



# TOWN OF STRATHMORE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS MANUAL

## APPENDIX A

### CCC / FAC Application Required Documentation

2022

### Inspection Type

<input type="checkbox"/> Shallow Utility Alignment Construction Completed	<input type="checkbox"/> Shallow Utility Alignment Installation (after warranty)
<input type="checkbox"/> Infill Surface Improvement Construction Completed	<input type="checkbox"/> Infill Surface Improvement Works (after warranty)
<input type="checkbox"/> Pre-CCC Inspection	<input type="checkbox"/> CCC Inspection
<input type="checkbox"/> Pre-FAC Inspection	<input type="checkbox"/> FAC Inspection

### Inspections Requested

<input type="checkbox"/> Underground Improvements	<input type="checkbox"/> Surface Improvements
<input type="checkbox"/> Shallow Utility Alignment Installations	<input type="checkbox"/> Landscaping
<input type="checkbox"/> Stormpond	

### Consulting Engineer / Contractor Certification

I hereby confirm that the improvements have been inspected and found to be acceptable for certification according to the Town of Strathmore's Engineering Design and Construction Standards.

For CCC Requests: I confirm that 100% of all critical assets\* and 90 % of all other assets\* are visible for inspection.

For FAC Inspection Requests: I confirm that 100% of all asset\* are visible for inspection.

\_\_\_\_\_  
Consulting Engineer's Inspector

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Email

\_\_\_\_\_  
Telephone

Refer to the current edition of the Town of Strathmore [Consolidated Schedule Bylaw](#) for information on cost of inspections.

\*Critical assets include all catch basins, storm outfalls, and culverts; all valves, hydrants, and flushing assemblies; all sanitary and storm manholes; and any other infrastructure that is normally visible from the surface and critical to the day-to-day operation of the water, sanitary, and storm systems. Other assets include any other improvements that are normally visible from the surface (e.g. paved roads, lanes, and pathways, sidewalks, curb and gutter, etc.).



**SUBDIVISION & PHASE**

**ENGINEERING CONSULTANT**

**DATE RECEIVED**

**UNDERGROUND IMPROVEMENTS**

*(Sanitary Sewer, Storm Sewer, Watermains and Hydrants, and Sewer and Water Connections)*

- ☐ CCC (pdf) of each with reduced coversheets showing boundary
  - Sanitary Sewer
  - Storm Sewer
  - Watermains and Hydrants
  - Sewer and Water Connections
- ☐ Geotechnical results / compaction reports
- ☐ Hydrant Flow Test Results
- ☐ Flushing, disinfecting, and final testing reports complete with hydrostatic and lab test results. and CCTV footage
- ☐ Deflection (mandrel) testing (IF Requested)
- ☐ Hydrostatic test results (force main only) (Sanitary & Storm Sewer)
- ☐ Property Service Connections Records
- ☐ Unit Cost Worksheet
- ☐ Oversize calculations (if applicable)
- ☐ Electronic copy of IFC drawings (CAD & PDF)
- ☐ All applicable operations or maintenance manuals for improvements with special maintenance requirements

**SURFACE IMPROVEMENTS**

*(Paved Roads, Paved and Gravel Lanes, Sidewalks, Curbs & Gutters, Overland Drainage, Catch Basins, Storm Pond Infrastructure, and all utilities and infrastructure that protrudes to the surface)*

- ☐ CCC (pdf) of each with reduced coversheets showing boundary
  - Paved Roads
  - Paved Lanes
  - Sidewalks, Curb, Gutter, and Catch Basins
  - Overland Drainage
  - Stormponds
- ☐ Geotechnical Reports/Test Results
- ☐ Asphalt and Concrete Test Results (cylinders, cores, and Marshall analysis)
- ☐ Unit Cost Worksheet
- ☐ Electronic copy of IFC drawings (CAD & PDF)
- ☐ All applicable operations or maintenance manuals for improvements with special maintenance requirements

**LANDSCAPING IMPROVEMENTS**

*(All Municipal Reserve and Boulevard-Related Improvements, Sound Fencing, Screen Fencing, Storm Pond, PULs, ROWs, and Pathways)*

