

CONTRACT ADMINISTRATION AND CONSTRUCTION INSPECTION MANUAL

For

HIGHWAYS

December 18, 2024

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PURPOSE OF THE MANUAL

The Contract Administration and Construction Inspection Manual (CACI Manual) for Highways has been prepared to assist the Contract Administrator (CA) and the associated inspection staff in the administration of highway construction contracts for Manitoba Transportation & Infrastructure (MTI).

Service providers (SP) are responsible for providing the contract administration services and deliverables in accordance with the Contract Administration and Construction Inspection (CACI) Agreement including the Contract Administration and Construction Inspection Manual for Highways.

The CACI Manual is divided into two parts:

- Part A: Provides direction to the SP contract administration team on meetings, deliverables, protocol, instruction, administration, relationships, and conduct.
- Part B: Consist of inspection tasks intended to provide guidance to those involved in the inspection of MTI contracts with a resource to check the quality and quantity of the Work is in accordance with MTI Specification, standards, Drawings, policies, and procedures.

This document is not a complete documentation of the contract administration process. It shall be read in conjunction with the Awarded Agreement, MTI construction Specifications, MEB standards, directives, requirements of the construction Contract and pertinent legislation. In addition, further direction and guidance relating to interpretation may be given by MTI's Project Manager.

Part A: Contract Administration

1 ROLES AND RESPONSIBILITIES

1.1 MTI ROLES

- MTI Project Manager approvals, mediation, monitors SP conformance to the Awarded Agreement, provides procedural information, contact information as required, and reports to MTI internally.
- Construction Support Services, Traffic Engineering and Highway Design advisors, information resources, provides technical expertise to MTI Project Manager, Regional Operations and SP.

1.2 SERVICE PROVIDER ROLES

- Contract Administrator The primary contact for the MTI Project Manager and Contractor. Administers the construction Contract including management of Contract cost, schedule, quality, change, Contractor conformance and project issues. Controls all Contract related documentation on behalf of the MTI Project Manager. The CA may also fulfill the role of Project Manager for the SP.
- Inspectors Conducts all construction inspection and testing in accordance with this CACI Manual and as required by the Terms of Reference in the Awarded Agreement including monitoring of project site safety and traffic control.

2 PRE-CONSTRUCTION

2.1 AWARDED AGREEMENT

The SP shall review and become familiar with the Awarded Agreement. Changes or revisions to the agreement must be requested in writing by the SP and approved by MTI Project Manager prior to implementation.

2.2 PRE-CONSTRUCTION ACTIVITIES

Pre-construction activities refer to the undertakings that generally occur before formal commencement of a construction project. The following activities will be considered as part of pre-construction:

- Developing SP Project Site Safety Plan
- Training and development of staff to ensure they are knowledgeable of the Contract documents, Specifications, Drawings, survey requirements and field inspection procedures (e.g., bituminous pavement, granular course, grading)
- Developing project binders, spreadsheets, inspection reports and various inspection documents
- Reviewing project files, quantities, Drawings, and documents provided by MTI Project Manager
- Creating checking, scaling, and inspection sheets
- Hiring support staff
- Reviewing Contractor's Quality Management Plan
- Booking and organizing all accommodations, vehicles, storage facilities, survey equipment, and necessary tools or supplies for this project

- Conducting pre-construction and start up meetings
- Other activities categorized within the pre-construction section

2.3 TURNOVER OF DOCUMENTS FROM MTI TO SERVICE PROVIDER

The following type of documents will be transferred from MTI to the SP:

- Copies of the tender documents, Contract Drawings, and addenda/amendments
- Signed Contract
- List of MTI contact names for the Contract
- MTI supplied documents (including digital files) listed in the CACI Agreement
- Design calculations
- Detailed Design Drawings
- Pavement marking Drawings
- Traffic Sign Plan
- Survey documents specified in the Special Provisions
- Environmental documentation:
 - Environmental Pre-Screening and Approval Document
 - Pertinent permits, approvals, and authorizations
- Utility information
- Copies of applicable applications/permits related to construction
- Design reports (if applicable):
 - Foundation investigation reports
 - Geotechnical reports
 - Hardcopy of original cross sections (highways, side roads, entrances, culverts and sewers)
- Traffic signal Drawings (if applicable)
- Property and access agreements
- Design SP and their Sub-Contractor contact phone numbers
- Copies of cost share agreements
- Summary sheets

2.4 SP's QUALITY CONTROL OF SERVICES & DELIVERABLES PLAN

The SP shall prepare a Quality Control of Services and Deliverables Plan in a format acceptable to MTI's Project Manager. The SP's Plan for the Quality Control of Services and Deliverables must, at a minimum, outline the following:

- Responsibility for quality
- Overview of the quality review process, including
 - Responsible reviewers
 - Responses to quality issues
- Other standard internal quality controls
- Project specific quality controls (where required)

The SP will immediately address and correct non-compliances to the Quality Control of Services and Deliverables Plan.

As part of the Plan for Quality Control of Services and Deliverables, the SP must commit to make all project records available at any time for review by MTI throughout the term of the agreement.

2.5 SP'S HEALTH AND SAFETY

Manitoba Health & Safety regulations must be followed the same as other Contract requirements to ensure the well-being of all project employees.

The CA and assigned field staff are required to acquaint themselves with the safety and health regulations that are relevant to the project. Additionally, they must familiarize themselves with the Contractor Project Site Safety Plans, Work procedures and Emergency Response Plans.

2.6 CACI ASSIGNMENT START-UP MEETING

The purpose of the CACI Assignment Start-up meeting is to define the roles and responsibilities of both MTI and the SP. The SP will arrange and conduct the CACI Assignment Start-Up Meeting. The SP's Project Manager, CA and lead Construction Inspector will attend on behalf of the SP and shall take meeting notes. MTI's Project Manager and representatives of Regional Operations, Highway Design and Construction Support Services shall attend on behalf of the Department. This meeting shall take place even if the Work has started.

The following should be discussed at the meeting:

- Issues and concerns from both MTI and the SP with respect to expectations and results with emphasis on the Services and Deliverables
- Documentation to be copied to MTI
- Location of SP's field office (if applicable)
- Identify name and location of laboratories supporting the project
- Guidelines and policies regarding media/general public
- CACI Agreement, objectives and deliverables
- Document management, communications and approvals processes
- Traffic management
- Land/Access issues
- Environmental issues
- Inspection requirements
- Survey requirements
- Sampling and testing requirements
- Quality assurance and appeal testing laboratory to be used
- Construction contract administration processes
 - Contract Change Orders
 - Payments and pay adjustments
- SP's Quality Control of Services and Deliverable Plan
- Invoices and status report format and requirements
- Further clarifications regarding the expectations of the CA

Expectations of the CA:

- Coordinate Work and check that the Contractor co-ordinates all Work with adjacent Contractors/maintenance staff and service crews
- Establish and maintain appropriate relationships (where necessary) with suppliers, Sub-Contractors, adjacent property owners, municipalities, other ministries' representatives, the RCMP, local politicians, local police and emergency services, school boards, transit authorities, utility companies, etc.
- Record all discussions and meetings
- Provide day-to-day liaison services with the Contractor
- Provide first line interpretations of the Contract documents to the Contractor, consistent with the intent of the Contract documents
- Communicate MTI's decisions to the Contractor
- Discuss traffic management and closure notification protocol with the Contractor and MTI prior to implementation or change
- Inform MTI of issues which may lead to delays or claims
- Continuously monitor Contract quantities and inform MTI of any anticipated quantity overruns and/or underruns as soon as they are known, and provide MTI ALL necessary information required for over-expenditure approval requests
- Check that the Contractor provides deliverables in a timely, accurate manner
- Receive submissions such as working Drawings (shop Drawings, construction drawings/details and related submissions) plans, proposals, and product data from the Contractor and forwarding them, with the CA's comments, within two working days, to MTI
- Confirm, document and report that working Drawings
 - are received within the specified time frame
 - o consist of the specified number of copies, content, and format
 - are sealed and signed according to the Contract documents either by the Engineer or Design Engineer and design checking Engineer
- Discuss health and safety plan
 - Issues and protection of employees
- Discuss all components of the Contractor's Construction Environmental Management Plan as required in the General Conditions or Special Provisions
 - Issues and protection of the environment
- Review the requirements of the General Conditions for the Contractor to supply source materials throughout the duration of the Contract
- Perform a cursory review of all documents pertaining to the Work for the purpose of identifying errors and omissions and advising the MTI of such errors and omissions
- Carry out all on-site inspection, surveying including layout not required of the Contractor, measuring and verification of construction methods as required by the Contract documents
- Monitor and review the quality of Contractor's Work to confirm that the Contractor is discharging its obligations and responsibilities under the Contract
- Notify the Contractor of any deficiencies in the construction of the Work identified by the MTI or SP's, instructing the Contractor to take appropriate corrective measures and confirming and reporting the results of the corrective measures
- Maintain control of the receipt, use and final disposition of all MTI-supplied materials in accordance with MTI procedures
- Identify and track any design related issues maintaining sufficient supporting documentation
- Provide written recommendations on situations/issues deemed necessary by MTI

- Monitor environmental construction related permits to check that they are obtained as requested and/or adhered to as prescribed in the Contract documents and that any follow up communications with the issuing regulatory agencies are documented
- Coordinate, communicate and consult with the pipeline company when excavating and construction occurs near pipelines that are regulated under the National Energy Board Act (e.g. TransCanada Pipelines, Enbridge). Discuss requirements at the pre-construction meeting with the Contractor
- Carry out Change Order using appropriate process

2.7 DESIGN PACKAGE HANDOVER MEETING

This meeting will be held as required. The purpose of this meeting is for the designers to hand over and/or confirm that all relevant documentation and information has been provided, and to give an overview of the project and any pertinent issues.

The CA shall contact the MTI Project Manager to arrange the Design Package Handover Meeting (location, attendees, taking of minutes, etc.). The MTI Project Manager, with the assistance of the CA, shall prepare an agenda, including a list of invitees, and a design synopsis for distribution one (1) week prior to the meeting. The CA shall chair the meeting and with the assistance of the MTI Project Manager be responsible for checking that the CA has received access to all required design documents and deliverables.

The CA shall prepare minutes of the meeting and shall distribute these minutes.

Value engineering judgements, Contract simplification, etc., decisions made during the design phase should be discussed and documented in the minutes to identify and discuss red flag items and contentious issues that may arise during construction, and any recommended courses of action and the rationale for these.

Suggested List of Attendees:

- MTI Project Manager
- Design SP
- MTI Regional Technical Services Engineer
- CA (SP)
- MTI Regional Construction Manager
- MTI Geotechnical/Traffic/Structural/Property Staff (as required)
- MTI Environmental Officer (as required)

The MTI Project Manager and the CA shall establish the list of attendees based on Contract scope. The design change protocol/process will be discussed at this time.

2.7.1 **Pre-Construction Site Review**

The CA shall carry out a pre-construction review of site conditions immediately in advance of commencement of construction. The CA shall document all conditions and obtain photographs/videos including but not limited to signs, all entrances, side roads, ingress and egress of posted construction

entrances, existing structures, electrical components, traffic signals, highway lighting, power plants, other authority's equipment such as hydro, bell, and railways. The CA shall video record haul road conditions prior to use by the Contractor.

Prior to the Contractor arriving on-site, the CA shall discuss with both MTI Project Manager and the area maintenance operations issues related to the project site.

- Areas of concerns within the project (e.g., travel surface, drainage, landowners)
- Storage locations for guardrail (salvage or new, if applicable)
- Traffic signs
- Other items

Copies of the documents shall be transferred to the MTI Project Manager.

2.8 NOTIFICATIONS PRIOR TO CONSTRUCTION

Before construction begins, notifications should be provided to property owners and businesses. The CA shall give written notice to all property owners and businesses within the limits of the Contract. The notice must specify that construction is about to begin, include details such as the prime Contractor, their representatives, the Contractor's contact information, a general description of the Work, the anticipated completion date, and the CA's name and office telephone number.

Prior to contacting property owners and businesses, the CA shall discuss with MTI Project Manager and provide notification draft.

The CA shall keep all appropriate agencies apprised of any construction activity that may have an impact on their daily operations, including:

Schools	 Transit Authorities (if applicable)
 Utilities (Discuss with MTI PM) 	Municipalities
• R.C.M.P	 Maintenance Patrols/Operations
 Municipal/Regional Police Forces 	 Manitoba Sustainable Development
• Fire	 Innovation, Energy & Mines Manitoba
Ambulance	 DFO (if applicable)
 Pipeline Companies (Discuss with MTI PM) 	 Railways (Discuss with MTI PM)
	Others as required

2.9 PRE-CONSTRUCTION SURVEY REQUIREMENTS

Prior to construction, the SP shall:

- Ensure the Contractor locates the survey monuments with field flags to prevent their damage;
- Verify the location of control points and ensure that the Contractor has clearly marked them with lath, ribbon and the relevant identification number;
- Review Contract documents and MTI's survey package to determine if anything is missing.
 - If any survey information is missing, the CA will contact MTI Project Manager to obtain the necessary survey information or guidance.
 - Additional survey information required and not identified in the tender documents shall be developed by the SP, with approval from MTI Project Manager.

Note: A monument is the official steel bar or post set in the ground to indicate a boundary. A marker is a wood stake or stone cairn to alert people to the monument.

2.10 PRE-CONSTRUCTION MEETING WITH CONTRACTOR

The pre-construction meeting is held after the Contract has been awarded, and before the start of any Work. The CA shall arrange the pre-construction meeting with the Contactor and the following representatives:

- MTI Project Manager
- Regional/Departmental authorities
- MTI's Safety Advisor
- The CA shall notify the Contractor that a representative from each of his Sub-Contractors should also attend
- Others identified by MTI Project Manager, such as:
 - MTI Traffic Engineering Branch, assigned MTI Biologist, or any applicable branches
 - MTI Regional Maintenance representative
 - Stakeholders as required (local municipality, regulatory agencies and utility companies)
 - o Other SPs

The CA shall chair the meeting and arrange for the minutes to be taken and distributed within five (5) working days of the meeting. The agenda can be revised as appropriate for the Contract.

The CA is to introduce all in attendance (i.e. persons name, representation, roles, responsibilities, distribution of business cards, etc.), take attendance, noting name of person, firm or office represented, telephone number(s), and e-mail address.

The number of pre-construction meetings the SP needs to conduct may vary depending on the Contractor's sub-completion, schedule and project deliverables (e.g., pre-crushing, roadwork).

The following items shall be part of the agenda of the meeting.

2.10.1 Administration and Staffing

- Identify Contractor's site representative and alternates with signing authority
- Determine the location of the Contractor's field office, yard and any staging areas

- Confirm the location of the CA's field office
- Assemble the emergency 24-hour phone numbers: MTI Project Manager, MTI Safety Advisors, CA and the Contractor (minimum two (2) representatives). Copies of the emergency name, position and phone numbers to be sent to the Regional Construction Office, Contractor, R.C.M.P., and Regional or Municipal Police with Contract number and location
- Confirm the identification of the designated appeal laboratory from MTI's Project Manager
- Confirm procedure to facilitate acceptance of Contractor's Work and daily activities by SP, Contractor, and MTI

2.10.2 Motor Carrier Enforcement Program

- Discuss allowable Vehicle Weight and Overloading based on the Contractor's pit and plant locations
- Outline that the Contractor is responsible for any overloading that occurs on the Contract, and that Manitoba Motor Carrier Enforcement Officer will monitor compliance
- Indicate that the CA will notify MTI's Project Manager when overloading is suspected
- Request the haul routes proposed by the Contractor and outline their responsibilities (load limits, local by-laws, etc.)
- Forward any concerns to MTI's Project Manager

2.10.3 Area/Regional Operations

• Review and discuss concerns of MTI's Regional Operations (Maintenance)

2.10.4 Environmental

- Review the projects existing environmental conditions and outline any key concerns with the Contractor
- Identify the remaining environmental permits/approvals the Contractor is responsible for and inform the Contractor that copies of any permits/approvals they acquire must be provided to the CA prior to commencing the related Work
- Ask the Contractor to identify any area they plan to disturb outside the specified limits of the Work (access, storage, disposal, work yard, etc.). Remind the Contractor that the selection and use of any such areas must comply with environmental laws as well as environmental assessment and environmental permit/approval requirements/commitments. If utilizing private property, obtain documentation containing written consent to use said property
- Review the key environmental requirements of the Contract (e.g., Contractor's Construction Environmental Management Plan, Site Specific Environmental Plan, specified Special Provisions)
- Remind the Contractor that applicable environmental forms in the Contract documents or provided by the CA must be completed and submitted to the CA
- Remind the Contractor that applicable environmental timing constraints must be complied with
- Identify the designated Inspector who will monitor environmental protection/mitigation and maintain an environmental diary
- Obtain Contractor's contact names, positions and telephone numbers for the following:

- The Contractor staff to be notified for follow-up of any environmental accidents/incidents/problems both during the Work and during periodic/seasonal shutdowns
- The Contractor staff person ultimately responsible for meeting statutory environmental duty in the event that regulatory agencies wish to pursue any problems
- Verify that the Contractor possesses an Emergency Response Plan with the above components. The Emergency Response Plan should include a list of regulatory agencies with their specific contact information that will be contacted in the event of a spill/environmental incident under all applicable legislation

2.10.5 Traffic

- Review the Contractor's responsibilities with respect to traffic, staging, detours, traffic control, maintenance of traffic, signing in accordance with Manitoba's Work Zone Traffic Control Manual, Temporary Conditions, safety precautions, and Special Provisions (e.g. Traffic Control Signing, Hours for Lane Closures, Maintenance of a Traffic Control Diary, etc.)
- Review the Contractors Traffic Management Plan (TMP) submission and approval requirements.
 - The CA shall advise MTI Project Manager when the TMP is ready for acceptance
 - The CA shall notify Manitoba 511 of any specified horizontal (lane width restrictions, lane closure, etc.) or vertical clearances, and construction timelines minimum two weeks before construction is to commence or as soon as the start of the work is known.
- Make the Contractor aware of their duties with respect to construction and traffic safety, and to abide by the Occupational Health and Safety Act
- Advise the Contractor of any reduced speed zones to be in effect (if applicable)
- Review the concerns of any other interested agencies
- Facilitate the advance notification of closures, detours, etc. to be provided to emergency services, municipalities, transit authorities, etc

2.10.6 Quality Assurance

- Review the Contractor's Quality Management Plan (QMP) for quality control activities
 - $\circ~$ The Contractor's QMP shall be submitted to the MTI project manager for acceptance after being reviewed by the CA, including any recommendations, modifications or addition
- Discuss how the Contractor's quality will be assessed in accordance with the Specifications in general terms
- Discuss communication strategy for distributing QA test results and gather a list of Contractor staff responsible for submitting QA lab results

