

ANNEX A – SPECIFICATIONS

**CANADIAN FOOD INSPECTION AGENCY (CFIA)
EMERSON-NOYES POINT OF ENTRY
EMERSON, MB**

**NEW VEHICLE ACCESS
SPECIFICATIONS and APPENDICES**

CFIA PROJECT No.: M10285

ISSUED FOR TENDER
JANUARY 05, 2023

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PART 1 GENERAL

1.0 SECTION INCLUDES

- .1 Summary of Work
- .2 Codes
- .3 Work Restrictions and Existing Services
- .4 Schedule and Meetings
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1.1 SUMMARY OF WORK

- .1 Work of this Contract comprises providing a new access driveway to the existing CFIA Port of Entry Inspection Station located in Emerson, MB. This includes providing new pavement segments, new gates within the existing fence for access, relocating the site signage and the related work.
- .2 Construct Work under single stipulated price contract.

- .3 Upon award provide a cost breakdown by category and sub category of work or sub contractor to facilitate progress claim review.
- .4 Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions, manufacturer's warranty and O&M manual requirements.
- .5 Project is to be completed by date indicated in bid documents.
- .6 Maintain at job site, one copy each document as follows:
 - .1 Plans and Specifications
 - .2 Shop drawings
 - .3 MSDS
 - .4 Addenda. (as applicable)
 - .5 Other Modifications to Contract (as applicable)
 - .6 Field Test/Inspection Reports
 - .7 Copy of Approved Work Schedule
 - .8 Health and Safety Plan and Other Safety Related Documents
 - .9 Other documents as specified

1.2 CODES

- .1 Perform work in accordance with National Building Code of Canada (NBC), National Fire Code, Canada Labour Code Part II, Provincial Occupational H&R Act and all other codes of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirement shall apply.
- .2 Comply with the various Manitoba Transportation and Infrastructure (MTI) materials specifications stated in the specifications.
- .3 Meet or exceed requirement of:
 - .1 Contract Documents.
 - .2 Specified standards, codes and referenced documents.
- .4 Where standards and referenced documents have changed, the most recent version shall apply.

1.3 WORK RESTRICTIONS AND EXISTING SERVICES

- .1 The CFIA Emerson MB facility is an existing Animal Inspection Station (AIS). The AIS is expected to continue operations during the construction.
- .2 There is no permanent staff at the AIS. The facility is used for inspection by offload of livestock. This generally occurs approximately 15 times per month during the busy season (spring and fall). The animal loads consist in tandem axle tractors with 53' cattle liner trailers. The existing site access is to the west of the work on the neighboring property.
- .3 Execute work with least possible interference or disturbance to normal use of premises. The location of the work is not expected to be affected by the CFIA Operations, however, the driveway being used to dock the trucks to the AIS is immediately adjacent to the new work.
- .4 The site fencing is currently intact and acts as a secondary containment for the animals. The contractor is required to provide temporary fencing when there are

- openings in the fence due to the gate work. This also includes temporary fencing on the east side connection to the AIS.
- .5 The contractor is required to coordinate with CFIA to ensure that when inspections are scheduled, the driveway to the AIS is not encumbered and that the temporary fencing is in place when there are animal inspections in progress. The CFIA will provide at least 1 business day notice of date and time for a scheduled inspection.
 - .6 **Secure all materials on the site at the end of each work day.** Maintain site in good housekeeping order at all times.
 - .7 There is limited amount of power available on the site and there is no running water. The contractor is required to provide any power needed. The contractor must plan to provide an outside porta-potty and bottled water for drinking purposes for contractor's workers. Use of any other services on site must be requested and approved by the CFIA Project Manager prior to use. CFIA reserves the right to decline requests for additional on site services.
 - .8 The adjacent property to the west is owned by a private organization. The contractor must not at any time have any equipment or personnel on the neighboring property. The property line does not have any visible boundaries and as such the contractor is expected to ensure that property line location shown on the plans is respected at all times.
 - .9 Laydown space is available and will be provided.

1.4 SCHEDULE AND MEETINGS

- .1 Schedule a pre-commencement (start-up) meeting within 1 week from award. Agenda to be provided by CFIA.
- .2 Schedule and administer job meetings to be held every 2 weeks for the duration of the project.
- .3 Provide a project schedule for the pre-commencement meeting that includes the major milestones and categories of work. Provide an updated schedule in advance of the bi-weekly meeting. Typically the project schedule includes the following milestones, as applicable:
 - .1 Award
 - .2 Shop Drawings, Samples
 - .3 Permits
 - .4 Mobilization
 - .5 Excavation
 - .6 Backfill
 - .7 Foundation
 - .8 Slab on grade
 - .9 Structural Steel and structural slabs
 - .10 Siding and Roofing
 - .11 Interior Architecture (Walls, Floors and Ceiling)
 - .12 Plumbing
 - .13 Lighting

- .14 Electrical
- .15 Piping
- .16 Controls
- .17 Heating, Ventilating, and Air Conditioning
- .18 Millwork
- .19 Fire Systems
- .20 Testing and Commissioning
- .21 Supplied equipment long delivery items
- .22 Engineer supplied equipment required dates
- .4 CFIA will prepare meeting agendas and minutes and submit minutes for review within 4 business days from the occurrence of the meeting. The contractor will be required to identify any errors or omissions within 4 business days of receiving the minutes.
- .5 Ensure key personnel are in attendance for the start-up and bi-weekly meetings including job superintendent, sub contractor representatives and CFIA Project Manager as a minimum. Plan to hold these virtually using a videoconferencing platform such as MSTeams, Zoom or Cisco Web Ex.

1.5 SUBMITTAL PROCEDURES

- .1 Submit submittals promptly at the start of the project and in orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 **Refer to submittals list in Appendix A of the specifications.** The specification sections may stipulate additional submittals than those indicated on the list, however, the only submittals planned are the ones on the Appendix A list. CFIA reserves the right to require any additional submittals or mock-ups listed in the specifications at a later date.
- .3 Do not proceed with Work or order materials affected by submittal until review is complete.
- .4 Review submittals prior to submission to CFIA Project Manager. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Provide MSDS with all submittals, maintain binder with copies of all MSDS on site.
- .6 Keep one reviewed copy of each submittal on site.
- .7 Refer to contract documents for the following submittals such as Worker Compensation, Insurance and Bonding.

1.6 SHOP DRAWINGS

- .1 Submit for the CFIA Project Manager's review, one (1) electronic copy of each shop drawing in Portable Document Format (PDF) format.

- .2 The review is for the sole purpose of ascertaining conformance with the general design concept, and does not mean approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or the responsibility for meeting all requirements of the Contract Documents.
- .3 Provide product data for all new items shown on shop drawings.
- .4 Submit drawings stamped and signed by professional engineer registered or licensed in Canada, where requested in respective specification sections.
- .5 Do not commence manufacture or order materials before shop drawings are reviewed.

1.7 SAMPLES

- .1 There are no samples required for this project.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store any cementitious products clear of earth or concrete floors, and away from walls.
- .5 Store material in heated and ventilated storage unit where required by Manufacturer.
- .6 Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .7 Remove and replace damaged products at own expense and to satisfaction of CFIA Project Manager.
- .8 Touch-up damaged factory finished surfaces to CFIA Project Manager's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.9 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.10 QUALITY CONTROL

- .1 Immediately upon signing of the contract, review product delivery requirements and anticipate foreseeable supply delays. Notify the CFIA project manager of any delays that can impact contract completion date.
- .2 The contractor is expected to conduct on-going internal Quality Control by ensuring supervisors/superintendent inspect the work being done. The 3rd party inspections

in **01 00 10 section 1.20 Inspection and Declaration** are intended to be quality assurance and validation, not quality control.

- .3 Provide a timely notice for any work designated for special tests, inspection or approval by CFIA Project Manager in divisions 02 to 43. If the contractor covers or permits to cover any work designated for a special inspection before such is made, the contractor is expected to un-cover and make good to allow the inspection.
- .4 Submit samples and/or materials required for testing, as indicated in the drawings and specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .5 Provide labour and facilities to obtain and handle samples and materials on site.
- .6 Provide sufficient space to store and as needed cure test samples.

1.11 PROTECTION

- .1 Prevent movement, settlement, or damage to adjacent structures, utilities, finishes and parts of building to remain in place. Provide bracing and shoring as required.
- .2 Protect building systems, services and equipment. Refer to General Notes on drawings.

1.12 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected CFIA Project Manager as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good work damaged by such removals or replacements promptly.
- .3 If in opinion of CFIA Project Manager it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by CFIA Project Manager.

1.13 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested and specified.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by CFIA Project Manager and may be authorized as recoverable.
- .3 All test results are to be submitted to CFIA Project Manager.

1.14 MOCK-UPS

- .1 Mock Ups are not planned for this project.

1.15 ALTERATIONS OR REPAIRS TO EXISTING STRUCTURES

- .1 Execute work with least possible interference or disturbance to occupants, public and normal use of premises. Contractor shall maintain all emergency paths of egress at all times.
- .2 Arrange with CFIA Project Manager to facilitate execution of work

- .3 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .4 Provide temporary dust screens, barriers, warning signs and drop cloths in locations where renovation and alteration work is adjacent to areas used by public or tenant, for example along the existing driveway to the AIS along the new work.

1.16 FIRE SAFETY, CUTTING AND PATCHING

- .1 Site issued and controlled Hot Work permit is required for any welding or cutting on site that may cause sparks that could ignite combustibles. Contact CFIA Project Manager a minimum of 72 hours (3 business days) prior to the issuance of the Hot Works permit.
- .2 Plan to provide (2) 10 lb ABC fire extinguishers in proximity of any hot work. The CFIA facility devices can not be used for this purpose.
- .3 Plan to maintain fire watch at least 1 full hour after all hot work has stopped.
- .4 Cut and patch as required to make work fit.
- .5 Make cuts with clean, true, smooth edges.
- .6 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing adjacent work.

1.17 SUBSURFACE CONDITIONS

- .1 Contractor to have public and private utilities located, in area of work, prior to commencement of excavation and backfilling procedures.
- .2 Promptly notify CFIA Project Manager in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .3 After prompt investigation, should CFIA Project Manager determine that conditions do differ materially; instructions will be issued for changes orders, as described in the General Conditions of the contract section CG6.

1.18 HEALTH AND SAFETY REQUIREMENTS

- .1 REFERENCES
 - .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
 - .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .3 Material Safety Data Sheets (MSDS).
 - .4 Province of Manitoba, MANITOBA WORKPLACE SAFETY AND HEALTH ACT AND REGULATIONS, most recent edition.
- .2 HEALTH AND SAFETY SUBMITTALS
 - .1 Submit site-specific Health and Safety Plan: Within 3 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.

- .2 Results of safety and health risk or hazard analysis for site tasks and operation.
 - .2 Submit work site health and safety inspection reports conducted by the Contractor's authorized representative.
 - .3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
 - .4 Submit copies of incident and accident reports, to CFIA Project Manager within 24 hours of occurrence.
 - .5 CFIA Project Manager will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 2 days after receipt of plan. Revise plan as appropriate and resubmit plan to CFIA Project Manager.
 - .6 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
 - .7 Maintain an on-site binder with all the product MSDS. **Ensure this includes any solvents, adhesives and any other materials used during the construction that do not have a specific requirement as a submittal but do have an MSDS.**
- .3 GENERAL REQUIREMENTS
- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
 - .2 The site specific plan must refer to hazard described in section **01 00 10 section 1.22 Regulatory Requirements- Designated Substances.**
 - .3 CFIA Project Manager may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
 - .4 **Smoking on Federal Government of Canada premises is prohibited at all times.** The contractor may set up a designated smoking area that must be at least 9 meters from the building. Ensure such an area has a suitable disposal container for cigarette butts.
- .4 RESPONSIBILITY
- .1 The Contractor is responsible for health and safety of all persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
 - .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
 - .3 Report all H&S and Fire incidents and accidents promptly, include the CFIA Project Manager.

