2019 Development Inspections

TRANSPORTATION INSPECTOR GUIDELINE

City of Edmonton

The ***Development Inspections Transportation Inspector Guideline*** provides a specific set of inspection guidelines for development projects in the City of Edmonton. The objective of this guideline is to provide consistency, transparency, and accountability between the private development industry and the City.

While this guideline can be used as an introduction to roadways inspection for new staff, it is equally useful as a reference and reminder for experienced staff. It includes an account of an Inspector's function and expected conduct, examples of City formats, inspection checklists, and various reference tables. Adherence to the procedures set out in this guideline will serve to regulate the administration of all agreements, and can improve the overall experience for all stakeholders in the Servicing Agreement. Processes for Construction Completion Certificate (CCC) and Final Acceptance Certificate (FAC) outlined in this guideline are based on the latest Servicing Agreement, and therefore may not be consistent with earlier versions.

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TERMS AND CONDITIONS

In this manual, the following terms are defined as follows:

Agreement: the signed Servicing Agreement made between the Developer and The City of Edmonton which specifies the financial obligations and the terms and conditions for the construction and warranty of municipal improvements necessary to service lands approved for development.

Asset: the municipal improvement as defined in Schedule D of the Servicing Agreement.

City: The City of Edmonton as a corporate body or a City owned corporation.

Complete Streets Construction Standards (CSCS): contained in Volume 2; Complete Streets Design and Construction.

Consultant: the Professional Engineer responsible for the preparation of designs, reports, studies, Engineering Drawings and associated documents and for the execution and implementation of such designs, normally on behalf of a Developer.

Construction Completion Certificate (CCC): The purpose of a Construction Completion Certificate (CCC) is to ensure that a Municipal Improvement has been constructed in accordance with the City of Edmonton Design and Construction Standards, the Servicing Agreement, and the Engineering Drawings, and is **operational, functional, and safe**.

Contractor: the construction company that is hired by the Developer to complete the work.

Days: calendar days unless noted otherwise.

Deficiency: Any fault or defect that impedes functionality, poses a safety hazard, does not meet City Specifications, or deviates from the approved drawings.

Developer: the proponent of a land development proposal, or the Owner as defined in a Servicing Agreement. Requirements of the Developer stated in these standards may, where appropriate, be deferred to a consultant, contractor or other agent acting on the Developer's behalf.

Departmental Review: All aspects of the certification approval process once a formal inspection has been approved.

Document Package: The supporting documentation required for certification. This is submitted to ePlan for review and must be approved by COE prior to certification approval.

TERMS AND CONDITIONS *(CONT.)*

Engineer: The City of Edmonton Senior Engineer who will be responsible for the inspectors in a specified area.

ePlan: an online tool Developers can use for the electronic application and review of Engineering Drawings needed for Servicing Agreements. It is the first element of eServices that has been implemented.

eServices: a website that will connect residents, businesses and industry representatives to a variety of City of Edmonton services. Developers and Consultants can use eServices to submit formal inspection requests.

Final Acceptance Certificate (FAC): the purpose of a Final Acceptance Certificate (FAC) is to formally accept and include a municipal improvement defined in the Agreement, into the capital inventory of the City of Edmonton, after a predetermined warranty period. It will finally confirm that the improvement has been constructed and maintained in accordance with the City of Edmonton Complete Streets Construction Specifications, the Servicing Agreement, and the Engineering Drawings, and is operational, functional and safe.

Formal inspection: any visual inspection conducted by or with the City Inspector. This does not include pre-FAC inspection.

Inspector: the City of Edmonton employee responsible for site visits and conducting formal CCC and FAC inspections.

Record Drawings: are engineering drawings, as define by APEGA, prepared by the engineer to record design changes for which he or she has accepted responsibility. The changes may have been made by the engineer previously through authenticated change orders, directives, etc. and those changes are subsequently being incorporated into one representative drawing along with the original design elements, representing the final design for the project. Since the engineer is responsible for the content of the record drawing, he or she is required to authenticate them.

Redlines: Previously approved engineering drawings that are re-submitted to the City (Development Engineering and Drawing Review) for approval because there are significant changes to the design that cannot be approved by the City in the field.

Warranty Period (Maintenance Period): The period of time that the owners shall maintain the Municipal Improvement in accordance with the Servicing Agreement.

PART 1: MUNICIPAL IMPROVEMENT CONSTRUCTION

2.0

Once a project is ready for commencement, there are key stakeholders that should be involved. The roles and responsibilities of each stakeholder are outlined as follows.

ROLES AND RESPONSIBILITIES

City Of Edmonton Inspector: Ensures work is performed and improvements are constructed in accordance with the Standards and Engineering Drawings by conducting site visits, monitoring work, and providing guidance. The primary responsibility of the inspector is to observe, check, record and report. Any problems, issues or noncompliance observed or any advice or guidance warranted must be directed to the consultant and/or their delegates. As the contractual obligation of all private development construction is by way of a servicing agreement, there is no direct authority or responsibility assigned to the inspector for that construction. The inspector does not have the authority to direct or manage the contractors or the work they perform beyond the methods defined in this guideline, the Complete Streets Construction Specifications and the Servicing Agreement. Consequently, they cannot be held responsible for any noncompliance or corrections that may be required. It should be stressed that the most effective, efficient, compliant and mutually beneficial results are obtained by a fully informed, collaborative and cooperative effort.

Consultant: Prepares designs, reports, studies, Engineering Drawings and associated documents. They are responsible for the execution and implementation of designs, normally on behalf of a Developer. This includes the 'on site' project management, direction and supervision of that execution and implementation. The Consultant must hold a valid permit to practice within the Province of Alberta and be registered as an Engineer in good standing with APEGA.

Clause 3.4 from the Design & Construction Standards Vol.1 (Intent and Use of The Design Standards) states: "when using these standards and specifications, the Developer and the Consultant remain fully responsible for the design and construction of municipal improvements according to good engineering standards that address the specific needs and site conditions of their project. Without limited that broad and general obligation, these standards and specifications shall be the minimum requirement. The Consultant must be satisfied of the applicability of the design criteria in these standards to the project at hand and apply more stringent criteria where appropriate".

Developer: Ensures that feasible implementation methods are established throughout the entire development process. Assigns responsibilities to ensure that all municipal improvements are constructed in accordance with the Servicing Agreement and good engineering practices.

Clause 1.5.3 from the Design & Construction Standards Vol.1 (General Provisions for Developers) states: "The developer shall ensure that the Consultant provides all equipment, tools & labor necessary for all inspection, quality control & administrative duties required during construction. Inspection by the City is for monitoring only and is not sufficiently comprehensive to address the requirements for quality control, activity coordination or safety. The City's inspection shall not relieve the Developer of full responsibility for all aspects of the work".

Contractor: The company(s) engaged and directed by the Developer and/or Consultant to construct the improvements as per the design and the Design & Construction Standards.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

2.1 EXPECTED CODE OF CONDUCT

As a city employee, the inspector must comply with the City of Edmonton Code of Conduct Handbook and Guide. (Refer to Appendix G). Inspectors must read, understand, and comply with these regulations.

On site, the Inspector is the liaison between the City and the Developer, and between the City and the general public. The Inspector must perform this duty in a courteous and respectful manner, and must be accessible at all times. An Inspector is a highly visible representative of the City and must remain above reproach in both conduct and appearance. They must be honest, reliable, and impartial.

The Inspector should maintain a positive and helpful attitude towards the project – this benefits all aspects of the work. When dealing with the Developer, the Inspector should stay impartial and avoid conflicts of interest.

The Inspector should address any requests, questions or recommendations from the Developer and/or Consultant. If there is any uncertainty in what they are proposing, the Inspector should contact the Engineer for direction.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

2.2 SAFETY

Safety regulations can reduce risk, but never eliminate it. A construction site is a dangerous place – think and act accordingly. Traffic and pedestrian safety is the responsibility of the Developer/Consultant. Inspectors must follow prime contractor's safety protocols while on site. The Inspector should ensure safe practices are being followed. All unsafe conditions and actions should be reported to the Contractor.

2.2.1 Personal Safety

Personal safety is the individual responsibility of everyone on site. The following items should be considered at all times:

- Remain alert
- Ensure that you are visible
- Wear all applicable PPE (safety helmet & footwear, high-visibility vest, etc.)
- Report all near misses as outlined in OH&S standards

2.2.2 Pedestrian Safety

If open to the general public, certain precautions are necessary to ensure the safety of all pedestrians.

- When required, temporary walks and bridges must be provided
- Pedestrians must be separated from traffic and other hazards

2.2.3 Traffic Safety

Although traffic safety is the responsibility of the Contractor, the Inspector should be mindful of traffic related hazards and should report any unsafe practices.

- Both the Inspector and the Contractor must be familiar with the "Procedures for On-Street Safety"
- Barricades must be placed safely
- Machines and materials must be placed safely
- If required, certified flagmen should be used
- All regulatory signs must be covered or removed if not in use

2.2.4 Field Level Hazard Assessment

- All possible hazards should be assessed and documented each day on the Inspector's Daily Construction Progress Report.
- Safety audits will be conducted throughout the city by Supervisors at a frequency of 12 random inspections per year.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.0 GENERAL DUTIES

See 2.0 "Roles and Responsibilities" and 2.1 "Code of Conduct" for definitions of general inspection concepts.

Unless the Specifications indicate a particular technique, the Contractor may choose any reasonable method to produce the desired end result. This method must be first approved by the City. If the Inspector believes that a particular method will result in an unacceptable product, they must advise the Consultant.

According to the Design and Construction Standards – Volume 1 (Chapter 1, Item 4.2.1), if the Developer wishes to apply methods which differ from a standard or specification in this document, or if these standards or specifications do not cover a subject of concern to a specific design, or if the Developer proposes to use materials not approved in this document, then the responsibility shall be on the Developer to justify the proposal or resolve the concern to the satisfaction of the City. The concern shall be the subject of a report that the Developer shall have prepared by a professional engineer and signed, sealed and submitted to the city for review. The Inspector must be aware of what is in the Agreement and must notify the Developer when the expectations are not being met. Note that the Inspector should work with the Developer, Consultants, and Contractors rather than against them. By consistently enforcing the Specifications fairly, the Developer will understand what is expected of them. However, a hostile or overly lenient Inspector will lose the Developer's respect.

The Inspector should not perform any of the work. This impairs the Inspector's ability to inspect objectively.

3.1 Roadway Construction Monitoring

The descriptions and details outlined are for specific aspects of transportation and roadway construction. All of these procedures have supporting requirements, details and specifications in the City of Edmonton Complete Streets Construction Specifications and is the primary resource for construction. This is a general guideline as to how these procedures are to be monitored to ensure compliance. (see Appendix A).

3.1.1 Utility Service Installation & Trench Backfill

See Complete Streets Construction Specifications Chapter 3.

3.1.2 Utilities

Installation of underground utilities within the Road Right-of-way in a greenfield residential environment will include both mainline and individual lot servicing. The following utilities included are water, storm, sewage, natural gas and shallow utilities (power, street lighting, telecom and natural gas). EPCOR Inspection Services is responsible for most aspects of this infrastructure installation. However, some aspects that affect the surface construction in relation to Transportation infrastructure should involve Transportation inspectors.

The most common items are:

Manhole Tops: Cone tops on standard barrels are required. Slab tops can be used in exceptional circumstances when required, upon permission from EPCOR & COE. The top of cone (or slab) must be below the intended bottom grade of the full depth of stabilized (prepped) subgrade. See City of Edmonton Design and Construction Standards Volume 3 Drainage; detail drawing 7013. The general consultant should be able to determine and identify this during the manhole installation. Manholes installed too high must be lowered prior to the subgrade preparation (stabilization) of the road subgrade.

Catch Basins: The alignment must fall within the designed curb alignment. Re-aligning the curbs (tangent or radii) to accommodate mis-aligned CB's is not permitted.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.1

Water Valves and Curb Cocks (CC): Water valve and curb cock placement is not permitted within any concrete infrastructure such as walks, curb & gutter, etc. Water valve's are permitted within road base concrete exceptions are permitted upon approval of COE & EPCOR. Water valve stems must be below the intended bottom grade of the full depth of stabilized (prepped) subgrade. The general consultant should be able to determine and identify this during the water valve installation. Water valve stems installed too high must be lowered prior to the subgrade preparation (stabilization) of the road subgrade.

Gas Transmission Mains: Gas transmission mains may be included within the Road Right-of-way of a residential development, but there are exceptions that require non-standard installation and backfill practices. These will be identified in the engineering design and should be discussed with all parties including the supervisor prior to construction.

3.1.3 Backfill

The geotechnical engineer holds the primary responsibility to perform monitoring, supervision and certification of the trench backfill (including shallow utility backfill). They are responsible to have a geotechnical report that provides specific observations, conditions and recommendations about the site and soil conditions. The geotechnical engineer is to be present onsite for supervision of the backfill operation while underway. The City inspector should be aware of the requirements, conditions and progress of the backfill, monitoring those circumstances in coordination with the geotechnical site representative.

The following are the items that the City inspector should be aware of when onsite:

Slope Safety: As part of the geotechnical report recommendation trench slopes, including possible shoring, are designed for optimum safety based on the soil conditions and soil composition. This is formally coordinated between the geotechnical consultant and the contractor.

Soil Material Acceptability: Initially based on the geotechnical report but also includes in-situ evaluation during construction. This is the composition and acceptability of the soil materials which includes establishing the moisture content and the temperature state (ie. frozen). This may also include determining the presence of unacceptable or deleterious materials and establishing remedial action to overcome any and all unacceptable conditions.

Lift Thickness: As per 3.1.3.6 of Complete Streets Construction Specifications, lift thickness must not exceed 300mm. Exceptions for the first lift above the pipe and/or bedding can be made for thickness but not for density.

Density: Must meet 3.1.3.7 of Complete Streets Construction Specifications. This section identifies density, moisture and testing frequency requirements.

Uniform Backfill: Is the standard requirement of all greenfield residential, collector and arterial roads. This requires that all backfill to a depth of 1.5m below subgrade must be placed uniformly from property line to property line of a residential road and 0.5m behind proposed back of curb for any arterial roadway.

Compaction Effort: As well as achieving passing densities, it must be clear that the effort used to achieving those densities is applied effectively and consistently throughout the area. Special equipment and effort in confined areas (around and between manholes) is required. Additional representative testing in those areas should be performed by the geotechnical representative. Special circumstances that limit compaction effort may require alternatives such as geotextiles or fillcrete in lieu. Such measures should be discussed with the geotechnical representative, the general consultant and the contractor.

Shallow Utilities: The only shallow utility installations occurring prior to road construction are the road crossing. These are excavated, installed and backfilled after the uniform backfill is complete and prior to the start of surface construction. The standard backfill requirements apply. See clause 3.1.8 for details.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.1.4 Road Core Grading

See Complete Streets Construction Specifications Chapter 2, Clause2.3.