2.10.7 General

- Submissions required from the Contractor:
 - Sub-Contractor's forms: Contractor's Certification Form
 - Contractor's Work schedule and weekly Work schedules, or acknowledgement of the construction schedule submitted in writing
 - List of material sources for all materials supplied by the Contractor, including suppliers for concrete, hot mix asphalt, asphalt cement, granular materials, and other specified

materials outlined in the Contract documents (e.g., seed, erosion control blanket, geotextile), and manufactured products, including Approved Product List references

- Current Workplace Hazardous Materials Information System (WHMIS) documentation and Safety Data Sheets (SDS) for designated materials must be submitted to the CA prior to the commencement of construction (if applicable)
- Concrete and hot mix asphalt mix designs including supporting documentation
- Permits required (pit or quarry permits for aggregates and borrow, environmental permits/approvals, forest resources licence prior to harvesting trees within a crown land pit or quarry boundary)
- Ensure the Contractor obtained permission in writing from the Department to remove materials from MTI owned gravel pit as per MTI Construction Specification No. 100(I), Section 6.2 "Material from Pits, Quarries, and Other Deposits"
- Contractor's price for asphalt cement supply and hauling (paid invoice from supplier)
- Municipality Haul Road Agreements
- Other submissions required by the terms of the Contract
- Review of Contract Drawings, Special Provisions, Specifications, etc.:
 - Identify and discuss any provisions, unique problems, MTI commitments and constraints to the Contract
 - Instructions from the CA must be adhered to in all cases. Disregarding verbal instruction will result in written notices, and could ultimately result in a Non-Conformance Report (NCR) being issued
- Advise that Contract layout is to be done by the Contractor. The CA shall:
 - Review requirements of Special Provisions and any new initiatives
 - Advise the Contractor of the location and number of co-ordinate bars, benchmarks and alignment ties. Hand over horizontal and vertical control sheets, when available. Preengineering survey data may be available for viewing at the CA's field office
 - Review requirements for submission of record Drawings data and Drawings (red-line revisions) for the Contract. Digital files for Contract Drawings may be available to the Contractor for this purpose
 - Property bars and benchmarks destroyed by the Contractor shall be communicated to MTI Project Manager
 - Review milestone field review requirements and submission procedures
 - Advise the Contractor of their responsibility to carry out a pre-blast survey
 - Advise the Contractor of their responsibility to lay out the paint line markings
- Utility Work (Special Provisions):
 - Advise that the Contractor is required to obtain and maintain utility locates throughout construction
 - Advise the Contractor to provide proper notification to utilities, in advance of any Work affecting their Plant
 - Advise the Contractor to abide by the Manitoba Workplace Safety & Health
 - Review compliance with operational constraints, special provisions, legislation and stakeholder operating guidelines relating to utilities
 - Advise the Contractor to abide by the National Energy Board Act (e.g. TransCanada Pipelines, Enbridge) for excavation and construction near pipelines and to co-ordinate, communicate and consult with the pipeline company

- Discuss all Utility locations
- o Survey monuments near utility Work must be identified and protected
- Property:
 - Advise the Contractor of any property restrictions, expropriations, easements, clearances or restrictions, and Property and Access Agreements. Review the terms of each property agreement (if applicable)
 - Provide the Contractor with a location plan (if available) showing highway boundaries and their monuments
 - Advise the Contractor of the requirement to obtain a right of entry for the use of private property including a release from the landowner at the end of the project absolving the Contractor and MTI from claims and damages
- Railways (if applicable):
 - Receive proper notification from the Contractor in order to make arrangements with railway officials
 - Confirm that appropriate insurance requirements are in place in accordance with Special Provisions or the railway requirements
 - Advise the Contractor of their responsibility for all applications and agreements with the railway
 - Check that the Contractor advises the railway authority when working within the railway right-of-way to arrange for track blocks and flagging, if necessary
 - When working within any railway properties/right-of-ways, the CA and their Sub-Contractors must adhere to all terms of the legal agreement and/or Work permit as signed by the MTI/Contractor and the respective rail authority. These requirements may include but are not limited to specialized training requirements and on-site reporting protocols
 - The SP shall obtain copies of all agreements and notifications to provide MTI as part of project documentation
- Contract Meetings:
 - To be held at regular intervals as noted in Contract documents or approved by MTI Project Manager
 - Convene and chair meetings with utility and municipal authorities (if applicable)
- Correspondence:
 - All Contract correspondence must flow through the CA
- Changes in the Work:
 - The Contractor shall advise the CA of any potential change in the Work under the terms of the Contract through a Contract Change Enquiry (CCE)
 - The Contractor is not required to proceed with the change in the Work until a Contract Change Order "Extra Work" has been approved by MTI Project Manager
 - Review the requirements of the Contract Change Order process
 - The Contractor may apply for an extension of time in accordance with the MTI General Conditions

- Claims for Adjustment:
 - Discuss process for dealing with claims when there is a dispute as to whether a Contract Change Order should be issued
- Progress Payments:
 - Review MTI General Conditions for Payments to the Contractor. Set cut-off dates for each bi-weekly progress payment or as agreed upon in the pre-construction meeting
- Damage to Permanent or Temporary Installations:
 - Review MTI General Conditions for Care of Various Services. Advise the Contractor of the safety and legal aspects of installations
- Claims by Motorists, Property Owners, etc.:
 - Advise that all claims during the construction period will be forwarded to the Contractor
- The Contractor is responsible for maintenance of the highway infrastructure within the construction zone in accordance with the General Conditions of the Contract
- Contract Completion
 - Review MTI General Conditions of Contract for final acceptance of the Work. A Final Inspection Report shall be completed identifying any deficiencies to be completed. Final acceptance will be made once the Final Inspection Report identifies that all deficiencies have been resolved.
- Liquidated Damages
 - Discuss the Contract completion schedule and corresponding Liquidated Damages that apply for failure to complete the Work within the Contract timelines
 - Discuss the process for re-assessment of Liquidated Damages
- Non-Conformance Report:
 - Discuss current process for issuing and receiving a Non-Conformance Report with emphasis on corrective action;
- Documents to be provided to the Contractor by the CA:
 - Standard forms related to the Contract
 - Templates
 - All survey data files (survey control, original survey data, design files)
 - Pavement Marking Drawings (if applicable)

Minutes are to be signed and dated by the CA, with distribution list appended, and sent to all in attendance. Any noted errors or omissions should be brought to the attention of the CA within one (1) week of receipt of the minutes.

2.11 PERMISSION TO START WORK

The CA shall issue Permission to Start Work form when all Contract requirements have been met by the Contractor, such as:

- MTI Project Manager received notification that the Contract has been executed
- The Contractor attended a pre-construction meeting
- Bond Notice is posted
- The Contractor submitted
 - Sub-Contractor Certification form
 - Pit Permits and associated documents
- MTI Project Manager accepted;
 - Proposed sequence of operations and construction schedule
 - Quality Management Plan
 - Traffic Management Plans
 - Project Site Safety Plan
 - Emergency Response Plan
 - Environmental Management Plan, if applicable
- Completed scale calibration and field accuracy test
- Any other requirements within the Contract that must be met prior to the start of the Work

The Contractor may start Work within the right-of-way once the CA has issued Permission to Start Work.

The CA may issue Permission to Start Work in multiple steps (e.g., crushing, culverts, grading, granular course, bituminous).

The Permission to Start Work checklist can be found on MTI's MEB Standards Website (<u>https://www.gov.mb.ca/mti/mateng/meb.html</u>)

3 DURING CONSTRUCTION

3.1 SURVEY REQUIREMENTS

At the commencement of construction, the SP shall:

- Collect original and final cross sections for each excavation type that is paid by volume in the construction Contract (e.g., topsoil, borrow, composite, rock). This includes staking the limits of the excavation areas discussed with the Contractor (if required)
- Cross sections shall be updated in actual Work areas and quantities shall be recalculated monthly for progress payment purposes
- Quality assurance checks for subcut, subgrade and granular courses shall include the record of station, actual elevation and offset. This information is to be recorded in a separate document
- The SP shall perform quality assurance survey Work independent from the Contractor's quality control surveys. All transition points to be verified by elevation and offset
- Quality assurance checks on construction Contractor survey QC data as required by the construction Contract. The SP shall perform QA checks as noted in Part B of this manual
- Data collection for design changes during construction

At the completion of construction, the SP shall:

- Review all cross sections, tie-ins, crossings or structure transitions to check that elevations and transitions are properly coordinated
- Verify, measure, record and submit all final vertical clearance along each edge of lane for any new structure (bridge, culvert, overhead sign, bridge widening or any other infrastructure) (if applicable)
- Provide MTI Project Manager a list of destroyed legal boundary survey monuments for reinstallation
- Provide Contractor's cut/fill documents and SP verification check shots

3.2 ENVIRONMENTAL REQUIREMENTS

3.2.1 Environmental Documentation

The CA is encouraged to consult all available environmental documentation that is available for further information on the environmental provisions contained in the Contract document and their purposes. These documents may include:

- Environmental approval
- MTI's General Environmental Requirements
- Contract documents
- Contractor Environmental Management Plan (if applicable)
- Environmental Inspection Checklist (if applicable)
- Emergency Response Plan

3.2.2 Contractor Environmental Management Plans

If specified in the Special Provisions of the Contract, the Contractor must develop and submit a Construction Environmental Management Plan (CEMP) or Site Specific Environmental Plan (SSEP) in accordance with the Contract documents. Prior to MTI acceptance, the CEMP or SSEP will be evaluated by the CA, MTI Project Manager, and MTI assigned Biologist. The assessment will involve approval by Environmental Services Section to ensure the plans conforms to all the environmental requirements specified in the Contract documents.

3.2.3 Environmental Contract Provisions

Environmental Contract provisions are included in the Contract documents for which construction compliance is required. These provisions address:

- Environmental design elements
- Environmental protection, mitigation and compensation measures
- Environmental construction constraints
- Environmental incident management requirements

In the event of any deficiencies in the Contractor's compliance with these provisions:

- The CA shall immediately notify the Contractor and provide instructions to take appropriate corrective action. The CA may also issue a non-conformance report
- The CA shall confirm that the corrective actions have been implemented
- Stop Work Notices shall be drafted by the CA where corrective measures are not implemented as instructed by the MTI Project Manager

3.3 TRAFFIC MANAGEMENT & PUBLIC NOTIFICATION REQUIREMENTS

References:

- Work Zone Traffic Control Manual
- Specification for Traffic Control (200) in the Standard Construction Specification Manual

The CA shall review the Contractor's Traffic Management Plans, public notifications and deliverables in the construction documents or required by law.

To determine if the Contractor's Traffic Management Plan (TMP) submission meets Contract requirements, the CA shall:

- Obtain TMP from the Contractor for the various phases, stages, and operations
- Ensure the Contractor's TMP complies with
 - MTI Construction Specification for Traffic Control;
 - the Work Zone Traffic Control Manual;
 - the Workplace Health and Safety Act (W210); and
 - Any specific traffic control Contract requirements.
- Identify any potential deviations from approved MTI policy respecting the traffic management plan and traffic control devices for further approval by MTI
- Provide any MTI approved instructions to the Contractor regarding the TMP
- Identify and summarize any horizontal or vertical restrictions associated with the Contractor's TMP and communicate them to MTI's Project Manager and Manitoba 511

Within two (2) business days of receiving the TMP from the Contractor, the CA shall provide a report or checklist that assesses the procedure, findings, and recommendations to MTI's Project Manager for acceptance.

Following implementation of the TMP, the CA shall:

- Monitor the traffic control measures implemented by the Contractor to determine that the actual measures are consistent with those shown in the previously assessed Traffic Management Plan and that the measures provide satisfactory levels of safety for workers and motorists
- Inspect all gateways or construction zone area signs prior to any Work commencing, with a minimum daily inspection of gateways or construction zone area signs;
- Pending the Contractor's operations (mobile, short term, long term, or permeant). The SP shall inspect all traffic control devices once any adjustments or relocations have been completed by the Contractor to ensure approved TMPs and Department Specifications and Policies are adhered too.

- Assess the effectiveness of the traffic control measures used by the Contractor each time a new traffic control set up is placed or after any alteration to an existing set up to confirm that the plan is complete, devices are appropriate and appropriately located and that traffic is responding appropriately to the traffic management measures
- The CA shall immediately notify the Contractor of any deficiencies identified in the traffic control measures, instructing the Contractor to take appropriate corrective measures and confirming and reporting the results of the corrective measures
- Verify that Contractor's site supervisor is performing traffic control/lane closure notifications including co-ordinating traffic management and notifications with other roadway Work in the vicinity of the project
- Provide and request a record of traffic accidents, public notifications and complaints that occur in the Work Zone. In all cases, MTI's Project Manager shall be notified within the same business day as the traffic incident occurs
- Perform all traffic control related tasks listed in the CACI Manual for Highways
- Monitor the Contractor's operations for compliance with MTI safety policies concerning the provision of safe passage for the travelling public
- As soon as temporary restrictions are removed, the CA shall immediately notify MTI's Project Manager with the date that the restrictions were removed and that pre-construction clearances were reinstated (if applicable)
- If there is a possibility that the Work on the Contract will result in the final clearances being different than the pre-construction clearances, then the CA shall notify MTI's Project Manager of the final vertical and horizontal clearances. (i.e. pavement resurfacing, pavement reconstruction, bridge widening, lane widening, bridge replacement, overhead sign installation, rock outcrop, roundabout, etc.)

In all cases, any communication between the Contractor and the Contract Administration Staff, or MTI's Project Manager, shall be followed up with a written copy for project documentation within the same business day as the communication occurs.

The CA shall notify Manitoba 511 of all traffic restrictions, lane closures, prepare and/or issue or appropriate public notifications in accordance with Regional requirements, Contract requirements, memoranda, directives or as requested by MTI's Project Manager prior to operations commencing on the roadway.

The CA shall check that appropriate Traffic Control Lane Closure Notifications or Restrictions are submitted to MTI's Project Manager whenever lane restrictions will be in place either on a permanent or temporary basis.

3.4 MEASUREMENT OF WEIGHED ITEMS

The CA is responsible for measuring, calculating, and tracking all quantities to be paid by weight. For project requiring weigh scale measurements, the SP shall provide scale person(s) as indicated within the request for proposal. The CA shall ensure the following is completed prior to hauling of materials to project site:

<u>References:</u> MTI Specification No. 170, "Specification for Weigh Scales"

- All Weigh Scales shall be operated in accordance with MTI Specification 170 Specification for Weigh Scales;
- Scales must be certified by Measurement Canada or a Measurement Canada Accredited SP prior to being used in trade;
- A Field Accuracy Test shall be conducted and witnessed by MTI staff prior to utilization of any scale;
- The field accuracy testing (including Asphalt Hopper Scales) shall be conducted in accordance with the "MTI Field Testing Manual for Portable Vehicle Scales.";
- The CA shall forward a copy of the completed Scale Accuracy Inspection to the Contractor and MTI Project Manager;

The CA shall check that the weighed materials are administered according to current practice and that all weighed materials are paid under the appropriate items. The CA shall ensure the following is completed throughout the duration of the project:

- Maintain up-to-date quantities and daily summaries of the weighed materials;
- Documentation, including tickets (paper or electronic), for all weighed items shall be retained until all claims are settled and final payment is verified;
- All tare and final weight measurements are properly completed and that all wheels of the truck and accompanying trailer are completely on the scale during any weight determinations or tareout procedures
- When scaled, any loads more than the allowable legal gross weight shall have material removed to bring the actual gross weight down to the allowable legal gross weight.
- Scale report including Gross Weight, Tare Weight and Net Weight expressed in individual columns and totaled at end of day's production.

Sensitivity Test

Shall be performed in accordance with MTI Field Testing Manual for Portable Vehicle Scales.

Strain Load Test

Shall be performed in accordance with MTI Field Testing Manual for Portable Vehicle Scales.

Tare Procedures

The tare procedure for a weigh scale involves subtracting the weight of the vehicle used to transport the materials. This ensures that only the weight of the materials themselves is being measured and any additional weight is not included in the reading. The tare weight of the vehicle is typically obtained by weighing separately and recording its weight which is then subtracted from the total weight measured. To facilitate the tare procedure, the CA must keep track of all tares used on the project by developing a summary sheet with all vehicle tare weights, updating tare weight once per scheduled Work period.

There are two methods for calculating tare weight:

- Method A, Tare method using actual size of the fuel tank
- Method B, Tare method assumes fuel tank weight of 400kg

Method A

Tare weight shall be calculated using the following formula:

Tare $Weight = VehicleWeight_{empty} + Fuel Capacity_{half}$

Where,

Vehicle Weight_{empty} = Scale weight of truck with no load, kg Fuel Capacity_{half} = Weight of fuel in the truck at half capacity, kg

Note: Tare Weight shall be rounded to nearest 100kg

Fuel Capacity_{half} shall be calculated using the following formula:

 $FuelCapacity_{half} = (FuelCapacity_{total} * 0.5) - (FuelCapacity_{total} * FuelContent_{actual})$

Where,

FuelCapacity_{total} = Fuel capacity of truck (main tank and back up tank), kg FuelContent_{actual} = Fuel content in the tank at time of scaling, 0, 0.25, 0.5, 0.75 or 1

Note: Fuel conversion rates to kg shall be as follows:

- Gallon Imperial x 4.0
- Gallon Metric (US) x 3.33
- Litre x 0.88

The scale person shall compare new vehicle tare to previous vehicle tare. If the new tare is different, scale person uses the new tare.

Example Calculation:

 $\label{eq:velocity} \begin{array}{ll} \mbox{VehicleWeight}_{empty} = 17,000\mbox{kg} \\ \mbox{FuelCapacity}_{total} &= 160\mbox{ gal (imp) per tank (two tanks)} \\ &= (160^*2)^*4 \\ &= 1280\mbox{ kg} \\ \mbox{FuelContent}_{actual} = 0.25\ (1/4\mbox{ tank}) \end{array}$

$$Tare Weight = 17,000 + [(1280 * 0.5) - (1280 * 0.25)]$$

= 16,680
= 16,700 kg

The *Tare Summary Sheet* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

Method B

Truck drivers are instructed to tare trucks while ensuring the fuel tank is full.

Tare weight is calculated using the following formula:

Tare Weight = *VehicleWeight*_{empty} - 200kg

Where,

Vehicle Weight_{empty} = Scale weight of truck with no load, kg

Note: Tare Weight shall be rounded to nearest 100kg

Example Calculation:

VehicleWeight_{empty} = 17,000kg

Tare Weight = 17,000 - 200 = 16,800 kg

The *Tare Summary Sheet* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

3.5 CONSTRUCTION INSPECTION

Construction Inspection shall be according to the Contract documents, MTI Standard Construction Specifications, and CACI Manual – Part B: Construction Inspection.