- .4 Comply and implement all aspects of the H&S requirements of materials MSDS including PPE, use, handling and storage of all products used on this project.
- .5 COMPLIANCE REQUIREMENTS
 - .1 Comply with regulations identified in Section **01 00 10 section 1.18.1**
- .6 UNFORSEEN HAZARDS
 - .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province Territory having jurisdiction and advise CFIA Project Manager verbally and in writing. Refer **01 00 10 sub section 1.21.2**
- .7 HEALTH AND SAFETY CO-ORDINATOR
 - .1 Employ and assign to Work, competent and authorized representative to act as a Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with this contract.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .8 POSTING OF DOCUMENTS
 - .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with CFIA Project Manager.
- .9 CORRECTION OF NON-COMPLIANCE
 - .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by CFIA Project Manager.
 - .2 Provide CFIA Project Manager with written report of action taken to correct non-compliance of health and safety issues identified.
 - .3 CFIA Project Manager may stop Work if non-compliance of health and safety regulations is not corrected.

1.19 ENVIRONMENT PROTECTION AND WASTE MANAGEMENT

- .1 Comply with the applicable Provincial and Federal Environmental Acts and regulations.

- .2 **Waste Management Goals** are to divert solid waste from landfill to the extent possible by separating recyclable components, reduce waste associated with new materials by favoring suppliers with recyclable packaging and implementing a separation program for both demolition and new construction. Provide records to support total waste generated by the project and total diverted from landfill.
- .3 Conduct "waste audit" to determine waste generated during demolition and new construction operations, prepare written "waste reduction work plan" and implement procedures to reduce, reuse and recycle materials to the extent possible.
- .4 Provide a "source separation program" to disassemble and collect in an orderly fashion the following "materials designated for alternative disposal" from the "general waste" stream of the demolition and new construction, including (as applicable):
 - .1 Portland cement concrete and asphalt
 - .2 Cardboard (corrugated) and paper.
 - .3 Steel and metals
 - .4 Brass and other metal alloys
 - .5 Wood
 - .6 Clean fill and compostable
- .5 Submit complete records of all removals from site for both "materials designated for alternative disposal" and "general waste" including:
 - .1 Time and date of removal
 - .2 Description of material and quantities.
 - .3 Proof that materials have been received at an Approved Waste Processing Site or certified Waste Disposal Site as required.
 - .4 Category of waste: landfill or recycle/alternative disposal
- .6 Implement **Environmental Assessment Mitigations** for this project as follows:
 - .1 Prevent Sediment RunOff
 - .1 Work that will disturb soils will be stopped during periods of high precipitation if it is likely to lead to sediment deposition into streams or waterways.
 - .2 Sub-excavated soils to be removed from the site and not stock piled. If stockpiled, cover stock piles with polyurethane to reduce erosion
 - .3 Exercise environmental monitoring to ensure local bylaws and Land Development Guidelines are followed
 - .4 If necessary, install and maintain appropriate erosion and sediment control measure such as silt fencing, temporary diversion berms, check dams, or straw bales
 - .2 Prevent Cement RunOff
 - .1 Concrete pours will be protected from rainfall with an impermeable cover, refer to note C12 drawing A0
 - .2

- .3 Recover wash water from the chute of the ready mix truck and washing of footwear and any tools used during the pour. Effluent from washing shall be contained and treated to a neutral before releasing effluent. Solids shall be disposed according to municipal regulations off site,
- .4 The ready mix concrete truck drum shall not be washed on site. The supplier is required to return to the plant and wash the ready mix truck drum according to supplier approved practices
- .3 Prevent Fuel/Diesel RunOff
 - .1 An accidental spill prevention and emergency response plan must be in place
 - .2 Materials needed for that plan will be available
 - .3 The emergency plan will be read and understood by the contractor and employees. They will be trained to respond at emergencies situation.
 - .4 Any spills occurring will be reported to the CFIA Project Manager and the designated authorities.
 - .5 Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Fuel levels in equipment and on site-fuel storage tanks must be inspected on a daily basis to ensure there is no leakage.
 - .6 Refueling of machinery must be done at least 30 m from any water body and on an impermeable surface.
- .4 Prevent Fugitive Dust Emissions
 - .1 Spray water, as appropriate, to minimize release of dust from exposed soils.
 - .2 Stabilize surfaces within same day of disturbance and begin restoration of disturbed surfaces as soon as practicable to minimize duration of soil exposure.
- .5 Control Vehicular Emisions
 - .1 Use well-maintained heavy equipment fit with muffler or exhaust systems, baffles and engine covers
 - .2 Comply with operating specifications for heavy equipment and machinery
 - .3 Minimize idling of gas-powered equipment and vehicles

1.20

INSPECTION AND DECLARATION

- .1 **Contractor's Inspection.** Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .2 **Third Party Inspections and Testing Requirement.** The contractor will plan for and provide independent 3rd party inspections and testing to be done by a qualified independent consultant to be chosen by the contractor. The contractor will be required to provide the resume of the inspection personnel and ensure that this

personnel is qualified and experienced in conducting inspections for the categories of work and ensure that the consultant is provided the relevant drawings, specifications or shop drawings.

.3 **Third Party Inspections and Testing Deliverables.** The 3rd party inspection and testing consultant(s) provided by the contractor are required to provide a comprehensive detailed report of what was inspected along with relevant pictures. Report must include as a minimum date, start-end time on site, ambient temp start-end test, description of what was inspected including estimated completion and conclusions as to compliance with applicable specifications/requirements. The report is expected to be a field report/memo with no further formality required. **A local CFIA representative will be assigned and MUST be present to witness and accompany the 3rd party test/inspection visitor. Schedule the test/inspection at least 3 business days notice at a mutually agreeable date-time.** The following inspection/testing visits will be required as a minimum:

- .1 **SP.3 Subgrade Inspection.** Before compaction with at least 50% of the total area exposed to grade, provide the inspection. See item 2 for compaction on subgrade. Refer to part 2 for inspection/testing requirements.
- .2 **SP.3 Subgrade Compaction.** Before installing the geotextile with at least 50% of the total area compacted, provide the inspection/compaction testing of the subgrade.
- .3 **SP.4 Non-Woven Geotextile.** Before installing the Granular sub-base with at least 50% of the total area of geotextile installed, provide inspection of the geotextile. Refer to 3.1 for placement requirements
- .4 **SP.6 Granular Sub Base.** Once the granular sub base materials are installed and compacted over at least 50% of the area, provide the inspection and compaction testing of the granular sub-base. Refer to Part 2 for requirements
- .5 **SP.5 Geogrid.** Before installing the granular base with at least 50% of the total area of geogrid installed, provide inspection of the geogrid. Refer to Part 3 for placement requirements
- .6 **SP.7 Granular Base.** Once the granular base materials are installed and compacted over at least 50% of the area, provide the inspection and compaction testing of the granular base. Refer to Part 2 for requirements
- .7 **SP8 and SP13 Concrete.** Provide field testing of fresh concrete and lab testing of field samples once for each type. Schedule the visit to ensure that the required reinforcing steel and embedded steel is 100% completed and provide the inspection of the reinforcing and embedded steel as well as, in the case of the piers, the inspection of the excavation before placement of concrete.
- .8 **SP.10 Asphalt.** Provide quality control testing and inspection according to section 3.7. Provide one inspection visit for the base course and a second inspection visit for the top course.

.4 Any needed re-inspections for corrections of non-complying items will be required and the responsibility of the Contractor.

- .5 Provide equipment (such as lifts, ladders, lighting, heavy equipment, etc) required to facilitate inspection by independent 3rd party inspection consultant.
- .6 **Completion.** Submit written notification that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Final Cleaning (**refer to 01 00 10, section 1.22 Cleaning**) has been completed
 - .4 Work is complete and ready for Final Inspection.
- .7 **Final Inspection.** When items noted in the above are completed, request final inspection of Work is made in writing to the CFIA Project Manager. Provide the following prior to Final Inspection:
 - .1 Notify CFIA Project Manager in writing of satisfactory completion of Contractor's and 3rd party Inspection and that corrections have been made.
 - .2 Request CFIA Project Manager's Inspection.
 - .3 If Work is deemed incomplete by CFIA Project Manager, complete outstanding items and request re-inspection.
- .8 **Declaration of Substantial Completion.** When CFIA Project Manager considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.
- .9 Commencement of Lien and Warranty Periods.** Date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work. **For any items differed to the spring of 2023, the warranty period shall commence after the final acceptance of those items.**
- .10 **Final Payment.** When CFIA Project Manager considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by CFIA Project Manager, complete outstanding items and request re-inspection.
- .11 **Payment of Holdback.** After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback.

1.21

REGULATORY REQUIREMENTS - DESIGNATED SUBSTANCES

- .1 DESIGNATED SUBSTANCES PRESENCE
 - .1 Does not apply to this contract.
- .2 HAZARDOUS MATERIALS DISCOVERY
 - .1 Hazardous materials discovery may include designated substances, soil contaminants, waste, artifacts or items within the excavated materials that are not native materials.

- .2 Should any suspect materials be discovered during the excavation process, the excavation work should stop and the contractor must immediately notify the Owner.
- .3 **HAZARDOUS MATERIAL MANAGEMENT**
 - .1 All hazardous materials that are not designated substances include all materials that are used in the construction process are addressed in **section 01 00 10 sub section 1.18** are managed using MSDS and WHMIS.
- .4 **DISPOSAL OF WASTES**
 - .1 Do not bury or burn rubbish and waste materials on site.
 - .2 Do not dispose of waste or hazardous/volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers or any sinks/drains if the site
 - .3 Follow disposal requirements for all waste materials stipulated in Regulations and Policies of the Provincial and Federal Government (refer to 1.19)

1.22

CLEANING

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris on an on-going basis, at least daily.
- .2 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .3 Dispose of waste materials and debris off site waste facility as approved by CFIA Project Manager.
- .4 Clean any interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .5 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .6 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .7 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .8 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .9 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .10 Remove stains, spots, marks and dirt from all surfaces affected by work including decorative work, electrical and mechanical fixtures, furniture fitments, walls.
- .11 Particular attention is required for exterior painting to not leave drips on mounting fixtures, walls or ground.
- .12 Vacuum clean and dust behind grilles, louvres and screens.
- .13 Thoroughly clean exterior space and remove all waste upon completion.

1.23 PERMITS, CERTIFICATES AND LICENSES

- .1 In accordance with Provincial Regulations, obtain and pay for any certificates, licenses and permits required by the Authorities Having Jurisdiction (AHJ) for the work of this project.
- .2 Provide appropriate notification of project to the municipal and provincial inspection authorities
- .3 Provide copy of applications and approval documents received from the relevant authorities.

1.24 MAINTENANCE MATERIALS

- .1 General
 - .1 Specific requirements for maintenance materials, specified in individual sections of Divisions 02 to 43 or drawings.
 - .2 Deliver maintenance materials, to CFIA Project Manager.
 - .3 Prepare list of maintenance materials, for inclusion in Operation and Maintenance manuals.
- .2 Maintenance Materials
 - .1 Deliver specified items packaged to prevent damage.