- ☐ CCC (pdf) of each with reduced coversheets showing boundary
  - Municipal Reserve Improvements
  - Boulevards, Median, Traffic Islands
  - All Environmental Reserves
  - All Public Utility Lots (PUL)
  - Fencing (Attenuation, Screening, Chain link, Other)
  - Storm Ponds
  - Pathways
- ☐ Signed Landscaping Construction Inspection Sheets
- ☐ Asphalt Test Results for pathways
- ☐ Playground Inspection Certificate of Compliance (CAN/CSA – Z614)
- ☐ Unit Cost Worksheet
- ☐ Electronic copy of IFC drawings (CAD & PDF)
- ☐ All applicable operation or maintenance manuals with special maintenance requirements

**COMMENTS**



<b>Subdivision:</b>					<b>Report #</b>		
					<b>Plan</b>	<b>Block</b>	<b>Lot</b>
<b>Description</b>	<b>Phase</b>		<b>Developer</b>			<b>Development Agreement #</b>	
<b>Legal/Municipal Address:</b>							
<b>Consultant</b>			<b>Contact Person</b>			<b>Phone</b>	
<b>Contractor</b>			<b>Contact Person</b>			<b>Phone</b>	
<b>Work Inspected</b>	<b>Approved</b>		<b>Date</b>	<b>Parks Inspector</b>	<b>Developer's Representative</b>	<b>Deficiencies Corrected?</b>	<b>Comments &amp; Notes</b>
	<b>Yes</b>	<b>No</b>	<b>YY/MM/DD</b>				
<b>Inspection #1</b>							
Approved Plans & Letter							
Line Assignment							
Layout PL Stakes							
Erosion/Sediment Controls							
Non-engineered Fill Requirements Met							
<b>Inspection #2</b>							
Approved Plans & Letter							
Survey Stakes – Grades							
Subgrade Preparation							
Irrigation Layout							
Plumbing Permit							
Layout, pathways, trees, furniture, sports fields, playgrounds, etc.							
<b>Inspection #3</b>							
Approved Plans & Letter							
Topsoil Test as per Specification							
Tree/Shrub Pits							
<b>Inspection #4</b>							
Approved Plans & Letter							
Trees & Shrubs as per Drawing							
Meter Installed	Tag#			Serial #			
Open Trench Inspection							
Trees Planted at Specified Grade							
Rootball, Caliper Standards Met							
CNLA Specifications Met							
Insect/Disease/Damage Free							
Tree <del>Setback</del> Spacing							

Work Inspected	Approved		Date	Parks Inspector	Developer's Representative	Deficiencies Corrected?	Comments & Notes
	Yes	No	YY/MM/DD				
<b>Inspection #5</b>							
Approved Plans & Letter							
Finish Grade to Plan & Spec.							
Topsoil & Finished Grade to Pre-existing							
Native Profile & Pre-Development Drainage Patterns & Rates							
Seeding / Sodding							
Burlap Straps Wires Removed/Rolled Back							
Amenities to Plan & Spec.							
Playgrounds to Plan & Spec.							
Certificate of Compliance							
Asphalt Pathway to Plan & Spec.							
Asphalt Compaction/Density Reports							
Digital & pdf copies of Irrigation As-Builts							
Annual DCV Report							
<b>General Comments &amp; Prior to FAC Conditions</b>							
<input type="checkbox"/>	No Deficiencies Noted			<b>Developer's Rep</b>			
	<b>Report Distribution</b>			<b>Parks Inspector</b>			
<input type="checkbox"/>	Development Rep			<b>Infrastructure Rep</b>			
<input type="checkbox"/>	Operations Files			<b>Inspection Date</b>			
<input type="checkbox"/>	Planning & Development Files			<b>Eligible for FAC Application Date:</b>			