This is establishing the grades within the Road Right-of-way at or in the proximity of the required road construction. Overall site grading occurs before underground utility installation begins, the core grading occurs after the uniform backfill is complete. Typically this core grading involves minor cuts to the existing completed backfill. However, excessive cuts may reduce the required thickness of the uniform backfill. On occasion, a site may be graded too low after completion of the uniform backfill. If this fill required includes importing material, compliance to clause 2.3.3.2 "Fill" of the Construction Specifications is required.

3.1.5 Subgrade Preparation

See Complete Streets Construction Specifications, Chapter 4.

The main way to determine the condition and quality of the roadway sub-base or subgrade soils is through geotechnical analysis (performed by the geotechnical engineer), visual inspections and proof rolls. These actions will determine the measures necessary to make subgrade material (clay, silt, sand) load bearing and adequate roadway subgrade. The City inspector should participate in all of these aspects; however, this may not be possible due to schedule. The major aspect to be involved in is attending the Consultant arranged proof rolls and participating in the analysis, discussion and consensus necessary to determine the mitigating measures required. All proof rolls must be in accordance with Complete Streets Construction Specifications Chapter 4 and the Geotechnical Consultant's recommendations.

3.1.5.1 Pre-proof Rolls

This proof roll is performed once the project is at grade and is ready for subgrade preparations. This test is useful in determining the methods and means necessary to achieve an acceptable subgrade. Following the proof roll, the Geotechnical Consultant is responsible for making any required recommendations – for these recommendations a consensus must be reached between all parties. A typical recommendation is to cement stabilize with quantities between 10kg/m and 30kg/m to depths between 150mm and 450mm. 10kg/m at 150mm depth is the minimum required. Conditions determined to exceed a requirement of 30kg/m require more extensive remedies prior to cement stabilization.

3.1.5.2 Cement Stabilization

See Complete Streets Construction Specifications, Chapter 4, Clause 4.2.

This section details the process of spreading cement, pulverizing and mixing the cement and soils and then spreading and packing. It is noted that this process cannot be used with frozen material. Also completed stabilized subgrade should not be left to freeze prior to placement of base course.

3.1.5.3 Post Proof Roll

This proof roll is performed once the subgrade is fully constructed. This test is used to confirm that the subgrade was built to design grade and standards. The City Inspector's role is to ensure the proof roll meets the Construction Specifications. The Geotechnical Consultant is responsible for providing recommendation and certification of remediation (if required) to conform to the Specification. The Geotechnical Consultant must certify and approve the proof roll in accordance with the Specification. In the event of a FAILED post stabilization proof roll, remedial action is required. This will be determined by the severity and extent of that failure. Minor failures may be mitigated by way of

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

re-mixing localized failures, placement of geotextiles (CSCS Clause 4.5) or other measures recommended by the geotechnical engineer. More extensive failures may require re-mixing, re-stabilizing or more severe measures. Consultation and consensus between the geotechnical engineer, the engineering consultant and the City of Edmonton is required for any remedial solution.

3.1.5 Subgrade Elevation Check

This is to verify that the road structure conforms to design requirements. The subgrade elevation check will entail checking the lip of gutter grade (lip of gutter +/- structural depth to top of subgrade) measured off of survey hubs. This is to be done at a random frequency and any necessary corrections are to take place prior to placement of granular base course. Crown and 1/4 crown checks are encouraged but not mandatory for City Inspectors. This should be performed on all roads; local, collector and arterial. The secondary method is to dig through placed gravel and check depth from lip of gutter. This should only occur when grade check was not performed as part of subgrade acceptance. If the subgrade elevation check does not meet City Specifications, contact the Consultant to re-mediate.

3.1.6 Road Base Installation

See Complete Streets Construction Specifications Chapter 5, Granular Materials and Chapter 2 Clause 2.1 Aggregates.

Road base designs typically comprise 3-20 aggregate (or an approved alternate) placed in two or more lifts. Prior to placement of the first lift, wick drains are placed on top of the prepared subgrade as per CSCS detail 5100 or 5120 and connected to the nearest catch basin at a depth conducive to positive drainage. The same applies to roads with curb and gutter without mono walks. This first lift is then placed including gutters and mono walk berms. This is then graded, compacted and tested as required to accommodate concrete placement.

3.1.7 Concrete Placement

See Complete Streets Construction Specifications Chapter 7, Concrete for specifications and procedures. See details 5000 through 5120 and 5300 through 5630 for curb and gutter, monolithic curb & gutter, walks, swales, curb ramps, crossings and median features. Also, see City of Edmonton Design and Construction Standards Volume 3 Drainage; detail drawings 7005 through 7014 for details about concrete placement around drainage features. The dimensioning of the placed concrete features must be checked to ensure compliance with the listed details. See "Concrete Deficiencies at CCC" in Part 2 of this manual for acceptance tolerances of grade, profile and crossfall of these features. Non-compliance will result in removal and replacement. Although this criterion is listed in the certification section, compliance checks should be performed as soon as possible after the concrete placement. Non-compliance must be addressed immediately; before proceeding with further stages of the construction.

- Concrete is either place through slipforming or by hand pouring into formwork.

- Concrete testing is performed during placement and effects the immediate and long term acceptance of the concrete product. The City Inspector should be present for any concrete testing. In the event of initial test failure, specific re-tempering procedures need to be followed and witnessed by the City Inspector. Ultimate acceptance or rejection of the concrete will depend on both the follow up testing after re-tempering

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

and adherence to the procedures.

3.1.8 Road Base Completion

- The subsequent lifts of road base aggregate are not to exceed 150mm and are placed after roadway concrete is complete. These lifts are graded and tested as required with final density testing occurring just prior to asphalt paving.

- Road base aggregate gradation (sieve) compliance should be confirmed immediately prior to commencement of the construction. Remedial action for non-compliance is incremental based on severity of the failure. The geotechnical engineer must make a remedial recommendation on that basis. This applies to all lifts and applications of aggregate base.

3.1.9 Paving

See Complete Streets Construction Specifications Chapter 6, Pavements. Application of SGC Hot-Mix Asphalt Concrete for roads, alleys and asphalt trails (SUP/MUT).

- Any new greenfield road construction, including local, collector or arterial roads will have staged pavement; the final lift applied just prior to FAC. Alley paving may be staged as well, if two or more utility run under the carriageway of the alley. This will include transverse service connections.

- There are a number of paving factors that need to be monitored before and during the construction. This includes checking the condition and limits of cold milling, current and imminent weather conditions, the condition of the base prior to and during paving, the condition of the tack coat prior to and during paving, asphalt delivery temperature, spreading and placement practices, monitoring that excess SGC is properly wasted, rolling temperatures, joint temperature, joint condition, segregation, grade, crown, intersection profiles, and surface finish and clean-up.

3.1.10 Shallow Utilities Install

Shallow utilities installation (power, street lighting, gas, telecom) and portions thereof occur at various stages of roadway construction. Utility crossings occur after the trench backfill is complete but before road base construction. Gas transmission mains installation when in the R.O.W. are usually part way through the road construction; after the first lift of road base but before concrete. A roadway with separate walks will have some or all of the shallow utilities under the walks, so they will be installed after the roadway is complete but before the walks begin. Various methods of trenching are used but the trench backfill specification must be followed and certification is required. As shallow utilities are often installed during the winter months and seasonal limitations apply. Backfill is not completed and certified until acceptable seasonal conditions return the following construction season.

3.1.11 Fine Grading

Fine grading must be completed for all improvements as illustrated and specified on all applicable detail drawings

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.2

before the improvement is considered complete.

3.1.12 Roadway Completion Requirements

As well as the physical improvement construction, there are associated elements and installations directly related to the roadway improvement that affect the safety, functionality, and susceptibility to damage and deficiency.

- Ensure that all associated and applicable improvement requirements have been met. This would include street lighting installation (but not energization), shallow utility backfill compliance.
- Completion of supplemental improvements (emergency access, temporary turn-around, temporary access, etc.).
- Application for installation of Pavement Markings and Streetblade ID. A copy of the application must be included in the CCC Inspection Request submission.

3.2 SUBSEQUENT IMPROVEMENTS

3.2.1 Separate Walks

All applicable subgrade, base course and concrete specifications apply. See CSCS details 5140 and 5150.

3.2.2 Alleys

See CSCS details 2040 and 2041. All applicable specifics are on those details. As previously mentioned, alleys may or may not have staged paving.

3.2.3 Walkways/Emergency Access

See CSCS details 5130 and 5140.

These are usually separate walks on PUL lots that lead away from the residential roadway walks. They can connect to MR walkways, to walks or SUP's on adjacent collector or arterial roads, or other residential stages; either existing or proposed. All grading for walkway Right-Of-Way must be complete (as specified in the Engineering Drawings). Clay capping is not acceptable to meet grading requirements, unless specified in engineering drawings. Emergency access walkways are similar but designed in structure and width to accommodate emergency vehicle traffic. They may have bollard type barriers to restrict traffic. As completion of emergency access are often critical to the safe operation of the road system, the eligibility of roadway inspections is contingent on that completion.

3.2.4 Multi Use Trails (also known as Shared Use Path)

See CSCS details 5160, 5165 and 5170.

These are found on one side of arterial roads and on MR/SWMF (parkland). They are intended for both pedestrian and bicycle traffic.

3.2.5 Hard Landscaping Features

These are any hard surface area intended for public/pedestrian access on public land. Examples are plazas, viewing platforms, entrance features and other decorative features. This may also include retaining walls up to 1.5m in height. These are specifically designed and are not included in any of the CSCS

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

details. All applicable subgrade, base course and concrete specifications apply.

3.2.6 Retaining Walls (>1.5m) & Bridges

These are the same as "Hard Landscaping Features" but also require professional design and certification from a structural engineer.

3.2.7 Noise Attenuation Fences

See CSCS detail 5205.

These are required on the back and flankage of lots adjacent to arterial roads. They are typically built on a berm. Important items in the clause are lift thickness, grade and density requirements. Important fence construction features requires "no gaps" either in the fence (between boards or boards and posts) or under the fence, unless specified in the design. No attachments (banners, flags, signage, etc.) are permitted.

3.2.8 Street Lighting

See the City of Edmonton Design and Construction Standards "Road and Walkway Lighting Construction and Materials Standards". See also, the "Street Lighting Deficiencies at CCC" in Part 2 of this manual.

Street light installation usually occurs after the roads have been paved, but prior to separate walk (if applicable) construction. This is due to the cable alignment being under separate walks but behind monolithic walks. Important feature of the street lighting installation are the pole base installation (including fillcrete), trenching and cabling, the trench backfill, pole installation and ultimately lighting energization. All of these operations (excluding energization) may significantly impact the conditions of the roads as well as cause damage and deficiencies.

3.2.9 Temporary Features

This can include temporary turn-arounds, temporary access roads, temporary emergency access, etc. These are short term features for access and safety, with specifics and details identified on the engineering drawings. They become redundant and are removed with future development. Typically, Construction Completion Certification is required, but Final Acceptance is not, as per the Servicing Agreement. Maintenance is the Developer's responsibility throughout the existence of the feature. As completion of these features are often critical to the safe operation of the road system, the eligibility of roadway inspections is contingent on the completion of these features.

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.3 JOB START-UP/PRE-CONSTRUCTION MEETING

The Inspector should:

- Review applicable sections of the agreement and the Specifications.
- It is imperative that the Inspector firmly upholds the Specifications at job start-up. Enforcing the Specifications will become more difficult as the project progresses.
- Note the general condition of site prior to construction.
- Introduce themselves to the Developer's representative(s). The Developer or the Consultant is the project manager on the jobsite
- Obtain contact information where applicable
- Check construction drawings prior to construction. Make sure they are understood and ensure the drawings are approved. Draw attention to any apparent errors.
- Keep plans handy

MUNICIPAL IMPROVEMENT CONSTRUCTION *(CONT.)*

3.4 DAILY RECORDS

Along with site presence and scrutiny of the construction activity, record keeping is critical to ensure standards and design compliance and to facilitate certification. Record keeping is a primary responsibility of all inspection staff.

An Inspector's daily records diary has occasionally been the deciding factor in legal proceedings; therefore, entries should be accurate and comprehensive.

The following information may be included in diary entries:

- Weather
- Consultant presence
- Conversations with the Consultant
- Disputes with Contractors/others
- Complaints from public
- Work progress
- Production yields for the day (m^3 for concrete, tonnes for gravel and asphalt)
- Identify any deficiencies in completed work
- Anything unusual

3.4.1 Development Inspections: Servicing Agreement Construction Tracking and MIA Tracking Report (construction trackers)

The construction trackers are the digital recording tools made available only to the City Inspector to record daily construction activity. This tool is to record project activity, milestones and any related issues on an ongoing basis as detailed as possible. A tracker entry should be made for every site visit and every construction activity witnessed by the inspector. Entries should be made while on site, as notable activities occur and with as much pertinent detail as practical.

3.4.2 Personal Diary

A personal diary can also be maintained to supplement the 'digital' construction tracker. It should contain at least the same amount of detail as construction tracker and could be an easier way elaborate on observations and details that are inconvenient to record in the digital tracker. It is a permanent record of all of these notes and observations.

PART 2: CERTIFICATION

4.1 CONSTRUCTION COMPLETION CERTIFICATE (CCC) AND FINAL ACCEPTANCE CERTIFICATE (FAC)

4.1.1 Construction Completion Certificate (CCC)

Upon completion of a municipal improvement as defined in the agreement, detailed in the engineering drawings and compliant with the Specifications, the Developer can certify completion by way of a CCC. The terms of the certification are defined in the agreement and must include approval by the City.

4.1.2 Warranty Period

Upon approval of the CCC, a warranty (hereinafter referred to as the "Maintenance Period") will commence. The duration of the Maintenance Period is also defined in the agreement. During this period the Developer is required to make any repairs to deficient areas that are deemed unsafe or disrupt the functionality of the improvement. The Developer may choose to do repairs at any time during the warranty period and will notify The City of repair schedules, All repairs must be completed to City specifications.

4.1.3 Final Acceptance Certificate (FAC)

Upon completion of the Maintenance Period of a municipal improvement, the Developer can certify the completion by way of a FAC. The terms of the certification are defined in the agreement and must include approval by the City. Upon approval of the FAC, the City will assume responsibility for maintenance of the municipal improvement.

4.1.4 Construction Completion Certificate Application

When an Agreement defined municipal improvement has been completed as per the COE Complete Streets Construction Specifications, the approved engineering design, the Developer/Consultant can initiate the CCC process.