1.25 AS-BUILT DRAWINGS

- .1 CFIA Project Manager will provide 1 set of reproducible (pdf) drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur.
- .2 Transfer information to reproducible, revising reproducible to show work as actually installed.
- .3 Prior to Final inspection, finalize production of as-built drawings: these may be paper based marked up copies or an update of the digital writable versions. When using paper markups, the contractor will be required to provide a 1200x1200 scan of the mark-ups in pdf format. Hand made markups shall be clear and legible.
- .4 Submit to CFIA Project Manager for approval and make corrections as directed.
- .5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.

1.26 DEMONSTRATION AND TRAINING

- .1 Does not apply to this project

1.27 OPERATION MAINTENANCE MANUAL

- .1 Does not apply to this project

1.28 PRE-COMMISSIONING, START-UP AND COMMISSIONING (Cx)

- .1 Does not apply to this project

1.29 GUARANTIES AND WARRANTIES

- .1 Before completion of work collect all manufacturer's guarantees and warranties and include in O&M manual submission as applicable.

- .2 Where conflicting guarantee/warranty period exists, the longer period will supersede the shorter.
- .3 Provide a minimum of 12 months parts, labour, materials and equipment warranty for the entire package of work.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 Clearing and grubbing for the new pavement shall consist of the removal and disposal of all trees, stumps, roots, logs, shrubs, grass, weeds, fallen timber and other surface litter to allow the construction of the new pavement, pavement shoulder and gate pads and shall include all labour, materials and equipment to complete construction.

PART 2 EXECUTION

2.1 CONSTRUCTION METHODS

- .1 For the new pavement area, within the limits noted on the drawings or as directed and staked out by the Owner Engineer, all brush and trees, except those designated by the Owner Engineer to be saved, shall be cut level with the ground, and all surface debris, excluding merchantable timber but including fallen timber, slash limbs, brush, grass and weeds, shall be disposed of as hereinafter set forth.
- .2 Within areas where excavation will be made all stumps and roots shall be grubbed out.
- .3 Trees shall be felled towards the centre of the area to be cleared. Any brush or trees falling outside of the area to be cleared shall be moved back to the grubbing area and disposed of. The Contractor shall take all precautions against damage to other trees or property in his felling of trees, and he shall be liable for any damages occurring in the performance of this work.
- .4 Dispose of all materials at suitable location in compliance with the municipal and or provincial regulations.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 Waste excavation shall consist of excavating and disposing of all soils required to complete pavement subbase construction within the limits of the project site and shall include all labour, materials and equipment to complete construction.

PART 2 EXECUTION

2.1 CONSTRUCTION METHODS

- .1 Excavate site material to the depth that accommodates the different pavement structure as shown on the Drawings or as directed by the Owner Engineer.
- .2 Ensure that materials at the subgrade level to be retained are not disturbed. Take precautions to not undermine the existing concrete pavement at the joint between the new pavement and the existing concrete pavement.
- .3 Dispose excavated materials at a suitable location off site in compliance with Municipal or Provincial regulations.
- .4 Notify the Owner Engineer if any contaminants, confirmed or suspect, or if artifacts are found. Should this occur, work must stop pending direction from the Owner Engineer.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 Sub-grade compaction shall consist of preparing the sub-grade insitu material for placement of the new access lane structure materials.

PART 2 EXECUTION

2.1 CONSTRUCTION METHODS

- .1 Provide a 3rd party independent inspection of the subgrade before compaction. The excavation must be approved before compaction.
- .2 Compact the sub-grade after the bottom of the excavation has been inspected and approved.
- .3 Compact areas of suitable sub-grade material, the full width of the excavation, to a minimum of 95% Standard Proctor Maximum Dry Density.
- .4 Due to the nature of the materials at the sub-grade level, it is important to ensure that compaction does not lead to a buildup of interstitial pressure in the material. If any such resulting sponginess is observed, the contractor must halt compaction and notify the Owner Engineer. If the sub-grade material cannot be compacted to the required density, the Contractor shall proceed as directed by the Owner Engineer.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 These specifications govern all operations necessary for, and pertaining to, the installation of non-woven geotextile fabrics for separation under the new access pavement and shoulder structure sub-base material and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 GEOTEXTILE FABRIC

- .1 Separation/filtration non-woven geotextile fabric material must comply to this specification.

2.2 MATERIAL IDENTIFICATION, STORAGE AND HANDLING

- .1 Geotextile fabric is to be labelled in accordance with ASTM D4873/D4873M, and must clearly show the manufacturer name and supplier, product style number and roll number and and date of manufacture.
- .2 Geotextile rolls shall be wrapped with a material that will protect the geosynthetic, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants.
- .3 During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from site construction damage, precipitation, contamination of dirt or dust, extended ultraviolet radiation, and any other environmental condition that may damage the physical property values of the geosynthetic.

2.3 CERTIFICATION

- .1 The Contractor shall provide Manufacturer's Mill Certificate and MARV Roll Data to the Engineer prior to installation. The Certification shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.
- .2 The Contractor shall provide a letter to the Owner Engineer stating the product name, manufacturer, style number, chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile.

2.4 SEPARATION/FILTATION GEOTEXTILE FABRIC

- .1 Separation/Filtration geotextile fabric shall meet or exceed the following requirements in the table below.

Separation/Filtration Geotextile Fabric Requirments Table

Physical Property	Statistical Reporting	Standard	Test Method
Grab Tensile Strength, minimum	MARV	900 N	ASTM D4632
Elongation, minimum	MARV	50%	ASTM D4632
CBR Puncture, minimum	MARV	2200 N	ASTM D 6241
Trapezoid Tear, minimum	MARV	350 N	ASTM D4533
Apparent Opening Size, maximum	TV	0.18 mm	ASTM D4751
Permittivity, minimum	MV	1.4 sec-1	ASTM D4491
Flow Rate, minimum	MV	3870 l/min/m2	ASTM D4491
U.V. Resistance, minimum	MV	70% after 500 hrs	ASTM D4355

- .2 All physical property requirements shall be provided using the appropriate statistical reporting method in the Table and as defined by ASTM D4759.

PART 3 EXECUTION

3.1 GEOTEXTILE FABRIC PLACEMENT

- .1 Surface Preparation
- .1 Excavations shall be grading to provide a smooth surface for geotextile placement and are to be clear of any debris. The subgrade in situ material shall be compacted to 95% Standard Proctor Maximum Dry Density..
- .2 Geotextile Placement
- .1 The prepared sub-grade surface shall be inspected by 3rd party independent sub-contractor.
- .2 The geotextile shall be rolled onto the excavation footprint free of wrinkles, rolls, or bulges. All seams shall be sewn by an approved method or overlapped a minimum of 500 mm.
- .3 The geotextile shall not be dragged across the surface. The required width of geotextile and the minimum overlap shall be maintained at all times.
- .4 Immediatly prior to covering, the geotextile shall be inspected by the 3rd party independent sub-contractor.
- .5 Construction vehicles are not permitted directly on the geotextile. Turning of vehicles shall not be permitted on the first lift above the geotextile.

- .6 Geotextile shall not remain uncovered for longer than 7 days after installation.
- .7 Install geotextile fabric in accordance with this specification and procedures recommended by the manufacturer.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 These specifications govern all operations necessary for, and pertaining to, the installation of geogrid for use as reinforcement of base layers for the new access pavement and shoulder structures and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 GEOGRID

- .1 Class A Geogrid material must comply to this specification.

2.2 MATERIAL IDENTIFICATION, STORAGE AND HANDLING

- .1 Geogrid is to be labelled in accordance with ASTM D4873/D4873M, and must clearly show the manufacturer name, product style number and roll number.
- .2 Geogrid rolls shall be elevated off the ground and adequately covered to protect them from site construction damage, precipitation, any contamination of dirt, dust any other deleterious materials.
- .3 Geogrid rolls shall be protected from extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, excess temperatures, and any other environmental conditions that may damage the physical properties of the geogrid.
- .4 Store and handle the geogrid in accordance with the manufacturer's recommendations.

2.3 CERTIFICATION

- .1 The Contractor shall provide Manufacturer's Mill Certificate and MARV Roll Data to the Owner Engineer prior to installation. The Certification shall state that the geogrid meets MARV requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.
- .2 The Contractor shall provide a letter to the Owner Engineer stating the product name, manufacturer, style number, and other pertinent information to fully describe the geogrid.

2.4 GEOGRID PROPERTIES FOR REINFORCEMENT OF BASE COURSE

- .1 Geogrid will be extruded polypropylene, bi-axial, single layer with opening configuration either square or rectangular in shape.

- .2 The axis with the least strength will be taken as the ultimate strength of the geogrid for any given property.
- .3 Class A geogrids shall meet the requirements in the table below.

Class A Geogrid Property Requirements Table

Physical Property	Machine Direction	Cross-Machine Direction	Test Method
Ultimate Tensile Strength	30 kN/m	30 kN/m	ASTM D 6637
Tensile Strength @ 2% Strain	10.5 kN/m	10.5 kN/m	ASTM D 6637
Tensile Strength @ 5% Strain	21.0 kN/m	21.0 kN/m	ASTM D 6637
Junction Strength	24.0 kN/m		ASTM D 7737
Junction Efficiency	90%		ASTM D 7737
Aperture Stability at applied moment of 20kg-cm	7.5 m-N/degree		ASTM D 7864
Aperture Sizes	12.5 – 60 mm		Direct Measure
Flexural Rigidity	1,500,000		ASTM D 7748
U.V. Resistance	70% after 500 hrs		ASTM D4355

- .4 All physical property requirements are Minimum Average Roll Values (MARV) determined in accordance with ASTM 4759. Values not labelled as MARV will not be accepted.
- .5 Aperture Sizes shall be as follows:
 - .1 Between 12.5 mm and 25 mm for geogrids immediately below or within the base course layer.
 - .2 Between 25 mm and 38 mm for geogrids immediately below or within 50 mm sub-base layers.
 - .3 Between 38 mm and 60 mm for geogrids immediately below or within 100 mm sub-base layers.
- .6 If the geogrid has a rectangular aperture size, the smaller dimension shall be used to choose the suitable geogrid.

PART 3 EXECUTION

3.1 GEOTEXTILE FABRIC PLACEMENT

- .1 Surface Preparation

-
- .1 Placed granular sub-base material shall be approved by 3rd party independent sub-contractor prior to geogrid placement. The sub-base shall be graded and compacted to provide a smooth surface for the geogrid.
 - .2 Geogrid Placement
 - .1 The geogrid shall be laid smooth without wrinkles or folds on the prepared granular sub-base in the direction of construction traffic. The geogrid shall be free from any tension or stress..
 - .2 Adjacent geogrid rolls should be overlapped along their sides and ends providing 450mm overlap.
 - .3 Cut geogrid to conform to curves.
 - .4 Install geogrid to the limits of the new access granular sub-base material excluding the area for the swing gate pad limits.
 - .5 Place piles of base course material as required to hold geogrid in place. Pins and washers are not permitted.
 - .6 Immediately prior to covering, the geogrid shall be inspected by the 3rd party independent sub-contractor for damage during installation.
 - .7 Cover any damaged areas identified with a geogrid patch that extends an amount equal to the required overlap beyond the damaged area.
 - .8 Remove and replace geogrid that is improperly installed or damaged as directed by the 3rd party independent sub-contractor.
 - .9 Construction vehicles are not permitted directly on the geogrid. Turning of vehicles shall not be permitted on the first lift above the geogrid.
 - .10 Avoid sudden stops or sharp turns by construction equipment during placement of sub-base materials.
 - .11 Geogrid shall not remain uncovered for longer than 7 days after installation.
 - .12 Install geogrid in accordance with this specification and the manufacturer's recommendations.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the supply and placement of granular sub-base material for the new access roadway and shoulders and shall include all labour, materials and equipment to complete construction.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
 - .1 Quality control test methods - Aggregate for Granular Course as per Manitoba Infrastructure Standard Construction Specification 110 Specification for Quality Control.