SUBDIVISION		PHASE	
DEVELOPER		DATE	
CONTRACTOR		IMPROVEMENT	
CONSULTING ENGINEER		BOUNDARY OF AREA	See Attached Map

### CONSULTING ENGINEER'S CERTIFICATE

I, \_\_\_\_\_, Professional Engineer of the firm of \_\_\_\_\_, Consulting Engineers, who are engaged by the Developer to design and inspect the construction and installation of roadways, utilities and other improvements, do hereby certify that the utilities and improvements within the area shown on the attached plan have been constructed, installed and inspected in conformance with the Municipality's specifications and approved designs, or as otherwise required by the Municipality, and that all defects and deficiencies in work and materials have been reported to the Developer and the Municipality and have been remedied by the Developer, and that the roadway, utility or other improvement noted herein meets all the requirements for acceptance. I confirm that I have been empowered by the Developer to honour, comply with and perform all of the Consulting Engineer's obligations and to provide all of the Field Services as specified in the current *Consulting Engineer's Field Services Guidelines*, as issued by the Urban Development Institute/City of Calgary.

Consulting Engineer's Stamp

\_\_\_\_\_  
Consulting Engineer's Inspector

\_\_\_\_\_  
Signature, and Permit to Practice

Rejection of Consulting Engineer's Certificate (Deficiency list attached):

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

I hereby certify that the items listed as reason for rejection have now been corrected.

\_\_\_\_\_  
Consulting Engineer

\_\_\_\_\_  
Date

#### Approval:

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Infrastructure Manager

\_\_\_\_\_  
Date

Projected earliest maintenance expiry date:

\_\_\_\_\_  
Date



<b>SUBDIVISION</b>		<b>PHASE</b>	
<b>DEVELOPER</b>		<b>DATE</b>	
<b>CONTRACTOR</b>		<b>IMPROVEMENT</b>	
<b>CONSULTING ENGINEER</b>		<b>BOUNDARY OF AREA</b>	See Attached Map

### CONSULTING LANDSCAPER'S CERTIFICATE

I, \_\_\_\_\_, Professional Landscape Architect of the firm of \_\_\_\_\_, Consulting Landscape Architect's, who are engaged by the Developer to design and inspect the construction and installation of parks, pathway, and other improvements, , do hereby certify that the utilities and improvements within the area shown on the attached plan have been constructed, installed and inspected in conformance with the Municipality's specifications and approved designs, or as otherwise required by the Municipality, and that all defects and deficiencies in work and materials have been reported to the Developer and the Municipality and have been remedied by the Developer, and that the park, pathway or other improvement noted herein meets all the requirements for acceptance. I confirm that I have been empowered by the Developer to honour, comply with and perform all of the Consulting Landscape Architect's obligations and to provide all of the services as specified in the current Landscape Standards and Specifications, as issued by the Town of Strathmore and/or City of Calgary.

Landscape Architect's Stamp/Seal

\_\_\_\_\_  
Consulting Engineer's Inspector

\_\_\_\_\_  
Signature, and Permit to Practice

Rejection of Consulting Landscaper's Certificate (Deficiency list attached):

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

I hereby certify that the items listed as reason for rejection have now been corrected.

\_\_\_\_\_  
Consulting Landscape Architect

#### Approval:

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Infrastructure Manager

\_\_\_\_\_  
Date

Projected earliest maintenance expiry date:

\_\_\_\_\_  
Date



**SUBDIVISION & PHASE**

**ENGINEERING CONSULTANT**

**DATE RECEIVED**

**UNDERGROUND IMPROVEMENTS**

*(Sanitary Sewer Storm Sewer, Watermains and Hydrants, and Sewer and Water Connections)*

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> FAC (pdf) of each with reduced coversheets showing boundary                             <ul style="list-style-type: none"> <li>• Sanitary Sewer</li> <li>• Storm Sewer</li> <li>• Watermains and Hydrants</li> <li>• Sewer and Water Connections</li> </ul> </li> <li><input type="checkbox"/> Test Results (i.e. CCTV, Mandrel reports)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Test Results for repair work completed</li> <li><input type="checkbox"/> Unit Cost Worksheet</li> <li><input type="checkbox"/> Offsite Levy Payment Confirmation</li> <li><input type="checkbox"/> Oversize calculations (if applicable)</li> <li><input type="checkbox"/> Oversize calculations (if applicable)</li> <li><input type="checkbox"/> Electronic copy of As-built drawings (CAD &amp; PDF)</li> </ul> |
|---|--|