Prior to the CCC application, the Developer/Consultant must:

- Ensure the improvement is ready to be inspected (clean and unencumbered).
- Confirm with the City Inspector that the Servicing Agreement "Conditions Preventing Inspection" (seasonal considerations) are not applicable.
- Ensure that any and all specific completion requirements associated with the improvement have been met (see section 3.1 & 3.2)
- Formally acknowledge that the improvement is complete, is free of safety hazards and without deficiency, confirmed by a "no deficiency report". This must be determined by way of a preliminary inspection, performed by the Consultant.
- If the Consultant's inspection finds deficiencies (as per section 4.6 General Repair Requirements at CCC of this manual), an inspection report should be forwarded to all parties concerned, including the City Inspector. Repairs can then be undertaken. All repair work requires 48 hours written notice of commencement to the city inspector. All repairs must comply with COE Complete Streets Construction Specifications including material testing. This process should be repeated until the consultant determines that the improvement is without deficiencies and can then provide a "no deficiency report".

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

4.2 THE CCC CERTIFICATE CON'T

4.2.1 Request Requirements

Once the requirements previously stated have been met, the improvement is eligible for a Formal CCC Inspection. The inspection request must be initiated through eServices. An upload of supporting documents to the "Inspection Documents" folder of the ePlan Project is also required to complete the request.

This upload to Eplan must include:

- Properly completed and current Inspection Request form (see Appendix C).
- An overall drawing of the stage highlighting the improvement to be inspected.
- The consultant's "no deficiency" inspection report along with any preliminary inspection reports that may have initiated deficiency repairs.
- Submission of required documents specific to the improvement. (Example, copy of the Pavement Markings and Streetblade ID application for 'Roads').

Once the upload is complete, the inspector will be notified through eServices. If the document submission is in order, the inspector will accept the request, approve the "Pre-screen" task and proceed with the inspection.

Below are examples of sites that are NOT ready for inspection:

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

4.3 THE CCC CERTIFICATE CON'T

4.3.1 Formal Inspection

The City will provide a formal inspection within 30 days of the approved request, once all of the application requirements have been met.

If the Developer/Consultant chooses to attend the formal inspection, they must contact the City to arrange a time and date. The Developer/Consultant will provide a list of deficiencies if any, or a no deficiency report if none exist. This is to be verified by the City Inspector at the time of inspection. This must be uploaded to the "Inspection Documents" folder in ePlan.

If the Developer/Consultant chooses not to attend the formal inspection, the City will provide a written list of outstanding deficiencies within 14 days of the inspection which is also to be uploaded to the "Inspection Documents" folder of ePlan. No new deficiencies will be added to the CCC deficiency list within 6 months or the formal inspection.

Deficiencies noted (as per section 4.6.1 "General Repair Requirements at CCC" of this manual) or non-compliance with any other of the requirements listed above, will result in a "not approved" result for the eServices Inspection Request.

When no deficiencies are noted, the "approved" result will be applied to the eServices Inspection Request within 14 days. This will benchmark warranty start date for the improvement.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

4.4 THE CCC CERTIFICATE CON'T

4.4.1 Appeal Process

If for any reason there is a disagreement with the observations of the City Inspector, the Developer/Consultant may request a review of the deficiency list. The Developer/Consultant will collect documentation of the deficiencies in question and present them to the City Engineer within 14 days of receipt of the deficiency list. Upon review, the City Engineer, along with the City Inspector and the Developer/Consultant, will inspect the entire site within 14 days of the appeal and will have the authority to add or subtract deficiencies to the list. This list, as provided by the City engineer is final, cannot be challenged and will designate the start of the warranty period. The warranty period will begin once all deficiencies have been repaired and approved by the City engineer and the City Inspector.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

4.5 THE CCC CERTIFICATE CON'T

4.5.1 CCC Documentation Package Requirements

The documentation package and any subsequent requested documents must be uploaded through ePlan. A documentation package must be submitted for each improvement. Each documentation package shall only include documents pertaining to the improvement. Documents pertaining to other improvements must not be included.

The documentation package must be submitted within **6 months of the approved CCC inspection** ("Inspection Expiry Period"). The City is required to review the complete documentation package within **60 days** of submission.

If a documentation package is submitted and conforms to all requirements within the "Inspection Expiry Period" the Departmental Review will be approved. This will set the accepted CCC inspection date as the start of the maintenance period and allow the formal CCC approval by Development Coordination.

Amendments, additions and/or corrections to the documentation package are permitted throughout the "Inspection Expiry Period".

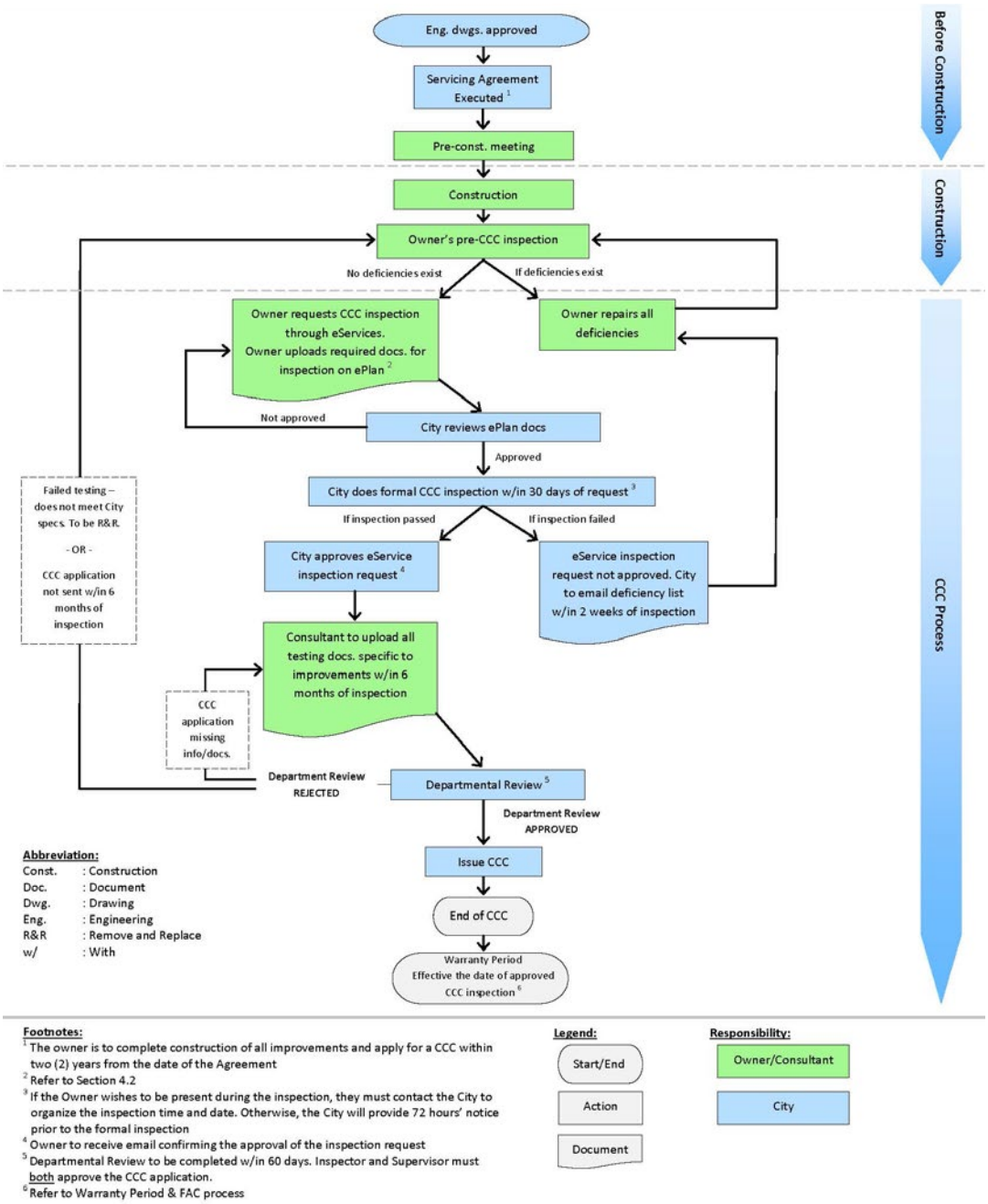
If a documentation package is not submitted or does not conform to all requirements within the "Inspection Expiry Period" it will be considered incomplete. This will, at the discretion of the City, void the accepted CCC inspection. The CCC process must be re-initialed with a new inspection request, a new acceptance date and new document submission.

The submission of the documentation package must include:

- Documentation Package Checklist for CCC (see Appendix D)
- Complete and reviewed document package including:
  - All test data. All tests must meet City Specifications. Test data must be specific to the improvement only.
  - Defect assessments including any required re-cores. (For example see Appendix F)
  - Plot of test locations on a project map
  - Completed Asset Cost Form (.pdf & .xls format)
  - Proof Roll Report from Geotechnical Consultant (if applicable)

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

Figure 1. The CCC Inspection and Documentation Review Process



CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

4.6 DEFICIENCIES IDENTIFIED DURING MAINTENANCE PERIOD

During the maintenance period, the Developer is responsible for the maintenance of the Municipal Improvement in accordance with signed Servicing Agreement. The Developer shall repair any damage or deficiency within 30 days of written notification from the City. The Developer is exempt from repairing any items identified as an exception in the Servicing Agreement. The maintenance period start date is not affected by these repairs. If not repaired, the City may draw on the security to correct deficiencies.

This clause pertains to deficiencies that require immediate attention (e.g. loss of service, safety hazards). This clause is applicable throughout the duration of the maintenance period, and may be used at the sole and exclusive discretion of the City.

A visual representation of the CCC approval process is shown in **Figure 1**. The flowchart briefly describes the steps involved for a certificate to be approved by the City. This guideline and flowchart are to be read in conjunction with Servicing Agreement.

4.6.1 General Repair Requirements at CCC

All maintenance and repair work is to be carried out in accordance with the approved City of Edmonton Complete Streets Construction Specifications. The following are required for any repair work:

- An On-Street Construction and Maintenance (OSCAM) Permit and any other applicable permits must be obtained 48 hours prior to commencement of repair work.
- Developer/Consultant must provide written notice to City inspection staff 48 hours prior to the commencement of any work.
- Developer/Consultant must provide written notice to residents of affected properties 48 hours prior to the commencement of repair work affecting on-street parking and/or driveway access.
- All repair work shall be cleared of any debris within 48 hours of construction completion.
- All damage that affects the functionality and operation of the landscaped boulevard must be corrected.
- Materials and placement must conform to the requirements of the City Complete Streets Construction Specifications and/or as required by the City.
- Testing is required for **all work** and should conform to the requirements of the Complete Streets Construction Specifications.
- Temporary measures may be used upon approval by the City. However, temporary measures must be repaired to City Specifications at FAC.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC

4.6.2

Concrete deficiencies can be minimized or prevented by adhering to proper construction methods. At the CCC inspections stage there are many deficiencies that can be subjective. This section will describe the many types of deficiencies and state the acceptable limits.

If these limits are exceeded, the concrete structure must be replaced or a penalty shall be applied in accordance with the Specifications.

Loss in crossfall and/or profile

Concrete shall be replaced following CCC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following concrete deficiencies exist:

Greater than 300 mm in length

4.6.2.1 Cracking

Cracking may result from a variety of factors. Cracking is influenced by material, design, construction, service loads, and exposure conditions. Cracks warranting removal and replacement include cracks which:

- Are greater than 300 mm in length.
- Are greater than 1.2 mm in width (the width of a dime).
- Split into two or more separate cracks.
- Causes a loss in crossfall and/or profile (zero tolerance).

Deficient crack

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

4.6.2.2 Mortar Flaking

Spalled concrete refers to concrete that has broken up, flaked, or become pitted. This is usually due to poor installation and/or environmental stresses on the concrete. Spalled concrete shall be removed and replaced :

- Loss of surface mortar and/or aggregate affects more than 5% of the surface area. This applies to walk panels, and 3.0 m curb and gutter sections.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

4.6.2.3 Gouging

Gouges are rough holes, grooves, or indentations in the concrete surface. Concrete shall be removed and replaced if:

- Two or more gouges exist in a single section of the concrete.
- Gouges affect the functionality of the concrete.
- A single gouge represents more than an area of 35 mm x 35 mm of curb and gutter.
- A single gouge has a depth more than 6mm in a single section concrete.

Gouging

Gouging

4.6.2.4 Vertical Displacement

Vertical displacement refers to lift or sag at the edge of a concrete block. Concrete shall be removed and replaced if:

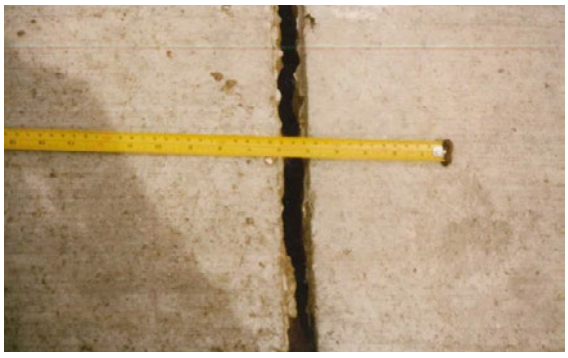
- There is a vertical displacement greater than 5 mm.

Vertical Displacement

4.6.2.5 Joint Separation

Concrete shall be removed and replaced if:

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



Joint Separation

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

4.6.2.6 Ponding

Ponding refers to standing water on the concrete surface, and is a result of settlement in the subgrade structure. Concrete shall be removed and replaced if:

- Ponding occurs on any walking surface (zero tolerance).
- Any localized deflective displacement (settlement) exceeding 6mm over 3m.
- Any settlement or workmanship causing water retention in front of driveways, curb ramps, alley crossings, commercial crossings, or bus stops

Ponding

Ponding

4.6.2.7 Disfigurement

Concrete shall be removed and replaced if:

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

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

4.6.2.8 Undermining

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

Undermined pad

Undermined walk

4.6.2.9 Crossfalls

Crossfall refers to the transverse grade of the concrete surface toward the gutter or drainage path. Concrete must be removed and replaced if:

- If there is a dish or hump in 2 panels of sidewalk (6m) greater than +/– 6mm (see Clause 7.13.3.3 of "Concrete" in the Construction Specifications)
- If the crossfall for the concrete work does not fall within the acceptable range as defined in Table 1.