1.3 TEST REPORTS

- .1 Submit copies of test results to the Owner Engineer at least (7) seven days prior to beginning operations.
- .2 Do not begin construction until materials are accepted by the Owner Engineer. Acceptance of material will not constitute general acceptance of stockpile, deposit, or source of supply.

PART 2 PRODUCTS

2.1 GRANULAR SUB-BASE MATERIAL

- .1 Granular sub-base material is to be constructed with aggregate materials consisting of sound and durable particles of crushed rock, gravel, stone, sand and fines free from injurious quantities of sod, roots, clay lumps and friable particles, organics or other Deleterious Material meeting the following requirements:
 - .1 Granular subbase to be CR-M50 granular material described below.

	CR-M50	
Passing Standard Sieves (Note 1)	Lower Limit	Upper Limit
50 mm sieve	100	100
37.5 mm sieve	65	100
19 mm sieve	40	75
9.5 mm sieve	25	55
4.75 mm sieve	15	40
2 mm sieve	10	30
75 µm sieve	0	8

	CR-M50
Fractured Faces, Min. %	100
Plasticity Index, Max. %	Non Plastic
Liquid Limit, Max. %	25
L.A. Abrasion Loss, Max. %	40 (ASTM C535)
Total Lightweight Particles Content, Max. %	12
Clay Lumps and Friable Particles Content, Max. %	Not Applicable

Note 1: A maximum of three percent (3%) oversize particles will be allowed provided that the maximum dimension of the oversize particles does not exceed 3mm from the specified maximum size.

.2 Quality Control

- .1 Provide 3rd party independent sub-contractor for inspections and testing to support conformance with the Contract .
- .2 Standard equipment, certified and qualified personnel shall be used by the 3rd party independent sub-contractor to perform the Quality Control inspection, sampling and testing required by the Contract.
- .3 The Contractor shall ensure that materials and the constructed Work meet Contract requirements and perform test and inspections in accordance with the procedures defined in the Contract.
- .4 The Contractor shall maintain a document management system to store and record all documents generated for the contract.
- .5 The Contractor shall provide the names of personnel that is Canadian Council of Independent Laboratories (CCIL) certified responsible for quality control and for undertaking the sampling and testing. Proof of CCIL certified laboratory is to be provided to the Owner Engineer prior to testing to be completed.

.3 Testing Frequencies and Test Methods

- .1 Testing frequencies are listed below.

Test	Frequency	Test Method
Gradation	1 per 500 tonnes	ASTM C136 ASTM C117
Fractured Faces	1 per 500 tonnes	ASTM D5821
Plasticity Index	1 per 500 tonnes	ASTM D4318

Test	Frequency	Test Method
Lightweight Particles	1 per 500 tonnes	ASTM C123
Clay Lumps and Friable Particles	1 per 500 tonnes	ASTM C142
Los Angeles Abrasion	3 per Product	ASTM C131 ASTM C535
Proctor	1 per 20,000 tonnes, minimum two per product	ASTM D698 ASTM D1557
Densities	2 per lift	MEB P050 MEB P051 MEB P052

PART 3 EXECUTION

3.1 SUB-BASE PLACEMENT

- .1 Placement of non-woven geotextile fabric must be approved by the 3rd party independent sub-contractor prior to any placement of sub-base material.
- .2 Sub-base material shall be placed, spread, and compacted on the geotextile. The material shall be end-dumped onto the ground in front of the leading edge of the geotextile and leveled using a track type dozer to a uniform lift thickness of no less than 300 mm or as directed by the Owner Engineer. Compact by mechanical means to 98% of the Standard Proctor Maximum Dry Density in accordance with ASTM D698.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the supply and placement of granular base course material for the new access roadway and shoulders and shall include all labour, materials and equipment to complete construction.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
 - .1 Quality control test methods - Aggregate for Granular Course as per Manitoba Infrastructure Standard Construction Specification 110 Specification for Quality Control.

1.3 TEST REPORTS

- .1 Submit copies of test results to the Owner Engineer at least (7) seven days prior to beginning operations.
- .2 Do not begin construction until materials are accepted by the Owner Engineer. Acceptance of material will not constitute general acceptance of stockpile, deposit, or source of supply.

PART 2 PRODUCTS

2.1 GRANULAR SUB-BASE MATERIAL

- .1 Granular base course material is to be constructed with aggregate materials consisting of sound and durable particles of crushed rock, gravel, stone, sand and fines free from injurious quantities of sod, roots, clay lumps and friable particles, organics or other Deleterious Material meeting the following requirements:
 - .1 Granular base course to be GBC-1 granular material described below.

Passing Standard Sieves (Note 1)	GBC-1	
	Lower Limit	Upper Limit
25.0 mm sieve	100	100
19.0 mm sieve	80	95
16.0 mm sieve	70	90
12.5 mm sieve	55	83
9.5 mm sieve	47	75
4.75 mm sieve	33	60

	GBC-1	
2 mm sieve	20	45
850 µm sieve	11	30
425 µm sieve	7	21
180 µm sieve	5	14
75 µm sieve	3 (note 2)	8(note 2)
Fractured Faces, Min. %	3 (note 2)	
Plasticity Index, Max. %	Non-Plastic	
Liquid Limit, Max. %	25	
L.A. Abrasion Loss, Max. %	35 (ASTM C131)	
Total Lightweight Particles Content, Max. %	7	
Clay Lumps and Friable Particles Content, Max. %	2.0	

Note 1: A maximum of three percent (3%) oversize particles will be allowed provided that the maximum dimension of the oversize particles does not exceed 3mm from the specified maximum size.

Note 2: If GBC Type I or Type II is used below concrete pavement, the fine content (material passing the 0.075mm sieve) shall be limited to 2 to 6% for such application and the materials passing #40 sieve shall be non-plastic.

.2 Quality Control

- .1 Provide 3rd party independent sub-contractor for inspections and testing to support conformance with the Contract.
- .2 Standard equipment, certified and qualified personnel shall be used by the 3rd party inspection and testing sub-contractor to perform the Quality Control inspection, sampling and testing required by the Contract.
- .3 The Contractor shall ensure that materials and the constructed Work meet Contract requirements and perform test and inspections in accordance with the procedures defined in the Contract.
- .4 The Contractor shall maintain a document management system to store and record all documents generated for the contract.
- .5 The Contractor shall provide the names of personnel that is Canadian Council of Independent Laboratories (CCIL) certified responsible for quality control and for undertaking the sampling and testing. Proof of CCIL certified laboratory is to be provided to the Owner Engineer prior to testing to be completed.

.3 Testing Frequencies and Test Methods

.1 Testing frequencies are listed below.

Test	Frequency	Test Method
Gradation	1 per 500 tonnes	ASTM C136 ASTM C117
Fractured Faces	1 per 500 tonnes	ASTM D5821
Plasticity Index	1 per 500 tonnes	ASTM D4318
Lightweight Particles	1 per 500 tonnes	ASTM C123
Clay Lumps and Friable Particles	1 per 500 tonnes	ASTM C142
Los Angeles Abrasion	3 per Product	ASTM C131 ASTM C535
Proctor	1 per 20,000 tonnes, minimum two per product	ASTM D698 ASTM D1557
Densities	2 per lift	MEB P050 MEB P051 MEB P052

PART 3 EXECUTION

3.1 GRANULAR BASE COURSE PLACEMENT

- .1 Granular base course material shall be placed, spread, and compacted on the geogrid. The material shall be end-dumped onto the ground in front of the leading edge of the geogrid and leveled using a track type dozer to a uniform lift thickness of no less than 200 mm or as directed by the Owner Engineer. Compact by mechanical means to 98% of the Standard Proctor Maximum Dry Density in accordance with ASTM D698.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the supply and placement of concrete slab works for the new site access road to transition from concrete to asphalt pavement and shall include all labour, materials and equipment to complete construction.

PART 2 CONCRETE MIX DESIGN

2.1 MIX PROPERTIES

- .1 The mix proportions will be based on the concrete meeting the following physical properties when tested in accordance with the requirements of (CAN/CSA A23.1-00 and CAN/CSA A23.2-00)
 - .1 Type of concrete mix – Normal
 - .2 Minimum cementitious material – 340 kg/m³
 - .3 Air content – 5-8%
 - .4 Min. 28-day strength – 32 MPa
 - .5 Maximum water/cement ratio – 0.45

2.2 MIX DESIGN BY CONTRACTOR

- .1 The mix design shall be submitted by the Contractor along with the mix properties, including strength, slump, and air content, as determined by independent qualified laboratory. Other pertinent data shall also be supplied including the mix identification, suppliers and types of cement admixtures used. The mix design and other pertinent data shall be provided to the Owner Engineer two weeks prior to concrete production.

PART 3 MATERIALS

3.1 CEMENT

- .1 Cement shall conform to the latest edition of CSA Standard A5.

3.2 ADMIXTURES

- .1 All additives or admixtures to concrete, except air entraining and water reducing agents, shall require prior approval by the Owner Engineer.
- .2 Air entraining agent shall conform to CSA A 23.1, Can 3-A 266.1 or ASTM C 260. Water Reducing Agent shall conform to CSA A 266.2 or ASTM C 494.

3.3 AGGREGATES

- .1 The Contractor shall supply aggregates in accordance with the Manitoba Transportation and Infrastructure (MTI) Specification 930 - Specifications for Aggregate for Portland Cement Concrete.
<https://www.gov.mb.ca/mit/contracts/pdf/manual/930i.pdf>.

3.4 REINFORCING STEEL

- .1 All reinforcing steel shall conform to the requirement of CSA Standard G30.12, Billet-Steel Bars for Concrete Reinforcement.
- .2 Bar Mat Reinforcement shall be Grade 300 bars with all bar intersections welded by an electric resistance spot welder. Welding shall be done in such a manner that the minimum requirements for tensile strength and yield point of the reinforcing steel shall be met when a specimen is tested across points of weld. Bar mats with defective spot welds or with spot welds that have been broken while in transit, or during handling or placing operations, shall be replaced or repaired to the satisfaction of the Owner Engineer prior to installation.
- .3 Deformed Tie Bars shall be Grade 300 deformed bars.
- .4 All reinforcing steel shall be straight and free from paint, oil, mill scale and injurious defects. Rust, surface seams, or surface irregularities will not be cause for rejection provided that the minimum dimensions, cross-sectional area and tensile properties of a hand wire-brushed specimen are not less than the requirements of CSA Standard G30.12M.

3.5 EPOXY-COATING

- .1 Tie bars shall be shop-coated with epoxy conforming to the requirements of ASTM Standard D3963. All bar ends shall be free of burs and distortions. All visible defects in the epoxy coating shall be field-coated with epoxy.

3.6 LIQUID MEMBRANE-FORMING CURING COMPOUND

- .1 Curing compound shall be Type 2, white-pigmented, and water based liquid membrane-forming curing compound conforming to the requirements of ASTM Standard C309.