**SURFACE IMPROVEMENTS**

*(Paved Roads, Paved and Gravel Lanes, Sidewalks, Curbs & Gutters, Overland Drainage, Catch Basins, Storm Pond Infrastructure, and all utilities and infrastructure that protrudes to the surface)*

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> FAC (pdf) of each with reduced coversheets showing boundary                             <ul style="list-style-type: none"> <li>• Paved Roads (Toplift)</li> <li>• Paved Lanes</li> <li>• Sidewalks, Curb, Gutter, and Catch Basins</li> <li>• Overland Drainage</li> <li>• Stormponds</li> </ul> </li> <li><input type="checkbox"/> Geotechnical Reports/Test Results for repair work</li> </ul> | <ul style="list-style-type: none"> <li>completed</li> <li><input type="checkbox"/> Asphalt Test Results for toplit</li> <li><input type="checkbox"/> Unit Cost Worksheet</li> <li><input type="checkbox"/> Offsite Levy payment confirmation</li> <li><input type="checkbox"/> Performance deposit paid for ongoing building lots under construction</li> <li><input type="checkbox"/> Electronic copy of As-built drawings (CAD &amp; PDF)</li> </ul> |
|--|--|

**LANDSCAPING IMPROVEMENTS**

*(All Municipal Reserve and Boulevard-Related Improvements, Sound Fencing, Screen Fencing, Storm Pond, PULs, ROWs, and Pathways)*

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> FAC (pdf) of each with reduced coversheets showing boundary                             <ul style="list-style-type: none"> <li>• Municipal Reserve Improvements</li> <li>• Boulevards, Median, Traffic Islands</li> <li>• All Environmental Reserves</li> <li>• All Public Utility Lots (PUL)</li> <li>• Fencing (Sound Attenuation, Screening,</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Chainlink, Other)                             <ul style="list-style-type: none"> <li>• Storm Ponds</li> <li>• Pathways</li> </ul> </li> <li><input type="checkbox"/> Test Results for repair work completed</li> <li><input type="checkbox"/> Unit Cost Worksheet</li> <li><input type="checkbox"/> Landscape Maintenance Logs</li> <li><input type="checkbox"/> Electronic copy of As-built drawings (CAD &amp; PDF)</li> </ul> |
|--|---|

**COMMENTS**



<b>Subdivision:</b>			<b>Report #</b>		
			<b>Plan</b>	<b>Block</b>	<b>Lot</b>
<b>Description</b>	<b>Phase</b>	<b>Developer</b>		<b>Development Agreement #</b>	
<b>Legal/Municipal Address:</b>					
<b>Consultant</b>		<b>Contact Person</b>		<b>Phone</b>	
<b>Contractor</b>		<b>Contact Person</b>		<b>Phone</b>	
<b>FAC Application Rec'd</b>	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	<b>Date (YY/MM/DD)</b>		
<b>Work Inspected</b>	<b>Deficiency</b>	<b>Landscape Technician's Report Detail</b>			
<b>A Surface</b>					
Settlement					
Ponding/Drainage					
Repair Required					
<b>B Turf</b>					
Turf Quality Acceptable					
Burn Sports Requiring Top Dressing & Overseeding					
Weed Problems					
Others					
<b>C Trees</b>					
Tree Replacement					
Pruning Required					
Strapping Removed					
Wires Removed					
Burlap Removed					
Guying Removed					
Tree Well Cultivated					
Soil Settlement i.e. tree too low					
Others					