Table 1: Crossfall Requirements

Design Standard	*Deficiency*
Sidewalk Crossfall (ensure draining towards road)	< 1.0% > 4.0%
Gutter Crossfalls	< 4.0% > 15.0%
Curb ramp Crossfalls	< 4.0% > 6.0%
Alley and Commercial Crossings	< 4.0% > 8.0%

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

Sidewalk < 1.0% crossfall

Sidewalk > 4.0% crossfall

Gutter < 4.0% crossfall

Curb ramp > 6.0% crossfall

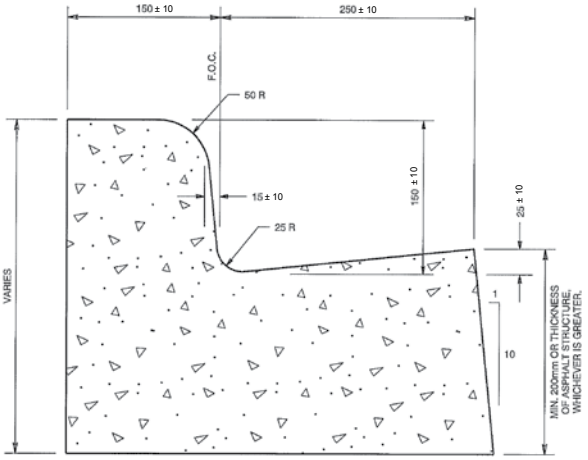
CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE DEFICIENCIES AT CCC CON'T

4.6.2.10 Profile Deficiencies

Curb and gutter must be removed and replaced if:

- Any dimension varies from the curb and gutter profile details by more than ± 10 mm.



Typical curb and gutter profile.
All measurements are in millimeters.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

CONCRETE REPAIR REQUIREMENTS AT CCC

General Concrete Repair Requirements

- Concrete sections are to be removed at contraction, expansion, or surface joints. If warranted, a 1.5 m minimum length of curb and gutter section may be replaced.
- Existing landscaping must be adjusted to match repaired concrete sidewalks and/or curb and gutter. Landscaping repairs to match existing condition and maintain proper grades from private property to road right of way. Additional damage done to adjacent concrete and/or asphalt during the removal process shall be re-cut prior to repair of the deficiency.

Concrete Sidewalks Repair Requirements

- Existing walks and driveways must be adjusted to match concrete sidewalks. The City may require the replacement of existing private walks or driveways to provide a satisfactory tie-in.
- When replacing separate sidewalks, positive drainage from the front of walk to the curb must be maintained throughout the boulevard. A minimum of 2% is required.
- Where monowalk panel deficiencies, the entire monowalk – including curb and gutter – must be replaced. No flag sections are permitted.
- If both adjacent panels are in need of repair, the middle concrete panel must also be removed and replaced. A panel is defined as the section between two crack control joints.

Curb and Gutter Repair Requirements

- 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 or cracks.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT DEFICIENCIES AT CCC

4.6.3

Pavement distress could be caused by a combination of factors. These factors may include weak surface, base, or subgrade, excessive loading and poor workmanship. At the CCC inspections stage there are many deficiencies that can be subjective. This section will describe the many types of asphalt deficiencies, and will outline the limits that warrant the replacement of deficient asphalt.

Asphalt shall be replaced at CCC following CCC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following asphalt deficiencies exist:

Standing water in crossing unacceptable

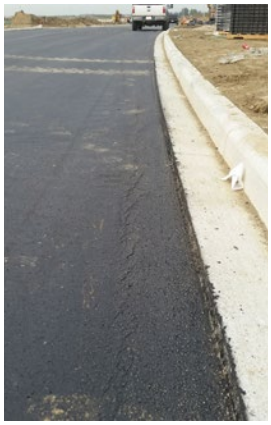
Open asphalt joints causing riding quality

4.6.3.1 Cracking

Cracking may result from a variety of factors. Generally asphalt cracking is influenced by moisture, temperature, movement and construction.

Asphalt that is defined as a deficiency includes:

- Open asphalt joints causing unacceptable riding quality
- Alligator cracking
- Longitudinal cracking
- Cracking that is detrimental to the road structure or causes unacceptable riding quality



Asphalt Crack

Longitudinal Crack

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT DEFICIENCIES AT CCC CON'T

4.6.3.2 Rutting

Rutting is the permanent deformation (indentations) of the pavement in the wheel paths, which can lead to cracking and further deterioration. Some causes of rutting include heavy traffic, slow moving traffic, temperature, poor construction, and moisture damage.

Rutting

Rutting

4.6.3.3 Potholes

Potholes are created when moisture in the asphalt expands from freeze/thaw cycles. Traffic further deteriorates the weakened road sections and can cause potholes to expand.

Pothole

Potholes

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT DEFICIENCIES AT CCC CON'T

4.6.3.4 Ponding

Ponding refers to standing water on the asphalt surface, and is a result of settlement in the subgrade structure. Settlement may occur for a variety of reasons, including poor compaction, changes in subgrade moisture, and the use of unsuitable subgrade materials. There is zero tolerance for ponding on asphalt.

4.6.3.5 Aggregate loss/Raveling/Segregation

Segregation may occur on the asphalt surface, or at the pavement edge. This may result from loss of binder between aggregate, poor grading and mixing of aggregate, or insufficient compaction. Segregated asphalt may fill with moisture and loose debris which can cause further problems.

Ponding

Segregation

Ponding

Segregation

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT DEFICIENCIES AT CCC CON'T

4.6.3.6 Contamination (e.g. clay tracking, petroleum spillage, foreign material)

Chemical contamination

Foreign material

Foreign material

4.6.3.7 Poor tie-ins

Poor tie-in

Poor tie-in

4.6.3.8 Poor Construction Methods

Refer to Chapter 7, Pavements; Complete Streets Construction Specifications.

4.6.3.9 Grade Deficiencies

Asphalt must be repaired if:

- Existing grade varies from design grade by ± 0.2%
- Any localized deflective displacement (settlement) exceeding 6mm over 3m.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT REPAIR REQUIREMENTS AT CCC

Asphalt overlay is required if the road cross section does not lie within the boundaries specified in Table 2.

Table 2: Road Standards at CCC

Road Width	*Standard Crown*	*Maximum Height*	*Minimum Height*
8.0 m	*110 mm*	*150 mm*	*100 mm*
9.0 m	*130 mm*	*160 mm*	*120 mm*
11.5 m	*150 mm*	*185 mm*	*135 mm*
14.5 m	*180 mm*	*225 mm*	*160 mm*

General Asphalt Repair Requirements

- Asphalt repairs are to be rectangular or square and a minimum of 1.2 m wide (excluding Asphalt Trail).
- Surface repairs must be ground and prefilled prior to a full depth overlay.
  - Arterial and collector roads to be ground a minimum of 50 mm.
  - Residential roads to be ground a minimum of 35 mm.
- Edges of existing asphalt to be ground or cut vertically. No feathering of patches is allowed.
- If there is base failure evident or settlements greater than 75 mm in the asphalt structure remove and replace base structure as recommended by a Geotechnical Engineer and approved by the City.
- If the asphalt surface is segregated, the use of an approved slurry seal may be used provided the deficiency is clean of dirt and debris. This method is only acceptable for non-staged paving improvements.

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

ASPHALT REPAIR REQUIREMENTS AT CCC CON'T

Road Repair Requirements

- To repair asphalt surface failure, cut out 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 allow for a minimum of 35 mm of asphalt. 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 (± 6 mm) prior to paving.

Asphalt Trail/Alley Repair Requirements

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

CONSTRUCTION COMPLETION CERTIFICATE (CCC) *(CONT.)*

STREET LIGHT DEFICIENCIES AT CCC

Items identified below are to be repaired and/or replaced within the period identified on the Servicing Agreement, compliant with Road and Walkway Lighting Construction and Material Standards, and verified by the Developer/Consultant, prior to a formal CCC inspection request with the City. All deficiencies shall be repaired and/or replaced in accordance with City Specifications. If uncertainty exists for any items listed, contact the Street Lighting group for final decision.

Items shall be repaired/replaced following CCC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following deficiencies exist:

4.6.4.1 Pole Base

- Crack exists on base that reaches the anchor rods. In this case, the pole base is to be removed, and the crack is to be checked. If the crack propagates all the way through to the anchor rod or compromises the base structure, the precast base will have to be replaced at CCC.
- Orientation of precast base significantly deviates from design.
- Missing/Loose anchor bolt nuts.
- Anchor rods are rusting or bent.

4.6.4.2 Luminaire Poles

- Structurally compromised poles – dent in pole that is located on the mold line of the steel.
- Ground bolts missing (e.g. bolt located on the opposite side of the hand hole).
- Missing hand hole cover.
- Non-galvanized hardware
- Paint chips that compromise galvanization.
- Powdercoat area damaged more than 700 mm^2 (approximate size of a toonie).

4.6.4.3 Luminaires

- Any luminaire is non-operational

4.6.4.4 Other

- Grade visibly below surrounding hard structures, like curb & walk.

Damaged precast base

Galvanizing damage

FINAL ACCEPTANCE CERTIFICATE (FAC)

5.1 PRELIMINARY FAC INSPECTION

To initiate the FAC process, the Developer must perform a pre-FAC Inspection.

The pre-FAC inspection is to occur prior to any staged paving (FAC overlay), as specified in the approved engineering design. This type of inspection is specifically intended for Paved Roads but will likely apply to any servicing agreement defined municipal improvement.

The Developer can request a pre-FAC inspection to the City (directly with Development Inspections) within 90 days of the maintenance expiry date. The City Inspectors must be notified of the inspection. Attendance is at the Inspector's discretion but is recommended in most cases and mandatory for Paved Roads. An inspection report must be submitted to the City prior to any repairs.

Requirements for a Preliminary FAC Inspection:

- Ensure the improvement is ready to be inspected (clean and unencumbered).
- Confirm with the City Inspector that the servicing agreement "Conditions Preventing Inspection" (seasonal considerations) are not applicable. This may also include inclement weather at the scheduled inspection time. Note these considerations are solely at the discretion of the inspector. A new inspection date will be coordinated between the applicable parties within 72 hours.
- Water flushing is required where applicable (Roads, gutters, swales, alleys). Catch basin socks should be removed for any inspection involving flushing.
- If the Consultant's inspection finds deficiencies (as per General Repair Requirements at FAC of this manual), the deficiencies must be marked (painted) at all locations. An inspection report identifying all deficiencies must be generated and should be forwarded to all parties concerned, including the City Inspector.

Deficiency Repairs:

Once identified by the preliminary inspection, deficiency repairs can commence at the Developer's convenience, but requires:

- An On-Street Construction and Maintenance (OSCAM) permit.
- 48 hours written notice of commencement to the City Inspector.
- 48 hours written notice of commencement to affected residents.
- Compliance with COE Complete Streets Construction Specifications including material testing.
- This process should be repeated until the consultant and inspector determine that the improvement is without deficiencies and the consultant can then provide a "no deficiency report".

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

5.2 FAC INSPECTION REQUEST REQUIREMENTS

- Completion of any staged construction, including asphalt overlays, associated with the improvement.
- A confirmed passing "post pave" EPCOR inspection has occurred.
- Ensure the improvement is ready to be inspected (clean and unencumbered).
- Confirm with the City Inspector that the servicing agreement "Conditions Preventing Inspection" (seasonal considerations) are not applicable.
- Formally acknowledge that the improvement is complete as per the approved engineering drawings and compliant with the COE Complete Streets Construction Specifications, is free of safety hazards and without deficiency. The consultant must verify this and submit "no deficiency report" as confirmation.
- Submit Record Drawings (Appendix K) as per Servicing Agreement.

Once these requirements have been achieved, the improvement is eligible for a **Formal FAC Inspection**. The inspection request must be initiated through eServices. An upload of supporting documents to the "Inspection Documents" folder of the ePlan Project is required to complete the request.

The upload must include:

- Properly completed and current Inspection Request Form. (Appendix C)
- An overall drawing of the stage highlighting the improvement to be inspected.
- The consultant's "no deficiency" inspection report along with any preliminary inspection reports that may have initiated deficiency repairs.
- Submission of required documents specific to the improvement. (Example; copy of the Pavement Markings, Construction Folder confirmation for street lighting, etc.).
- Once the upload is complete, the City Inspector will be notified through eServices. If the document submission is in order, the inspector will accept the request, approve the "PreScreen" task and proceed with the inspection.

Below are examples of sites that are NOT ready for inspection:

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

5.3 FORMAL FAC INSPECTION

5.3

The Developer must contact the City to arrange a time and date for a formal inspection. The City will provide a formal inspection within 30 days of the approved request, once all of the application requirements from clause 5.2 have been met.

- Ensure the improvement is ready to be inspected (clean and unencumbered).
- Confirm with the City Inspector that the servicing agreement "Conditions Preventing Inspection" (seasonal considerations) are not applicable. This may also include inclement weather at the scheduled inspection time. Note these considerations are solely at the discretion of the inspector. A new inspection date will be coordinated between the applicable parties within 72 hours.
- Water flushing is required where applicable (Roads, gutters, swales, alleys). CB socks should be removed for any inspection involving flushing.

Deficiencies noted (as per General Repair Requirements at FAC of this manual) or non-compliance with any other of the requirements listed above, will result in a "not approved" result for the eServices Inspection Request. When no deficiencies are noted, the "approved" result will be applied to the eServices Inspection Request. No new deficiencies will be added to the FAC deficiency list within 42 days of the formal inspection.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

5.4 APPEAL PROCESS

If for any reason there is a disagreement with the observations of the City Inspector, the Developer/Consultant may request a review of the deficiency list. The Developer/Consultant will collect documentation of the deficiencies in question and present them to the City Engineer within 14 days of receipt of the deficiency list. Upon review, the City Engineer, along with the City Inspector and the Developer/Consultant, will inspect the entire site within 14 days of the appeal and will have the authority to add or subtract deficiencies to the list. This list, as provided by the City Engineer is final and cannot be challenged.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

5.5 FAC DOCUMENTATION PACKAGE REQUIREMENTS

The documentation package and any subsequent requested documents must be uploaded through ePlan. A documentation package must be submitted for each improvement. Each documentation package shall only include documents pertaining to the improvement. Documents pertaining to other improvements must not be included.

The documentation package must be submitted within **6 months of the approved FAC inspection** ("Inspection Expiry Period"). Review by the City of the complete documentation package will occur within **60 days** of submission.

If a documentation package is submitted and conforms to all requirements within the "Inspection Expiry Period" the Departmental Review will be approved. This will allow the formal FAC approval by Development Coordination.

Amendments, additions and/or corrections to the documentation package are permitted throughout the "Inspection Expiry Period".