3.7 BONDING AGENT

- .1 Epoxy resin shall be of a type listed in the City of Winnipeg approved products list [Approved Product Suppliers.pdf \(winnipeg.ca\)](#), conforming to the requirements of ASTM Standard C881. Type 1, Grade 3 epoxy shall be used for bonding tie bars into hardened concrete.
- .2 Bonding agents for bonding tie bars into holes in hardened concrete other than epoxy resin may be permitted provided that they develop a minimum pullout resistance of 50 kN within two days (48 hours) after installation.

3.8 HOT POURED JOINT SEALER

- .1 Hot poured joint sealer shall be low modulus Type IV Material Conforming to the requirements of ASTM Standard D 6690-01, Specification for Joint and Crack Sealants, Hot-poured, for Concrete and Asphalt Pavements.
- .2 Use only those materials listed as Approved Products for Surface Works available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at:
<http://www.winnipeg.ca/matmgt/info.stm>

3.9 BACKER ROD

- .1 Backer rod shall be Type 1, heat-resistant, round foam rod sized to approximately 25% larger than joint width so as to employ wall tension to allow backer rod installation at required depth in accordance with ASTM D5249.
- .2 Acceptable Products will be:
 - .1 HBR XL as manufactured by NOMACO Inc. supplied by Road Products Manitoba Inc.
 - .2 Hot Rod XL as manufactured by Industrial Thermo Polymers Limited supplied by Brock White Canada, Johnson Construction Materials and Wearing Williams Limited.
 - .3 or an approved equal.

PART 4 EXECUTION

4.1 FORMS

- .1 Forms for concrete shall be constructed of steel or wood and shall be sufficiently rigid to prevent lateral or vertical distortion from the loading environment to which the forms will be subjected. All forms shall be set to the design grades, lines and radii as shown on the Drawings. Forms shall be adequately anchored and firmly set over bearing areas to prevent displacement during concrete placement. All formwork in place shall be subject to inspection and correction of grade and alignment prior to, and at any time during concrete placement.
- .2 The surfaces of all formwork to come in contact with the concrete shall be thoroughly cleaned and treated with form coating before concrete placement. The form coating shall be applied by brush or spray so as to give the forms an even coating without excess or drip, and shall not be allowed to get on any reinforcing steel. The form coating shall not cause a softening or permanent staining of the concrete surface and, further, it shall not impede the proper functioning of the curing compound.
- .3 Forms shall not be removed for a period of at least twenty-four (24) hours after the concrete placement has been completed. Removal of forms shall be done in a manner in order to avoid damage to, or spalling of, the concrete.

4.2 PLACING REINFORCING STEEL

- .1 Place reinforcing steel for 150mm concrete transition slab construction. Steel is to be positioned 50mm-70mm from edge of slab and 75mm above the base course.
- .2 Reinforcing steel shall be held in place by positive and satisfactory means so that the correct position of the reinforcing steel will be maintained after the concrete has been placed, vibrated, and finished. If reinforcing steel is displaced during concrete placing operations, concrete placement shall cease and shall not resume until the displaced reinforcing steel has been reset to its true design position.
- .3 Field lap joints shall be securely wired or clipped. Splices shall have a length sufficient to develop the full strength in bond of the bar and shall be well distributed and only located in areas of low tensile stress. Reinforcing steel shall be securely fastened at all laps, intersections, and splices.
- .4 Once all reinforcing steel is in position, provide 3rd party independent inspection before any concrete is placed. Otherwise, the concrete will be rejected by the Owner Engineer and shall be removed by the Contractor at his own expense.

4.3 TYING INTO EXISTING PAVEMENT

- .1 For tying the transition slab to the existing concrete pavement (except at three (3) entrances), drill holes for installation of 15M – 600mm long epoxy coated tie-bars to be placed at 600mm o/c the length of concrete transition slab as shown on the drawings. Holes to be positioned 75mm down from the existing slab for placement of a 150mm slab. At the three (3) entrances, drill holes for the installation of 19.1mm smooth dowels spaced at 450mm o/c.
- .2 The Contractor shall drill holes into adjacent slabs for 15M – 600mm long tie bars. Drill bits shall have a diameter no larger than 2 mm larger than the nominal dowel or tie bar diameter. Holes shall be located so they align with the middle of the new transition slab. Drilling equipment shall be operated so as to ensure that no damage to the pavement results from such drilling operation. Holes for tie bars shall be blown clean with compressed air. Bonding agent shall be placed in the back of the drilled hole. The tie bar shall be worked back into the holes for complete coverage around the portion of the bar that extends into the hole, such that bonding agent is squeezed from the hole. A maximum tolerance of 5 mm in the vertical and horizontal direction over the length of the dowel is permitted. At the three (3) entrances, the 19.1mm– 600mm long dowels shall be epoxy coated, and installed with bonding agent. The remaining half of the dowel shall be lubricated with asphaltic cut-back prior to placing concrete.
- .3 Once all reinforcing steel is in position, it shall be inspected and approved by 3rd party independent inspection and testing sub-contractor before any concrete is placed. Otherwise, the concrete may be rejected by the Owner Engineer and shall be removed by the Contractor at his own expense.

4.4 CONTRACTION JOINTS

- .1 Construction joints are to be extended from the existing pavement joints. The Contractor shall extend the reinforced steel bar mat 380mm beyond the joint, and lubricate with asphaltic cut-back prior to placing concrete.
- .2 Sawn contraction joints shall be saw-cut in succession by a single cut, 3mm wide and 50mm deep as soon as the concrete is sufficiently hard so that it will not be ravelled or damaged by the blade. The time at which all such saw-cutting is to be undertaken shall be determined by the Contractor.
- .3 A second saw cut is required for sealing of the contraction joints, 10mm wide and 30mm deep.
- .4 Joints and the pavement surface shall be cleaned of all residue left by the sawing operation. Initial cleaning shall be done by water jet having sufficient volume and pressure to remove the residue. Alternative methods of cleaning joints must be approved by the Owner Engineer. The joint shall be blown out with an air jet having sufficient volume and pressure to remove the residue. Joints shall be allowed sufficient time to thoroughly dry before the application of the joint sealer.
- .5 Install backer rods immediately after cleaning and before sealant installation. Backer rods shall be inserted uniformly so the top is 12mm below the concrete surface to achieve the required shape factor. Backer rods shall be inserted using a double wheel steel roller and shall not be punctured or stretched during the installation process.
- .6 The joint shall then be filled with low modulus joint sealer 2mm below the concrete surface using an approved mechanical pressure joint filling system. Overfilling of joints shall not be permitted. Overfilled joints shall have excess material removed to the satisfaction of the Owner Engineer. The joint must be surface dry at the time of filling, and the ambient temperature must be at least 4°C and rising.

4.5 CONCRETE PLACEMENT

- .1 No concrete shall be placed until the Owner Engineer has examined and approved the layout of the forms, reinforcing steel, tie bars and joints and the condition and grade of the compacted base course.
- .2 The placing of concrete on a base course which is too wet or too dry, or which is frozen, will not be permitted. The prepared grade shall be sufficiently moist to prevent absorption of water from the freshly placed concrete, but must be free from mire or water pondage. The temperature of the fresh concrete shall not be less than 10.0°C nor greater than 30.0°C, as measured at time of placing.
- .3 Concrete shall be deposited as nearly as practicable to its final position in a rapid and continuous operation in such a manner as to require as little rehandling as possible and to avoid segregation and separation of the materials. The sequence of concrete placement shall be arranged so that no

concrete, which has partially hardened, will be subjected to injurious vibration or shock.

- .4 Concrete shall be placed while fresh and before it has taken its initial set. Retempering of partially hardened concrete with additional water will not be permitted.
- .5 Vibration shall be applied at the point of deposit and in areas of freshly deposited concrete. Vibrators shall be inserted vertically into and withdrawn vertically out of the concrete slowly. Vibrations shall be of sufficient duration and intensity to thoroughly consolidate the concrete, but shall not be continued so as to cause segregation. Vibrators shall not be used for flowing the concrete or spreading it into place.
- .6 Concrete shall be worked thoroughly around any reinforcement, dowels, tie bars and around embedded fixtures and into the angles and corners of the forms. During placement, concrete shall be sufficiently vibrated with suitable equipment to ensure a secure bond with the reinforcement, dowels, and tie bars, to eliminate entrapped air voids, and to ensure a homogeneous structure and adequate consolidation. Particular care shall be given to placing and vibrating the concrete along the faces of the forms to ensure a dense, smooth surface devoid of imperfections.

4.6 ADDITION OF WATER AND/OR AIR ENTRAINMENT ADMIXTURE

- .1 After initial mixing no water and/or air entraining admixture may be added except if, at the start of discharge the measured slump of the concrete or the measured air content of the concrete is less than that specified and no more than 60 minutes have elapsed from the time of batching to the start of discharge. Water added shall not exceed 12 litres per cubic metre as measured by an approved measuring device.
- .2 Air entraining admixture shall be added as required to meet specified allowable air content ranges. The mixer drum shall be turned a minimum of 30 revolutions at mixing speed and the slump and air content shall be retested.

4.7 CONCRETE FINISHING

- .1 Finishing shall be regulated in order that quality of the surface is not impaired by overworking or by bringing excessive fines and water to the surface. The use of steel trowels is not permitted.
- .2 Prior to final finishing, the surface grade of concrete slabs shall be checked to an accuracy of plus or minus 5 mm, with a rounded shape 3.0-metre-long metal straight edge, unless otherwise specified in the Specifications for the Work. The straight edge shall be drawn across the pavement in a scraping motion to identify deviations for immediate correction. The straight edge shall be advanced one-half of its length for successive checks.
- .3 When drying conditions are greater than or equal to 0.75 kg/m²/hr. as estimated by use of Figure D1, Appendix D, Guidelines for Curing and Protection, of CSA A23.1, the plastic concrete surface shall be protected

from drying by application of an evaporation retardant according to clause 5.4.10. The evaporation retardant shall be applied immediately after checking the surface with the 3.0 m long metal straight edge and shall be reapplied between finishing operations. Following completion of floating operations, but prior to initial set of the concrete, the edges of all formed concrete slabs shall be carefully finished with an appropriate edging tool.

- .4 Upon completion of finishing operations, and when excessive moisture has evaporated, the plastic surface of the entire pavement shall be given a textured finish by means of broom finishing with a steel or fibre broom of a type approved by the Owner Engineer at right angles to the direction of traffic. Surface depressions introduced by the broom strands in the brooming operations shall not be more than 3 mm deep. Broom finishing will similarly be required for surfaces of private approaches, gutters, bull-nose slabs, boulevard and median slabs, and other related slabs. Broom finishing will not be required when the concrete does not form the finished surface.

4.8 CONCRETE CURING

- .1 Immediately following concrete finishing and after excess moisture due to bleeding has evaporated. The surface of the concrete shall be completely treated with a white-pigmented water based liquid membrane-forming curing compound, in accordance with the manufacturer's recommendations. The minimum rate of application shall not be less than that recommended by the manufacturer. As soon as the side forms are stripped, the edges of all concrete slabs shall be completely sprayed white. In the case of slip form paving, the edges shall be completely sprayed white at the same time as the pavement surface.
- .2 After application, the white-pigmented liquid membrane-forming curing compound shall be protected as per the manufacturer's recommendations from rain or snow.
- .3 Curing compound shall not be used when the pavement is otherwise protected from cold weather by polyethylene film for a period of not less than five days.

