



I DETAILED REQUIREMENTS AND DESIGN STANDARDS

I.1 SITEWORK

I.1.1 PAVEMENT STRUCTURE DESIGN

- .1 Design Life: Minimum of 25 years with no rutting of the surface.
- .2 Consult with Provincial, Federal, and State authorities and identify maximum Design Vehicle axial and gross loading as well as overall dimensions for height, width, and length of design vehicle. Define and verify maximum design loading for vehicle inspection lanes, pavement structures, and parking lots at the pre-design stage in collaboration with CBSA, PWGSC, Provincial Authorities, and other stakeholders identified at that time by the Departmental Representative.
 - .1 The initial design maximum load Design Vehicle at this Request for Consultant proposal stage is assumed to be legally loaded WB-30TM tractor trailer combination. See attached sketch.
 - .2 As a minimum, the concrete pavement design be 280mm (11") of dowelled PCC on 200mm of dense graded crushed aggregate as per North Dakota Department of Transportation's pavement design for the new commercial by-pass lanes being built on the USA side of the border.
- .3 Roadway adjacent to PIL booths shall be concrete pavement complete with concrete curbs. Design curb dimensions to delineate roadway; to reduce risks to adjacent buildings and people associated with vehicles accidentally accelerating in this area. Design robust and durable curb structures capable of withstanding wear and tear from snowplow operations.
- .4 Portland Cement Concrete Pavement to be provided in areas where typically commercial vehicles are waiting in line up to the PIL lane, where commercial vehicles are parked, and/or waiting to unload/load their cargo at the commercial examination warehouse.
- .5 Portland Cement concrete and Asphaltic Concrete Pavement designs to be prepared by a Registered Professional Engineer for intended use.
- .6 Provide durable, robust, pavement structure, sidewalks, and curb and gutters as recommended by the geotechnical consultant and to minimum standard required by the Provincial Highway Department of Manitoba, State of North Dakota or a standard identified in a report prepared for this project. In case of a variance between the standards apply the more robust standard.

I.1.2 ROADWAY GEOMETRICS AND DRAINAGE STRUCTURE DESIGN

- .1 Road works shall be designed in accordance with the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads, 1999 edition (with all applicable updates issued up to the date of the proposal submission. Verify at the pre-design stage the following design assumptions with Provincial Authorities:
 - .1 Design Speed Minimum (km/h) = 60
 - .2 Design Vehicle for turning movements = WB-30TM
 - .3 Driving lanes and paved shoulder widths shall not be any less than what exists now.
 - .4 Drainage structures to be designed to handle a 1 in 25 year storm event and frost protection as recommended by the Geotechnical Engineer.

I.1.3 STREET LIGHTING, SIGNAGE AND PAVEMENT MARKINGS

- .1 Street lighting design criteria and construction specifications shall be in accordance with:



- .1 TAC – Guideline for the Design of Roadway Lighting, latest edition.
- .2 Signs and Pavement markings shall be designed and constructed in accordance with:
 - .1 Manual of Uniform Traffic Control Devices (MUTCD), latest edition.
 - .2 Manitoba Ministry of Infrastructure and Transportation's design standards and specifications.

I.1.4 WASTE WATER SERVICES.

- .1 The existing facility is connected to the Town of Emerson waste water system. Assess the condition and capacity of existing waste water services on site as part of the Site Development Planning process at the Pre-design stage of the work. Confirm the scope of work required to augment existing wastewater systems and infrastructure.
- .2 Confirm the total population at each site including employees, commercial, and visitor. Determine design population for 25 years.
- .3 Determine new demand and advise the Departmental Representative of the impact of the Site Development design Options on each option. Detail order of magnitude costs associated with anticipated waste water infrastructure works. Collaborate program of pre-design works with Departmental Representative.
- .4 The scope of work on the existing Emerson Port Waste water systems is not defined at this time. If and as required:
- .5 Connect to the existing water system as required to provide a completely functional system meeting the operational requirements of the Port.
- .6 Minimum pipe size will be 300mm. All pipes to be PVC with minimum SDR 35.
- .7 Minimum catch basin size to be 900 and all catch basin and manholes to be reinforced Portland cement concrete.
- .8 Provide catch basins, Manholes, pipes, and other appurtenances to City of Winnipeg standards.
- .9 Minimum slopes for pipes to be 0.5%
- .10 Minimum velocity of water in pipes to be 0.3m/sec and maximum velocity to be 1.2m/sec
- .11 Provide minimum 2.0 meter cover for frost protection of all pipes or as recommended by the Geotechnical Engineer.
- .12 Provide horizontal and vertical separation of water pipes, storm water pipes, and waste water pipes to City of Winnipeg standards.
- .13 Provide bedding, side fill, and cover material and thickness for all pipes to City of Winnipeg standards.

I.1.5 POTABLE WATER / WATER MAIN INFRASTRUCTURE

- .1 The existing facility is served by the Town of Emerson potable water system. Assess the condition and capacity of existing potable water services on site as part of the Site Development Planning process at the Pre-design stage of the work. Confirm the scope of work required to augment existing water systems and infrastructure.
- .2 Confirm the total population at each site including employees, commercial, and visitors. Determine design population for 25 years.
- .3 Determine new demand and advise the Departmental Representative of the impact of the Site Development design Options on each option. Detail order of magnitude costs associated with anticipated water infrastructure works. Collaborate program of pre-design works with Departmental Representative.
- .4 Water quality to meet Canadian Water Quality Guideline.



- .5 Design all water main and other related infrastructures and appurtenances including valves, service connections, thrust restraint joints, cathodic protection, and pressure testing and disinfection to City of Winnipeg standards.
- .6 Provide bedding, side fill, and cover material and thickness for all pipes to City of Winnipeg standards.
- .7 Provide minimum 2.0 meter cover for all pipes or as recommended by the Geotechnical Engineer.
- .8 Provide horizontal and vertical separation of water pipes, storm water pipes, and waste water pipes to City of Winnipeg standards.

I.1.6 EMPLOYEE PARKING LOT

- .1 Assess existing number of employee parking stalls, confirm total number of required staff parking stall with CBSA. Provide barrier free accessible staff parking stalls in conformance with federal accessibility standards.
- .2 All stalls to have electrical plug-ins
- .3 All stalls to have a well drained paved surface and paved walkway to nearest building.

I.1.7 SEIZED VEHICLE COMPOUND

- .1 Confirm requirements for the seized vehicle compound with CBSA including
 - .1 Area requirements
 - .2 Illumination requirements
 - .3 Fence and Security requirements.
- .2 Confirm size and layout of seized vehicle stalls for large commercial vehicles at pre-design stage.
- .3 Confirm size of commercial vehicle to be parked in compound, and number of designated parking stalls for commercial trucks. To have a well drained surface
- .4 Compound to be illuminated
- .5 If a new fence is required, provide a 2400mm high, electrically grounded, chain link security fence with a double swing, lockable vehicle gate with overall minimum width of 7m.

I.2 ELECTRICAL

I.2.1 STRUCTURED WIRING (INCLUDING I/T, SECURITY AND ALARM SYSTEMS)

- .1 IT cables are to be in conduits that prevent tampering;
- .2 IT cables need to be identified as such (for example, by colour);
- .3 Prior to making the final IT cable connection to the CBSA servers, CBSA will inspect and validate that the wiring is acceptable. The final connection between the IT cables and CBSA servers is to be done by CBSA
- .4 During the Design Phase, IT conduit layout and plans must be line diagrams (as opposed drawings which showing exact location of wiring).