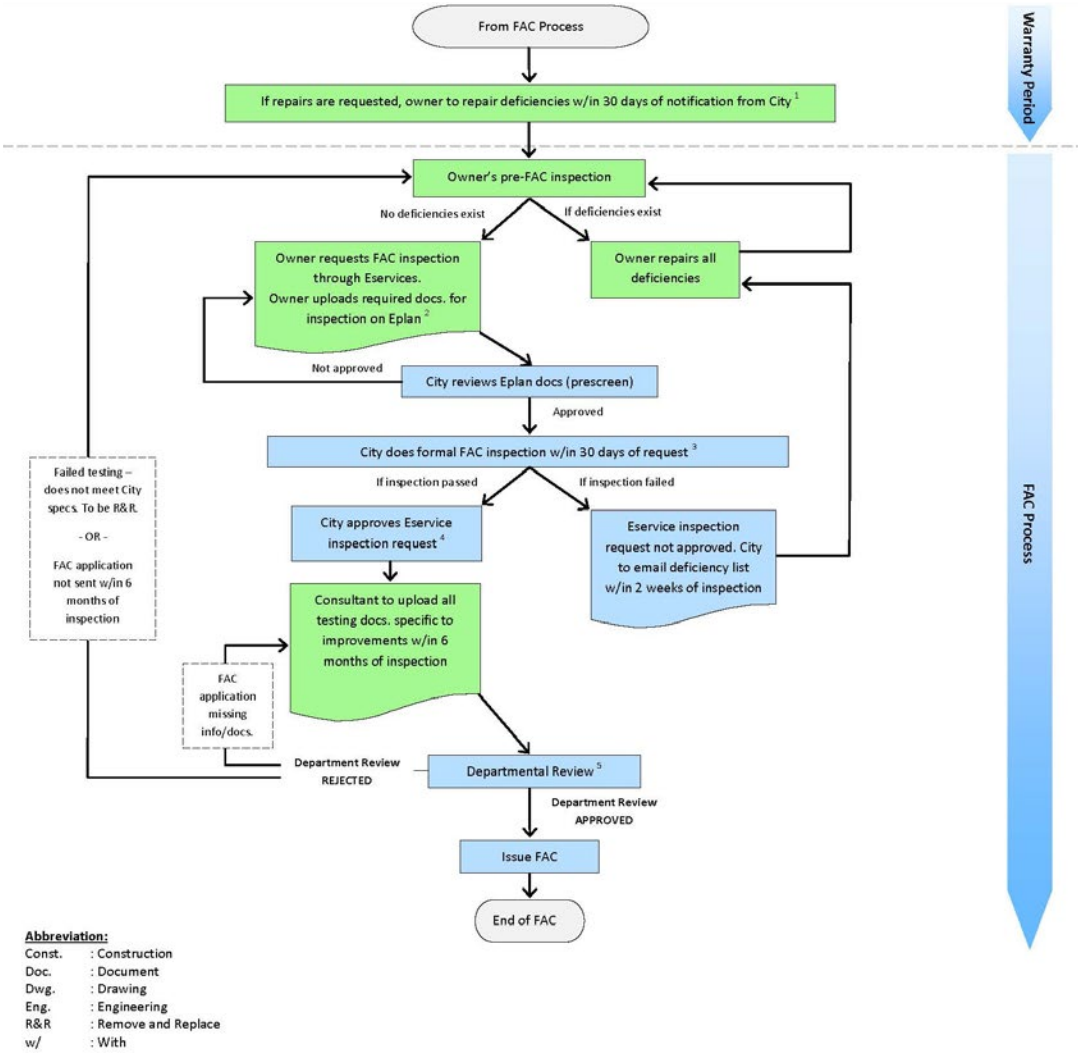
If a documentation package is not submitted or does not conform to all requirements within the "Inspection Expiry Period" it will be considered incomplete. This will, at the discretion of the City void the "accepted" FAC inspection. The FAC process must be re-initialed with a new inspection request, a new "accepted" date and new document submission.

The submission of the documentation package must include:

- Documentation Package Checklist for FAC (see Appendix E)
- Complete and reviewed document package including:
  - All FAC test data. All tests must meet City Specifications. Test data must be specific to the improvement only.
  - Defect assessments, including any required re-cores. For a sample defect assessment. (see Appendix F)
  - Plot of test locations on a project map.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

Figure 2. Final Acceptance Certificate (FAC) Process



Abbreviation:

Const.	: Construction
Doc.	: Document
Dwg.	: Drawing
Eng.	: Engineering
R&R	: Remove and Replace
w/	: With

Footnotes:

[1] If deficiencies are not repaired by the Owner, the City may draw on the Security to correct any deficiencies

[2] Refer to Section 5.3

[3] If the Owner wishes to be present during the inspection, they must contact the City to organize the inspection time and date. Otherwise, the City will provide 72 hours' notice prior to the formal inspection

[4] Owner to receive email confirming the approval of the inspection request

[5] Departmental Review to be completed w/in 60 days. Inspector and Supervisor must both approve the FAC application

Legend:

Start/End

Action

Document

Responsibility:

Owner/Consultant

City

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

5.6 GENERAL REPAIR REQUIREMENTS AT FAC

- All maintenance and repair work is to be carried out in accordance with the approved City of Edmonton Complete Streets Construction Specifications.
- An On-Street Construction and Maintenance (OSCAM) Permit and any other applicable permits must be obtained 48 hours prior to commencement of repair work.
- Developer/Consultant must provide written notice to City inspection staff 48 hours prior to the commencement of any work.
- Developer/Consultant must provide written notice to occupants of affected properties 48 hours prior to the commencement of repair work affecting on-street parking and/or driveway access.
- All concrete works, curb, gutter, paved roads, boulevards, landscaped areas, private walks and driveways must be cleaned of any repair debris within 48 hours of completion.
- All damage that affects the functionality and operation of the landscaped boulevard must be corrected.
- Materials and placement must conform to the requirements of the Complete Streets Construction Specifications and/or as required by the Engineer.
- Testing is required for **all work**, regardless of the volume or quantity and should conform to the requirements of the Complete Streets Construction Specifications.

5.6.1 Concrete Deficiencies at FAC

Concrete shall be replaced following FAC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following concrete deficiencies exist:

5.6.1.1 Cracking

Cracking may result from a variety of factors. Cracking is influenced by material, design, construction, service loads and exposure conditions. Cracks warranting removal and replacement include:

- 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).

5.6.1.2 Mortar Flaking

Spalled concrete refers to concrete that has broken up, flaked, or become pitted. This is usually due to poor installation and/or environmental stresses. Spalled concrete shall be removed and replaced if:

- Loss of surface mortar and/or aggregate affects more than 5% of surface area. This applies to 1.5 m by 1.5 m walk panels and 3.0 m curb and gutter section.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

GENERAL REPAIR REQUIREMENTS AT FAC CONT'D

5.6.1.3 Gouging

Gouges are rough holes, grooves, or indentations in the concrete surface. Concrete shall be removed and replaced if:

- 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 concrete.

5.6.1.4 Vertical Displacement

Vertical displacement refers to lift or sag at the edge of a concrete block. Concrete shall be removed and replaced if:

- There is a vertical displacement greater than 5 mm.

5.6.1.5 Joint Separation

Concrete shall be removed and replaced if:

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

5.6.1.6 Ponding/Settlement

Ponding refers to standing water on the concrete surface, and is a result of settlement in the subgrade structure. Settlement may occur for a variety of reasons, including poor compaction, changes in subgrade moisture, and the use of unsuitable subgrade material. Concrete shall be removed and replaced if:

- Ponding occurs on any walking surface (zero tolerance).
- Any localized deflective displacement (settlement) exceeding 10 mm.
- Any settlements or workmanship causes water retention in front of driveways, curb ramps, alley crossings, commercial crossings, or bus stops

5.6.1.7 Disfigurement

Concrete shall be removed and replaced if:

- Disfigured by extraneous means including but not limited to 3rd party damage and builder damage.

5.6.1.8 Linear Grade Deficiencies

Concrete must be repaired if:

- Existing grade varies from design grade by ± 0.2%
- Any localized deflective displacement (settlement) exceeding 6mm over 3m.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

GENERAL REPAIR REQUIREMENTS AT FAC CONT'D

5.6.1.9 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.

5.6.1.10 Crossfalls

Crossfall refers to the transverse grade of the concrete surface toward the gutter or drainage path. Concrete must be removed and replaced if:

- The crossfall for the concrete work does not fall within the acceptable range as defined in **Table 3**.

Table 3: Crossfall Tolerance

Design Standard	*Deficiency*
Sidewalk Crossfall (ensure draining towards road)	< 1.0% > 4.0%
Gutter Crossfalls	< 4.0% > 15.0%
Curb ramp Crossfalls	< 4.0% > 6.0%
Alley and Commercial Crossings	< 4.0% > 8.0%

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

CONCRETE REPAIR REQUIREMENTS AT FAC

Concrete Sidewalks

- Existing walks and driveways must be adjusted to match concrete sidewalks. The City may require the replacement of existing private walks or driveways to provide a satisfactory tie-in.
- For 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.
- For monowalk panels with deficiencies, the entire monowalk – including curb and gutter – must be replaced. 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 must be cut to the full depth of the structure.
- Existing landscaping must be adjusted to match repaired concrete sidewalks and/or curb and gutter. Landscaping repairs to match existing condition and maintain proper grades from private property to road right of way.
- 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.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

ASPHALT DEFICIENCIES AT FAC

Pavement distress could be caused by a result of a combination of factors. These factors may include weak surface, base or subgrade, excessive loading and poor workmanship. There will often be situations that will have to be discussed and negotiated in the field. This section will describe the many types of deficiencies and the acceptable limits. If these limits are exceeded, the asphalt must be replaced in accordance with the Specifications.

Asphalt shall be replaced at FAC following FAC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following asphalt deficiencies exist:

5.6.2.1 Cracking

Cracking may result from a variety of factors. Generally asphalt cracking is influenced by moisture, temperature, movement and construction.

Asphalt that is defined as a deficiency includes:

- Open asphalt joints causing an unacceptable riding quality
- Alligator cracking
- Longitudinal cracking
- Cracking that is detrimental to the road structure or causes unacceptable riding quality

5.6.2.2 Rutting

Rutting is the permanent deformation (indentations) of the pavement in the wheel paths, which can lead to cracking and further deterioration. Some causes of rutting include heavy traffic, slow moving traffic, temperature, poor construction, and moisture damage.

5.6.2.3 Potholes

Potholes are created when moisture in the asphalt expands from freeze/thaw cycles. Traffic further deteriorates the weakened road sections and can cause potholes to expand.

5.6.2.4 Ponding

Ponding refers to standing water on the asphalt surface, and is a result of settlement in the subgrade structure. Settlement may occur for a variety of reasons, including poor compaction, changes in subgrade moisture, and the use of unsuitable subgrade materials. There is zero tolerance for ponding on asphalt.

6.5.2.5 Aggregate loss/Raveling/Segregation

Segregation may occur on the asphalt surface, or at the pavement edge. This may result from loss of binder between aggregate, poor grading and mixing of aggregate, or insufficient compaction. Segregated asphalt may fill with moisture and loose debris which can cause further problems down the road.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

ASPHALT DEFICIENCIES AT FAC CON'T

5.6.2.6 Contamination (e.g. clay tracking, petroleum spillage, foreign material)

Chemical contamination

Foreign material

Foreign material

5.6.2.7 Poor tie-ins

Poor tie-in

Poor tie-in

5.6.2.8 Poor Construction Methods

Refer to Chapter 7, Pavements; Complete Streets Construction Specifications

5.6.2.9 Linear Grade Deficiencies

Asphalt must be repaired if:

- Existing grade varies from design grade by ± 0.2%
- Any localized deflective displacement (settlement) exceeding 6mm over 3m.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

ASPHALT REPAIR REQUIREMENTS AT FAC

Asphalt overlay is required if the road cross section does not lie within the boundaries specified in Table 4.

Table 4: Road Standards at FAC

Road Width	*Standard Crown*	*Maximum Height*	*Minimum Height*
8.0 m	*110 mm*	*150 mm*	*100 mm*
9.0 m	*130 mm*	*160 mm*	*120 mm*
11.5 m	*150 mm*	*185 mm*	*135 mm*
14.5 m	*180 mm*	*225 mm*	*160 mm*

General Asphalt Repair Requirements

- Asphalt repairs are to be rectangular or square and a minimum of 1.2 m wide (excluding Asphalt Trail).
- Surface repairs must be ground and prefilled prior to a full depth overlay.
  - Arterial and collector roads to be ground a minimum of 50 mm.
  - Residential roads to be ground a minimum of 35 mm.
- Edges of existing asphalt to be ground or cut vertically. No feathering of patches is allowed.
- If there is base failure evident or settlements greater than 75 mm in the asphalt structure remove and replace base structure as recommended by a Geotechnical Engineer and approved by the City.
- If the asphalt is segregated, the use of an approved slurry seal may be used. This method is only acceptable if the deficiency is clean of dirt and debris, and only applies to non-staged improvements.

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

ASPHALT REPAIR REQUIREMENTS AT FAC CON'T

Road Repair Requirements

- To repair asphalt surface failure, cut out 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 allow for a minimum of 35 mm of asphalt. 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 (± 6 mm) prior to paving.

Asphalt Trail/Alley Repair Requirements

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

FINAL ACCEPTANCE CERTIFICATE (FAC) *(CONT.)*

STREET LIGHT DEFICIENCIES AT FAC

This section describes the deficiencies to be repaired and/or replaced at FAC. The items must be repaired and/or replaced in accordance with the Road and Walkway Lighting Construction and Material Standard..

Items shall be repaired/replaced following FAC inspection if:

- Any deficiency is defined as a safety hazard by the Inspector.
- The asset is not built in accordance with the approved Engineering Drawings or City Specifications.
- The asset does not function as intended.
- Any of the following deficiencies exist:

5.6.3.1 Any item listed in section 4.6.4.

5.6.3.2 Pole Base

- Small cracks and shrinkage cracking
- Spalling
- Anchor bolt not to specified height – may be corrected by using a half nut if the following conditions are met:
  - Only one half nut is required in any one base
  - No more than 10% of poles in the stage require a half nut.

If more than 10% of the pole bases in a stage require half nuts, the issue will be escalated to City Operations – Network Integration for approval/ rejection of the stage.

5.6.3.3 Luminaire Poles

- Leaning poles – visual leans that are greater than 1 degree lean or visually inconsistent
- Powder coating chips/damage (any size)
- Galvanizing chips
- Non-galvanized hardware
- Rusted cup washers on the hand hole cover
- Missing washers on the hand hole cover
- Incorrect washer size

5.6.3.4 Attachments

- Banners / wayfinding signs without verification from the City
  - if a permit exists, the banners / wayfinding signs are not a deficiency
  - if a permit does NOT exist, the banners / wayfinding signs either need to be removed or a permit needs to be acquired

Damaged hand hole cover

APPENDIX A: FIELD INSPECTION CHECKLISTS

A. TRENCH BACKFILL CHECKLIST

Read Specifications (CSCS 3.1 Trench Backfill)

- ☐ Are safe trench practices being followed for soil type?
- ☐ Is suitable material being used for backfill?
- ☐ Is moisture content optimal? (When squeezed in hand, forms ball that can be broken into two without crumbling)
  - ✚ Proper moisture content is the responsibility of the Contractor; however, you should learn to recognize it by manual testing (squeezing a sample)
- ☐ Is the backfill being completed for the top 1.5m from P.L. to P.L.?
- ☐ Is there proper compaction being performed at manholes, valves, catch basins and power crossings?
- ☐ Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- ☐ Is backfill material being placed and compacted in lifts of the specified thickness?
- ☐ Is compaction equipment being used? No wheel packing is allowed, except for power trenches.