4.9 WEATHER CONDITIONS

- .1 The Contractor shall be responsible for taking all necessary measures to protect freshly laid concrete from adverse weather conditions, including hot weather, wind, rain, sleet, snow and cold weather, to the satisfaction of the Engineer.
- .2 Concrete shall be adequately protected from freezing for a minimum of five (5) days after completion of placing operations, or longer as required to ensure that the pavement opening requirements are met. A minimum requirement for protection shall be provided as follows when the air temperature as forecast by Environment Canada is:
 - .1 0 oC to -3 oC The concrete shall be covered with polyethylene film.
 - .2 -3 oC to -5 oC Insulated tarp(s) or two sheets of polyethylene film covering, separated by 300 mm of dry straw.

- .3 Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense.
- .4 When air temperature is at or will be above 27oC during the basic curing period, curing shall be accomplished in accordance with the requirements of CSA A23.1.

4.10 OPENING TO TRAFFIC

- .1 In no case shall traffic or construction equipment be allowed on the pavement until the concrete has reached a minimum compressive strength of 20 MPa, as determined by additional field cured cylinders

4.11 QUALITY CONTROL

- .1 Slump tests of the fresh concrete on site shall be provided by the Contactor of the fresh concrete at delivery in accordance with CSA A23.2-5C, Slump of Concrete. If the measured slump falls outside the limits of 70 ± 20 mm, a second test shall be made. In the event of a second failure, the Owner Engineer reserves the right to refuse the use of the batch of concrete represented.
- .2 Air content tests of the fresh concrete on site shall be provided by the Contractor in accordance with CSA A23.2, Air Content of Plastic Concrete by the Pressure Method. If the measured air content falls outside the specified limits of 5-8%, a second test shall be made at any time within the specified discharge time limit for the mix. In the event of a second failure, the Owner Engineer reserves the right to reject the batch of concrete represented.
- .3 Samples completed by the Contactor of concrete for all slump, air, and strength tests shall be taken in accordance with CSA A23.2, Sampling Plastic Concrete.
- .4 Test specimens shall be made and cured in accordance with CSA A23.2, Making and Curing Concrete Compression and Flexure Test Specimens. Compressive strength tests of concrete cylinders shall be conducted in accordance with CSA A23.2 Compressive Strength of Cylindrical Concrete Specimens. Compressive strength tests on specimens cured under the same conditions as the concrete works shall be made to check the strength of the concrete so as to determine if the pavement may be opened to traffic, and also to check the adequacy of curing and/or cold weather protection. Where compressive strengths do not meet the specifications, CFIA shall require actions be taken in accordance with CSA A23.1. Cost of additional testing including core removal, core testing and repair of core holes shall be paid for by the contractor.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 These specifications govern all operations necessary for and pertaining to the spraying of asphalt prime coat on the completed asphalt base course prior to applying the top course and shall include all labour, materials and equipment to complete construction.
- .2 The prime coat is not required on the base course when the top course is applied within 48 hours and the base course has remained clean and exempt of any dirt or soil.

PART 2 PRODUCTS

2.1 ASPHALT MATERIAL

- .1 Prime coat shall be Emulsified Asphalt SS-1.
- .2 Material must come from pre-approved suppliers and meet current Manitoba Specifications outlined in the Grading and Surfacing Approved Products List at [Approved Product List | Materials Engineering | Transportation and Infrastructure | Province of Manitoba \(gov.mb.ca\)](#)

PART 3 EQUIPMENT

3.1 INSPECTION OF ASPHALT SURFACE TREATMENT EQUIPMENT

- .1 Equipment required for this work shall be in satisfactory working condition and so maintained for the duration of the work
- .2 The Contractor shall ensure as a minimum, the following equipment is on site before beginning any Asphalt Surface Treatment operation:
 - .1 one self-propelled steel roller, weighing 10 - 15 t;
 - .2 two self-propelled straight wheel rubber-tired rollers, each weighing a minimum of 10 t;
 - .3 one self-propelled roll-type chip spreader with a minimum width of 4 m;
 - .4 one asphalt distributor meeting requirements outlined below;
 - .5 one power broom.
- .3 Equipment shall be on the site and available for inspection, testing and approval before the work commences.

3.2 ASPHALT PRESSURE DISTRIBUTOR

- .1 The distributor shall be equipped with a metric unit of measurement monitor to determine the application rate and must be capable of providing an accurate, even rate of application at various speeds.

- .2 The distributor used in applying asphalt products shall be constructed and equipped to maintain a sufficient and uniform pressure the full length of the spray bar so as to uniformly and completely cover the road surface at rates approved by the Owner Engineer.

It shall be equipped with:

- .1 A heating unit capable of maintaining the asphalt product in the tank at the specified temperature;
- .2 A thermometer so placed as to accurately measure the temperature of the asphalt product in the tank;
- .3 A spray bar that can be adjusted in increments of 0.6 metres and capable of being raised or lowered;
- .4 Spray nozzles, with quick-acting positive shutoff, of a design which will ensure a uniform fan-shaped spray;
- .5 A hose and nozzle attachment to be used for spraying, by hand, areas inaccessible to the distributor spray bar;
- .6 A gauge to indicate volume of product in the distributor.

PART 4 EXECUTION

4.1 PRIME COAT PLACEMENT

- .1 Application of Prime Coat shall consist of flushing the final accepted Granular Base Course surface with water and undiluted emulsified asphalt, followed by a train of pneumatic tired rollers. The application rate of undiluted prime shall be between 0.4 to 0.8L/m² as determined by the Owner Engineer.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This Specification covers all operations necessary for and pertaining to the construction of a hot mixed Bituminous Pavement and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 AGGREGATES FOR BITUMINOUS MIX

- .1 The aggregate for the Bituminous Mix shall meet the requirements of the Manitoba Transportation and Infrastructure (MTI) Material Specification for Aggregate – Bituminous Pavement (No.921) for mix for Marshall Mixes for traffic category A – less than 0.3 million ESALs,
<https://www.gov.mb.ca/mit/contracts/pdf/manual/921i.pdf>.

2.2 ASPHALT CEMENT (ASPHALT BINDER)

- .1 The Contractor shall supply and use PG 58-34 asphalt binder (or Penetration Grade 150-200) for the Bituminous Mix.
- .2 All asphaltic materials and additives shall be supplied from pre-approved Suppliers and meet current MTI specifications as outlined in the Grading and Surfacing Approved Products List at
<https://www.gov.mb.ca/mit/mateng/apl/bituminous/index.html>.

2.3 BITUMINOUS MIX DESIGN AND JOB MIX FORMULA

- .1 The Contractor shall prepare and submit a Bituminous Mix Design for approval by the Owner Engineer.
- .2 Mix design work shall be completed by a laboratory with Canadian Council of Independent Laboratories (CCIL) Type “A” certification.
- .3 The Bituminous Mix Design shall be prepared and submitted in accordance with MTI MEB P042 Hot Mixed Bituminous Mix Design.
https://www.gov.mb.ca/mit/mateng/meb/meb_p042.pdf
- .4 The mix design shall be developed from the following Marshall Mix Design requirements:

Mix Properties	Bituminous Pavement Class B (Bit B)
VOIDS IN MINERAL AGGREGATE (%), MINIMUM	14.0
VOIDS FILLED WITH ASPHALT (%)	67-75
AIR VOIDS (%)	4
EFFECTIVE ASPHALT (%), MINIMUM	4.5
MARSHALL FLOW, 0.25 MM	8-14
MARSHALL STABILITY (KN), MINIMUM	8

- .5 The marshall mix shall be designed using 75 blows per side of the test specimen with manual compaction hammer or a mechanical hammer equivalent to 75 blows per side of the test specimen with manual compaction.
- .6 One (1) week prior to the start of paving the Contractor shall provide the Contract Administrator with the results of three (3) separate sets of Marshall Tests to show that the requirements of the mix design statement have been met.
- .7 The approved mix design statement by the Owner Engineer will be the job mix formula.

PART 3 EXECUTION

3.1 PRIME COAT

- .1 A prime coat shall be applied on a base course IAW SP.9.
- .2 The Contractor shall maintain the primed base course free from surface breaks and potholes until the pavement has been constructed. Bituminous material shall not be deposited until the surface is prepared as per the Contract and in condition satisfactory to the Owner Engineer.

3.2 HAULING BITUMINOUS MATERIAL

- .1 Truck boxes shall be clean and free from foreign material. Truck boxes shall be lightly coated with a uniform application of a non-petroleum based asphalt release agent. Excess lubricants shall be removed before trucks are loaded with bituminous material. Release agents that adversely affect the quality or performance of the Bituminous Mix shall not be used.

3.3 BITUMINOUS LIFT THICKNESS

- .1 The minimum and maximum thickness of a compacted Lift of bituminous Bit B pavement shall be 40mm(min) and 60mm(max).

3.4 SPREADING BITUMINOUS MIX

- .1 The temperature of the Bituminous Mix at the paver while spreading shall be controlled to ensure compaction can be achieved. The temperature shall not be less than 120°C or the mix will be rejected.
- .2 The paver shall produce a uniformly textured surface free from tearing, tracking or other unacceptable surface irregularities.
- .3 Each Lift of bituminous material shall be spread and compacted to the width and grade as indicated on the Detailed Design Drawings.

3.5 WEATHER LIMITATIONS

- .1 Paving will only be permitted under the following weather conditions:
 - .1 Top Lift Paving
 - i. The atmospheric temperature shall be at least 6°C and rising.
 - ii. The atmospheric temperature shall be at least 10°C and rising when the wind speed is greater than 10km/h
 - iii. When using warm mix:
 - a. The atmospheric temperature shall be at least 0°C and rising.
 - b. The atmospheric temperature shall be at least 4°C and rising when the wind speed is greater than 10km/h.
 - .2 Other than Top Lift Paving
 - i. The atmospheric temperature shall be at least 0°C and rising.
 - ii. When using warm mix, the atmospheric temperature shall be at least -4°C and rising. Notwithstanding the above, when weather conditions are unfavourable, or are likely to become unfavourable, paving operations may be suspended by the Contract Administrator without liability or cost to the Contract Administrator.
- .2 Notwithstanding the above, when weather conditions are unfavourable, or are likely to become unfavourable, paving operations may be suspended by the Owner Engineer without liability or cost to the Owner Engineer.

3.6 COMPACTING BITUMINOUS PAVEMENT

- .1 All Bituminous Pavement shall be thoroughly compacted, and after final rolling, the finished surface of the mat shall be free from Segregation, waves, hairline cracks, pavement edge damage and any other defects.
- .2 Asphalt compaction equipment shall be clean, free from accumulations of asphalt mix and foreign material. Equipment shall be lightly coated with a uniform application of non-petroleum based asphalt release agent.
- .3 No construction traffic shall be allowed to travel on the finished surface until the surface has cooled to a temperature of 60°C or less.

- .4 The measured in-place density of the completed course shall be an average of ninety-seven (97%) percent of the 75 Blow Marshall Density of the paving mixture, with no individual test being less than ninety-five (95%) percent.

3.7 QUALITY CONTROL

- .1 The Contractor shall meet the requirements of the Specification for Quality Control (No.110). <https://www.gov.mb.ca/mit/contracts/pdf/manual/110i.pdf>
- .2 If the Contractor wishes to take cores for Quality Control testing, the number of cores shall be limited to each day of paving.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the supply and installation of chain link fence gates and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 GENERAL

- .1 All chain link fence materials shall conform to this Specification and the Canadian General Standards Board (CGSB) Specifications CAN/CGSB-138.1, CAN/CGSB-138.2 and CAN/CGSB-138.4. Where any contradictions occur, this Specification shall take precedence over CGSB Specifications.