The CA shall document all inspection activities in the relevant inspector's diaries to demonstrate to MTI's Project Manager that inspection activities are accomplished at the minimum inspection frequencies identified in the CACI Manual – Part B: Construction Inspection

3.5.1 Non-Conformance Reporting

A non-conformance report (NCR) is a document used to record and address any deviations, deficiencies or non-compliance with construction Specifications, safety requirements and Contract documents.

Where the SP identifies Contractor non-conformances, the CA shall promptly notify the Contractor and provide a non-conformance report. This report will clearly outline the identified non-conformance and request appropriate corrective action. The CA will ensure that MTI project manager is included in all non-conformance report notifications to the Contractor.

The NCR report shall include the following information:

- Contract information;
- Description of Non-Conformance Work, including pictures if applicable;
- Reference documents to support the non-conformance Work (e.g., MTI Construction Specifications, Contract Special Provisions, Safety Policies, Traffic Control Manual);
- Contractor's Corrective action;
- Contractor Signature

MTI NCR template can be found on MTI's MEB Standards Website (<u>https://www.gov.mb.ca/mti/mateng/meb.html</u>)

The CA will review the Contractor's proposed corrective action and ensure that the necessary measures are implemented and completed successfully. Additionally, the CA shall keep track of non-conformances and provide a summary report to MTI project manager on a biweekly basis.

3.5.2 Review of Mix Designs

General

The CA shall review mix designs for compliance with MTI Construction Specifications, MEB Standards, and the Contract documents.

Bituminous Mix Designs

The CA shall review the bituminous mix design package and conduct laboratory verification. A review indicating acceptance or rejection shall be provided to the Contractor within the timeline indicated in the Contract document.

The mix design submission shall meet the Specification requirements before delivering samples to the laboratory for verification. The CA shall review the mix design verification results and complete the mix design checklist for MTI acceptance.

The bituminous mix design checklist can be found on MTI's MEB Standards Website (<u>https://www.gov.mb.ca/mti/mateng/meb.html</u>)

Job Mix Formula Revisions

During bituminous paving operations, the CA shall review any revisions to the job mix formula within 24 hours upon receiving from the Contractor. The review process will be carried out in accordance with the MTI construction Specification for bituminous pavement. Accepted JMF revisions shall be signed and sent to both the Contractor and the MTI Project Manager.

The Job Mix Formula Revision checklist can be found on MTI's MEB Standards Website (<u>https://www.gov.mb.ca/mti/mateng/meb.html</u>)

3.5.3 Sampling and Testing

General

Sampling and testing shall be according to the Contract documents, MTI Standard Construction Specifications, MEB Standards, CACI Manual and applicable Sampling and Testing Procedures.

The Contractor shall obtain all samples to be tested by the CA for:

- a) Quality Assurance (QA) Testing
- b) Appeal Testing; and
- c) Other testing requested by MTI

MTI may take samples for its own purposes at any time from any location.

Random Sampling

The CA is responsible for determining the random location of sampling for all samples to be tested as specified in the Contract documents, Specifications, and MEB Standards.

Sampling and Witnessing

All samples shall be obtained in the presence of the CA or a designated representative as outlined in the MEB Standards and construction Specifications. This includes off site locations that are specified in the Contract documents (e.g., hot mix plants, Stockpiles). Once samples are taken, the CA shall maintain custody and continuous presence with the samples. Samples shall not be left unattended or in the care of the Contractor.

The Contractor shall supply all the sample containers as specified in the Contract documents. All containers used for samples shall be appropriate for the materials being sampled.

The CA shall monitor the Contractor's operation to check that sampling techniques are according to the Contract requirements and inspect all samples to make sure they are the proper size, weight and volume and free of any damage or contamination.

All samples shall be properly packaged by the Contractor, in the presence of the CA, to minimize risk of damage during transport. The CA should not accept samples unless satisfied that they have been properly packaged.

Sampling and Testing Frequency

The CA shall ensure sampling and testing frequency adheres to the appropriate Specifications, standards and provisions. For aggregate sampling, the CA may consider a reduction in sampling and testing frequencies if test results are consistently meet Specification requirements. The plan to reduce sampling and testing shall be approved by MTI project Manager.

Sample Labelling and Identification

All samples shall be clearly labelled according to the requirements specified in this section and the Contract documents.

All samples, including those handled by a commercial carrier, shall be accompanied by:

- A label or tag which shall include a unique number for identification purposes
- WHMIS labels according to the applicable Dangerous Goods Legislation
- Relevant Material Safety Data Sheets supplied by the Contractor
- Additional information as specified in the MEB standards

Once the CA determines that the sample is acceptable for delivery, the CA shall properly label and ensure the sample data information is accurate and complete the Chain of Custody Form.

Maintaining a Chain of Custody of All Samples

The Chain of Custody Form shall be maintained of all the samples, including:

- Sample ID, unique number for identification purposes
- Type of Material
- Lot and Sublot numbers as applicable
- Sample location
- Date sampled
- Name of all persons witnessing sampling (CA and/or Contractor's staff);
- Date shipped and method of shipping
- Date the samples were received by the laboratory; and
- Date the test results were received from the laboratory.

Provide chain of custody documentation to QA or appeal laboratory when delivering samples for testing.

Sample Storage and Delivery by the Contract Administrator

The CA is responsible to deliver all samples to the designated laboratory identified to the CA by MTI's Project Manager prior to operations commencing.

The CA shall take and maintain possession of the samples when they are taken by the Contractor until they are received by the testing laboratory. The CA may use a commercial/third party carriers not associated with the Contractor. MTI Project Manager must approve any third party carrier, which will be treated as an extension of the CA.

Samples shall be stored by the CA and when samples are identified for testing, they shall be delivered by the CA to the lab within 24 hours.

All samples shall be securely stored and transported in such a manner to protect the samples from damage, weather, and contamination. Further, all samples shall not be subjected to freezing temperatures at any time and in the case of asphalt cores temperatures shall not exceed 40 degrees Celsius. Considerations for handling these samples include:

- Maintaining the samples in a dry environment (or in such condition as specified in the Contract documents);
- Temperature of vehicle during transportation and handling of bituminous cores;
- Not exposing samples to direct ultraviolet light;
- Avoid jarring, rolling and/or hitting samples (consider storage containers);
- Core samples shall be transported and stored cut face down or up.

The CA shall deliver samples during normal business hours. Normal business hours are deemed to be from 8:00 a.m. to 5:00 p.m., Monday through Friday. Where a sample must be delivered outside these hours, the CA shall give the laboratory one full Business Day notice. The CA shall sign and email the Chain of Custody Form to confirm the date and time of delivery.

Depending on laboratory location, access to MTI storage container may be provided for samples delivered outside working hours.

Contact with Laboratories

The CA must provide the laboratory with the pertinent Contract details (Contract number, phone and email addresses for CA) as well as all pertinent information which affects testing procedures (e.g., hot mix re-compaction temperatures). The CA shall clearly indicate what samples are to be tested and the specific tests required.

The CA shall investigate all sample non-conformance identified by the QA laboratory, and shall provide written direction to resolve the problem(s) in a prompt and efficient manner. The CA is responsible for communicating such instances to MTI staff as appropriate.

The CA should liaise directly with the laboratories on routine matters as required, however, issues related to the performance of the area and/or laboratories (e.g. turnaround times and quality of results) or any other related concerns shall be brought to the attention of MTI's Project Manager.

Quality Assurance Testing

Quality Assurance testing shall be coordinated by the CA as per Standard Construction Specifications, MEB Standards, and Contract requirements. The CA shall request via email and note on the sample tag the material testing requirements (e.g., gradation, density, proctor, thickness, PI), lot and sub-lot(s) identification, and all additional information noted within the applicable MEB standard.

Appeal Testing

Appeal Testing may be invoked by the Contractor provided that the associated contractual conditions have been met. The Contractor shall identify in writing the material and specific property or properties and lot for which the Appeal testing is being requested.

The CA shall coordinate the appeal test request as follows:

- Confirm that the Contractor has met the timeframes and provided the corresponding Quality Control test results to request appeal testing as detailed in the Construction Contract documents;
- Immediately notify MTI's Project Manager of the Contractor's Appeal request and supply the information pertinent to the Appeal;
- The CA shall coordinate the Appeal testing sample drop off and reporting. The designated Appeal laboratory will be identified to the CA by MTI's Project Manager.

The CA will immediately forward the appeal test results and implications on payment adjustment to the Contractor and carbon copy MTI's Project Manager.

Other Testing Requested by MTI

When other testing is requested by MTI, the CA shall arrange with the Contractor and the CA to furnish all reasonable assistance to the Owner.

Review and Submission of Test Results and Pay Adjustment Summary

The CA is responsible to determine if the material meets the Contract requirements. The role of the laboratory is to provide raw data and not to determine acceptability. The results obtained from the laboratory will be utilized for payments.

Copies of the laboratory test results shall be sent to the Contractor within 24 hours, or same day if the Contractor has ongoing operations. The CA is also responsible for submitting the pay adjustment sheets in Excel format to the Contractor and MTI, ensure that all necessary information is noted, including JMF revision being used and quantities related to the Lot and Sublot.

The SP shall provide copies of the pay adjustment sheets to MTI Project Manager and the Contractor within 24 hours upon the CA receiving the QA results.

Not all materials are covered in the guideline for test result submissions. As a general rule, copies of all acceptance worksheet and results should be submitted to MTI.

Bituminous Pavement and Associated		
Торіс	Submission	Comments
PG Asphalt Cement	Acceptance Worksheet	If Appeal Testing is invoked, the final acceptance worksheet shall also be submitted.
Mix Properties and Density	Acceptance Worksheet	If Appeal Testing is invoked, the final acceptance worksheet shall also be submitted.
Aggregates	Acceptance Worksheet	If Appeal testing is invoked, the final acceptance worksheet shall also be submitted
Thickness	Acceptance Worksheet	If Appeal testing is invoked, the final acceptance worksheet shall also be submitted
Segregation	Areas of segregation including severity and frequency	If Appeal testing is invoked, the test results and final acceptance shall be submitted
Defects	List of defects	Detailed list of defects areas
Tack Coat	Summary of Test Results	Material test results and application rates
Cold In-Place Recycling Mixes	Summary of Test Results	QA test result summary and Control Strip results
Granular Course and Associated		

Guidelines for Test Result Submissions

Торіс	Submission	Comments
Aggregates	Granular Course Acceptance Worksheet	If Appeal testing is invoked, the final acceptance worksheet shall also be submitted
Compaction	Density Report Form	QA test results of Proctor/Control Strip
Prime Coat	Summary of Test Results	Material test results and application rates
Survey	Certification of Grade and Elevation	If survey check is invoked, the check shot worksheet shall also be submitted.

3.6 INSURANCE, RISK MANAGEMENT AND CLAIMS

3.6.1 Third Party Claims

The CA shall receive third party claims and present the information to MTI PM. Guidance with respect to the claims process will be provided at the time of claim review as these next steps are dependent on the type of claim. This includes claims for compensation of personal and business loss while conducting Work under the construction Contract.

The CA shall obtain copies and maintain a file of any pertinent accident reports from the appropriate law enforcement. All copies shall be provided to MTI Project Manager upon completion of the project.

When the claims are forwarded through the Department's Insurance and Risk Management Branch, or Contracts Branch, the CA shall examine the Contract documentation and respond to requests for information. The MTI PM shall review all communications in advance of responding to the claim.

3.6.2 Contractor Claims

Refer to section 3.10.3 (Clarification and Claims) of this manual for the appropriate process in the case that a Contractor makes a claim against the construction Contract.

3.6.3 Sub-Contractor Claims

In the case that a Sub-Contractor makes a claim against the construction Contract, all documents are to be immediately forwarded to the MTI Project Manager and Tendering and Contracts. The MTI Project Manager will conduct all necessary tasks related to the claim going forward. No reduction or release of the holdback funds shall be made while a Sub-Contractor claim is in place unless the MTI Project Manager provides that instruction in writing.

3.7 MEETING REQUIREMENTS

General

The CA shall be in attendance at all Contract meetings.

Meeting minutes shall be distributed within three (3) business days to all applicable parties.

The minutes of meetings shall become part of the Contract documents. Each meeting should begin by discussing previous meeting action items and delivery outcomes.

Any amendments (e.g. errors, omissions and additional comments) are to be noted. If there are discussions pertaining to items in the previous minutes, these are to be discussed under "New Business" with reference to the previous minutes' number, for example: Item No. 2, Site Meeting No. 6, Date.

The minutes shall include the following information:

- Meeting number
- Contract number
- Date/Time and Location of the meeting
- Invited Guests/In Attendance or not
- Name of the person chairing the meeting
- Time that the meeting adjourned
- Date/Time and Location of the next meeting to be held
- Name of the person compiling the minutes

The CA should begin each meeting by introducing all attendees and taking attendance, recording their names, firm and telephone numbers. During the initial meeting, the CA should gather the emergency 24 hour phone numbers from MTI, SP and Contractor.

3.7.1 Contract Progress/Site Meetings

The CA, in consultation with the Contractor, must prepare an agenda three (3) days before the progress/ site meeting and forward copies to the Contractor, MTI Project Manager, MTI Regional Construction Manager, MTI Construction Support Services.

The following issues shall be discussed at the meeting:

- Review the minutes of the previous meeting, including action items
- MTI or Contractor concerns, which have not been resolved on a day-to-day basis
- Safety
- Environmental
- Adherence to the Quality Management Plan (Non-Conformance)
- Quality Assurance (Non-Conformance)
- Project status to date/planned activities/critical path updates
- Claims/Change Orders/negotiations
- Safety-traffic control/accidents

- Utility
- Contractor Issues/MTI Issues
- New Business

MTI Project Manager may provide list of additional attendees.

3.7.2 Pre-Paving Meeting

The CA shall discuss with MTI Project Manager to determine the necessity of a pre-paving meeting. If a meeting is necessary, the CA shall organize it before one week prior to any bituminous operations on the Contract.

The purpose of this meeting is to review the Special Provisions and administration requirements.

Suggested Topics

- Mix designs
- Special Provisions
- Quality Management Plan
- Traffic Control,
- Scheduling
- Submittals
- Quality Assurance Sampling
- New technologies

Suggested Attendees:

- CA and Road Inspector (SP)
- Contractor
- Sub-Contractors and/or Hot Mix Producers (if required)
- MTI Project Manager
- MTI Regional Construction Manager
- MTI Highway Design
- MTI Construction Support Services

3.7.3 Special Meetings

During the course of the project, the CA may need to organize special meetings to address various aspects such as conformance, Specification, design changes, or general performance. The CA shall review the following topics and determine with MTI's Project Manager if it is appropriate to conduct a separate meeting for any or all of the following:

- Traffic meetings to discuss major changes in operations (e.g., staging, detours, night closures) are to be held prior to any change
- Utility meetings to identify utility locations and discuss how the Work is to be carried out and survey monuments protected
- Emergency Services and Seasonal Shutdown

There may be additional reasons to facilitate special meetings that may not have been provided on the list.

3.7.4 Pre-Seasonal Shutdown & Final Inspection Meeting

The following groups are suggested to attend the Pre-Seasonal Shutdown & Final Inspection Meeting:

- CA (SP);
- MTI Project Manager;
- MTI Regional Construction Manager;
- Contractor (Project Manager and Superintendent);
- MTI Construction Support Services and Grading & Audit; and
- Others identified by MTI Project Manager

In discussion with MTI Project Manager. The CA may be requested to include the following:

- MTI Maintenance Superintendent or Manager
- MTI Highway Design
- MTI Safety Advisors
- MTI Traffic Representative
- MTI Structures Representative
- MTI Geotechnical Representatives
- MTI Environment Representatives
- Regional/Municipal Police
- Emergency Services (Fire Response, Ambulance, etc.) (if applicable)
- Local Traffic Authorities
- Local Transit Authorities
- Municipality Road Superintendent
- Railway Representative

MTI's Project Manager and the CA shall establish the list of attendees based on type of meeting (i.e. pre-Seasonal Shutdown or final inspection) and the conditions of the Contract.

3.7.4.1 Pre-Seasonal Shutdown Meeting

At the meeting, the following issues shall be addressed:

- Review MTI's protocol concerning the "Seasonal Shutdown and Assessment of Liquidated Damages";
- Review Critical Path Schedule. The Critical Path Schedule must identify what Work will be completed to allow the safe passage of the travelling public during the Seasonal Shutdown
- Review the applicable "Seasonal Shutdown period" Contract documents (e.g. Contract Drawings, SPs, Regional and Head Office memos, MTI Directives)
- Review and discuss any Operations/Maintenance concerns
- Review the condition of haul routes and maintenance requirements
- Review minimum clearances (horizontal and vertical; protocol for advising about clearances), including update to Manitoba 511 (Road Info)
- Review the concerns of any other interested agencies, stakeholders, and landowners

- Facilitate the advance notification of closures, detours, etc. to be provided to emergency services, municipalities, transit authorities, etc.
- Review damage to Permanent or Temporary Installations including traffic control devices
- Remind the Contractor that applicable environmental timing constraints must be complied with including but not limited to fisheries, birds, species at risk and noise
- Obtain the Contractor's emergency contact names, positions and telephone numbers for the shutdown period
- The Contractor staff is to be notified for follow-up of any environmental accidents, incidents or issues both during the Work and during periodic/Seasonal Shutdowns
- Review the appropriate typical cross-section for the Minimum Road Surface Conditions at Seasonal Shutdown component in the Contract documents
- Does the designed staging comply with the Seasonal Shutdown requirements listed in the Contract documents
- Develop a deficiency list which incorporates any Seasonal Shutdown related situations/problems, which will be reviewed at all pre-seasonal shutdown meetings (noting by the time the scheduled shutdown nears all deficiencies must be established by the various offices involved in order for the CA team to administrate an orderly and timely turnover)
- Discuss the removal of construction signs (if applicable)
- Discuss any Contractor or utility issues
- Discuss the acceptance of the road back for winter maintenance by MTI, particularly in cases where it does not align with the previously agreed terms (e.g., arrival of early winter). Discuss MTI minimum requirements for acceptance.

3.7.4.2 Final Inspection Meeting

At the meeting, the following issues shall be addressed:

- Review and discuss any concerns from Operations/Maintenance
- Review the concerns of any other interested agencies, stakeholders, and landowners
- Review the condition of haul routes and maintenance requirements
- Review minimum clearances (horizontal and vertical; protocol for advising about clearances), including update to Manitoba 511 (Road Info)
- Review the Contractor's duties with respect to construction and traffic safety
- Advise the Contractor of any reduced speed zones to be in effect (if applicable)
- Review damage to Permanent or Temporary Installations including traffic control devices
- <u>Prior to any acceptance</u>, the CA must notify the applicable MTI representatives (i.e. including a drive through with MTI's Project Manager, Regional Construction Manager, Contractor, CA and Maintenance Manager or Superintendent, or as specified by MTI's Project Manager).
- Ensure final inspection meeting has been held with all interested parties prior to the actual turn over or opening of the road/lane, etc. checking that everyone's concerns have been addressed.