B. SUBGRADE PREPARATION CHECKLIST

Read Specifications (CSCS 4.1 Subgrade Preparation)

- ☐ A preliminary proof roll is required, prior to proceeding.
- ☐ Has organic and unsuitable material been removed?
- ☐ Are there excessive deflections under equipment loads? A loaded single axle water truck is ideal, but a grader is acceptable.
- ☐ Is there any break-up of compacted surface from traffic?
- ☐ Has the full depth of material been worked?
- ☐ Is the entire area receiving equal effort?
- ☐ Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- ☐ If finished, are catch basins open to minimize rain damage?
- ☐ Is the depth of material correct in reference to survey hubs/curb?

APPENDIX A: FIELD INSPECTION CHECKLISTS *(CONT.)*

C. CLAY STABILIZATION CHECKLIST

Read Specifications
(CSCS 4.2 Cement Stabalized Subgrade)

- ☐ A preliminary proof roll is required (CSCS 4.3.1), prior to proceeding.
- ☐ Have all the MH's and WV's been lowered below the stabilization depth? Is pre-grading satisfactory?
- ☐ Is cement spread well? (Check with tarp and scale and confirm with Geotechnical Consultant)
- ☐ Is mixing uniform and to full depth?
- ☐ Is moisture content optimal? (When squeezed in hand, forms ball that can be broken into two without crumbling)
  - ✚ Proper moisture content is the responsibility of the Contractor; however, you should learn to recognize it by manual testing (squeezing a sample)
- ☐ Are there excessive deflections under equipment loads? A loaded single axle water truck is ideal, but a grader is acceptable.
- ☐ Is the surface sealed?
- ☐ Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- ☐ Are catch basins open?
- ☐ Once final grading is complete, is the depth of stabilization as per the geotechnical recommendation?
- ☐ Is the top of subgrade elevation and grade correct as per design? Has it been checked by the inspector?
- ☐ A final proof roll is required (CSCS4.3.1) prior to roadbase placement.

APPENDIX A: FIELD INSPECTION CHECKLISTS *(CONT.)*

D. GRANULAR BASE COURSE CHECKLIST

Read Specifications (CSCS 5.1 Granular Base Course)

- ☐ Is the proper gravel type being used? (20mm or 63mm)
- ☐ Has the gravel been contaminated? All parties to address
- ☐ Has the wick drain (if required) been installed? Is the wick drain connected to the catch basin?
- ☐ Is the material uniform and mixed well?
- ☐ Is the proper thickness being placed?
- ☐ Have manholes and/or valves been adjusted to proper elevation?
- ☐ Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- ☐ Be aware that gradation sieve testing must pass before proceeding. Failed sieves may result in remedial action, depending on the severity of failure.

E. CONCRETE (INCLUDING FORMWORK) CHECKLIST

Read Specifications (CSCS 7 Concrete Cement)

- ☐ Does formwork meet design requirements (cross-fall, grade, dimensions)?
- ☐ Is the reinforcement spaced correctly?
- ☐ Will gravel elevation allow for full thickness of structure?
- ☐ Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- ☐ Is the string line in place?
- ☐ Is there enough time to discharge the product? Check the batch time
- ☐ Has the gravel been dampened prior to pouring?
- ☐ Is the slump okay? Visually inspect concrete slump (practice tests are taken)
- ☐ Is proper vibration being performed?
- ☐ During machine pours, check product for dimensions, grade and alignment. If extruded concrete finishing requires significant effort, there is an issue (i.e. broken vibrators, incorrect slump)
- ☐ Is there good coverage of curing compound? (Backs of curbs, edges of walks)
- ☐ Record limits and volume of pour on concrete report
- ☐ Has rebar been installed at proper lengths and intervals at tie-ins?
- ☐ Is there any damage from backfill operations?

APPENDIX A: FIELD INSPECTION CHECKLISTS *(CONT.)*

F. SOIL CEMENT CHECKLIST

Read Specifications (Roadways, Section 02713)

Plant Mix Soil Cement is currently only used in commercial applications as a subgrade replacement in areas that cannot be properly stabilized. Also SC is used as the roadbase (granular) material where the roadbase is vulnerable to the elements to eliminate the possibility of contamination and moisture infiltration.

- [ ] Is moisture content optimal? (When squeezed in hand, forms ball that can be broken in two without crumbling)
  - + Proper moisture content is the responsibility of the Contractor; however, you should learn to recognize it by manual testing (squeezing a sample)
- [ ] Is there enough time to install the product? Check the batch time. No additional water is allowed.
- [ ] Is the amount of trimming to reach final grade minimal?
- [ ] Is a geotechnical representative present to perform required tests? Are tests being completed (type and frequency according to Specifications)?
- [ ] Are catch basins open?

G. ASPHALT CHECKLIST

Read Specifications (CSCS SGC Hot Mix Asphalt Concrete 6.1)

- [ ] Are the barricades properly placed?
- [ ] Are tests being completed (type and frequency according to Specifications)?
- [ ] Is the road surface dry and clean prior to application of prime or tack coat?
- [ ] Is there adequate tack coat coverage?
- [ ] Is the mix temperature suitable? Too hot; emits blue smoke; too cold: stays in peak when dumped. (Use a thermometer for accurate reading)
- [ ] Are trucks covered?
- [ ] Are there any irregularities in the mix?
- [ ] Have any utilities (manholes, valves) been paved over? These will have to be raised
- [ ] Does the thickness and crown meet design requirements?
- [ ] Are there any inconsistencies in the rolling pattern?
- [ ] Ensure no reuse of asphalt mix already placed by the paver

APPENDIX A: FIELD INSPECTION CHECKLISTS *(CONT.)*

H. PAVING STONE CHECKLIST

Read Specifications (CSCS 7.6 Concrete Paving Units)

- [ ] Is the base on grade?
- [ ] Bedding sand must be within Specifications
- [ ] No traffic is allowed on sand before laying stone
- [ ] Are vertical faces of headers must plumb and true?
- [ ] Have the edges along headers been compacted?
- [ ] Are there any cracks in stones (especially "uni-stone")?
- [ ] Brick alterations must be made by saw cut (no breaking allowed)
- [ ] Ensure that laying pattern will not require slivers
- [ ] No traffic is allowed on stones until they are vibrated in

I. COLD MILLING CHECKLIST

Read Specifications (CSCS 6.6 Pavement Cold Milling)

- [ ] Are the grinding limits clearly laid out?
- [ ] Is the depth of grind noted?
- [ ] Have the grind areas been measured?
- [ ] Are all necessary signs on site?
- [ ] Have all straight cuts been ramped for road speeds?
- [ ] Will grind depth remove all ruts and cracks?

APPENDIX B: TESTING FREQUENCIES FOR PRIVATE RESIDENTIAL DEVELOPMENT

Material	*Frequency*	*Minimum Densities*	*Overlying Infrastructure*
Trench Backfill	**See 3.1.3.7 of CSCS** Moisture note: Max. moisture standard backfill; to 1.5m depth:5%, 8% below Uniform backfill 8% throughout.	98% SPD or 100% OPP to depth of 1.5m 95%SPD or 97% OPP bellow	– Roads, imminent or future.
Clay Subgrade	1 test for every 1000m^2 **See 4.1.1.4 of CSCS**	100% density for each 150mm lift of subgrade	– Pavement structures – Concrete curb – Concrete gutter – Monolithic walk – Concrete swale – Emergency access walkways – Transit pads – Private, commercial and alley crossings – Asphalt walks/bikeways
		97% density for each 150mm lift of subgrade	– Concrete separate walk – Curb ramps – Slabs – Walkways made of concrete pavers, brick pavers and granular material
Soil Cement	**See 4.4 of CSCS for details**	100% density for each 150mm	
Gravel Base Course	For density: min 1 test for every 1000 m2 per supplier / per day **See Table 5.1.1 CSCS**	100% density for each 150mm lift of subgrade	– Concrete curbs – Concrete gutters – Asphalt roadways – Commercial and alley crossings – Shared Use Path
		97% density for each 150mm lift of subgrade	– Concrete, asphalt separate walks – Transit pads – Private crossings – Median/island strips

APPENDIX B: TESTING FREQUENCIES FOR PRIVATE RESIDENTIAL DEVELOPMENT *(CONT.)*

Material	*Frequency*	*Minimum Densities*	*Overlying Infrastructure*
Asphalt	Minimum 1 test for Marshall specimen every 1000 tonnes per day / per type + Minimum 1 test every 250 tonnes for bitumen content and density per day / per type Minimum 1 core sample for every 1000m^2 of compacted asphalt / per sample type **See 6.1 CSCS for more details**	94% density for all stages in staged paving	- Freeways - Arterial - Industrial or commercial roadways - Residential collector roadways - Residential local roadways - FAC overlays
		93% density	- Alley paving - Rehabilitation overlay - Asphalt walk/bikeway

CONCRETE QUALITY ASSURANCE TESTING

All concrete will be tested for Quality Assurance (QA) by the geotechnical engineer. Any testing by the supplier (quality control) may be informative, but is ***not recognized***. The inspector should be present for all on site, quality assurance testing when possible. Variables that will not be scrutinized by the geotechnical engineer or the contractor may affect the outcome of the test and the acceptance of the product.

Initial QA testing should be performed on the first load of the day. Performing the initial testing on later loads is the contractor's discretion. However, a failed test even if modification is possible will result in rejection of all earlier place concrete. Any concrete that is not or cannot be tested will be rejected.

As well as witnessing the testing, the inspector has the opportunity to check other requirements such as formwork, base (including berms), required equipment (vibrators, etc.).

TESTING DETAILS

Testing frequency is one test per day, per mix; with at least one test for each 60m3 or portion thereof for that day's pour.

Plastic air content is 5.5 – 8%. Plastic air tested between 4.0 – 5.4% can be modified (air entrainment) once to reach compliance. Plastic air tested below 4.0% cannot be modified and must be rejected. Plastic air measured above 8.0% can be accepted for Class C concrete but not Class A concrete.

Slump for hand pour concrete is 60mm +/- 20mm, for machine pour; 20mm +/-10mm for curb & gutter, 30mm +/- 10mm for mono, walks. Concrete that is being pumped can be modified with super plasticizers to increase the slump. This should be reviewed by Engineering Services.

All concrete must be placed within 90 minutes of batch time. Batch time is noted on the supply ticket.

APPENDIX B: TESTING FREQUENCIES FOR PRIVATE RESIDENTIAL DEVELOPMENT *(CONT.)*

ACCEPTANCE, FAILURE AND MODIFICATION

Concrete that fails QA testing with low slump or low air content can be accepted upon modification and re-testing. Modification can be either adding water to increase the slump and/or adding air entrainment to increase air content. If air entrainment is required, only one QA re-test is permitted; if the re-test fails, that load shall be rejected. Any slump test exceeding the maximum allowable limit results in rejection of that load.

If a load is modified for air content, the outcome of the test only applies to the specific load and is not representative of the pour larger than that load. Subsequent testing on load(s) immediately following an air modified or failed load is required until passing without air modification.

Any concrete (full load or portions of) that is placed after 90 minutes from batch time shall be rejected.

ASPHALT THICKNESS DEFICIENCIES RE-CORING

A material deficiency that requires clarification is that of asphalt thickness deficiencies in the initial lift of staged paving. This is the completed paving prior to CCC with the final lift intended to be applied prior to FAC.

Clause 6.3.1.4 of CSCS for SGC Hot-mix Asphalt Paving specifies a thickness deficiency in the initial (CCC) paving of a staged paved (final paving @ FAC) improvement. A thickness deficiency that is or exceeds 12mm is not acceptable. Thickness deficiencies in non-staged paving are identified in Clause 6.3.3.9 of CSCS.

In the event of this thickness deficiency, an appeal mechanism will be allowed to re-core for partial acceptance of the represented area. This re-coring will also isolate the deficient area for remedial repairs as directed by the inspector.

The appeal re-coring will require additional thickness coring and should be witnessed and directed by the inspector. The original deficient core must be located and then the thickness confirmed by way of a primary, addition re-core within 0.5m of the original. Once confirmed, the deficient area must be localized by way of additional, surrounding coring to establish the limit. The coring should clearly confirm the limits of the deficiency, establish if the deficiency is full or partial road width and clearly confirm the rest of the area represented by the initial failed core is NOT deficient. Once the deficient area has been localized, remedial repair details will be defined by the inspector in consultation with the contractor and consultant. Required repairs should be full lane width or road width as determined by the coring. In the event of the re-cores being deemed acceptable, a CCC may be issued and the deficiencies can be remedied prior to FAC.

Any remedial repairs, along with confirming testing and re-inspections must be completed prior to CCC.

APPENDIX C: INSPECTION REQUEST FORM

Inspection Request Forms

Included within are the request forms for improvements inspected and certified by the Transportation Inspectors of Development Inspections. They are split into separate forms for the major types of improvements:

- Roads, including curb and gutter and monolithic walks (when mono walk is included)
- Other Surface Improvements (excluding roads) and hard landscaping features
- Street Lighting
- Noise Attenuation Fencing and included berms

The applicable form must be completed in full and must be current. The completed form, the attached drawing(s) and all associated documentation (inspection reports, street ID applications, attachment permits, etc.) must be uploaded concurrently into the "Inspection Documents" folder in the ePlan. Re-applications require newly completed and updated forms. Incomplete, incorrect or miss-placed (not in the "Inspection Documents" folder) will result in the rejection of the PreScreen and a "not approved" inspection request.

APPENDIX C: INSPECTION REQUEST FORM *(CONT.)*

DEVELOPMENT INSPECTIONS - TRANSPORTATION
SUBDIVISION AND DEVELOPMENT COORDINATION
CITY PLANNING
URBAN FORM AND CORPORATE STRATEGIC DEVELOPMENT

SERVICING AGREEMENT

TRANSPORTATION INSPECTION REQUEST FORM

Paved Roads, Curb & Gutter, Monolithic Walk

REQUEST DATE: _____

☐ CCC ☐ FAC

DEVELOPMENT NAME & STAGE: _____

SERVICING AGREEMENT NO.: _____

DESCRIPTION AS PER SCHEDULE "D" IN SERVICING AGREEMENT: _____

SIGNED SERVICING AGREEMENT DATE: _____

END MAINTENANCE DATE (FOR FAC): _____

DEVELOPER: _____

CONSULTANT: _____

☐ Latest approved project drawings/red-lines attached with Improvement highlighted?