<i>Work Inspected</i>	<i>Deficiency</i>	<i>Landscape Technician's Report Detail</i>
<b><i>D Shrubs</i></b>		
Shrub Replacement		
Pruning Required		
Bed Cultivated		
Weed Free Bed		
Mulch Intact		
<b><i>E Fencing</i></b>		
<b><i>F Play Equipment</i></b>		
<b><i>G Pathways/Hard Surfaces</i></b>		
<b><i>H Amenities</i></b>		
Benches		
Garbage Receptacles		
Others		
<b><i>I General Comments</i></b>		
<b><i>J Irrigation System</i></b>		
As-Built Drawings		
Maintenance Manuals Received		
Annual DCV Report		
Irrigation Information Sheet		
Meter Information Sheet		
<b><i>K Extended Warranty Required</i></b>		
<b><i>L Maintenance Log Submitted</i></b>		



Work Inspected		Deficiency	Landscape Technician's Report Detail
<b>M Landscape Plan</b>			
As-Builts submitted & checked			
<b>N Water Meter Reading</b>			
<b>NOTE: Contract documents and the Development Guidelines and Standard Specification for Landscape Construction override the Inspection Check List and Report.</b>			
<input type="checkbox"/>	No Deficiencies Noted	<b>Developers Rep</b>	
<b>Report Distribution</b>		<b>Parks Inspector</b>	
<input type="checkbox"/>	Development Rep	<b>Infrastructure Rep</b>	
<input type="checkbox"/>	Operations Files	<b>Inspection Date</b>	
<input type="checkbox"/>	Planning & Development Files	<b>Application Expiry Date:</b>	



SUBDIVISION		PHASE	
DEVELOPER		DATE	
CONTRACTOR		IMPROVEMENT	
CONSULTING ENGINEER		BOUNDARY OF AREA	See Attached Map

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Consulting Engineer's Stamp

\_\_\_\_\_  
Consulting Engineer's Inspector

\_\_\_\_\_  
Signature, and Permit to Practice

Rejection of Consulting Engineer's Certificate (Deficiency list attached):

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

I hereby certify that the items listed as reason for rejection have now been corrected.

\_\_\_\_\_  
Consulting Engineer

\_\_\_\_\_  
Date

#### Approval:

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Infrastructure Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Director of Infrastructure, Operations  
& Development Services

\_\_\_\_\_  
Date

Extended maintenance expiry date:

\_\_\_\_\_  
Date



<b>SUBDIVISION</b>		<b>PHASE</b>	
<b>DEVELOPER</b>		<b>DATE</b>	
<b>CONTRACTOR</b>		<b>IMPROVEMENT</b>	
<b>CONSULTING ENGINEER</b>		<b>BOUNDARY OF AREA</b>	See Attached Map

### CONSULTING LANDSCAPER'S CERTIFICATE

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Landscape Architect's Stamp/Seal

\_\_\_\_\_  
Consulting Engineer's Inspector

\_\_\_\_\_  
Signature, and Permit to Practice

Rejection of Consulting Landscaper's Certificate (Deficiency list attached):

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

I hereby certify that the items listed as reason for rejection have now been corrected.

\_\_\_\_\_  
Consulting Landscape Architect

\_\_\_\_\_  
Date

#### Approval:

\_\_\_\_\_  
Infrastructure Technologist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Infrastructure Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Director of Infrastructure, Operations  
& Development Services

\_\_\_\_\_  
Date

**Extended maintenance expiry date:**

\_\_\_\_\_  
Date



HOUSE NO. STREET NAME

SUBDIVISION

PLAN BLOCK LOT

SCALE DATE

DRAWN CHECKED

SERVICING DIAGRAM (PROVIDE NORTH ARROW)

WATER		SANITARY SEWER		STORM SEWER	
Date of Installation		Date of Installation		Date of Installation	
Service Size		Service Size		Service Size	
Service Type		Service Type		Service Type	
Dist. From PL to Main		Dist. From PL to Main		Dist. From PL to Main	
Dist. From PL		Dist. From PL		Dist. From PL	
Type of Curb Stop		Type of Curb Stop		Type of Curb Stop	
Depth at PL		Depth at PL		Depth at PL	
Dist. From PL to Curb Stop		Dist. From PL to Curb Stop		Dist. From PL to Curb Stop	
Type of Saddle		Type of Saddle		Type of Saddle	
Main Size		Main Size		Main Size	
Main Type		Main Type		Main Type	
Length of Stub Inside PL		Length of Stub Inside PL		Length of Stub Inside PL	
Dist. From PL to Curb Stop					





