at least two projects of at least the same complexity in the last five years.

Requirements of the Applying Office	
Applying Office Requirements	• The applying office must have staff capable of total completion of project that meets MIT's schedule, budget and required quality for deliverables. • The applying office must be capable of delivering drawings in Microstation (current MIT version) and tender documents and reports in Microsoft Word (current MIT version). • The applying office must hold a valid Certificate of Authorization from the Association of Professional Engineers and Geoscientists of Manitoba.
Qualifying Experience of Applying Office	• The applying office must demonstrate satisfactory experience on at least two projects of at least the same complexity in the last five years. • If the applying office has completed previous assignments with MIT, the project must have met MIT's schedule, budget and quality requirements for deliverables.