3.8 GENERAL ADMINISTRATION & SUBMISSION REVIEW RESPONSIBILITIES

3.8.1 Service Provider Status Report

The SP shall provide a regular status report that shall accompany the SP's invoice at the invoicing schedule set out in the CACI Agreement. The status report shall include:

- Summary of Activities and timeline activities were performed in;
- Labor hours and expenses categorized into pre-construction, during construction, post construction, expenses, and travel costs;
- Approved Contract Change Requests (CCRs);
- Budget expenditures (approved, expended, remaining)
- Summary of CACI Agreement Payments

3.8.2 Service Provider Expenditure Projections

The CA shall submit a budgeted labour allocation and expenses projection on a bi-weekly basis to the MTI Project Manager. The report shall encompass hours for each position specified in the awarded agreement, project expenses and provide a clear breakdown of total expenses, projected costs and the overall estimated cost of the project.

The report shall include the following:

- Name of individual and the position as specified in the awarded agreement;
- Estimated and actual hours categorized in daily, total, and total from Work breakdown structure, including difference in expenditure;
- Individual detail expense breakdown approved in awarded agreement with actual projections, including travel expenses to and from the project site;
- Summary of each budgeted item;
- Contract Change Requests summarized individually with forecast;
- Depending on the project, year to year breakdown may be required.

3.8.3 Construction Progress Reports

The CA shall prepare a Construction Progress Report upon completion of each bi-weekly. The Construction Progress Report shall contain the following information:

- Progress overview
- Summary of Contractor Progress Payments and Expenditure Control and Forecasts (Flag any overexpenditures)
- Approved Contract Change Orders
- Summary of schedule (including a record of working days or site occupancy days)
- Summary of issues and status
- Summary of QA/inspection activities
- Summary of Non-Conformance Reports and Status
- Summary of pay adjustments
- Summary of fuel cost and asphalt cement adjustments based on market variation
3.8.3.1 Contractor Progress Payments

<u>References</u>: MTI Standard Construction Specifications

The CA shall submit the Contractor's Progress Payment to MTI's Project Manager as part of the Construction Progress Report. The CA shall check that it contains all necessary information as stated in MTI's General Conditions, and Specifications and statutory holdbacks.

The Contractor Progress Payment shall contain the following information:

- Summary of quantities to be paid;
- Bi-weekly construction reporting, including initialled liquidated damage and days;
 - Quantity tracker that illustrates the quantity to be paid in the bi-weekly period, previously used, and running total;
 - Summary of daily operations;
 - Start times, end times, weather, brief summary of operations completed on site, and any measurements or quantities that need to be detailed;
- Bi-Weekly Contract Change Request "Extra Work" reports;
- Site Occupancy upon completion of 28 day period (if applicable);
- Survey reports for pay quantities (if applicable);
- Fuel and asphalt cement adjustments (if applicable);
- Summary of pay adjustment sheets for all specified materials, including segregation or surface defects;
- All necessary supporting documentation for payment.

Where the Contractor has installed or placed an item of Work, but the Work remains deficient, the item shall not be included as a pay quantity in a Progress Payment until the deficiency is rectified.

The CA's Progress Payment will be reviewed by MTI's Project Manager for completeness and subsequent approval for payment, along with the corresponding Progress Payment Summary. Upon completion of each bi-weekly period, the CA is required to submit the construction progress report (with progress payment) within **FIVE (5)** business days for processing, that include time stamp of submission to MTI Project Manager.

The CA shall complete the Construction Progress Report and maintain a project ledger to support payment to the Contractor.

3.8.3.2 Expenditure Control and Forecasts

A projected Contract Value shall be constantly monitored by the CA using project tracking ledgers to track and forecast quantity overruns and underruns. The CA shall report all projected overruns or underruns to MTI's Project Manager as a part of the Construction Progress Report.

The CA will be responsible for submitting an accurate expenditure forecast based on actual quantity distributions, with all changes and detailed explanations as part of the Construction Progress Report.

The CA shall submit the expenditure forecast to MTI's Project Manager.

The expenditure forecast must be updated along at least bi-weekly and include an updated Contract completion date, all estimated expenditures for the current fiscal year (April 1– March 31) as well as carryover expenditures for the next fiscal year, if any.

If an over-expenditure is required, the CA shall draft and provide an over-expenditure approval record for review and approval prior to ANY Work commencing by the Contractor. The over-expenditure report shall include all projections, details regarding the over-expenditure (quantities, production rates, design changes, etc.), and projected Contract value.

MTI Project Manager will provide the SP an Over-Expenditure Approval template.

3.8.4 Schedules/Critical Path

References:

- MTI General Conditions of Contract
- Contract documents
- Contract Specific Special Provisions

Where required by the Construction Contract, the CA shall receive and review the Contractor's critical path schedules submitted by the Contractor for practicality/achievability and conformance with the Special Provisions of the Contract documents. The CA shall analyse the originally submitted (as-bid) Critical Path Schedule in detail and identify any deficiencies or impracticalities.

Deficient, non-conforming schedules shall be returned to the Contractor, noting error(s) and requesting a resubmission.

Impracticalities (e.g. operations which appear out of order, questionable production rates) shall be documented and brought to the Contractor's attention.

The CA shall review the Contractor's progress with respect to the schedule and/or critical path. The CA shall review weekly updates of the Contractor's intended Work operations, analyse critical path updates received from the Contractor, and respond/administer these accordingly. The schedule and progress shall be reviewed with the Contractor at every site or partnering meeting.

The CA shall monitor the Contractor's progress throughout the construction period to ensure schedule is maintained. If the CA notices the Contractor is behind or the schedule is not being followed (operations, timelines, or milestones), the CA shall request an updated schedule from the Contractor, request an action plan (whether to accelerate or do nothing). If the CA has determined the delays are due to MTI, Contractor, weather, changes to Contract, additional Work, or other parties, the CA shall document these and discuss at the next meeting and provide input with detail recommendations to MTI's Project Manager with reasons for review.

The CA shall update the construction progress report with respect to the new schedule and notify MTI Project Manager.

The CA shall apply information gained from the critical path schedule, to assess in detail any requests for extension of time and provide detailed recommendations to MTI's Project Manager with rationale.

The CA shall apply knowledge gained from the critical path schedule to arising issues, including but not limited to, delays, changes in the Work or additional Work, potential acceleration of the Work, claim negotiations, and/or issue resolution processes, and provide input and detailed recommendations to MTI's Project Manager.

3.8.5 Extension of Contract Time Requests (Re-Assessment of Liquidated Damages)

The CA shall become familiar with and administer the Contract requirements or Special Provisions regarding Contract completion dates, incentives/disincentives, the charging of working days/calendar days, and liquidated damages, if applicable.

References:

- MTI General Conditions of Contract
- MTI Specifications for Liquidated Damages

The Contractor must request an Extension of Time in accordance with the Contract. The CA shall receive and evaluate the Contractor's requests for extension of time and provide a comprehensive written report with recommendations to MTI's Project Manager within the timeframes specified in MTI's General Conditions of Contract.

The request and SP's recommendations shall be reviewed with MTI's Project Manager. MTI will approve or deny the Contractor's requests for extension of time in writing and will advise the CA of the outcome and instructions for application of liquidated damages by copy of the letter.

When the Approval or Denial of an extension of time request is provided, the amount of liquidated damages shall be calculated by the CA. The CA shall review the assessment or re-assessment of liquidated damages with MTI's Project Manager and apply the liquidated damages to the Contractor's next Progress Payment.

3.8.6 Liquidated Damages (Outstanding/Disputed Extensions of Contract Time)

If there is an outstanding request for Extension of Contract Time or a Claim that disputes an Extension of Contract Time request, the Liquidated Damages shall continue to be assessed but not be applied until one of the following conditions has been met:

- 1. Response to the request for an Extension of Contract Time has been issued and the Contractor does not dispute the response within the allowable Contract timelines,
- 2. The Claim has been resolved (at any level), or
- 3. The time to elevate the Claim to the next step in the process has expired.

Provided one of the conditions above has been met, the assessment of Liquidated Damages will be recommended by the CA to MTI's Project Manager. Once agreed to by MTI's Project Manager, the corresponding Liquidated Damages amount may be deducted from the Contractor's payment.

3.8.7 MTI Review Timelines

In addition to requirements outlined elsewhere in the CACI Agreement or reference documents, the SP must secure the construction documents as noted below. The SP shall submit to MTI's Project Manager, the construction items within the timelines indicated below. The timelines will commence upon receipt of all required documentation from the construction Contractor.

Document	Turnaround Time
Transportation of Oversized Loads During Construction	1 Week
Traffic Control Plan	2 Weeks
Load Limits (in accordance with Highway Traffic Act)	2 Weeks
Construction Contract Change Enquiries or Change Orders	Without delay
Contractor Initiated Change Proposals	**
Changes to Contractor's Working Days/Charge Days/Completion Date	**
Stop Work Order (Non-Safety Related)	Same Business Day
Issue of Certificate of Contract Completion	3 Business Days
Property Related Agreements with Municipalities/Private Owners	3 Weeks

** To be agreed by MTI and the SP

3.9 DOCUMENTATION

General

To keep MTI informed of the status of the project, the CA shall submit reports within specified timelines and containing information identified in the CACI Agreement. Sample forms and summary sheets will be supplied to the CA at the design package handover meeting.

3.9.1 Documentation of Service Provider's Activities

On a daily basis, the SP shall make available to MTI sufficient documentation to determine that they are satisfying their obligations under the SP's CACI Agreement and the Contract Administration and Construction Inspection Manual for Highways requirements. Inspection tasks and time spent on each shall be referenced in the Inspector's Diaries.

3.9.2 Contractor Documentation/Certification

Documentation requirements related to inspection have not been specifically identified within the individual tasks in Part B of this Manual. It is the responsibility of the CA to require that all documentation specified by the Contract is available or has been received and/or accepted. Related Work shall not proceed until the documentation requirements of the Contract have been met. These documents include but are not limited to the following:

- Contractor's Construction Environmental Management Plan or Site Specific Environmental Plan (if applicable);
- Contractor's Quality Management Plan;
- Contractor's Price of the Asphalt Cement (Privacy Warning: This information is commercially sensitive and cannot be disclosed to any other party other than MTI's appropriate representatives);
- Mix Design;
- All Aggregate Permits/Permit Applications;
- Safety Documentation (Emergency Response Plans, Traffic Management Plan, Project Site Safety Documents); and
- Contract specified requirements (i.e.; Water Management Plan).

3.9.3 Notices to Contractor

Notices to the Contractor shall be issued to document concerns and deviations, clarify requirements of the Contract, communicate information, and transmit documentation. Notices shall be signed by the CA and the Contractor to acknowledge receipt of the Notice. Where the Notice is issued electronically, the CA must pursue acknowledgement of receipt from the Contractor by reply email.

Examples for the use of Notices to the Contractor include the following:

- Approvals
- Transmittal of documents
- Safety issues
- Non-conformance with the Contract
- Warnings
- Suspension of Work/stop Work order issued by MTI or its agents
- Specific Instructions from MTI's Project Manager

3.9.4 Project Diaries

The SP shall develop a project diary that meets the Departments standards and the following requirements.

The following documents are considered as part of the project diary:

- Daily inspection notes
- Bid item quantity summaries
- Inspector's weekly reports
- Extra Work Reports and summaries
- Traffic Control Inspection Reports

3.9.4.1 Daily Inspection Notes

Daily inspection notes are kept to provide a complete narrative of the project, covering both the normal Work processes and anything unusual that might have occurred on the project. The daily inspection notes are used to document Work progress, site conditions, temperatures, labor and equipment usage, and the Contractor's ability (or inability) to perform their Work, and can provide valuable information necessary to accurately reconstruct the events of the project in preparation of a claim. It is a collection point for many of the project's pertinent facts arranged in a chronological order. It may show how questions were answered, how problems were solved, and unusual conditions pertaining to working days charged. In maintaining these reports, project personnel must be consistent in recording the events and activities on the job, particularly those relating to claims or potential claims. Daily inspection notes are the key to understanding what went on during the project, decisions made, claims avoidance and mitigating damages. It is also available for reference long after the Work is complete.

3.9.4.2 Bid Item Quantity Summaries

Bid item quantity summaries shall be kept for each bid item in the Contract. All quantities paid must be recorded on the summary with a date, location or description, amount paid with a running total of the quantity in a separate column, supporting documentation and any other relevant comments. Any bid items that require field measurements hourly equipment and items paid by contingency must be reviewed and initialed by the Contractor on a daily basis. The item summary will be considered incomplete if the Contractor's representative has not initialed the daily quantities. Supporting documentation can be measurements done by the inspector and recorded in the field. A linear measurement, length, and width calculation for square metre (m²) or a length, width and depth calculation for cubic metre (m³). All survey measured quantities must have the corresponding electronic files or a printed copy to support the quantity paid. Any cross-section quantities must have the computed CAD files so the data can be reviewed with the corresponding volume calculations.

3.9.4.3 Contract Administrator & Lead Inspector's Project Diary

The CA and Lead Inspector is responsible for ensuring that all Project Diaries are kept current for every construction Contract. The CA may delegate the responsibility of keeping the project diary to the Lead Inspector. The Project Diary is a recorded collection of events, data, occurrences, instructions, situations, circumstances, quantities, charge days, and Work performed each day during a construction project. Data is collected on every phase of Work performed by a Contractor and Sub-Contractor(s). Recorded information must be clear, detailed, accurate, complete, objective, and dated. This includes providing dated entries were the Contractor or Sub-Contractor(s) did not perform Work or on leave.

The CA exercising supervision of a project does not need to maintain a diary; however, entries shall be made in an Inspector's diary. The CA shall conduct random audits of each diary during the course of the project for consistencies and accuracies to the ongoing project activities.

Diaries must be kept for each separate Contract even though there may be two or more Contracts within the same general area that involves the same Contractor and engineering personnel. To be effective, all entries shall be accurate and concise yet complete enough so that the writer can recall the events clearly.

All diaries are to be kept in bound field notebooks or binders, or in an approved electronic format. Each book or file is to be labelled and indexed but pages do not need to be numbered since all entries are dated. Label the complete set of diaries uniformly; place the project, highway, and Contract numbers on the front cover, together with other information indicating the scope and contents of each book.

Anyone reading the Project Diary should be able to comprehend the project status and determine the quantities and Work performed. The Project Diary must be used to record all matters of importance which are not covered by other routine reports or may contain a record of routine matters if the circumstances are unusual, conferences with the Contractor, agreements made, special notes regarding equipment or organization, weather or other causes for delays if of any consequence, and any other matters that might have a bearing on the completion of the project.

Entries must include:

- Weather conditions affecting operations and temperature. Identify days when crews were sent home or were unable to Work due to weather or field conditions.
- Contractor's Work force, equipment (including hours worked), and hours worked. Describe inefficient operations and poorly maintained equipment.
- Description of major construction activity. Include locations and quantities.
- Description of any non-conforming Work being performed.
- Controlling item(s) of Work.
- Comments on the progress of operations as compared to the Contractor's approved schedule.
- Suspensions and resumptions of Contractor operations. Causes and dates must be recorded.
- Utility operations. Report on their progress, conflicts with Contractor operations and any resultant delays, and quality of workmanship as it affects the project.
- Summary of significant conversations. Include orders to the Contractor, especially those pertaining to Work schedule, Work methods, materials, or payment; directions and advice from supervisor, and discussions with MTI representative(s), property owners, local officials, and utility and stakeholders
- Virtual and site meetings including dispute and subsequent decisions, where official meeting notes have not been taken.
- Comments on construction safety hazards and corrective measures.
- Unusual or materially different physical working conditions from those expected under the Contract. Record all significant information about the working conditions, progress of Work, working force, equipment, and materials, which would be of value if the Contractor file claims for extra compensation.
- Disagreements with the Contractor over Work quality or performance, including rejected Work or materials and reasons.
- Delays, difficulties, accidents, utility damages, and other unusual situations.
- Lane closures, traffic disruptions, etc.
- Days charged and days worked (site occupancy, completion date, or working day), liquidated damages. If no day is being charged, the reason for lost time days or periods when no Work is in progress or no Work was accomplished and reasons why. Charge days to follow MTI Construction Specification No. 130(I), "Index for Specification for Liquidated Damages"
- Describe factors or conditions that may hinder the Contractor's operations and cause delays, including the time of suspending or resuming Work and explanations, and equipment and bid items affected.

- Significant information on other Work operations if not recorded in a separate field inspection diary
- Major discrepancies in the Contract. Necessary changes and subsequent actions taken to correct the situation shall be recorded
- Each set of notes, except staking details shall note the quantities recorded for that operation, by each inspector, with the Lead Construction Inspector summarizing the daily operations;
- The condition of haul roads before and after construction, including appropriate documentation (e.g. photographs)
- Deviations from plans, profiles, Specifications, construction methodology or Special Provisions along with the rationale for acceptance of the change
- Any decisions or recommendations made by MTI must be recorded, including the date, subject, decisions and final results.
 - Information as to time, materials, working force and equipment used for authorized extra Work, i.e., claims.
- Record of all environmental incidents, including, but not limited to, when the incident took place, actions taken or intended to be taken by the Contractor regarding the incident such as containment of spills, notifications made to proper authorities, actions taken to clean up and restore the environment to pre-incident conditions, investigations, charges, Stop Work Orders and remedial instructions by regulatory agencies, environmental complaints by the public

The Lead Inspector maybe required to further document project activities not provided in the list above.

3.9.4.4 Construction Inspector's Diary

Each Inspector who is charged with the responsibility of reporting a construction activity must keep a daily diary. Separate diaries shall be kept by each inspector for all construction activities such as grading, base, guardrail, and surfacing construction; for plant production of aggregates, culverts, concrete, and bituminous mixtures and for specialty items such as fencing, environmental measures, and signing. In any event, all construction operations must be covered whether in a single diary or in separate diaries. When the Contractor operates on a multiple shift basis the entry for each succeeding shift is made in the same diary under the date on which the shift started. The Inspector on each shift is responsible for making and signing their own record.

The inspector's daily diary must include a record of the day's activities, Contractor activity on the project, instructions given to the Contractor, and extra Work completed. Daily diaries can assume legal importance.