2.2 GATE POSTS

- .1 Gate posts shall be standard seamless, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 11.28 kg per lineal metre. Posts shall be supplied with weatherproof caps. Tubing, conduit or open seam material will not be accepted.
- .2 Gate posts shall be 3.05m in length, 114.3 mm outside diameter.
- .3 Concrete piles shall be constructed as per SP.13 – Cast-In-Place Concrete Piles and Posts.

2.3 TOP AND BOTTOM RAILS

- .1 Top rails, or bottom rails where specified, shall be standard, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 3.38 kg per lineal metre. Top rails lengths shall be as outlined on the drawing details and have an outside diameter of not less than 43 mm.

2.4 TOP AND BOTTOM RAIL SLEEVE COUPLINGS

- .1 Top and bottom rail sleeve couplings shall be schedule 40, hot dip galvanized steel pipe, 171 mm long and 45 mm inside diameter to accommodate a 43 mm outside diameter top rail and manufactured specifically as a top/bottom rail sleeve coupling for chain link fence.

2.5 FABRIC

- .1 Fabric shall be No. 9 gauge steel wire woven into a uniform 50 mm (2") diamond pattern mesh or as specified. Size of mesh shall be determined by measuring the minimum clear distance between the wires forming the parallel sides of the mesh. Permissible variation in size of mesh shall be 3 mm (1/8").

Diameter of wire shall be no less than 3.68 mm (0.145"). The top and bottom selvage shall be knuckled.

- .2 Fabric shall be zinc coated before weaving by the hot dip process to an average mass per unit area of not less than 490 g/m².
- .3 Mesh fabric shall not be excessively rough, or have blisters, sal ammoniac spots, bruises or flaking.
- .4 Chain link fabric shall have a minimum tensile strength of 415 MPa.

2.6 BOTTOM TENSION WIRE

- .1 Bottom tension wire shall be No. 6 gauge single strand galvanized steel wire.

2.7 TURNBUCKLES

- .1 Where turnbuckles are specified, they shall be drop forged steel and be hot dip galvanized. The average overall length shall be approximately 300 mm, with ends in the closed position. Bolt diameter shall be 10 mm and shall be capable of taking up a minimum of 150 mm slack.

2.8 BRACES

- .1 Braces shall be schedule 40 hot dip galvanized steel pipe, not less than 43 mm outside diameter and weigh 3.38 kg per lineal metre.

2.9 FITTING AND ACCESSORIES

- .1 Tension bars shall be 5 x 19 mm galvanized flat steel and not less than 50 mm shorter than the height of the fabric with which they are to be used.
- .2 Tension bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts.
- .3 Brace bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts to fasten top rail receptacles to terminal posts.
- .4 Cut ends of tension bars shall be ground smooth to remove all sharp edges and burrs.
- .5 Fabric clips shall be No. 9 gauge aluminum alloy wire.
- .6 Weatherproof post tops/caps, receptacles, and fittings shall be of adequate strength and may be of aluminum alloy, malleable steel or pressed steel. All ferrous metals shall be hot dip galvanized.
- .7 Gate wheels shall be 254 mm diameter capable of supporting the approximate gate weight of 159kgs on 2 wheels.
- .8 Cane bolt with 42 mm diameter schedule 40 driven cane bolt receiver.

- .9 Gate latch c/w padlock.
- .10 Steel hook permanently connected on the gate end post, 1.2m above the gate bottom, to receive gate secure chain in the gates fully open position.

2.10 GATE SECURE POST

- .1 Posts shall be 2.44 m long, 100 mm x 100 mm square treated wood posts.
- .2 Provide a concrete pier at least 1.5 m deep and 250 mm diameter for each post.
- .3 Fence secure chain shall be 1.0m in length, 3/8" grade stainless steel or hot dip galvanized.
- .4 Lag bolts to secure chains to wood posts are to be 3/8" x 3" hot dip galvanized (HDG) c/w (HDG) washer.

PART 3 EXECUTION

3.1 EXISTING FENCE REMOVAL FOR GATE INSTALLATION

- .1 Once the trees/shrubs have been removed in the areas designated on the drawings proceed with removal the existing fence to the extent necessary for construction of the new fence gate.
- .2 Remove and dispose of existing fence fabric and posts the length of fence designated for the new gates.
- .3 Cut existing fabric at the location required to re-connect to the gate posts. Care is to be taken not to damage the fabric. Vertical cut edges shall be knuckled. Damage to the existing fabric during removal operations will be replaced at the Contractor's cost. Maximum distance between existing line post retained to new gate post is 3.05 m.

3.2 CAST-IN-PLACE GATE PILE AND POST INSTALLATION

- .1 Cast-in-place concrete piles shall be constructed in accordance with SP.13 – Cast-In-Place Concrete Piles and Posts.
- .2 Posts shall be plumbed and set in the centre of the concrete piles to give correct alignment with the existing fence line.
- .3 Weatherproof post tops/caps shall be securely attached to eliminate removal by hand. Eye top caps shall allow for the insertion of a top rail in a horizontal position.

3.3 GATES

- .1 Gate frames shall be made from schedule 40 hot dip galvanized steel pipe; not less than 43 mm outside diameter, electrically welded at all joints with ample bracing to provide a rigid frame free from sag or twist.

- .2 Gate height shall be 140 mm above the finished road grade.
- .3 No. 9 gauge chain link fabric as specified in Clause 2.5 herein shall be attached to gate panels in accordance with Clause 3.4 herein. Top and bottom fabric selvage shall be knuckled.
- .4 Gates shall be supplied and installed complete with hot dip galvanized malleable iron hinges, latches, chain holdbacks, and a gate latch suitable for padlock, which is accessible from either side. Gates have three hinges per section.
- .5 Hinges shall permit the gate to swing back 180° degrees in line with the fence and shall be installed so as not to permit easy removal of the gate.
- .6 Gate frame ends shall include a steel hook to receive the secure post chain 1.2 m above the bottom of the gate.
- .7 The Contractor shall supply shop drawings of all gates to be supplied prior to manufacture for the Owner Engineer approval. Shop drawings to include all related hardware associated with the gates and posts.

3.4 FABRIC INSTALLATION

- .1 Fabric shall be stretched taut to the correct tension as specified by the manufacturer and to the Owner Engineer satisfaction. Fabric shall be installed on the outside of the fence unless requirement for installation on the inside of the fence is specified.
- .2 Clearance between bottom of fabric mesh and ground surface shall be no less than 40 mm or more than 50 mm unless otherwise indicated on the drawing or approved by the Owner Engineer.
- .3 Fabric clips shall be used to fasten the fabric to the top rail at 450 mm spacing and to line posts at 380 mm maximum spacing. Wires ties on the top rail and bottom rail or tension wire shall have a minimum of two twists around mesh.
- .4 Tension bars, bands and bolts shall be used to fasten the fabric to terminal gate posts. Maximum spacing for tension bands and bolts shall be 380 mm. Top of tension bars shall not protrude above the bottom of the top rail.
- .5 The bottom tension wire shall be stretched taut along the bottom of the fabric and securely attached to all terminal and line posts and attached to the bottom edge of the fabric at 450 mm maximum spacing using hog rings.

3.5 TURNBUCKLES

- .1 Where turnbuckles are specified for installation, they shall be used to stretch the bottom tension wire taut and be able to take up a minimum of 150 mm slack.

3.6 MID RAILS OR BRACE RAILS

- .1 Mid rails for the gate frames shall be installed mid-way up the gate frame in accordance with construction drawing details and/or to the satisfaction of the Owner Engineer.

3.7 ZINC COATING REPAIRS

- .1 All abraded and damaged galvanized surfaces shall be cleaned and painted. Damaged surface areas shall be thoroughly grinded or wire brushed and all loose and cracked zinc coating removed, after which the cleaned area shall be painted with two coats of a zinc rich primer with at least 95% zinc content by weight such as Sherwin Williams Zinc Clad or equivalent.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the removal and re-installation of the existing CFIA sign and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 EXISTING CFIA SIGN

- .1 The existing CFIA sign, sign posts, base plates and mounting materials are to be re-used for the relocation.

2.2 CAST-IN-PLACE CONCRETE PILE FOUNDATION

- .1 Materials for cast-in-place concrete pile foundation for the sign relocation are specified in SP.13 – Cast-In-Place Concrete Piles and Posts.

PART 3 EXECUTION

3.1 EXISTING CFIA SIGN REMOVAL

- .1 The existing sign is to be secured during the removal of the four anchor bolts.
- .2 Care is to be taken in the removal and transportation of the CFIA sign to the relocated location as shown on the drawing.
- .3 Any damages to the sign during remove and transportation are to be corrected at the Contactor's cost.
- .4 Removal of the existing concrete pile foundations will not be required.

3.2 RE-INSTALLATION

- .1 Once the new pile foundation has been constructed and accepted by the Owner Engineer the CFIA sign is to be placed and bolted to the new pile foundation.
- .2 Care is to be taken when re-installing the sign. Any damages to the sign during installation are to be corrected at the Contractor's cost.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers all concreting operations related to construction of cast-in-place concrete pile and post foundations for installation of the CFIA sign, the fence gate posts and the gate secure posts and shall include all labour, materials and equipment to complete construction.

PART 2 REFERENCES

- .1 ASTM A123M – Standard Specification for Zinc (Hot-Dip Galvanized Coatings on Iron and Steel Products;
- .2 ASTM A767M – Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement;
- .3 ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength;
- .4 ASTM F2329 – Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners;
- .5 CAN/CSA A23.1/A23.2 – Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete;
- .6 CAN/CSA G30.18-M92 – Billet Steel Bars for Concrete Reinforcement;
- .7 Reinforcing Steel Institute of Canada (RSIC), Manual of Standard Practice.

PART 3 MATERIALS

3.1 GENERAL

- .1 The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

3.2 HANDLING AND STORAGE OF MATERIALS

- .1 All materials shall be handled and stored in a careful and workmanlike manner. Storage of materials shall be in accordance with CAN/CSA A23.1.

3.3 TESTING AND APPROVAL

- .1 All materials supplied under this Specification shall be subject to inspection and testing by the Owner Engineer.

3.4 PATCHING MORTAR

- .1 The patching mortar shall be made of the same cementitious material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2 parts sand by damp loose volume.
- .2 The quantity of mixing water shall be no more than necessary for handling and placing.
- .3 A mix of bonding agent (SikaCem 810), cementitious grout (Sika 212) and water may be used for all patches.

3.5 CONCRETE MIX

- .1 The mix proportions will be based on the concrete meeting the following physical properties when tested in accordance with the requirements of (CAN/CSA A23.1-00 and CAN/CSA A23.2-00)
 - .1 Class of Exposure: C-1
 - .2 Cement – Normal Portland (Type GU) with minimum cementitious material of 340 kg/m³
 - .3 Fly ash shall not be used as a substitute for cement in the concrete mix
 - .4 Air content - Category 1 (5-8%)
 - .5 Slump – 70 ± 20 mm (a high range water reducing admixture may be used to temporarily increase slump and improve workability)
 - .6 Min. 28-day strength – 32 MPa
 - .7 Maximum water/cement ratio – 0.45

3.6 REINFORCING STEEL

- .1 All reinforcing steel shall conform to the requirements of CAN/CSA Standard G30.18, Grade 400W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot dip galvanized in accordance with ASTM A767 for a minimum net retention of 610 g/m².
- .2 Vertical bars shall be supplied and installed for the full length of the piles.