ATTENDANCE BY: ☐ DEVELOPER ☐ CONSULTANT ☐ CONTRACTOR

CCC/FAC INSPECTION REQUEST CHECKLIST

	YES	NO	N/A
Improvement completed as per Approved drawings, compliant with CSCS and without deficiency	○	○	○
Uploaded any pre-inspection deficiency report and the final 'No Deficiency' report to ePlan	○	○	○
Grading or Landscaping completed around improvement	○	○	○
Manholes and valves visible as per Approved drawings with no pending underground utility deficiencies	○	○	○
Temporary improvements installed (prior to CCC request)	○	○	○
Street Lighting installed (prior to CCC request)	○	○	○
Street ID Application sent to Transportation Operations & uploaded in ePlan (prior to CCC request)	○	○	○
Improvement clean of debris and equipment (construction or otherwise including dumpsters)	○	○	○
All safety concerns have been addressed	○	○	○
Conditions Preventing Inspection (seasonal considerations) will allow inspection.	○	○	○

☐ I hereby certify that all the above mentioned improvement has been verified to meet all the necessary requirements for inspection. I understand that the request will be considered invalid if any of the above items are missing.

NAME OF APPLICANT: _____ EMAIL: _____

APPENDIX C: INSPECTION REQUEST FORM *(CONT.)*

DEVELOPMENT INSPECTIONS - TRANSPORTATION
SUBDIVISION AND DEVELOPMENT COORDINATION
CITY PLANNING
URBAN FORM AND CORPORATE STRATEGIC DEVELOPMENT

SERVICING AGREEMENT

TRANSPORTATION INSPECTION REQUEST FORM

Surface Improvements (excluding roads)

REQUEST DATE: ☐ CCC ☐ FAC

DEVELOPMENT NAME & STAGE:

SERVICING AGREEMENT NO.:

MUNICIPAL IMPROVEMENT:

SIGNED SERVICING AGREEMENT DATE:

DESCRIPTION AS PER SCHEDULE "D" IN SERVICING AGREEMENT:

END MAINTENANCE DATE (FOR FAC):

DEVELOPER:

☐ Latest approved project drawings/red-lines attached with improvement highlighted?

CONSULTANT:

ATTENDANCE BY: ☐ DEVELOPER ☐ CONSULTANT ☐ CONTRACTOR

CCC/FAC INSPECTION REQUEST CHECKLIST

	YES	NO	N/A
Improvement completed as per Approved drawings, compliant with CSCS and without deficiency	○	○	○
Uploaded any pre-inspection deficiency report and the final 'No Deficiency' report to ePlan	○	○	○
Grading and/or Landscaping completed around improvement	○	○	○
Improvement clean of debris (construction or otherwise)	○	○	○
All safety concerns have been addressed	○	○	○
Conditions Preventing Inspection (seasonal considerations) will allow inspection.	○	○	○

☐ I hereby certify that all the above mentioned improvement has been verified to meet all the necessary requirements for inspection. I understand that the request will be considered invalid if any of the above items are missing.

NAME OF APPLICANT:

EMAIL:

APPENDIX C: INSPECTION REQUEST FORM *(CONT.)*

DEVELOPMENT INSPECTIONS - TRANSPORTATION
SUBDIVISION AND DEVELOPMENT COORDINATION
CITY PLANNING
URBAN FORM AND CORPORATE STRATEGIC DEVELOPMENT

SERVICING AGREEMENT

TRANSPORTATION INSPECTION REQUEST FORM
Street Lighting

REQUEST DATE: ☐ CCC ☐ FAC

DEVELOPMENT NAME & STAGE:

SERVICING AGREEMENT NO.:

DESCRIPTION AS PER SCHEDULE "D" IN SERVICING AGREEMENT:

SIGNED SERVICING AGREEMENT DATE:

DEVELOPER:

END MAINTENANCE DATE (FOR FAC):

CONSULTANT:

☐ Latest approved project drawings/red-lines attached with improvement highlighted?

ATTENDANCE BY: ☐ DEVELOPER ☐ CONSULTANT ☐ CONTRACTOR

CCC/FAC INSPECTION REQUEST CHECKLIST

	YES	NO	N/A
Street Lighting completed as per Approved drawings, compliant with CSCS and without deficiency	○	○	○
Street Lighting circuits completely operational, energized and fully lit	○	○	○
Uploaded pre-inspection deficiency report to ePlan (only FAC)	○	○	○
Construction folder approved with confirmation documents uploaded to ePlan	○	○	○
Banners and/or attachments have either been removed or authorization permit documents uploaded to ePlan	○	○	○
Improvement clean of debris (construction or otherwise)	○	○	○
All safety concerns have been addressed	○	○	○
Conditions Preventing Inspection (seasonal considerations) will allow inspection.	○	○	○

☐ I hereby certify that all the above mentioned improvement has been verified to meet all the necessary requirements for inspection. I understand that the request will be considered invalid if any of the above items are missing.

NAME OF APPLICANT: EMAIL:

APPENDIX C: INSPECTION REQUEST FORM *(CONT.)*

DEVELOPMENT INSPECTIONS - TRANSPORTATION
SUBDIVISION AND DEVELOPMENT COORDINATION
CITY PLANNING
URBAN FORM AND CORPORATE STRATEGIC DEVELOPMENT

SERVICING AGREEMENT

TRANSPORTATION INSPECTION REQUEST FORM
Noise Attenuation Fencing CCC

REQUEST DATE: _____

DEVELOPMENT NAME & STAGE: _____

SERVICING AGREEMENT NO.: _____

DESCRIPTION AS PER SCHEDULE "D" IN SERVICING AGREEMENT: _____

SIGNED SERVICING AGREEMENT DATE: _____

DEVELOPER: _____

END MAINTENANCE DATE (FOR FAC): _____

CONSULTANT: _____

☐ Latest approved project drawings/red-lines attached with Improvement highlighted?

ATTENDANCE BY: ☐ DEVELOPER ☐ CONSULTANT ☐ CONTRACTOR

CCC/FAC INSPECTION REQUEST CHECKLIST

	YES	NO	N/A
Fencing (and berm) completed as per Approved drawings,compliant with CSCS and without deficiency	○	○	○
Top of berm is at finished clay grade with bottom fence stringer flush with grade.	○	○	○
Uploaded any pre-inspection deficiency report and the final 'No Deficiency' report to ePlan	○	○	○
There are 'NO Gaps' in the fencing (along bottom, between boards, at posts)	○	○	○
There are no banners or attachments	○	○	○
Improvement clean of debris (construction or otherwise)	○	○	○
All safety concerns have been addressed	○	○	○
Conditions Preventing Inspection (seasonal considerations) will allow inspection.	○	○	○

☐ I hereby certify that all the above mentioned improvement has been verified to meet all the necessary requirements for inspection. I understand that the request will be considered invalid if any of the above items are missing.

NAME OF APPLICANT: _____ EMAIL: _____

APPENDIX D: DOCUMENTATION PACKAGE CHECKLIST FOR CCC

CCC DOCUMENTATION CHECKLIST

PROJECT NAME:	**DS#:**	**CONSULTANT:**
GEOTECH FIRM:	**UNDERGROUND CONT.:**	**SURFACE CONT.:**
IMPROVEMENT:	**END MAINTENANCE DATE:**	
DESCRIPTION (AS LISTED IN SCHEDULE 'D'):		

	PAVED ROADS, SIDEWALKS, CURB, AND GUTTER	**ASPHALT TRAIL**	**ALLEYS**	**WALKS**	**NOISE ATTENUATION FENCE**
FORMS REQUIRED	INCLUDES - PAVED ROADS, C&G, MONOWALK, CURB RAMPS, CROSSINGS, ACCESSES, BUS PADS	INCLUDES - ASPHALT TRAIL AND SHARED USE PATHS		SEPARATE WALKS, WALKWAYS, EMERGENCY ACCESS	INCLUDES - NOISE FENCE AND BERM
ASSET COST FORM	☐	☐	☐	☐	☐
STREET ID REQUEST	☐				
QUANTITY REPORT	☐	☐	☐	☐	
PROOF ROLL REPORT	☐	☐	☐		
DEFECT ASSESSSMENT	☐	☐	☐	☐	
PENALTY ACCEPTANCE	☐	☐	☐	☐	
GEOTECHNICAL REPORT	☐	☐	☐	☐	☐
GEOTECHNICAL CERTIFICATION (COMPLIANCE)	☐	☐	☐	☐	☐
UNDERGROUND					
SANITARY	☐		☐		
STORM	☐		☐		
WATERMAIN	☐		☐		
LOT SERVICES	☐		☐		
CATCH BASINS	☐		☐		
TRIPLE TRENCH / UNIFORM	☐		☐		
COMMON TRENCH / UNIFORM	☐		☐		
POWER CROSSINGS	☐		☐		
POWER TRENCH	☐	☐	☐	☐	
PROCTORS	☐		☐		
LIMITS	☐		☐		
FILLCRETE	☐		☐		
OTHER UNDERGROUND TESTS	☐	☐	☐	☐	
PLOTTED TEST LOCATIONS	☐		☐		
SURFACE TEST RESULTS					
CLAY BACKFILL					
TEST RESULTS		☐			☐
PLOTTED TEST LOCATIONS		☐			☐
CLAY SUBGRADE					
PROCTORS				☐	
DENSITIES				☐	
PLOTTED TEST LOCATIONS				☐	
CEMENT STABILIZIED SUBGRADE					
PROCTORS	☐	☐	☐		
DENSITIES	☐	☐	☐		
PLOTTED TEST LOCATIONS	☐	☐	☐		
GRAVEL					
PROCTORS	☐	☐	☐	☐	
SIEVES	☐	☐	☐	☐	
DENSITIES	☐	☐	☐	☐	
PLOTTED TEST LOCATIONS	☐	☐	☐	☐	
CONCRETE					
TEST RESULTS	☐			☐	
PLOTTED TEST LOCATIONS	☐			☐	
ASPHALT					
MARSHALLS/SGC	☐	☐	☐		
OIL CONTENTS	☐	☐	☐		
CORES	☐	☐	☐		
PLOTTED TEST LOCATIONS	☐	☐	☐		
OTHER (PLEASE SPECIFY):					
TEST RESULTS	☐	☐	☐	☐	
PLOTTED TEST LOCATIONS	☐	☐	☐	☐	

APPENDIX E: DOCUMENTATION PACKAGE CHECKLIST FOR FAC

THE CITY OF Edmonton TRANSPORTATION SERVICES

FAC Document Package Checklist

PROJECT NAME:	
DS #:	
CONSULTANT:	
GEOTECHNICAL FIRM:	
UNDERGROUND CONTRACTOR:	
SURFACE CONTRACTOR:	

DOCUMENTATION REQUIRED					
DEFECT ASSESSMENT (summarized CCC and FAC penalties)	☐	PENALTY ACCEPTANCE	☐	RECORD DRAWINGS	☐

TESTING			
SURFACE	**CONCRETE**	**ASPHALT**	**OTHER (PLEASE SPECIFY):** _____
MARSHALLS/SGC	–	☐	☐
TEST RESULTS	☐	☐	☐
OIL CONTENTS	–	☐	☐
CORES	–	☐	☐
SIEVES	–	☐	☐
PLOTTED TEST LOCATIONS	☐	☐	☐

APPENDIX F: SAMPLE DEFECT ASSESSMENT

DEFECT ASSESSMENT

A non-compliant product can be accepted subject to conditions specified in the CSCS. The when the non-compliance is indicated by the quality assurance testing, the primary means of acceptance is by way of a pay factor. All associated details of any non-compliance must be identified, evaluated and submitted to the inspector by the consultant. As well as quality assurance pay factor, non-compliant construction practices can be assessed a "penalty per occurrence", as specified in CSCS. With private development construction, this pay factor is a defect assessment charged to the contractor through the Developer/ Consultant.

Examples of deficient materials would be low strength concrete or low density asphalt. Non-compliant practices would be during paving, occurrences of placing waist asphalt back in the paver, or raising

M.H.'s or W.V's through the final lift of paving. The engineering consultant is responsible to provide the sum of these assessments based on CSCS specified requirements. The calculations must be clear, detailed and must be confirmed by the inspector. Confirmed acceptance by the contractor is required prior to invoicing as appeal procedures outlined in the CSCS may affect the pay factor amount or even the actual non-compliance.

DETERMINING ASSESSMENT AMOUNTS

The consultant will provide calculations for the inspector to check and confirm.

The consultant must identify:

- Specific failed test(s) will be identified and the associated pay factor (penalty percentage) will be determined from the CSCS.
- The contract unit rate price to be adjusted by the pay factor
- The quantity of the failed material.
  - Concrete strength failure would be based on:
    - The day's concrete pour or portions thereof (base on the number of tests and the proportions breakdown of the failure).
    - The type of concrete (hand pour, machine pour and concrete class).
  - Asphalt penalties can be applied for:
    - Density failure
    - Thickness failure
    - Bitumen content failure.
  - See clause 6.3.3.9 "Mix Production and Paving Tolerances" for details. For density and bitumen, the number of tests and the areas of the types of asphalt will determine the quantity. Thickness deficiencies that meet the CCC acceptance but fail at FAC will also be based on test frequency and total areas.
- Examples of assessments for non-compliant construction practices can be found in CSCS clauses 6.3.3.2, 6.3.3.5, 6.3.3.8.

APPENDIX F: SAMPLE DEFECT ASSESSMENT *(CONT.)*

INVOICING AND PAYMENT

Invoicing is initiated by the inspector. Billing advice (copy of the form is included) is to be submitted via emailed to Corporate Billing at corporate.billing@edmonton.ca. Invoicing should not occur until all eligible improvements are complete. Only one comprehensive billing advice/ invoice should be process. Preparation and distribution of the invoice, as well as notification, payment and collection are the responsibility of Corporate Billing Copies of the calculations and the billing advice should be stored in the ePlan Task "Documents" folder and the Google Drive *Subdivisions›"neighborhood"›"stage"›Transportation Construction›11 Defect Assessment* folder. This will be found in the "Shared with me" section of Google. Once the billing advice has been sent to Corporate Billing, the Departmental Review and certification approval can proceed.