Inspectors must include in their diaries all decisions made and all actions taken each day, quantities, measures, locations, calculations, summary of activities, material record and progress estimates, other information, which might be of assistance in case of dispute, and all items detailed within this section that they are inspecting, even in the event the Lead Inspector or CA is onsite.

Entries must include:

- Weather conditions affecting operations and temperature. Identify days when crews were sent home or were unable to Work due to weather or field conditions.
- Contractor's workforce and equipment, including total workforce and equipment hours.
- Description of inefficient operations and poorly maintained equipment.

- Detailed description of Work, including location, sizes, quantities and methods, the quality of workmanship, difficulties encountered and method of correction.
- Delays and reasons for the delays
- Inspection checks, tests and samples taken (granular base course, hot mix samples, cores, etc). Material accepted on visual inspection or material rejected (QA results, surface defects, etc.)
- Information as to time, materials, working force and equipment used for authorized extra Work, i.e., claims.
- Any decisions or recommendations made by MTI must be recorded, including the date, subject, decisions and final results.
- Discussion and instructions given to the Contractor.
- Record of non-compliance/non-conformance with Contract Specifications, designs, environmental requirements and approvals, action taken to address, and communications with MTI and regulatory agencies
- Conversion factors of volume to calculate the corresponding weight for payment. This shall be noted within field notes and on the corresponding checker/truck box measurement sheet
- Record of all environmental incidents, including, but not limited to, when the incident took place, actions taken or intended to be taken by the Contractor regarding the incident such as containment of spills, notifications made to proper authorities, actions taken to clean up and restore the environment to pre-incident conditions, investigations, charges, Stop Work Orders and remedial instructions by regulatory agencies, environmental complaints by the public
- Explanations for incompleteness of any field records
- Contamination of any materials, reasons for replacement and method of payment
- Measurements and quantities recorded for their Work area or inspection assignments

Remember to date each page (include year) and sign each entry.

3.9.4.5 Survey Crew Chief's Diary & Documents

The Surveyor must keep a diary of Work performed, measurements collected by survey, including file names, and direction from supervisory inspection staff for each project. The diary must include a brief summary of the survey crew activities for each day, indicating the progress of staking operations, difficulties encountered, contact with the Contractor, any resetting of stakes necessary, and other information indicating the sequence and adequacy of construction surveying.

Entries must include the date, weather, and temperature data, the names of the individuals working in the survey party each day. The person making the entry must sign each daily entry, unless one individual makes all entries in which case that person shall sign the diary on the front page. All survey notes and files are submitted to the CA on a bi-weekly basis for payment and at the end of the project for inclusion in handover project documents to MTI's Project Manager.

The Surveyor shall provide the CA a project summary and files created or adjusted throughout construction. This will include any measurements collected via survey method (cross section, square metre measurements, locations, etc.). These files must be included in audit documentation and attached with the daily entries in the project quantity binder or tracker.

3.9.4.6 Photography as Documentation

It is required for all inspection staff to collect photographs throughout the project. Should the project ultimately become immersed in a dispute, photos can serve as an important element in the presentation of facts surrounding the details of a claim and provide visual documentation of issues or findings. Photographs provide excellent evidence and are one of the least challenged tools used to document a case.

Photographs shall be of high quality and illustrate the facts of the site as accurately as possible. Photographic documentation should tell the story with as little need for narrative as possible and the issue should be noted in daily diaries.

Size and distance of objects in photographs can often be deceiving; think about including a reference point in your photographs - a person, a notebook, a pen, or ruler are examples of common objects that can give a sense of scale to other objects in the picture. Remember too that photographs can also distort or understate conditions. Try to be objective in making your visual record. It is helpful to take a series of photos from varying perspectives as described below.

- Establish a reference: Take photos from a distance to establish perspective. Show the subject in reference to one or more permanent landmarks. If helpful, show the compass orientation of the subject.
- Medium shots: Take multiple photos to depict the object or event in context of the immediate surroundings. Shoot a series from all angles.
- Tight or detail shots: Focus on the issue under review and identify the specific item or event in question.

3.9.4.7 Documentation of Bid Items

Contract records and documentation must be sufficiently detailed and maintained in a manner that will withstand an audit and be clear enough to be read and understood by anyone unfamiliar with the project.

It is required that original field notes be kept in a form that can be filed and retained as basic documentation. Transcription of field notes to the final inspector's report or diary shall be avoided due to the possibilities of error and the unnecessary cost of duplication.

The CA is responsible for ensuring that all quantity measurements are made and documented in accordance with the Contract and Special Provisions. The Contract may address specific methods of measurement and payment requirements for bid items that supersede the Standard Specifications.

Entries for Contract Change Request (Extra Work) payments must be tracked and documented separately in the inspector's reports. Include a brief explanation of why the extra Work was required.

Quantity Binder

Quantities are mainly recorded in the field between the Lead Inspector and the Contractor. However, the CA shall ensure a quantity binder is kept and maintained for all applicable bid items to be paid. The Quantity Binder must include the following:

- Individual tabs for each applicable bid item;
- Daily quantities (i.e.; Bid-hourly, weighted materials, inspector measurements, survey measurements, lump sum items, etc.)
- Any field measurements taken by an Inspector including supporting documents or illustrations of the measurements collected. This is important during audit or any disagreement and must include dates, location, material, and identifying information
- Each entry must be initialled by the Contractor's signing authority or supported written notification (i.e.; Email)
- Each entry shall also identify which bi-weekly report or payment the quantity is be made on
- All extra Work shall be documented, recorded, and initialled separately from the Contract bid items

3.9.4.8 Change in the Method of Measurement of a Contract Bid Item

If the Contractor, CA, and MTI Project Manager mutually agree upon in writing, the CA may measure materials in units other than the units of measure specified as the basis of payment. Any change in the method of measurement from the method specified in the Contract or Special Provisions shall be clearly documented either by the CA and inspection staff. The unit of measure, for payment purpose, must remain the same as the original Contract item, and may require a conversion factor to accomplish. Any conversion factor(s) that are be used must be approved by MTI Project Manager with applicable agreed upon conversion factor with the Contractor, and reason why the change in measurement is required

For Example: GBC-I is designated by the Contract to be paid for by the tonne. The method of measurement is changed to cubic metre (m3). In this case, the cubic metre total obtained by field measure must be converted back to tons for payment by using a conversion factor similar to 1.781tonne/m3.

All changes in the method of measurement shall include supportive tracking measurement, ie. Truck Box Measurement sheet that includes project number, sheet number, location, project, lane, kilometre, total, running total, and conversion calculation. All sheets must become part of the project document and recorded in all quantity binders and ledgers.

3.9.4.9 Supporting Documentation

The term Supporting Documentation is defined as any physical record that was created to serve as verification of either a partial or final pay quantity of an applicable bid item. For daily update entries, the nature of these records must be entered daily dairies and field notes. (Example: Concrete Measurement Book). For final documentation, this same Concrete Measurement Book that was used as support for each daily entry, will be completed and more specifically referenced in the "final Document Location". Supporting Documentation includes, but is not limited to, various books, booklets, envelopes, forms, packets, quantity tabulations, data collection forms, and other field measurements/computations.

No erasing or overwriting is permitted in any documentation. If an error is made it will be corrected by neatly crossing out the erroneous data with a single line and entering the correct data in the most logical place.

3.9.4.10 Field Notes

Field notes are one of the many items that might be considered as a support document. It is recommended that all field notes and grade books be recorded in bound books. If loose-leaf or paper books are to be used, care must be exercised to prevent lost pages. Notes shall be recorded in a manner that is neat, clear, un-crowded, and in sufficient detail to be easily understood.

Original entries later determined to be in error must not be obliterated by erasing, application of correction fluid, taped over, or in the case of computer-generated documents, deleted. Instead, a line must be cleanly drawn through the mistaken entry and corrections entered directly above with the initials of the person making the change. This is very important, as erasures, or deletions will destroy the legal standing of notes. When revisions require abandonment of a considerable portion of notes, they shall be crossed out and a cross reference made of the book and page number where the revised notes may be found.

Each field note and grade book shall be labeled. Each book is to be numbered and a table of contents included on the first page. It is essential that original field notes and documents be carefully organized, kept, recorded, and maintained in safe filing facilities during the active stage of a project. At all times, when not in use, all support documents, reports, survey notes, etc.

Notation requirements:

- 1. Each set of notes must contain the date when they were made and the initials of the persons making them, the date when the phases of Work are accomplished, all applicable quantities, the locations where the Work was performed, and the corresponding project identification.
- 2. When field notes are used in the supporting documentation for a payment, they must include the date and initials of the person making the entry.
- 3. Each quantity identified in the field notes shall be designated with the corresponding bid item number and correct item name listed in the Contract.
- 4. It is recommended that the correct field book or sheet always be used for the particular kind of Work being staked or measured.
- 5. It is recommended that sets of field notes and field books be numbered and titled in order to prevent their loss and to aid in tracking payments and their supporting information. Information and documentation loses its value if it cannot be retrieved.
- 6. Notes shall be kept so that Work can be checked without returning to the field. Use positive controls. If notes are properly kept, any person familiar with the project should be able to verify accuracy of the Work from information contained in notes.

3.9.4.11 Contract Change Requests "Extra Work"

Contract Change Requests "Extra Work" bid items, not specifically covered by the Contract documents or Specifications, shall be measured and documented in accordance with the method of measurement and basis of payment outlined in the approved request and record individually for each applicable bid item.

3.9.4.12 Lump Sum Items

Lump Sum pay items shall be paid in accordance with the construction Specification for basis of payment, or as specified in the Contract documents.

3.9.4.13 Electronic Documentation

MTI encourages and promotes innovative ways to improve project documentation and quantity tracking throughout a project. If the SP elects to use an electronic diary or documentation format, they must meet the same requirements as non-electronic documentation outlined in this manual. All daily notes and quantities must be in PDF form and signed by the inspector, and be organized in order of date entries.

All Electronic Documentation shall be approved by MTI Project Manager prior to usage on a project.

3.9.5 Inspector's Report

The Inspector's Report is generally completed bi-weekly and summarizes the reporting period, quantities (Work period, previous, and running total), a total and running total for any charge days (completion day, working days, and site occupancy), working hours, and daily summary within the specified report period. In the event the Contractor was not working that day, a reason or brief explanation shall be documented on the report.

Failure to record an event carries with it the implication that the event did not occur or was insignificant and threatens the credibility of the entire report.

- The report is meant to summarize the Work period activities, note key completion or delays to project deliverables;
- Outline any extra Work performed during the Work period, with associated extra Work bi-weekly report; and
- Be a supportive document submitted to the CA for payment.

The Lead Inspector and all Inspector's conducting inspection activities as part of a Contract are required to keep a daily diary for all Work performed. The Lead Inspector must summarize all activities and comments within their report and provide any associated documentation with each report (i.e.; Field notes, survey notes, and photo documentation if applicable).

The inspectors report is not required to outline all incidental equipment hours performed during this working period if they were recorded in the daily dairies.

3.9.6 Project Ledgers for Tracking Material Quantities

The project ledger serves as a comprehensive record documenting material quantities, amount of funds disbursed and Work performed. Bid items identified in the Contract (e.g., GBC-I, Bit B, shoulder preparation, seeding, pay adjustments) shall be recorded in the ledger. The tracking of all the various materials used on the project as they are being deposited are key in maintaining proper distribution and the quickest way of identifying any problems early in the project; this is done using the daily material quantity sheets. Maintaining accurate and up-to date ledgers allows for review of the calculated design quantities against the ledger quantities to identify any discrepancies quickly.

The Project Ledger at a *minimum* shall include the following:

- Summary page of all applicable Contract bid items, fuel and asphalt cement adjustments, site occupancy, liquidated damages, extra Work, and interim payments expended;
- Project estimated projections for the project on all applicable bid items;

- Individual tabs for each bid items outlining summary of activities either daily, weekly or bi-weekly based on field note entry;
- Daily quantity tracking for each individual bid item;
- Summary of extra Work and bi-weekly reports to reflect actual project expenditure.

If a discrepancy is discovered, the CA shall double check for verification and seek a resolution. Identifying a potential discrepancy early allows all parties to have options when reacting to and rectifying the issue.

Once the project has been completed, the Project Diaries (Road & Plant), material quantity sheets, scale books, Survey notes/files, Plans with notations/changes shall be submitted with all supporting documentation, to the CA.

Construction photos shall be included as back up to Project Diaries. The photographs must be clearly identified by date, type of activity and location.

It is recommended that the surveyors, materials inspectors, and any other key project staff maintain separate diaries detailing any significant issues occurring during construction.

The *Project Ledger* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

3.9.7 Inventory Asset Information Package

References:

- Latest version of MTI Survey Control Policy
- Example of MTI Control Section Survey Control file

The CA shall obtain accurate coordinates at as-constructed locations of field infrastructure and provide a record containing the following:

- Contract number
- Legal Description (Bridge Sites, Section-Township-Range of project location(s), RM)
- Control Section #
- Date
- Brand of GPS device used (NAMO reports only)
- Benchmark (BM) locations within the project limits
 - Primary Control Point Id's (legal control points)
 - Project Control Point Id's (CSS control Points)
- Horizontal Datum/Vertical Datum
- Ellipsoid
- Geoid Model
- UTM Zone
- Scale Factor
- Last updated
- Longitude and Latitude in decimal degrees accurate to the fifth decimal place (for sub-metre accuracy) NAMO reports only

- The CA is required to obtain GPS readings only for Contract Items that include GPS readings requirement under inspection tasks included in CACI Manual. The results shall be provided in Microsoft Excel format in two (2) hard copies and in two (2) electronic media copies. MTI provides the following in a WinZip electronic file:
 - CRD file (SurvCE software compatible file)
 - DOCX (screen shot of control points in MapSource)
 - GDB (MapSource file of control points)
 - GSF (Geoid file for GNSS orthometric height correction)
 - KML(Google Earth file of control points)
 - TXT (text file of control points)
 - Point id, Northing, Easting, Elevation, Description
 - 3 decimal places

3.10 CHANGES, CLARIFICATION, AND CLAIMS

3.10.1 Contract Change Request

<u>Reference</u>: Contract Documents

If the Contractor or CA determines a Contract Change Request ("Extra Work") is required, a request must be made in writing outlining the scope of the request, any applicable financial impacts (breakdown of the total cost), and any additional Specification changes. Additionally, the CA shall provide MTI Project Manager budgetary implications to the total project cost.

The Contractor shall not proceed with the Work in the Contract Change Request until the work has been approved by the MTI Project Manager. MTI Project Manager will obtain the necessary internal approvals and provide all copies of the approval to the CA for record.

3.10.2 Contract Design Change Proposal

If the Contractor or CA determines a Design Change is required, a proposal must be made in writing outlining the change in design, Specification, and value added. MTI Project Manager will evaluate the proposal for acceptance.

3.10.3 Clarification and Claims

References: MTI General Conditions of Contract

Claim Review Process

Unless the issue is resolved; the Claim shall proceed through the Claim Review Process as follows:

Stage		Level	Claim Reviewer/Respondent Level
Stage 1	Clarification	1	The CA for the Contract/MTI Project Manager
Stage 2 Claim		1	MTI Regional Construction Manager
	2	MTI Regional Director	
		3	MTI Executive Director of Construction and Maintenance

Role of the CA at Stage 1 – Request for Clarification

For a Stage 1 Request for Clarification (RFC), the CA shall as a minimum:

- Notify the Contractor that the RFC been received and will be reviewed in conformance with the timelines contained in the Contract documents
- Check that Contractor's RFC submissions fully comply with Contract requirements both for content and time
- Notify by email the MTI Project Manager and appropriate MTI personnel that the Contractor has submitted a RFC
- Conduct a detailed analysis of the RFC based on the Contract documents.
- Review the RFC in conjunction with MTI's Project Manager and provide a response to the Contractor within the Contract timelines.
- Monitor and record the Contractor Work activities (manpower, materials and equipment) for Work affected by (or likely to be affected by) the RFC

Roles of the CA at Stage 2

For a Stage 2 Claim, the CA shall as a minimum:

- Review the Notice of Claim to confirm completeness
- Notify the Contractor that the claim has been received and will be reviewed in conformance with the timelines contained in the Contract documents
- Notify by email MTI's Project Manager and appropriate MTI personnel that the Contractor has submitted a Notice of Claim
- Conduct a detailed analysis and review of each Notice of Claim based on the Contract documents. This shall include, as a minimum, pictures, background details and all other pertinent documentation
- Complete a Claim review report and assemble all relevant documents
- Consult with MTI's Project Manager and appropriate MTI personnel with respect to the recommendations of the Claim review report
- Coordinate the response of the Claim Reviewer/Respondent to ensure that a reply is provided to the Contractor within the timelines identified in the Contract
- Monitor and record the Contractor's Work activities (manpower, materials and equipment) for Work affected by (or likely to be affected by) the Claim

In addition to the aforementioned responsibilities, the CA shall also provide any requested additional documentation or support for a Stage 2 Claim.

Clarification and Claim Settlements on Active Contracts

Request for Clarifications determined to be a change to the Contract shall be processed as a Contract Change Order.

In the event that a Regional or Head Office level settlement is reached and the Contract is still on going, Regional or Head Office Claims review staff will forward the Claim settlement details to the CA and MTI Project Manager for payment processing.

3.11 PROJECT & CONTRACT COMPLETION

References:

- MTI Construction Specification No. 100(I), "General Conditions"
- MTI, Tendering and Contracts, *Project Acceptance Report*

The CA is required to complete MTIs *Project Acceptance Report*, confirming the Contractor's compliance with the Contract.

Prior to project completion and demobilization, the CA will conduct an interim inspection with Departmental staff and Contractor, identifying deficiencies and the conditions for acceptance.

The CA shall conduct a *Final Inspection Meeting* and share the interim version of the *Project Acceptance Report* with the Contractor.

The Final Inspection Meeting details are outlined in Section 3.7 of the manual.

Once the Contractor has addressed the deficiencies and met the conditions for acceptance, the CA will finalize the *Project Acceptance Report*, obtaining signatures from MTI Project Manager and the Contractor. The CA shall notify 511 of projection completion and to remove roadway restrictions.

The *Project Acceptance Report* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

4 POST-CONSTRUCTION

References:

- MTI Construction Specification No. 100(I), "General Conditions"
- Aggregate Haul Report
- Site Safety Post Evaluation
- Reduction of Holdback Payment Checklist
- Contract Completion Closeout Checklist
- Release of Holdback Payment Checklist

4.1 MTI AGGREGATE HAUL REPORT

The CA shall complete the *Aggregate Haul Report* with necessary details including pit locations, UTM, ownership, permit number, material description, quantity, and control section. Written confirmation shall be obtained from the Contractor regarding the agreed-upon *Aggregate Haul Report* and provide record to MTI Project Manager.