Description	New / Replace	Unit	Quantity	Unit Cost	Total Cost
	N or R			\$	\$
<b>Water System</b>					
Watermain Size				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
Hydrants				\$	\$
Service Connections				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Water System</b>				<b>\$</b>	
<b>Sanitary Sewer System</b>					
SAN Main Size				\$	\$
				\$	\$
				\$	\$
				\$	\$
Manholes				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Sanitary Sewer System</b>				<b>\$</b>	

<i>Description</i>	<i>New / Replace</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost \$</i>	<i>Total Cost \$</i>
<b>Lift Station</b>					
Forcemain Size				\$	\$
				\$	\$
				\$	\$
				\$	\$
Generator				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Lift Station</b>					<b>\$</b>
<b>Storm System</b>					
Storm Main Size				\$	\$
				\$	\$
				\$	\$
				\$	\$
Manholes				\$	\$
Lid Type				\$	\$
Concrete Swales				\$	\$
Stormpond				\$	\$
Control Structure				\$	\$
Catch Basins (Type)				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Storm System</b>					<b>\$</b>
<b>Roadways</b>					
Paved Road (1st Lift)				\$	\$
Paved Road (2nd Lift)				\$	\$
Lanes/Alleys				\$	\$
Sidewalks				\$	\$
Islands/Medians				\$	\$
Driveway Construction & Paving				\$	\$
Curbs/Gutter (type):				\$	\$
Low Profile				\$	\$
Standard				\$	\$
Guard Rail				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Roadways</b>					<b>\$</b>

<i>Description</i>	<i>New / Replace</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost \$</i>	<i>Total Cost \$</i>
<b><i>Streetscape and Parks/Landscaping</i></b>					
Pathways				\$	\$
Playgrounds				\$	\$
Irrigation:				\$	\$
Lines				\$	\$
Controller				\$	\$
Fencing				\$	\$
Trees (Type)				\$	\$
				\$	\$
				\$	\$
Shrubs (Type)				\$	\$
				\$	\$
				\$	\$
Sod (Type)				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Parks/Landscaping</b>				<b>\$</b>	
<b><i>Other</i></b>					
Sound Attenuation Fencing				\$	\$
				\$	\$
				\$	\$
				\$	\$
<b>SUBTOTAL - Other</b>				<b>\$</b>	
<b>SUBTOTAL</b>				<b>\$</b>	
<b>Contingencies and Engineering (10%)</b>				<b>\$</b>	
<b><i>TOTAL</i></b>				<b>\$</b>	

*Contract prices will be entered above.*

### Inspection Guidelines (at the sole discretion of the Town's Inspector)

The following requirements must be met, at the inspector's discretion, prior to the inspection taking place:

- Weather conditions are to be adequate to allow the surface to be inspected without hinderance
- Ensured that the surface improvement to be inspected is clean and free of debris (snow, ice, dirt, etc.)
- All gutters to have been flushed immediately prior to inspection
- Any non-compliance with the above may form a reason to cancel and reschedule

### Asphalt Deficiencies

The following items are grounds for full replacement, to the extents determined by the inspector, without question:

- Any deficiency is defined as a safety hazard by the Inspector
- The asset is not built, in accordance, with the approved Engineering Drawings or Town Specifications
- The asset does not function as intended

Each of the following types of deficiencies will be identified and replacement will occur for the smallest area reasonable for that specific deficiency.

#### Cracking

- Open asphalt joints causing unacceptable riding quality
- Alligator cracking.
- Longitudinal cracking
- Cracking that is detrimental to the road structure or causes unacceptable riding quality.
- Are greater than 1.2 mm in width (the width of a dime)

#### Rutting

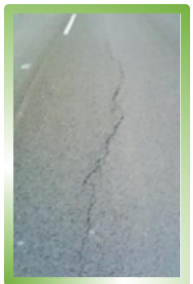
- Permanent deformation (indentations) in wheel paths construction, and moisture damage.