3.7 ANCHOR BOLTS, NUT, AND WASHERS

- .1 Anchor bolts, nut, and washer shall conform to ADTM A193, Grade B7 and shall be hot dip galvanized conforming to ADTMF2329 for the entire length of the anchor bolts.
- .2 The top threaded portion of the anchor bolts shall be 100 mm long.

3.8 ANCHOR BOLTS TEMPLATES

- .1 Anchor bolt templates to be cast into concrete piles shall be CAN/CSA G40.21 Grade 300W, minimum 10 mm thick, and hot dip galvanized in accordance with ASTM A123 for a minimum net retention of 610 g/m².
- .2 Contactor to site verify existing base plate hole locations prior to fabrication of anchor bolts and templates.

PART 4 EXECUTION

4.1 LOCATION AND ALIGNMENT OF PILES

- .1 Pile construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.
- .2 Piles shall be placed in the positions shown on the Drawings or as directed by the Owner Engineer in the field.
- .3 The deviation of the axis of any finished pile shall not differ by more than 1 percent from the vertical.

4.2 EXCAVATION

- .1 Pile excavation shall be accomplished by hydro-jet and/or boring for the full depth of all piles.
- .2 Upon reaching the required elevation, the bottom of the excavation shall be cleaned and loose material shall be removed.
- .3 After completion of the cleaning out of the bottom, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after excavation has been completed.
- .4 If any hole is condemned because of caving, it shall be filled with lean-mix concrete. The new pile location shall be as directed by the Owner Engineer.

4.3 SLEEVING

- .1 If the existing soil conditions require, steel or corrugated metal pipe sleeving shall be used to temporarily line the excavation to prevent bulging or caving of the walls.
- .2 The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
- .3 The sleeving shall be withdrawn as the concrete is placed in the excavation. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.

- .4 The clearance between the face of the excavation and the sleeving shall not exceed 75 mm.

4.4 INSPECTION OF EXCAVATIONS AND STEEL

- .1 Provide 3rd party independent inspection of the excavation and reinforcing/embedded steel before the placement of concrete.
- .2 The Contractor shall have available suitable light for the inspection of each excavation throughout its entire length.
- .3 Any improperly set sleeving or improperly prepared excavation shall be corrected to the satisfaction of the Owner Engineer.

4.5 PLACING REINFORCING STEEL

- .1 Reinforcement shall be:
 - .1 placed in accordance with the details shown on the Drawings;
 - .2 rigidly fastened together; and,
 - .3 lowered into the excavation intact before concrete is placed.
- .2 Spacers shall be utilized to properly locate and secure the reinforcing steel cage in the excavation.

4.6 PLACING ANCHOR BOLTS

- .1 The anchor bolts shall be aligned with templates matching the bolt holes in the sign structure base plate and as shown on the Drawings. The setting templates shall be held in place by the top and bottom nuts of the anchor bolts. The anchor bolts shall be plumb. Extreme care shall be used in this operation. Placement of anchor bolts without the setting templates will not be permitted.
- .2 The threaded portion of the anchor bolts projecting above the top surface of pile shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue.
- .3 Placement of concrete without templates will not be permitted. The top setting template shall be removed following a minimum 24-hour curing period.

4.7 FORMS

- .1 For hydro-jet excavated piles the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1500 mm below final grade.
- .2 For bored piles the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1000 mm below final grade.
- .3 In locations of caving, the tubular form (Sonotube) should extend a minimum of 500 mm below where the shaft becomes uniform.

- .4 The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.

4.8 PLACING CONCRETE

- .1 Care shall be taken to ensure that anchor bolts are vertically aligned and that anchor bolts and conduits are properly positioned prior to placement of concrete.
- .2 Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The concrete shall be vibrated throughout the entire length of the pile.
- .3 Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the pile shall be finished smooth and even with a hand float.
- .4 The shaft shall be free of water prior to placing of concrete.
- .5 All concrete, during and immediately after deposition, shall be consolidated by mechanical vibrations so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into the corners of forms; eliminating all air or stone pockets that may cause honeycombing, pitting, or planes of weakness.

4.9 PROTECTION OF NEWLY PLACED CONCRETE

- .1 Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means.

4.10 CURING CONCRETE

- .1 The top of the freshly finished concrete piles shall be wet cured for 7 days including temperature management of the portion of the pile above grade.
- .2 After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.
- .3 Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four (24) hours after the end of the curing period.

4.11 FORM REMOVAL

- .1 Forms shall not be removed for a period of at least twenty-four (24) hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete. This does not preclude the requirement of maintaining the seven (7) day curing period.
- .2 The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.

- .3 Field-cured test specimens, representative of the in-place concrete being stripped, may be used to verify the in-place concrete strength.

4.12 PATCHING OF FORMED SURFACES

- .1 Immediately after forms around top of pile have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Owner Engineer. Any repair of surface finishing started before this inspection may be rejected and required to be removed.
- .2 Immediately after forms around top of pile have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Owner Engineer. Any repair of surface finishing started before this inspection may be rejected and required to be removed.
- .3 Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one (1) hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Owner Engineer. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

4.13 COLD WEATHER CONCRETING

- .1 The requirements of CAN/CSA A23.1 shall be applied to all cast-in-place pile concreting operations during cold weather, i.e., if the mean daily temperature falls below 5 degrees Celsius during placing or curing.

4.14 QUALITY CONTROL

- .1 Slump tests of the fresh concrete on site shall be provided by the Contactor of the fresh concrete at delivery in accordance with CSA A23.2-5C, Slump of Concrete. If the measured slump falls outside the limits of 70 ± 20 mm, a second test shall be made. A high range water reducing admixture may be added on site after the slump test is completed and accepted to improve workability. In the event of a second failure, the Owner Engineer reserves the right to refuse the use of the batch of concrete represented.
- .2 Air content tests of the fresh concrete on site shall be provided by the Contractor in accordance with CSA A23.2-4C, Air Content of Plastic Concrete by the Pressure Method. If the measured air content falls outside the specified limits of 5-8%, a second test shall be made at any time within the specified discharge time limit for the mix. In the event of a second failure, the Owner Engineer reserves the right to reject the batch of concrete represented.

- .3 Samples completed by the Contactor of concrete for all slump, air, and strength tests shall be taken in accordance with CSA A23.2-1C, Sampling Plastic Concrete.

- .4 Test specimens shall be made and cured in accordance with CSA A23.2-3C, Making and Curing Concrete Compression and Flexure Test Specimens. Compressive strength tests of concrete cylinders shall be conducted in accordance with CSA A23.2- 9C. Compressive Strength of Cylindrical Concrete Specimens. Where compressive strengths do not meet the specifications, CFIA shall require actions be taken in accordance with CSA A23.1. Cost of additional testing including core removal, core testing and repair of core holes shall be paid for by the contractor.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This specification covers the supply and installation of Topsoil and Seed to restore disturbed grounds due to construction activities and shall include all labour, materials and equipment to complete construction.

PART 2 PRODUCTS

2.1 TOPSOIL

- .1 Topsoil shall consist of an imported clay textured or loam textured dark peat, a friable material containing no more than 25% nor less than 5% by volume organic matter (pete, rotted manure, composted material). It shall be free of roots and any subsoil clay lumps, stones and roots over 15 mm diameter and free of any other extraneous material.

2.2 SEED

- .1 Native grass seed mix.
 - .1 20% Canada Wildrye
 - .2 10% June Grass
 - .3 20% Slender Wheatgrass
 - .4 20% Northern Wheatgrass
 - .5 20% Slogh Grass
 - .6 10% Canada Milkvetch

Note that each species is expressed as a percentage of total weight.

PART 3 EXECUTION

3.1 PLACEMENT OF TOPSOIL

- .1 Prepare grade of any damaged area to be minimum 100 mm below finished grade for placement of topsoil. Excavated materials are to be depose of off site. Required fill materials are to be approved by the Owner Engineer and compacted to a minimum of 95% Standard Proctor Maximum Dry Density.
- .2 Placement of topsoil layers shall be a minimum of 100mm in thickness after compaction. Areas shall be raked prior to seeding.

3.2 PLACEMENT OF SEED

- .1 Grass seed shall be sown at a rate of 1.0 kilogram per 100 square metres.
- .2 The Contractor shall sow the seed into the approved seed bed by using seeding equipment suitable for the area involved and to the satisfaction of

the Engineer. Seed shall be embedded into soil to a depth of 5 mm within 1 hour of sowing.

- .3 All seeded areas shall be rolled with a mechanical roller of a minimum weight of 220kg and minimum width of 760 mm to form a uniform even surface, level with adjoining curbs, sidewalks or sod.
- .4 Water shall be applied in sufficient quantities and frequencies to obtain seed germination and growth. Watering shall be controlled to prevent seed washout.
- .5 No seeding shall be done on frozen soil, or when any other conditions unfavourable to successful seed germination exist.

END OF SECTION

APPENDIX A
NEW VEHICLE ACCESS
CFIA PROJECT No.: M10285

SUBMITTALS LIST

ISSUED FOR TENDER
JANUARY 5, 2023

APPENDIX A
CFIA EMERSON, MB - NEW VEHICLE ACCESS

PROJECT M10285
SUBMITTALS LIST

Section or DWG	Article or Note #	Description	Date Submitted	Submittal Method			Status			Review Date/Comments
				Email	Paper	Other	Pending	Resubmit	Reviewed	
SP.0	1.4.3	Work Schedule								
SP.0	1.18	Site Specific Safety Plan								
SP.0	1.20.3	3rd Party Inspections and Testing-Identify Sub-Contractors/Consultants								
SP.0	1.20.6	Notification of Completion								
SP.0	1.20.7	Notification of Final Inspection								
SP.0	1.20.8	Declaration of Substantial Completion								
SP.3	2.1	3rd Party Inspections-Subgrade Condition and Compaction								
SP.4	2.2	Geotextile Technical Data Sheet								
SP.5	2.2	Geogrid Technical Data Sheet								
SP.6	1.3/2.1.1	Granular Sub-Base - materials testing report and source								
SP.6	2.1.2	3rd party Inspection and Testing Reports - Granular Sub Base								
SP.7	1.3/2.1.1	Granular Base - materials testing report and source								
SP.7	2.1.2	3rd party Inspection and Testing Reports - Granular Base								
SP.8	2.2	Concrete Mix Design								
SP.8	3.7	Bonding Agent Technical and MSDS Data Sheet								
SP.8	3.8	Joint Sealer Technical and MSDS Data Sheet								
SP.8	3.9	Backer Rod Technical Data Sheet								
SP.8	4.2	3rd Party Inspection Report Reinforcing Steel Placement-Transition Slab								
SP.8	4.11	Contractor QC Fresh Concrete-Transition Slab: Air, Slump Field Sample								
SP.9	2.1	Primer Coat Emulsified Asphalt SS-1 Technical and MSDS Data Sheet								
SP.10	2.1/2.3	Bituminous Mix Design								
SP.10	3.7	Contractor QC Asphalt Pavement								
SP.11	Part 2	Chain Link Fence, Gate and Hardware- Material Technical Datasheet								
SP.11	3.3.7	Shop Drawings for Gates								
SP.13	3.7	Concrete Piles-Anchor Bolts-Technical Datasheet								
SP.13	4.4	3rd Party Inspection Report-Pile Excavation & Reinforcing Steel Placement								
SP.13	4.14	Contractor QC Fresh Concrete-Piles: Air, Slump and Field Sample								
SP.14	Part 2	Technical datasheet Soil and Seed								
END										