The *MTI Aggregate Haul Report* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

4.1.1 Aggregate Sources Controlled by the Department

The following are deemed as aggregate sources controlled by the Department:

- A source owned by the Department; or
- A Crown source for which the Department has a Quarry Mineral or Sand and Gravel Withdrawal.

For projects where the Contractor has utilized a Department controlled aggregate source, the CA shall complete the *Aggregate Resource Management Fee Sheet*. This document will delineate project specifics, description of material and measured quantities to calculate corresponding amount owed.

On request, MTI Project Manager will provide the most recent Aggregate Resource Management Fee Sheet.

4.2 REDUCTION OF HOLDBACK PAYMENT

Following a written request from the Contractor to reduce the holdback, the CA shall complete the *Reduction of Holdback Payment Checklist* and provide to MTI Project Manager for approval.

The *Reduction of Holdback Payment Checklist* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

The CA shall provide all progress payment documents outlined in *Section 3.8.3.1 Contractor Progress Payment* with the written request and completed checklist.

4.3 CONSTRUCTION AUDIT

As part of the Contract closing process, the Department will perform a construction audit. The CA is required to complete the *Audit Review Checklist* beforehand to ensure that all supporting documents are available during the audit.

The *Audit Review Checklist* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>)

The audit review process will commence at the request of MTI Project Manager.

4.3.1 Submission of Project Documentation

Project documentation shall be submitted to the audit team for evaluation in digital, hardcopy or combination of both formats within fourteen days of Project/Contract Completion. If any files are absent, the audit team will request them.

Supporting documents for the construction audit are itemized in the Audit Review Checklist

4.3.2 Audit Review

The main objective of the audit team is confirming all financial transactions to the Contractor including payments for bid items, Work completed via contingency payment, site occupancy, working days, liquidated damages, fuel cost and AC adjustments.

The audit process will also include a review of project diaries, project ledger, contingency documentation, supporting documentation for measured and scaled bid items, progressive payments and any other applicable project documentation.

If there are errors, omissions or unsupported payments in the documentation, they will be communicated to the CA and MTI Project Manager to determine if corrections to payments are required.

4.3.3 Audit Review Summary

The audit team will provide an audit review summary disclosing findings concerning the completeness, accuracy and legibility of the audit documentation in alignment with the CACI manual and the Awarded Agreement.

4.4 SITE SAFETY POST EVALUATION

The CA shall complete the *Site Safety Post Evaluation* report and provide a copy with the project close out documents.

The *Site Safety Post Evaluation* report can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>).

4.5 CONTRACT COMPLETION CLOSEOUT

The CA shall complete the *Contract Completion Closeout Checklist* and provide to MTI Project Manager for approval.

The *Contract Completion Closeout Checklist* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>).

4.6 RELEASE OF HOLDBACK PAYMENT

Once all noted deficiencies, Construction Audit, safety documents, and Contract Completion Closeout have been approved by MTI Project Manager, the CA can proceed with the *Release of Holdback Payment Checklist*.

The *Release of Holdback Payment Checklist* can be found on MTI's Tendering and Contracts Website (<u>https://www.gov.mb.ca/mti/contracts/tenders_contracts.html</u>).

Once all items on the checklist have been completed the CA shall submit final payment to MTI Project Manager and the following documentation:

- Final Project Acceptance Report
- Contact Completion Closeout Checklist
- Release of Holdback Payment Checklist
- Site Safety Post Evaluation

4.7 DELIVERABLES

The CA shall prepare, package, and submit to MTI's Project Manager the Contract Administration and Construction Inspection Report and Record documents along with all deliverables as specified in the CACI Agreement, within 40 days from the Project/Contract Completion (or as otherwise agreed to by MTI's Project Manager).

4.8 PERFORMANCE AND WARRANTY INSPECTIONS

If the agreement with the SP is active, the CA shall inspect any Work or materials subject to a specific Warranty period identified in the Construction Contract at least one month prior to the expiry of the Warranty period and shall prepare a brief report of any deficiencies that have developed in the Work since Completion of the Construction Contract.

As part of the reports related to the above inspections, the CA shall prepare a recommendation to MTI's Project Manager and seek direction to:

- 1. Notify the Contractor and the Contractor's Surety that the Department has performed a final inspection of the Work prior to the expiry of the Performance Bond and that the Work remains free of defects or deficiencies, or,
- 2. Notify the Contractor and the Contractor's Surety that the Department has performed a final inspection of the Work prior to the expiry of the Performance Bond and the Work is deficient (listing the deficiencies).

The CA shall provide recommendations to rectify the deficiencies identified within the report.

PART B: CONSTRUCTION INSPECTION

5 INTRODUCTION – CONSTRUCTION INSPECTION

5.1 GENERAL INFORMATION

Part B describes the duties and the role of the CA's Inspectors. Subsequent sections deal with the more technical details of the inspection phases of the Contractor's Work and is ordered by Work type.

In order to ensure that a roadway construction project is constructed in accordance with the design and Specifications, the requirements of inspection include:

- Knowledge of the principles of design
- Skill in interpreting Drawings
- Skill in anticipating possible problems
- Understanding of the order in which things must be done
- Regular systematic inspection of structural elements
- Inspection and testing of materials
- Accurate vertical and horizontal (control) surveying and checking dimensions
- Keeping and maintaining sufficient records

5.2 ROLE AND RESPONSIBILITIES OF INSPECTORS

5.2.1 General

The Contractor is responsible for constructing the project in full accordance with the Contract documents, Standard Construction Specifications (Specifications), and Drawings. The Inspector's role is to ensure that the roadway to which they are assigned is built in compliance with the Contract, MTI's Specifications, Drawings, MTI requirements, Workplace Safety and Health Act and Regulations, as well as any other applicable laws. The Inspector may not authorize any changes in the Contract, Specifications, or Drawings without first obtaining approval from the Contract Administrator or MTI Project Manager.

In general, when a clarification of the Contract, Specifications, or Drawings is required, or a deviation appears to be required or any problem occurs, the Inspector shall contact the Contract Administrator.

In general, the Inspector is required to perform the following duties: survey control, quality assurance, record keeping, reports, and "As-Built" Drawings.

Prior to the commencement of construction, the Inspector shall review the project with the Contractor to become acquainted with the Contractor's plan of action and to discuss anticipated difficulties. Particular attention shall be given to ensure that aggregate samples and bituminous mix designs have been submitted and approved. The equipment to be used, methods for storing and handling materials, and the general sequence of the Contractor's operation shall be discussed. This will enable the Inspector to arrange their inspection accordingly.

- The Inspector must not in any way perform the Contractor's supervisory and/or quality control responsibilities.
- If the Contract documents, Specifications, or Drawings permit a choice of methods, the Inspector may offer suggestions if requested, but cannot arbitrarily demand that a given method be employed.

- If non-conformance from the Contract documents, Specifications, and Drawings are proposed by the Contractor and appear to be reasonable, the Inspector may accept the proposal tentatively, making it understood that the matter must be referred to the Contract Administrator for final decision.
- Conditions that may lead to unsatisfactory Work shall be anticipated whenever possible, and in any event be pointed out (verbally followed up in writing) to the Contractor at the earliest opportunity, to avoid waste of materials, labour, and strained relations.
- The Inspector shall not delay the Contractor unnecessarily, nor interfere with the Contractor's methods unless it is evident that unacceptable Work will result.
- The Inspector cannot demand the Contractor to complete any Work that is not in accordance with the Contract documents, Specifications, and Drawings.
- The Inspector shall be on-site during the Contractor's daily working hours, unless otherwise approved by MTI's Project Manager.

The Inspector is usually the only representative of the Department at the site for the entire duration of the project. In recognition of this, the Inspector has been given certain responsibilities and authority. This includes the right to inspect all aspects of the Work done and materials furnished, rejection of defective material, suspension of any Work method or procedure not meeting the requirements of the Contract documents, Specifications, and Drawings, as well as other authority as may be explicitly given by the Contract Administrator or MTI's Project Manager.

- The Inspector is not authorized to alter or waive the provisions of, or to issue instructions contrary to the Contract documents, Specifications, or Drawings.
- The Inspector is not authorized to give final acceptance or approval of the Work.
- The Inspector is advised to contact the Contract Administrator to discuss project Issues and document Non-conformance with the Contract requirements.

5.3 LEVELS OF INSPECTION

The minimum level of inspection is noted at the bottom of each inspection task. The level of inspection shall be performed as per Table 1 and 2.

ruble i minimum requercy of inspection			
LEVEL OF	MINIMUM FREQUENCY		
INSPECTION			
А	Continuous		
В	Twice Per Day		
С	Once Per Day		
D	Every Other Day		
E	Once Per Week		

Table 1 Minimum Frequency of Inspection

LEVEL OF	TIME ON SITE
INSPECTION	
1	100% of the time the Contractor is on
	site carrying out that task
2	75% of the time the Contractor is on site
	per day carrying out that task
3	50% of the time the Contractor is on site
	per day carrying out that task
4	25% of the time the Contractor is on site
	per day carrying out that task
5	10% of the time the Contractor is on site
	per day carrying out that task
6	10% of the overall time the Contractor is
	on site carrying out that task

Table 2 Time On Site Performing Inspection

Some tasks may consist of a combination of the above two (2) tables, with a statement to define the inspection effort. For example:

Level of Inspection -5 means that the Contract Administrator (or designee) shall be on site to inspect 10% of the day's production.

Where practical, for tasks that require less than full time inspection, the required time shall be interspersed throughout the day (i.e. for a task requiring a 25% time commitment, the inspection should not occupy the first quarter of the day, with no further inspection for the rest of the day).

The required levels of inspection are specified as **minimums**. If the Contractor is not performing well, or test results are continually poor, then the level of inspection may need to be increased to a higher level in order to check that the Contractor provides a quality end product. This situation must be reported to the MTI Project Manager.

In conjunction with the inspection tasks outlined in this manual, the Contract Administrator shall provide qualified personnel to inspect all Work as required to verify and document non-compliance.

6 INSPECTION TASKS

6.1 AGGREGATE PRODUCTION

6.1.1 Aggregate Source and Production

Task # Task Description

- 1 Review Contract documents Special Provisions, the appropriate Specifications (No. 600, 610, 701, 900, 901, 910, 920, 925, and/or 960) and *MEB P047 Sampling Aggregate Materials for Laboratory Testing.*
- 2 Ensure source has been approved by Mines Branch with a Private Quarry (PQ#, CQP# or other equivalent approval #).
- 3 Ensure Project Site Safety Plan is prepared and provided to CA prior to aggregate production.
- 4 Check stockpile sites are level, well-drained and have adequate bearing capacity to support the weight of the material.
- 5 Check stockpile sites are free from objectionable material prior to stockpiling aggregate on site.
- 6 Verify that the Contractor's Quality Control testing frequency is followed and reported as per the Contractor's Quality Management Plan.
- 7 Ensure stockpile is produced in manner to prevent segregation.

LEVEL OF INSPECTION:

• Once per day (C)

6.2 GRADING

6.2.1 Clearing & Grubbing

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and Specifications for Clearing & Grubbing (No. 300).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check for proper installation of tree barrier protection prior to clearing and grubbing activities.
- 4 Check that clearing activities occur during permitted timing windows, if specified by the Contract to avoid nesting periods of migratory birds (e.g. May 1 to August 1).
- 5 Ensure original survey measurements (cross sections) are captured prior to grubbing operations for payment purposes.
- 6 Check that all clearing and grubbing debris is removed and managed in accordance with Contract requirements.
- 7 Check that clearing and grubbing is carried out to the limits given.
- 8 Check that Grubbing is performed as specified (stumps, roots, embedded logs, debris, and secondary growth) and stripping depths are as indicated in the Contract documents.
- 9 Ensure final survey measurements are captured and recorded in the project diary.

LEVEL OF INSPECTION

• 10% of the overall time the Contractor is on site per day carrying out that task (5)

6.2.2 Topsoil Excavation

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and *Specifications for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Ensure original survey measurements (cross sections) are captured prior to excavation operations for payment purposes.
- 4 Confirm stripping/topsoil excavation is completed in accordance with the cross section subgrade widths and that proper depth of stripping is achieved.
- 5 Ensure the topsoil is removed to where the underlying layer of material is visible and organic material is minimal.
- 6 Check required amount of stripped organic material is stockpiled for topsoil as specified prior to disposal of surplus material. Record the location of the stockpile sites.
- 7 Check that topsoil piles are positioned away from waterbodies.
- 8 Check that sheetflow from stockpiles is intercepted using silt fence, straw bale or sandbag barriers
- 9 Where cubic metre payment is to be completed, verify and record that underfill stripping measurements have been obtained prior to fill replacement. Where actual depths and widths vary from design, keep proper documentation to carry out a calculation.
- 10 Ensure final survey measurements (cross sections) are captured and recorded in the project diary.

LEVEL OF INSPECTION

• 10% of the overall time the Contractor is on site per day carrying out that task (5)

6.2.3 Bench Cuts

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and *Specifications for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Confirm bench cut limits prior to the Contractor commencing operations.
- 4 Confirm stripping/topsoil excavation has been completed to the required limits and depths.
- 5 Check that survey markers have been placed at the proposed toe of new slope indicating amount of fill required and pitch of slope (e.g.; 4:1, etc).
- 6 Confirm offset(s) from centreline at which bench cuts are to be performed, creating a vertical face.
- 7 Check that appropriate width and depth of cut have been achieved based on design cross sections.
- 8 Check that appropriate compaction efforts have been completed and that the bench cut surface is sound, free from surface cracks and excessive moisture.
- 9 Measure and record the location and length of the bench cuts completed on a daily basis in accordance with the Contract documents.

LEVEL OF INSPECTION

• 50% of the time the Contractor is on site per day carrying out that task (3)

6.2.4 Stripping Slopes

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and *Specifications for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Confirm stripping is completed in accordance with the cross section sub-grade widths and that proper depth of stripping is achieved.
- 4 Check required amount of stripped organic material is stockpiled for topsoil as specified prior to disposal of surplus material. Record the location of the stockpile sites.
- 5 Check that topsoil piles are positioned away from waterbodies.
- 6 Check that sheetflow from stockpiles is intercepted using silt fence, straw bale or sandbag barriers.
- 7 Measure and record the area and length of slopes stripped on a daily basis in accordance with the Contract documents.
- 8 Check that newly constructed grade slopes have been constructed to the appropriate width and elevation and have been trimmed properly in accordance with the design cross sections and Contract documents prior to replacing the stripped material.
- 9 Check that stripped topsoil is spread uniformly on the newly constructed slopes and to the depth specified.

LEVEL OF INSPECTION

• 10% of the overall time the Contractor is on site per day carrying out that task (5)

6.2.5 Seeding

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and *Specifications for Seeding (No. 540)*.
- 2 Confirm seeding limits with the Contractor prior to Work commencing.
- 3 Check that the areas to be seeded have been harrowed prior to seeding in accordance with the Specification and the Special Provisions.
- 4 Ensure that the Contractor does not apply seed under adverse weather conditions.
- 5 Check that the seeded areas have been harrowed again in accordance with the Specification and the Special Provisions. This second harrowing operation should leave grooves in the seeded surface running parallel to the road. Immediately advise Contractor to adjust operations to meet Specification if necessary.
- 6 Check that seed is broadcast or distributed at the appropriate distribution rate (kg/ha) as stated in the Special Provisions.
- 7 Ensure seeded areas are captured by survey or field measurement and recorded in the project diary.

LEVEL OF INSPECTION

• 25% of the time the Contractor is on site per day carrying out that task (4)

6.2.6 Common Excavation

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and Specifications *for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check the suitability of cut material for use as fill and ensure representative samples are collected and evaluated to determine the maximum dry density and optimum moisture content. Consult with Manitoba Transportation and Infrastructure if anticipated volume of suitable earth material from individual cuts differs from the Contract estimate.
- 4 Ensure existing surface survey measurements (cross sections) are captured prior to common excavation.
- 5 Watch for any seepage areas in earth cuts and provide for appropriate treatments as required. Check that any advanced dewatering scheme to facilitate the excavation is carried out.
- 6 Check that treatment of frost susceptible soil area is completed as specified in the Contract documents. Verify that the disposition of material from each earth cut area is recorded.
- 7 Loose rock as described in the Specification for Grading will be measured and recorded for payment as Loose Rock Excavation. Disposal shall be as described in the Specification for Grading.
- 8 Check for proper crown and that adequate drainage is maintained.
- 9 Check that the excavation is carried out to the requirements of the Contract documents.
- 10 Verify and record that grading tolerances are correctly applied and all slopes conform to the acceptance envelope.
- 11 Check that drains and/or ditches are properly constructed.
- 12 Check that backfilling of over excavated areas is carried out in accordance with the Specification.
- 13 Check that any organic or deleterious material is sub-excavated prior to embankment construction.
- 14 Check that special embankment foundation and benching is carried out as specified in the Contract documents.
- 15 Check Contractor's required quality control tests to determine if in-situ moisture content and target density is obtained.

- 16 Inspect embankment construction to check that the specified depth of layers are maintained, that oversize and frozen material is not used, that material is not placed on frozen ground or on ice or snow, and that the crossfall is adequate for drainage.
- 17 Verify and record that grading tolerances are correctly applied and all slopes conform to the acceptance envelope prior to placement of subbase material.
- 18 Check that fill is placed and compacted according to the Specifications layer compaction or modified layer compaction.
- 19 Ensure final survey measurements (cross sections) are captured and volumes recorded in the project diary. If survey measurement is impractical, measure and record the dimensions (length, width and depth) and provide a diagram of the cut area in the project diary.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site per day carrying out that task (2)

6.2.7 Composite Excavation

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and *Specifications for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check the suitability of borrow material for use as fill and ensure representative samples are collected and evaluated to determine the maximum dry density and optimum moisture content. Consult with Manitoba Transportation and Infrastructure if anticipated volume of suitable earth material from borrow differs from the Contract estimate.
- 4 Ensure existing surface survey measurements (cross sections) of the borrow area are captured after clearing, grubbing and stripping of the borrow is completed and prior to composite excavation. Alternative measurement methods may be identified in the Contract documents.
- 5 Watch for any seepage areas in earth cuts and provide for appropriate treatments as required. Check that any advanced dewatering scheme to facilitate the excavation is carried out.
- 6 Check that treatment of frost susceptible soil area is completed as specified in the Contract documents. Verify that the disposition of material from each earth cut area is recorded.
- 7 Loose rock as described in the Specification for Grading will be measured and recorded for payment as Loose Rock Excavation. Disposal shall be as described in the Specification for Grading.
- 8 Check for proper crown and that adequate drainage is maintained.
- 9 Check that the excavation is carried out to the requirements of the Contract documents.
- 10 Verify and record that grading tolerances are correctly applied and all slopes conform to the acceptance envelope.
- 11 Check that drains and/or ditches are properly constructed.
- 12 Check that backfilling of over excavated areas is carried out in accordance with the Specification.
- 13 Check that any organic or deleterious material is sub-excavated prior to embankment construction.
- 14 Check that special embankment foundation and benching is carried out as specified in the Contract documents.