#### Potholes

- Moisture in the asphalt expands from freeze/thaw cycles
- Travelling deteriorates weakened sections

#### Ponding

- Standing water on the asphalt surface
- Zero tolerance for ponding on asphalt



*Cracking*



*Rutting*



*Potholes*



*Ponding*

### Aggregate Loss/Raveling Segregation

- May occur on surface or at pavement edge

#### Contamination

- Surface affected by e.g. clay tracking, petroleum, foreign materials

#### Poor Tie-ins

- Should be cut back to have a straight edge to directly tie-in



*Aggregate Loss / Raveling Segregation*



*Contamination / Foreign Material*



*Poor Tie-ins*

### Linear Grade Deficiencies

- Existing grade varies from design grade by  $\pm 0.2\%$
- Any localized deflective displacement (settlement) exceeding 6 mm over 3 metres

### Rideability

- Bumps – small, localized, upward displacements of the pavement surface
- Shoving – permanent displacement of a localized area of the pavement surface caused by traffic loading (abrupt wave in the pavement surface)
- Corrugation (wash boarding)
  - series of closely spaced ridges and valley (ripples) occurring at fairly regular intervals, usually less than 3 m along pavement
  - ridges are perpendicular to the traffic direction; usually caused by traffic action combined with an unstable pavement surface or base
- Swells
  - characterized by an upward bulge in the pavement's surface
  - a long, gradual wave more than 3 m long
  - may be accompanied by surface cracking

At FAC, there should be little to no vehicle vibrations (e.g. from corrugation) noticeable, no reduction in speed necessary, no bumps or settlements that cause the vehicle to bounce slightly

### Clarifications on Asphalt Repair Requirements at FAC

#### Road Repair Requirements

- To repair asphalt surface failure, cut out the failed road structure and replace. If the cut area is less than full lane width, grinding is required to the full width of the lane.
- Localized areas of settlement which cause ponding shall be repaired by grinding from the center of the road to the lip of the gutter.
- Grind existing asphalt adjacent to gutter lines and joints, to accommodate the design overlay. Grinding shall extend a minimum of 1.5 m into the roadway from lip of gutter.
- Manholes, valves, vaults, and other fixtures to be adjusted to asphalt design grade ( $\pm 6$  mm) prior to paving.

#### Asphalt Pathway / Alley Repair Requirements

- The full width of an asphalt trail or alley is to be removed and/or replaced where deficiencies exist.

#### General Asphalt Repair Requirements

- Asphalt repairs are to be rectangular or square and a minimum of 1.2 m wide (excluding Asphalt Pathways).
- Surface repairs must be ground and pre-filled prior to a full depth overlay, as per the Design and Construction Standards.
- Edges of existing asphalt to be ground or cut vertically. No feathering of patches is allowed.
- If there are settlements between 50-75 mm in the asphalt structure (measurement does not include the future overlay), the proposed restoration will need to be recommended by a Geotechnical Engineer and approved by the Town.
- If there is base failure evident or settlements greater than 75 mm in the asphalt structure (measurement does not include the future overlay), remove and replace base structure as recommended by a Geotechnical Engineer and approved by the Town.
- If the asphalt is segregated, the use of an approved asphalt sealant may be used. This method is only acceptable if the deficiency is clean of dirt and debris and only applies to non-staged improvements.

## Inspection Guidelines

The following requirements must be met, at the inspector's discretion, prior to the inspection taking place:

- Weather conditions are to be adequate to allow the surface to be inspected without hinderance.
- Ensured that the surface improvement to be inspected is clean and free of debris (snow, ice, dirt, etc.)
- All gutters to have been flushed immediately prior to inspection.
- Any non-compliance with the above may form a reason to cancel and reschedule.

## Concrete Deficiencies

The following items are grounds for full replacement, to the extents determined by the inspector, without question:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built, in accordance, with the approved Engineering Drawings or Town Specifications.
- The asset does not function as intended.