15	Check Contractor's required quality control tests to determine if in-situ moisture content and target density is obtained.
16	Inspect embankment construction to check that the specified depth of layers are maintained, that oversize and frozen material is not used, that material is not placed on frozen ground or on ice or snow, and that the crossfall is adequate for drainage.
17	Verify and record that grading tolerances are correctly applied and all slopes conform to the acceptance envelope prior to placement of subbase material.
18	Check that fill is placed and compacted according to the Specifications – layer compaction or modified layer compaction.
19	Ensure final survey measurements (cross sections) are captured and the volumes recorded in the project diary. If survey measurement is impractical, measure and record the dimensions

(length, width and depth) and provide a diagram of the cut area in the project diary.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site per day carrying out that task (2)

6.2.8 Waste Excavation

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and *Specifications for Grading (No. 500).*
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check that the excavation material is unsuitable for construction of the embankment and document limits.
- 4 If measuring by survey, collect cross sections of the waste excavation area.
- 5 Verify that the disposal area is acceptable and meets the Contract requirements. Record location of waste material from each earth cut area.
- 6 Watch for any seepage areas in earth cuts and provide for appropriate treatments as required. Check that any advanced dewatering scheme to facilitate the excavation is carried out.
- 7 Check that the excavation is carried out to limits and the requirements of the Contract documents.
- 8 Check that drains and/or ditches are properly constructed.
- 9 Ensure final survey measurements (cross sections) are captured and the volumes recorded in the project diary. If survey measurement is impractical, measure and record the dimensions (length, width and depth) and provide a diagram of the cut area in the project diary.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site per day carrying out that task (2)

6.2.9 Geotextile

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and Specifications for Geotextile Fabric (No. 1295).
- 2 Check that each roll to be used has a tag showing product name and number to verify that it is being supplied from the Manitoba Transportation and Infrastructure approved products list and that it meets the design requirements of the Contract (woven or non-woven, Class 1 or Class 2, F.O.S.).
- 3 Check that the geotextile is contained in opaque (light blocking) wrapping.
- 4 Check installation area for removal of sharp objects that may puncture the geotextile.
- 5 Check that the proper overlap has been maintained during installation.
- 6 Check that the method of placement of overlying material is suitable to prevent damage to the geotextile and as specified in the Contract documents.
- 7 Check that all materials contaminated or damaged during installation are either replaced or repaired so that the geotextile will perform as intended.
- 8 Ensure that the area of placed geotextile is captured prior to backfilling by survey measurement and recorded daily in the project diary. If survey measurement is impractical, measure and record the dimensions (length and width) and provide a diagram of the installation in the project diary.

LEVEL OF INSPECTION

• 25% of the time the Contractor is on site per day carrying out that task (4)
6.2.10 Erosion and Sediment Control

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and appropriate Specifications (No. 1296, 1298).
- 2 Check that each product and biodegradable staples are on Manitoba Transportation and Infrastructure approved products list and that it meets the design requirements of the Contract. The erosion and sediment control products to be used must have a tag showing product name and number.
- 3 Inspect and confirm erosion control product limits and design with the Contractor prior to installation.
- 4 Check that the products are installed in accordance with the Contract documents (e.g. stapling pattern, trenching, ground contact)
- 5 After runoff events and during prolonged rainfall, check that erosion and sediment control schemes are in place and functioning. If the control measures are not functioning or are insufficient the Contractor must be requested to review and take action.
- 6 Check that when installations are removed that disturbed areas are restored in accordance with the Contract documents.
- 7 Ensure that the area or length of placed erosion and sediment controls are captured daily by survey measurement and recorded in the project diary. If survey measurement is impractical, measure and record the dimensions (length and/or width) and provide a diagram of the installation in the project diary.

LEVEL OF INSPECTION

6.2.11 Stone Rip Rap

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and Specifications for Stone Rip Rap (No. 1297).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check that rip rap material is as specified in the Contract documents.
- 4 Check that rip rap bed has been excavated and is neatly shaped to the design as shown in the Contract documents.
- 5 If geotextile is required, check that rip rap is placed in a manner that will not tear or otherwise damage the geotextile.
- 6 Check that rip rap is placed in accordance with the Contract documents and within any applicable timing windows.
- 7 Check that the rip rap when placed on a slope is placed at the toe first and progresses up the slope.
- 8 Ensure that the quantity of material placed is recorded daily in accordance with the Contract documents.

LEVEL OF INSPECTION

6.2.12 Fence

Task #	Activity
1	Review the Contract documents including Drawings, Special Provisions, and Specifications.
2	Check all the delivered material to verify that it is being supplied in accordance with the Contract documents or from the approved list that was submitted by the Contractor at the commencement of the Contract.
3	Check that fence is staked out in accordance with the requirements of the property agreements and Contract documents.
4	Check that all debris, trees, stumps, brush and logs have been removed and ground undulations have been corrected along the fenceline to obtain a smooth and uniform gradient prior to fence installation.
5	Check that fence posts are the specified size and length.
6	Check that all end, corner, anchor, line, straining and gate posts are properly installed with respect to depth, alignment, and spacing.
7	Check that all bracings are correctly installed.
8	Check that loose material in the bottom of the posthole is tamped or removed prior to placing the posts.
9	Check that all posts are vertical and that the backfill is properly tamped.
10	Check that all gates operate properly.
11	Ensure that the length of installed fence is captured by survey measurement and recorded in the project diary. If survey measurement is impractical, measure and record the dimensions and provide a diagram of the installation in the project diary.

LEVEL OF INSPECTION

• Once per Day (C)

6.3 CULVERTS

6.3.1 Excavation for Culverts

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and Specifications for Culverts (No. 400, 410, 1285, and/or 1290).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check that the dewatering and flow passage arrangements comply with restrictions/provisions specified in the Contract.
- 4 Check that dewatering is not causing erosion of soil at the outlet and other environmental concerns (e.g. muddy water discharge). Check that the Contractor has the standby equipment (pumps, hose, etc.) on site as required in the Contract and environmental submission.
- 5 Check that dust and debris from construction operations is not entering a watercourse or Environmentally Sensitive Area.
- 6 Confirm that any other relevant environmental constraints have been addressed.
- 7 Check that the foundation soil is sound and undisturbed. Check that all loosened, soft, organic and deleterious material and boulders at the foundation base are removed and replaced with suitable, compacted granular material.
- 8 Investigate pipe relocation to avoid cutting the organic mat when the embankment rides the swamp.
- 9 Confirm and record dimensions (length and diameter) of existing culvert(s) to be removed.
- 10 Check that any temporary protection scheme to facilitate the excavation and construction of the culvert is carried out.
- 11 Confirm and record limits of excavation (width and depth) to determine if they conform to Contract documents.
- 12 Confirm culvert inlet and outlet design elevations are consistent with existing site conditions prior to installation.
- 13 Confirm and record limits of excavation tapers at shoulderline and centreline. Confirm that the specified taper slope continues until it intersects subgrade/bottom of roadbed granular.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site carrying on the task (2)

6.3.2 Backfilling for Culverts

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and Specifications for Culverts (No. 400, 410, 1285, and/or 1290).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check all the delivered material to verify that it is as specified in the Contract documents.
- 4 Check that all pipes are correct class and reject and document those that are damaged and cannot be repaired.
- 5 Check that advanced dewatering is conducted as required to prevent soil sloughing, basal heave and boiling. Check that excavations are free of water at all times.
- 6 Check that alignment, invert elevation and designed widths are adhered to, as loading on pipe is partially dependent on trench widths.
- 7 Check that dewatering is not causing erosion of soil at the outlet and other environmental concerns (e.g. muddy water discharge). Check that the Contractor has the standby equipment (pumps, hose, etc.) on site as required in the Contract and environmental submission.
- 8 Check the foundation for transition from firm to soft material, high points, soft spots, stones or boulders under culvert; general foundation problems due to unstable soil conditions, prior to placing bedding or embedment material.
- 9 Check that backfilling materials are sampled as required, comply with the Specifications, and are compacted to the target density specified in the Contract documents. Check that the proper compacted lift thickness is as specified.
- 10 If required, check that each end of the pipe is embedded and material is properly compacted to prevent seepage.
- 11 Check that the bedding and the backfilling materials are placed in the dry, and in lifts as specified in the Contract documents.
- 12 Check that backfilling is compacted under the haunches.
- 13 Check that proper gaskets and/or couplers are used. Check that all gaskets and joints are tight. Check for proper camber. Where applicable, check that joints are lapped in direction of flow.
- 14 Check that pipes and connections are kept clean and free of foreign material.
- 15 Check that any gaps do not exceed the standard construction Specifications

16	Check that backfilling is brought up evenly on both sides of the pipe at the same time.
17	Check that compaction equipment does not impose excessive vibrations on structure.
18	Check that specified depth of cover is placed before heavy equipment is allowed over culvert location.
19	Check that oversize particles are removed.

20 Record trench widths, type and quantities of bedding and backfilling.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site carrying on the task (2)

6.3.3 Jacking Culverts

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and Specifications for Culverts (No. 400, 410, 1285, and/or 1290).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check that construction methods employed meet the Specification.
- 4 Check that benchmark, culvert location and invert elevations are staked out in accordance with the Contract documents.
- 5 Check that shoring systems are in place and stable.
- 6 Check that alignment and grade are maintained throughout construction.
- 7 If required, check that each end of the pipe is embedded and material is properly compacted to prevent seepage.
- 8 Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the Contract.
- 9 Check that grouting materials meet the material requirements of the specification.
- 10 Report and record all ground movements, obstructions, failures, seepage zones and changes in soil conditions.
- 11 Check that appropriate dewatering is conducted to avoid soil cave-in and sloughing during the tunnelling.
- 12 Check to verify any obstructions attributable to boulders and cobbles etc. Monitor and record delay time for obstruction removal in accordance with the Contract documents.
- 13 Ensure that annular space grouting and other culvert requirements are completed in accordance with the Contract documents and record the quantity of material used.
- 14 Ensure that the length of installed culvert is captured by survey measurement and recorded in the project diary.

LEVEL OF INSPECTION

6.3.4 Manholes, Catchbasins and Ditch Inlets

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, MEB Standards, and Specifications for Culverts (No. 400, 410, 1285, and/or 1290).
- 2 Check that erosion and sediment control schemes are in place and functioning prior to and during the Work. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
- 3 Check type, alignment, offset and grades of manholes, catchbasins and ditch inlets prior to commencing Work.
- 4 Check correct positioning and installation of ladder rungs and safety grates.
- 5 Visually check all materials used for quality and/or damage (Pre-Cast); i.e. honeycombing, cracks, voids, surface defects, etc.
- 6 Check that, backfill materials are as specified in the Contract and are compacted to the target density.
- 7 Check that poured in place manholes, catchbasins and ditch inlets conform to the Contract standards.
- 8 Check for the correct placement of reinforcing steel, if required.
- 9 Check that specified compaction is obtained under pipes entering or exiting manholes, catchbasins and ditch inlets.
- 10 Check that specified compaction is obtained under and around manholes and catchbasins.
- 11 Check for proper placement of pipe subdrain outlet in structures, if required.
- 12 Verify final alignment, offset and grade of all manholes, catchbasins, and ditch inlets.
- 13 Check that honeycombed areas are parged and the grates and pipes are grouted upon completion.
- 14 Check that manholes, catchbasins and ditch inlets are cleaned out. Check that excess materials from the Work are stored and disposed of as specified in the Contract documents.

LEVEL OF INSPECTION

• 75% of the time the Contractor is on site carrying out that task (2).

6.4 GUARDRAIL

6.4.1 Approach Guardrail and End Treatments

Task # Activity

- 1 Review the Contract documents including Drawings, Special Provisions, and appropriate Specifications.
- 2 Check the guardrail during installation and record any deficiencies.
- 3 Verify that the guardrail layout is in accordance with the Contract documents
- 4 Check that all posts are vertical and that the backfill is properly tamped.
- 5 Check that the installation height is correct.
- 6 Check that guardrail in the vicinity of the bridge is attached in accordance with the Contract documents.
- 7 Confirm placement of reflectorized strips.
- 8 Check that the guardrail elements are overlapped as detailed in the Contract documents.
- 9 Check that all bolts, washers and nuts are placed and affixed securely to all plates, angles, posts and steel rail, as required.
- 10 Check end treatments during installation to ensure that they are installed in accordance with the manufacturers plans and installation manual, and record any deficiencies.
- 11 Measure and record the length of the installed guardrail sections, and the number of end treatments installed and bridge connections completed.

LEVEL OF INSPECTION

6.5 GRANULAR COURSE

6.5.1 Surface and Shoulder Preparation

Task # Task Description

- 1 Review Contract documents including the Drawings, Special Provisions, Construction Specifications for Granular Course (No. 701) and relevant MEBs.
- 2 Check that all deleterious material is removed from the grade prior to surface preparation.
- 3 Where applicable, verify that the sub-cut and/or scarifying depth and width requirements have been achieved prior to re-shaping and re-compacting as specified in the Contract.
- 4 Verify that the Contractor's Quality Control testing frequency is followed, if required.
- 5 Check that samples of existing materials have been obtained for Quality Assurance testing, if required.
- 6 Check that appropriate compaction efforts have been completed and that the surface is sound, free from surface cracks and excessive moisture.
- 7 Verify that the prepared surface meets the crossfall and width as specified in the Contract.

LEVEL OF INSPECTION

6.5.2 Base and Subbase

Task # Task Description

- 1 Review Contract documents including Drawings, Special Provisions, Specifications for Granular Base Course (No. 701), Material Specification for Aggregates (No. 901), MEB P044 Random Sampling for Acceptance Testing and MEB P047 Sampling Aggregate Materials for Laboratory Testing
- 2 Check that Contractor has obtained the required weigh scale certification in accordance with the Construction Specifications.
- 3 Check that underlying material was maintained prior to depositing Granular Course.
- 4 Inspect Granular Course for contamination including clay coated particles or foreign material.
- 5 Check the distribution of material quantities and compare with the estimated distribution of materials for each Layer.
- 6 Verify that the Contractor's Quality Control testing frequency is followed and reported as per the Contractor's Quality Management Plan.
- 7 Check that random samples of Granular Course have been obtained from each Sub-lot for Quality Assurance testing as specified in the Construction Specifications.
- 8 Ensure Sample Identification and Chain of Custody form is completed.
- 9 Verify sample is delivered to MTI's Quality Assurance laboratory.
- 10 Check that each Lift of Granular Course meets the percent compaction requirements.
- 11 Verify that the finished surface of each Layer meets the grade and width tolerance and cross slope prior to placement of the next type of material.
- 12 Check that the finished surface is not segregated and that there are no signs of surface defects.

LEVEL OF INSPECTION

6.5.3 Compaction

Task # Task Description

- 1 Review Contract document Special Provisions, Construction Specification for Bituminous Pavement (No. 801), Construction Specifications for Granular Course (No. 701), MEB P043 Sampling Compacted Bituminous Mixtures for Laboratory Testing, MEB P034 Density of Soils in Place by Nuclear Method and MEB P051 Density of Granular Base Course in Place by Nuclear Method.
- 2 Document the type of compaction equipment used for the type of material, degree of compaction required and space available.
- 3 If applicable, check the Contractor is using the same equipment and number of passes used in the corresponding control strip.
- 4 Verify that the Contractor's Quality Control testing frequency is followed and submitted as per the Contract.
- 5 Check that Quality Assurance sampling and testing is followed as specified in the Contract.
- 6 Ensure the percent compaction for each Lot is acceptable prior to placing another lift of material.

LEVEL OF INSPECTION

6.5.4 Compaction Control Strip

Task # Task Description

- 1 Review Contract document Special Provisions, Construction Specifications for Granular Course (No. 701), and MEB P052 Density of In Place Material by Control Strip Method.
- 2 Check that a suitable location has been selected for the control strip.
- 3 Check that the compaction equipment for the control strip conforms to the minimum requirements as described in the Contract.
- 4 Check that the desired moisture content of the material is within the allowable tolerance specified.
- 5 Ensure the control strip was completed as per MEB P052 Density of in Place Material by Control Strip Method.
- 6 Check that a new control strip is established when required.

LEVEL OF INSPECTION

6.5.5 Pulverization of Existing Surface

Task # Task Description

- 1 Review Contract documents including Drawings, Special Provisions, and Construction Specification for Granular Course (No.701)
- 2 Randomly check, at least once per km, that the in-situ material is processed to the depth and width as specified in the Contract.
- 3 Ensure that the in-situ material has been processed uniformly and contains no oversize particles.
- 7 If applicable, check the desired application rates for water and emulsified asphalt are as specified in the Contract.
- 8 Ensure that each compacted Lift does not exceed the maximum Lift thickness.
- 4 Check that each Lift of material meets the percent compaction requirements.
- 5 Check that the surface alignment and cross fall has been shaped according to the Contract.

LEVEL OF INSPECTION

6.6 **BITUMINOUS**

6.6.1 Asphalt Cement and Asphalt Emulsions

Task # Task Description

- 1 Review MEB P031 Sampling and Testing Asphalt Binder Materials, MEB P027 Pay Adjustment for Penetration Grade Asphalt Cement, MEB P026 Pay Adjustments for Performance Graded Asphalt Cement and associated material Specification on the Approved Products List.
- 2 Check that the asphalt cement or asphalt emulsion delivered to the project is as specified in the Contract and on MTI's Approved Products List.
- 3 Check that representative samples of asphalt cement or emulsion are collected as per appropriate MEB.
- 4 Ensure sample Identification and Chain of Custody form is completed.
- 5 Verify sample is delivered to MTI's Quality Assurance laboratory.

LEVEL OF INSPECTION

6.6.2 Prime Coat

Task # Task Description

- 1 Review the Specifications for Applying Prime Coat, Blotter, and Tack Coat, MEB P031 Sampling and Testing Asphalt Binder Materials, and APL 101-4 Material Specification for Emulsified Asphalt.
- 2 Check that the asphalt emulsion delivered to the project is as specified in the Contract and on MTI's Approved Products List.
- 3 Check equipment is in satisfactory condition and verify that calibration system has been completed as per Contract requirements.
- 4 Ensure that the contractor's Work for Granular Course has been accepted prior to the prime coat operation.
- 5 Ensure the granular surface is not frozen and that the air temperature and wind conditions meet the requirements of the Contract.
- 6 Check that the application rate is as specified in the Contract.
- 7 Verify that the proper method of application is used as outlined in the Contract.
- 8 Check that the granular material is uniformly coated.
- 9 Check that the primed surface has sufficiently cured to accommodate traffic.

LEVEL OF INSPECTION

6.6.3 Reclaiming Bituminous Pavement

Task # Task Description

- 1 Review Contract documents including Drawings, Special Provisions, and the *Specifications for Reclaiming Bituminous Pavement (No. 815).*
- 2 Ensure the pavement surface is free from deleterious material prior to the reclaiming operation.
- 3 Check equipment meets the requirements of the Specifications.
- 4 Ensure the reclaiming operation is removing the bituminous pavement to the depth, width and cross fall as specified in the Contract.
- 5 Check that reclamation is completed to the same termination point across the entire roadway width, including paved shoulder, before shutdown each day and properly ramped if roadway is to be opened to traffic.
- 6 Inspect the resulting surface upon completion of the reclamation operation for any loose, damaged, or unstable areas and correct as necessary.
- 7 Check that deviations in the design cross fall are corrected.
- 8 Check that the milled surface is broomed, and that areas of loose material and dust are removed.
- 9 Ensure the reclaimed material is stockpiled and processed according to the Contract.

LEVEL OF INSPECTION

6.6.4 Tack Coat

Task # Task Description

- 1 Review the Specifications for Applying Prime Coat, Blotter, and Tack Coat (No. 805), MEB P031 Sampling and Testing Asphalt Binder Materials, and APL 101-4 Material Specification for Emulsified Asphalt.
- 2 Check that the asphalt emulsion delivered to the project is as specified in the Contract and on MTI's Approved Products List.
- 3 Check equipment is in satisfactory condition and verify that calibration system has been completed as per Contract requirements.
- 4 Check that the pavement surface is clean, dry, and free from loose material.
- 5 Check that the application rate is as specified in the Contract.
- 6 Ensure that the nozzle spray pattern, bar height, and distributor pressure are providing a double or triple lap coverage.
- 7 Check that the emulsion has had time to break (turned from brown to black colour) prior to placing the bituminous pavement.

LEVEL OF INSPECTION

6.6.5 Hot Mixed Bituminous Paving

Task # Task Description

1	Review the Contract documents including Drawings, Special Provisions, Construction Specification for Bituminous Pavement, Material Specification for Aggregate – Bituminous Pavement and relevant MEB documents.
2	Confirm that the substrata is not saturated or frozen.
3	Check that the surface is clean and free of surface breaks, potholes, and other defects.
4	Check that the prime or tack coat has been uniformly applied and cured, and is in good condition.
5	Check that the surface to be paved is frost free, clean, dry, and free of standing water.
6	Confirm that the atmospheric temperature is not below the specified minimum and the wind speed is not above the specified maximum before the start of the paving operation.
7	Check and note placement of centerline guide for paving operations.
8	Check that the sequence of the paving operation including, but not limited to, paving intersections, tapers, ramps, bridge decks, and all staging plans are being followed.
9	Check that correct mix is being delivered and that all the required information is recorded.
10	Check that the temperature of the bituminous mix delivered to the road is not below the specified temperature in the Contract.
11	Check the distribution of material quantities and compare with the estimated distribution of materials for each Layer.
12	Check that the mix is uniform and the aggregate particles are completely coated with asphalt cement.
13	Check that paving is carried out to the width and uniformly maintained, as specified in the Contract.
14	Check that all joints are constructed as per the Specifications and/or Special Provisions.
15	Check that mix placement meets the alignment and cross-fall.
16	Verify that the Contractor's Quality Control testing frequency is followed and reported as per the Contractor's Quality Control Plan.
17	Check that random samples have been obtained for Quality Assurance testing as specified in the Contract.

- 18 Ensure Sample Identification and Chain of Custody form is completed.
- 19 Verify sample is delivered to MTI's Quality Assurance laboratory.
- 20 Check the bituminous pavement has been inspected for segregation, centre-of-paver streak and surface defects prior to covering with another lift.
- 21 Check that the temperature of the mat is below the specified maximum prior to covering with another lift or opening to traffic.
- 22 If applicable, confirm that end and edge ramping are done prior to shutdown each day.

LEVEL OF INSPECTION

6.6.6 Surface Smoothness Measurements

Task # Task Description

1	Review the Construction Specification and MEB P045 Surface Smoothness Measurement Using High Speed Inertial Profiler for Highway Construction Projects.
2	Ensure that the Contractor has completed all main lane paving and is not blocking any lanes.
3	Ensure that the roadway surface is free of all debris and other loose material.
4	Notify appropriate staff from the Department when the surface is ready for acceptance testing.
5	Meet the profile operator on site and provide details of the project.

LEVEL OF INSPECTION

• Once upon completion

6.6.7 Microsurfacing

Task # Task Description

- 1 Review *Specification for Micro Surfacing Treatment* and Contract documents.
- 2 Check mixing, proportioning and spreading equipment.
- 3 Check sequence of placement operation including, but not limited to, surfacing intersections, tapers, ramps, bridge decks and all staging plans are being followed.
- 4 Check for proper surface preparation including protective covering, Work done by others and application of tack coat where applicable.
- 5 Confirm that the atmospheric and pavement temperature is not below the specified minimum before the start of the microsurfacing operation.
- 6 Check and note placement including longitudinal joint location and joint overlap tolerances.
- 7 Check the surface is free from excessive scratch marks, tears, rippling and other surface defects.
- 8 Check that samples have been obtained for acceptance testing as specified in the Contract.
- 9 Document width and length of each day's placement.
- 10 Check the microsurfacing has been inspected for surface deficiencies prior to final acceptance.

LEVEL OF INSPECTION

6.6.8 Chip Seal

Task # Task Description

- 1 Review Specification for Emulsified Asphalt Chip Seals and Contract documents.
- 2 Confirm equipment is in satisfactory working condition and maintained for the duration of the Work.
- 3 Ensure equipment has been calibrated using representative materials from the Contract before commencement of the Work.
- 4 Confirm and mark construction limits including start and end locations, width of the chip seal, treatment area of curves and treatment area of intersection(s) with the contractor.
- 5 Check for proper protective covering to prevent foreign materials from entering utility structures and expansion joints.
- 6 Check that the surface to be chip sealed is free from dust, dirt, excessive moisture and other unacceptable materials prior to application of emulsified asphalt.
- 7 Ensure the construction of a test strip to verify accept design rates, rolling patterns and surface finish.
- 8 Confirm that weather conditions do not exceed the specified limitations prior to start of construction.
- 9 Check that the application of emulsified asphalt has been uniformly applied within the accepted test strip rate.
- 10 Confirm that cover aggregates are placed at the accepted test strip rate using a chip seal spreader.
- 11 Check pneumatic tired rollers and steel roller have completed passes over the entire area of application.
- 12 Check timing of sweeping occurred in accordance with specification.
- 13 Check that random samples have been obtained for Quality Assurance testing as specified in the Contract.
- 14 Ensure Sample Identification and Chain of Custody form is completed.
- 15 Verify sample is delivered to MTI's Quality Assurance laboratory.
- 16 Check and note placement of longitudinal joint location and joint overlap tolerances.
- 17 Document width and length of each day's placement.
- 18 Check the chip seal has been inspected for surface deficiencies prior to final acceptance.

LEVEL OF INSPECTION

6.6.9 Sand Seal

Task # Task Description

1 Review Specification for Emulsified Asphalt Chip Seals and Special Provisions for Sand Sealing. 2 Confirm equipment is in satisfactory working condition and maintained for the duration of the Work. 3 Ensure equipment has been calibrated using representative materials from the Contract before commencement of the Work. 4 Confirm and mark construction limits including start and end locations, width of the sand seal, treatment area of curves and treatment area of intersection(s) with the Contractor. 5 Check for proper protective covering to prevent foreign materials from entering utility structures and expansion joints. Check that the primed surface has cured for a minimum of 24 hours and that the surface is free 6 from dust, dirt, excessive moisture and other unacceptable materials prior to sand sealing. 7 Ensure the construction of a test strip to verify accept design rates, rolling patterns and surface finish. 8 Confirm that weather conditions do not exceed the specified limitations prior to start of construction. 9 Check that the application of emulsified asphalt has been uniformly applied within the accepted test strip rate. 10 Confirm that cover aggregates are placed at the accepted test strip rate using a sand seal spreader. 11 Check pneumatic tired rollers and steel roller have completed passes over the entire area of application. 12 Check timing of sweeping occurred in accordance with specification. 13 Check that random samples have been obtained for Quality Assurance testing as specified in the Contract. Ensure Sample Identification and Chain of Custody form is completed. 14 15 Verify samples are delivered to MTI's Quality Assurance laboratory. Check and note placement of longitudinal joint location and joint overlap tolerances. 16 17 Document width and length of each day's placement. Ensure the sand seal has cured for a minimum of 72 hours and has been inspected for surface 18 deficiencies prior to final acceptance.

LEVEL OF INSPECTION

6.7 CONCRETE

6.7.1 Concrete Curb and Gutter

Task # Task Description

- 1 Review the Contract documents including Drawings, Special Provisions, Specifications for Concrete Curbing, Specifications for Reinforced Cast-In-Place Concrete, Section 4 – Cast In-Place Concrete (CA & CI Manual, WC&S), Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check that proper type of curb is constructed in accordance with the Contract.
- 3 Check for proper alignment, grade and proper granular base preparation.
- 4 Check for proper formwork or stringline alignment and grade.
- 5 Check for proper positioning of joints.
- 6 Check for proper positioning of manhole frames and grates.
- Check that concrete material, production and testing are in accordance with Section 4 Cast
 In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- 8 Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 9 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 10 Check for proper drop curb at entrances and at any other area as detailed in the Drawings.
- 11 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 12 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

LEVEL OF INSPECTION

6.7.2 Concrete Sidewalk

Use this task in conjunction with Section 4, Cast In-Place Concrete, CA & CI Manual – Water Control & Structures

Task # Task Description

- 1 Review the Contract documents including Drawings, Special Provisions, Specifications for Construction of Concrete Sidewalks, Specifications for Reinforced Cast-In-Place Concrete, Section 4 – Cast In-Place Concrete (CA & CI Manual, WC&S), Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check for proper alignment, grade, granular base preparation and extra thickness at entrances.
- 3 Check for proper formwork or stringline alignment and grade.
- 4 Check for proper positioning of construction joints and expansion joints.
- 5 Check that concrete material, production and testing are in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- 6 Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 7 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 8 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 9 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

LEVEL OF INSPECTION

6.7.3 Concrete Barrier Walls

Use this task in conjunction with Section 4, Cast In-Place Concrete, CA & Cl Manual – Water Control & Structures

Task # Task Description

- Review the Contract documents including Drawings, Special Provisions, Specifications for Reinforced Cast-In-Place Concrete, Section 4 – Cast In-Place Concrete (CA & CI Manual, WC&S), Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check that the method of construction is as specified in the Contract.

Method A - Conventional Wooden or Steel Form

- 1 Check for correct alignment, grade and granular base preparation.
- 2 Check for correct joint detail and spacing.
- 3 Check that the inside face of formwork is clean and in good order, to produce a smooth cast face.
- 4 Check that the barrier wall forms are adequately restrained to prevent uplift.
- 5 Check that railing mounts/anchorages are correctly installed (Location, elevation, flushness, and anchor bolt protrusion is adequate for tube rails).
- 6 Check that concrete material, production and testing are in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA &
 CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 8 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 9 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 10 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

Method B – Extruded (Not allowed on Bridge decks)

- 1 Check for correct alignment, grade and granular base preparation.
- 2 Check that specified percentage of air is being maintained. Check that construction joints, isolation joints and contraction joints are constructed in accordance with the Contract requirements.
- 3 Check that concrete material, production and testing are in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- 4 Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 5 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 6 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 7 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

Method C - Pre-Cast

- 1 Check that the foundation is prepared for acceptance of pre-cast units.
- 2 Check that pre-cast units are as specified and supplied from the approved list.
- 3 Check for correct installation of interlocking devices and check that no damaged units are installed.
- 4 Check for correct alignment and grade.

LEVEL OF INSPECTION

Method A - Conventional Wooden or Steel Form

• 100% of the time the Contractor is on site per day carrying out that task (1)

Method B - Extruded

• 100% of the time the Contractor is on site per day carrying out that task (1)

Method C - Pre-Cast

6.7.4 Concrete Median Pavement

Use this task in conjunction with Section 4, Cast In-Place Concrete, CA & Cl Manual – Water Control & Structures

Task # Task Description

- 1 Review the Contract documents including Drawings, Special Provisions, Specifications for Concrete Pavement, Specifications for Reinforced Cast-In-Place Concrete, Section 4 – Cast In-Place Concrete (CA & CI Manual, WC&S), Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check for proper alignment, grade and granular base preparation. Check for proper formwork or stringline alignment and grade.
- 3 Check for proper positioning of construction joints and expansion joints.
- 4 Check that concrete material, production and testing are in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- 5 Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 6 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 7 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 8 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

LEVEL OF INSPECTION

6.7.5 Reinforced Concrete Pavement

Use this task in conjunction with Section 4, Cast In-Place Concrete, CA & Cl Manual – Water Control & Structures

Task # Task Description

- 1 Review the Contract documents including Drawings, Special Provisions, Specifications for Concrete Pavement, Specifications for Reinforced Cast-In-Place Concrete, Section 4 – Cast In-Place Concrete (CA & CI Manual, WC&S), Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check for proper alignment, grade and granular base preparation.
- 3 Check for proper formwork or stringline alignment and grade.
- 4 Check for proper type of reinforcement (if applicable) including bar size and type, alignment, placement (depth in the slab) and spacing. If using fibre reinforced concrete, check that correct amount of fibre reinforcement has been added to the concrete.
- 5 Check for proper positioning of construction joints and expansion joints.
- 6 Check that concrete material, production and testing are in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (One test for every 20 cubic metres of concrete).
- Test concrete and cast cylinders in accordance with Section 4 Cast In-Place Concrete, CA & CI Manual, Water Control & Structures (Approximately 1 test for every 40 cubic metres of concrete).
- 8 Check that placement, consolidation, finishing and curing operations are as specified in the Contract and in Section 4 – Cast In-Place Concrete, CA & CI Manual, Water Control & Structures.
- 9 Verify test cylinders are delivered to MTI's Quality Assurance laboratory.
- 10 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

LEVEL OF INSPECTION

6.7.6 Concrete Pavement

Task # Task Description

- 1 Review the Contract documents including Drawings, Special Provisions, Specifications for Concrete Pavement, Specifications for Reinforced Cast-In-Place Concrete, Material Specification for Aggregate – Portland Cement Concrete and relevant MEB documents.
- 2 Check for proper alignment, grade and granular base preparation.
- 3 Check for proper formwork or stringline alignment and grade.
- 4 Check for proper type of reinforcement (if applicable) including bar size and type, alignment, placement (depth in the slab) and spacing. If using fibre reinforced concrete, check that correct amount of fibre reinforcement has been added to the concrete.
- 5 Check for proper positioning of construction joints and expansion joints.
- 6 Check for final alignment, surface tolerances and document surface defects (e.g. cracking, spalling, honeycombing).

LEVEL OF INSPECTION

6.8 TRAFFIC

6.8.1 Traffic Control Inspection

Task # Task Description

- 1 Review the MTI Standard Construction Specifications Traffic Control, No. 200(I) and MTI Work Zone Traffic Control Manual
- 2 Check that Contractor has submitted and have obtained approval of Traffic Management Plan.
- 3 Review the Approved Signing Requirements with the Contractor.
- 4 Record Contractor's contact person(s) responsible for traffic control.
- 5 Check that the construction zone designation is in place before speed limits signs are change or the construction zone begins/release signs are installed.
- 6 Check that layout of signs is in accordance with MTI Work Zone Traffic Control Manual or approved TMP.
- 7 Check that the Contractor's initial sign placements (by station, offset and height above pavement) and all revisions are clearly documented.
- 8 Check that all signs and traffic control devices are properly maintained, and in good working order, (i.e. flashers, etc.) and that temporary traffic signals are working properly with no long delays (if applicable).
- 9 Check that signs and traffic control devices are retro-reflective, clean, legible and in good working order.
- 10 Check for the removal of temporary signs when they are no longer required.
- 11 Check that (on a regular basis) the Contractor records each stage change or sign change in the Traffic Control is documented in the daily diaries.
- 12 If an accident occurs check that all traffic control devices, signing, time of inspection and any other pertinent information including measurements and photos have been documented by staff. This includes follow up with the Contractor if they have documented this information.
- 13 Check that all lane or highway closures are adhered to in accordance with approved TMP and Contract documents.

- 14 The Contract Administrator shall complete the Traffic Restrictions at Structure Report form and submitted Manitoba 511, including lane or highway closures.
- 15 The CA shall confirm the actual clearance dimensions, in metres to 2 decimal places, within 24hrs of implementation of the restriction or any change to the implementation.
- 16 As soon as the temporary restriction(s), lane or highway closures are removed, the CA shall notify Manitoba 511.

LEVEL OF INSPECTION

• This task shall be performed by all staff on the project on an "ongoing" basis. It shall be performed at the initial installation of the traffic stage and every change, and as outlined within this manual.

APPENDIX A: Technical Standards and Specifications

Document	Distributor
Progress Payment Checklists	Tendering and Contracts
Contract Change and Over Expenditure templates, Forms and Guidelines	Tendering and Contracts
Project Completion Checklists	MTI Project Manager & Tendering and Contracts
Project Audit & Ledger Template	MTI Project Manager & Tendering and Contracts
Standard Construction Specifications Manual	Tendering and Contracts
MTI Policies	Tendering and Contracts, Infrastructure Programs and Asset Management
Survey Support Manuals, Survey Equipment Information and Survey Control Data	Construction Support Services
Overview of Transportation Road Maintenance & Construction Activities	Operational Services
MTI Environmental Approval Process Guidelines	Highway Design
ESS Request for Review and Approval Form	Highway Design
MTI Environmental Fact Sheets – Working WITH the Environment, Culverts, Regulations, and Compliance Monitoring	Highway Design
MTI Highway Inventory System	Highway Design
Roadside Development Working Guidelines (Traffic Impact, Hydro, MTS, and Access onto Structures etc)	Highway Design
MTI Geometric Design and Standards Policies	Highway Design
MTI Environmental Services Policies	Highway Design
MTI Approved Products List	Highway Design
Highway Design Standards	Highway Design
Highway Design Reports	Highway Design
Traffic Engineering Work Zone Traffic Manual	Traffic Engineering
Traffic Engineering Signing Manual	Traffic Engineering
Traffic Engineering Policies and Standards	Traffic Engineering

Provincial Highway Classification Map	Transportation Systems Planning and Development
Transportation Planning Manual	Transportation Systems Planning and Development
MTI Standard Drawings	Tendering and Contracts