Each of the following types of deficiencies will be identified and replacement will occur for the smallest area reasonable for that specific deficiency.

### Cracking

- Random cracks or more than one crack between any two construction joints.
- Cracks with chipped or spalled edges.
- Longitudinal cracks.
- Are greater than 1.2 mm in width (the width of a dime).

### Spalling (refers to concrete that has broken up, flaked, or become pitted)

- Loss of surface mortar and/or aggregate affects more than 5 percent (%) of surface area. This applies to 1.5m x 1.5m sidewalk panels and 3.0m curb and gutter section.

### Gouging (rough holes, grooves, or indentations in the concrete surface).

- Two or more gouges in a single section of the concrete.
- Affects the functionality of the concrete.
- A single gouge representing more than an area of 35 mm x 35 mm of curb and gutter.
- A single gouge with a depth more than 6 mm in a single section of concrete.



Cracking



Spalling



Gouging

### Vertical Displacement (refers to lift or sag at the edge of a concrete block)

- Existing grade varies from design grade by  $\pm 0.2\%$  or greater
- Any localized deflective displacement (settlement) exceeding 6mm over 3m.
- There is a vertical displacement greater than 10 mm.

### Joint Separation

- Two panels of concrete have a joint separation greater than 10 mm.

### Ponding/Settlement (refers to standing water on the concrete surface and is a result of settlement in the subgrade structure)

- Ponding occurs on any walking surface (zero tolerance).
- Any localized defective displacement (settlement) exceeding 6mm over a length of 3m will be considered a deficiency.
- Any settlements or workmanship causes water retention in front of driveways, curb ramps, alley crossings, commercial crossings, or bus stops (unless located in a trap low).

### Disfigurement

- Disfigured by extraneous means including but not limited to 3rd party damage, and builder damage (e.g. graffiti, footprints, tire treads).

### Undermining

Undermining refers to the loss of subgrade material under the concrete structures. Undermined concrete is to be removed and replaced by full panel sections.



Vertical Displacement



Joint Separation



Ponding



Undermining

**Crossfalls** (refers to the transverse grade of the concrete surface toward the gutter or drainage path)

- If there is a dish or hump in two panels of sidewalk (3m) greater than  $\pm 6\text{mm}$ ,
- The crossfall for the concrete work does not fall within the acceptable range as per design.



#### Profile Deficiencies

- Any profile deficiencies overlooked at CCC should be corrected prior to FAC.
- Any concrete section must be removed and replaced if any dimension varies by more than  $\pm 10\text{ mm}$ .

#### Clarifications on Concrete Repair Requirements at FAC

##### Concrete Sidewalks

- Replacement of existing private walks or driveways to provide a satisfactory tie-in will be required when necessary.
- Separate sidewalks, positive drainage from the front of walk to the curb must be maintained throughout the boulevard. A minimum of 2% is required in the boulevard.
- A moonwalk identified with deficiencies must be replaced, including curb and gutter, unless the final lift of asphalt has been placed. Flag sections will only be permitted at FAC after the final lift has been placed to a maximum of 2 panels.

##### Curb and gutter

- Where curb and gutter deficiencies exist, the entire mono-curb, gutter and walk shall be replaced.
- Curb and Gutter repairs that are less than or equal to 3 m in length may be face formed against adjacent asphalt. This method is only acceptable if the asphalt edge is straight and has no chips/cracks.

##### General Concrete repair requirements

- Concrete sections to be removed at a contraction, expansion, or surface joint. If warranted, a 1.5 m minimum length of curb and gutter section may be replaced. Concrete to be cut to full depth of structure.
- Existing landscaping must be adjusted to match repaired concrete sidewalks and/or curb and gutter and maintain proper grades from private property to road right of way.
- Where greater than 90% of existing concrete in any section is being removed for repairs, remaining amount of concrete is also to be removed.
- Curb ramps and crossings may be repaired to the nearest control joint if deficiency exists in only one half of curb ramp or crossing.
- Additional damage done to adjacent concrete during the removal process shall be re-cut prior to repair of the deficiency.