DEFECT ASSESSMENT SUMMARY

SUBDIVISION: _____ **STAGE:** _____ **DATE:** _____ **REF. #:** _____

CCC DEFECT ASSESSMENT	CONCRETE	ASPHALT				Comments
		Density	Oil Content	Thickness	Revised at FAC	
Paved Roads; Sidewalks; Curb & Gutter						
Separate Sidewalks						
Concrete Walkways						
Emergency Access						
Shared Use Path						
Paved Alleys						
Other: _____						
Other: _____						
Other: _____						

FAC DEFECT ASSESSMENT	CONCRETE	ASPHALT		
		Density	Oil Content	Thickness
Paved Roads; Sidewalks; Curb & Gutter				
Separate Sidewalks				
Concrete Walkways				
Emergency Access				
Shared Use Path				
Paved Alleys				
Other: _____				
Other: _____				
Other: _____				

COMBINED CCC/FAC DEFECT ASSESSMENT AMOUNT	
Concrete:	
Asphalt:	
Total:	

APPENDIX G: CODE OF CONDUCT

(Taken from the Code of Conduct Handbook and Guide)

CITY TIME AND ASSETS

We will use and permit the use of City time and assets only for the performance of City duties or as approved by our supervisors. We will safeguard and protect City work time and assets. We will not use any City asset, including e-mail, Internet services, or any other electronic communication devices, if the use could be offensive or inappropriate. Further, employees must devote themselves exclusively to the performance of their employment duties during paid working hours.

SMELL TEST

Each of us make work-related decisions everyday. Sometimes, outside interests can make these decisions more difficult. When in doubt about what to do, ask yourself the following questions:

- Will this result in a personal gain or benefit?
- Could an outside person, co-worker or the media perceive this action as unethical?
- Will I owe somebody something as a result of this action?
- Was this gift/action intended to influence my decision?
- Would I hesitate to take this action or to allow my employees to take this action in my own company?
- Could my comments on social media or in a public forum be considered negative, derogatory or be taken as a criticism of the City of Edmonton or a fellow City employee?

GIFTS AND GRATUITIES

We will not accept or provide any gift, benefit or favour in exchange for special consideration or influence, or where it may be perceived to be in exchange for special treatment.

PERSONAL CONDUCT

We will perform our duties with honesty and integrity and in a manner that is helpful, respectful and courteous. We will not behave in a manner that could result in a conflict of interest.

PERSONAL GAIN, BENEFIT OR FAVOURITISM

We will remove ourselves from any decision process that may result in a real or perceived personal gain or benefit. We will remove ourselves from situations where there is a real or perceived risk of favouritism. We will use information collected by the City for purposes consistent with the use for which it was collected. When we have access to confidential information relating to any competition open to the public, we are ineligible to compete.

USE, COLLECTION AND DISCLOSURE OF INFORMATION

We will only use, collect and disclose information in accordance with the Freedom of Information and Protection of Privacy Act (FOIP Act) and only for the purposes of carrying out City duties.

OTHER EMPLOYMENT

We will only engage in other employment that does not conflict with our City duties or the Code of Conduct or put us in competition with services provided by the City.

PROFESSIONAL CODES OF CONDUCT

Employees with professional affiliations – accountants, lawyers, engineers, auditors, safety officers, and social workers – may be subject to more than one code of conduct. If a situation arises that may cause conflict or confusion between the applicable codes, consult with your supervisor.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY MANUAL (EXCERPTS)

Part 18 Personal Protective Equipment

DUTY TO USE PERSONAL PROTECTIVE EQUIPMENT

228(1)

If the hazard assessment indicates the need for personal protective equipment, an employer must ensure that

- Workers wear personal protective equipment that is correct for the hazard and protects workers,
- Workers properly use and wear the personal protective equipment,
- The personal protective equipment is in a condition to perform the function for which it was designed, and
- Workers are trained in the correct use, care, limitations and assigned maintenance of the personal protective equipment.

228(2)

A worker must

- Use and wear properly the appropriate personal protective equipment specified in this Code in accordance with the training and instruction received,
- Inspect the personal protective equipment before using it, and
- Not use personal protective equipment that is unable to perform the function for which it is designed.

228(3)

An employer must ensure that the use of personal protective equipment does not itself endanger the worker.

EYE PROTECTION

Compliance with standards

229(1)

If a worker's eyes may be injured or irritated at a work site, an employer must ensure that the worker wears properly fitting eye protection equipment that

- Is approved to
  - CSA Standard Z94.3-07, *Eye and Face Protectors*,
  - CSA Standard Z94.3-02, *Eye and Face Protectors*, or
  - CSA Standard Z94.3-99, *Industrial Eye and Face Protectors*, and
- Is appropriate to the work being done and the hazard involved.

229(2)

Prescription eyewear may be worn if it

- Is safety eyewear,
- Meets the requirements of
  - CSA Standard Z94.3-07, *Eye and Face Protectors*,
  - CSA Standard Z94.3-02, *Eye and Face Protectors*, or
  - CSA Standard Z94.3-99, *Industrial Eye and Face Protectors*, and
- Is appropriate to the work and the hazard involved.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

EYE PROTECTION *CONT.*

Compliance with standards cont.

229(2.1)

Prescription safety eyewear having glass lenses must not be used if there is danger of impact unless it is worn behind equipment meeting the requirements of subsection (1).

229(2.2)

If the use of plastic prescription lenses is impracticable, and there is no danger of impact, a worker may use lenses made of treated safety glass meeting the requirements of

- ANSI Standard Z87.1–2003, *Occupational and Educational Personal Eye and Face Protection Devices,* or
- ANSI Standard Z87.1–1989, *Practice for Occupational and Educational Eye and Face Protection.*

229(2.3)

Despite subsection (2), prescription safety eyewear may consist of frames that meet the requirements of ANSI Standard Z87.1–2003, *Occupational and Educational Personal Eye and Face Protection Devices* provided the lenses meet the requirements of CSA Standard Z94.3–07, *Eye and Face Protectors.*

229(3)

If a worker must wear a full face piece respirator and the face piece is intended to prevent materials striking the eyes, an employer must ensure that the face piece

- meets the requirements of
- CSA Standard Z94.3–07, *Eye and Face Protectors,* or
- CSA Standard Z94.3–02, *Eye and Face Protectors*, or
- meets the impact and penetration test requirements of section 9 of
- ANSI Standard Z87.1–2003, *Occupational and Educational Personal Eye and Face Protection Devices,* or
- ANSI Standard Z87.1–1989, *Practice for Occupational and Educational Eye and Face Protection.*

Contact Lenses

230

An employer must ensure that, if wearing contact lenses poses a hazard to the worker's eyes during work, the worker is advised of the hazards and the alternatives to wearing contact lenses.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

FOOTWEAR

233(1)

An employer must ensure that a worker uses footwear that is appropriate to the hazards associated with the work being performed and the work site.

233(2)

If the hazard assessment identifies that protective footwear needs to have toe protection, a puncture resistant sole, metatarsal protection, electrical protection, chainsaw protection or any combination of these, the employer must ensure that the worker wears protective footwear that is approved to

- CSA Standard Z195-02, *Protective Footwear*, or
- ASTM Standard F2413-05, *Specification for Performance Requirements for Protective Footwear*,

if the protective footwear was manufactured on or after July1, 2009.

233(3)

Despite subsection (2), if a worker is likely to be exposed to a hazard other than those referred to in subsection (2), the employer must ensure that the worker uses footwear appropriate to the hazard.

233(4)

If a worker is unable, for medical reasons, to wear protective footwear that complies with subsection (2), the worker may substitute external safety toecaps if the employer ensures that

- the safety toecaps meet the impact force requirements of
  - CSA Standard Z195-02, *Protective Footwear*, or
  - ASTM Standard F2413-05, *Specification for Performance Requirements for Protective Footwear*,
- metatarsal protection is not needed to protect the feet from injury,
- the hazard assessment confirms that the worker will not be exposed to any sole penetration hazards, and
- wearing the safety toecaps does not itself create a hazard for the worker.

233(5)

An employer must ensure that a fire fighter wears safety footwear that is approved to

- CSA Standard Z195-02, *Protective Footwear*,
- NFPA Standard 1971, *Protective Ensemble for Structural Fire Fighting*, 2007 Edition, or
- NFPA Standard 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 2005 Edition,

if the safety footwear was manufactured on or after July1, 2009.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

HEAD PROTECTION

Industrial headwear

234(1)

Subject to sections 235, 236 and 237, if there is a foreseeable danger of injury to a worker's head at a work site and there is a significant possibility of lateral impact to the head, an employer must ensure that the worker wears industrial protective headwear that is appropriate to the hazards and meets the requirements of

- CSA Standard CAN/CSA-Z94.1-05, *Industrial Protective Headwear*, or
- ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection,* for Type II head protection,

if the protective headwear was manufactured on or after July1, 2009**234(2)** Subject to sections 235, 236 and 237, if there is a foreseeable danger of injury to a worker's head at a work site and the possibility of lateral impact to the head is unlikely, an employer must ensure that the worker wears industrial protective headwear that is appropriate to the hazard and meets the requirements of

- CSA Standard CAN/CSA-Z94.1-05, Industrial Protective Headwear, or
- ANSI Standard Z89.1-2003, American National Standard for Industrial Head Protection,

if the protective headwear was manufactured on or after July1, 2009

Exemption from wearing headwear

239(1)

Despite section 234, if it is impractical for a worker to wear industrial protective headwear during a particular work process,

- the employer must ensure that the worker's head is protected using an adequate alternative means of protection during the work process, and
- the worker may conduct the work while the alternative means of protection is in place.

239(2)

A worker must wear industrial protective headwear if the foreseeable danger of injury to the worker's head persists immediately after completing the work process referred to in subsection (1).

TORSO PROTECTION

Limb and body protection

242

If there is a danger that a worker's hand, arm, leg or torso may be injured, an employer must ensure that the worker wears properly fitting hand, arm, leg or body protective equipment that is appropriate to the work, the work site and the hazards identified.

Skin protection

243

An employer must ensure that a worker's skin is protected from a harmful substance that may injure the skin on contact or may adversely affect a worker's health if it is absorbed through the skin.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

PART 11 FIRST AID

Training Standards

177(1)

A person or agency that provides training in first aid must enter into an agreement with the Director of Medical Services if the person or agency is to provide training in first aid to workers under this Code.

177(2)

An approved training agency that provides the first aid training to candidates for a certificate in emergency first aid, standard first aid or advanced first aid must comply with the terms of the agreement with the Director of Medical Services.

177(3)

A worker who successfully completes the training of an approved training agency must meet the standards for a certificate in emergency first aid, standard first aid or advanced first aid that are adopted by the Director of Medical Services in consultation with the Joint First Aid Training Standards Board.

Providing services, supplies, equipment

178(1)

An employer must provide first aid services, supplies and equipment and provide a first aid room in accordance with the applicable requirements of Schedule 2, Tables 3 to 7 or an acceptance from the Director of Medical Services.

178(2)

A prime contractor must ensure that in accordance with the applicable requirements of Schedule 2, Tables 3 to 7, first aid services, supplies and equipment and a first aid room, are available at the work site suitable for the type of work site and the total number of workers at the work site.

178(3)

Despite subsections (1) and (2), the employers and prime contractor at a project may enter into a written agreement to collectively provide first aid services, supplies and equipment and provide a first aid room for workers in accordance with the applicable requirements of Schedule 2, Tables 3 to 7 or an acceptance as allowed by section 34 of the *Act*.

178(4)

If a first aid room is a temporary or mobile facility, an employer must ensure that it meets the requirements of Schedule 2, Table 4 except that

- the room may be used for other services if it is maintained appropriately to provide first aid, and
- where it is not possible or practicable to provide a supply of hot and cold potable water, a supply of cold potable water is acceptable.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

PART 11 FIRST AID *CONT.*

Location of first aid

179

An employer and prime contractor must

- ensure that first aid services, first aid equipment, supplies and the first aid room required by this Code are
  - located at or near the work site they are intended to serve, and
  - available and accessible during all working hours;
- ensure that first aid equipment and supplies are
  - maintained in a clean, dry and serviceable condition,
  - contained in a material that protects the contents from the environment, and
  - clearly identified as first aid equipment and supplies;
- post, at conspicuous places at the work site, signs indicating the location of first aid services, equipment and supplies or, if posting of signs is not practicable, ensure that each worker knows the location of first aid services, equipment and supplies; and
- ensure that an emergency communication system is in place for workers to summon first aid services.

Emergency Transportation

180(1)

Before workers are sent to a work site, the employer must ensure that arrangements are in place to transport injured or ill workers from the work site to the nearest health care facility.

180(2)

An employer must ensure that an ambulance service licensed in accordance with the *Ambulance Services Act* is readily available to the work site when travel conditions are normal.

180(3)

If an ambulance service licensed in accordance with the *Ambulance Services Act* is not readily available to the work site, or if travel conditions are not normal, an employer must ensure that other transportation is available that

- is suitable, considering the distance to be travelled and the types of acute illnesses or injuries that may occur at the work site,
- protects occupants from the weather,
- has systems that allow the occupants to communicate with the health care facility to which the injured or ill worker is being taken, and
- can accommodate a stretcher and an accompanying person if required to.

180(4)

An employer must provide a means of communication at the work site to summon an ambulance service licensed in accordance with the *Ambulance Services Act* or transportation described in subsection (3).

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

PART 11 FIRST AID *CONT.*

Emergency Transportation cont.

180(5)

If a worker is acutely ill or injured or needs to be accompanied during transport to a health care facility, an employer must ensure that the worker is accompanied by at least one first aider, in addition to the operator of the transportation.

180(6)

Subsection (5) does not apply if there are three or fewer workers at the work site at the time.

First aid providers

181(1)

An employer must ensure that the number of first aiders at a work site and their qualifications and training comply with Schedule 2, Tables 5, 6 or 7.

181(2)

An employer must ensure that the first aiders at a work site have successfully completed a first aid training course approved by a Director of Medical Services and hold a valid certificate in first aid.

181(3)

If a nurse, advanced first aider, or EMT–P is required at a work site, that person must

- be based at or near the first aid room, and
- when not in the first aid room, be easy to contact or notify if first aid services are required.

181(4)

If a nurse, advanced first aider or EMT–P while on duty at the work site, is required to perform non–first aid duties, such duties must be of a type that let the person remain in a fit and clean condition.

181(5)

Subsection (4) does not apply if the duties are those of a first aid provider.

181(6)

An employer must keep a record of workers at a work site who are first aiders.

Duty to report injury or illness

182

If a worker has an acute illness or injury at the work site, the worker must report the illness or injury to the employer as soon as is practicable.

APPENDIX H: OCCUPATIONAL HEALTH AND SAFETY (EXCERPTS) *(CONT.)*

PART 11 FIRST AID *CONT.*

Record of injury or illness

183(1)

An employer must record every acute illness or injury that occurs at the work site in a record kept for the purpose as soon as is practicable after the illness or injury is reported to the employer.

183(2)

A record under subsection (1) must include the following:

- the name of the worker;
- the name and qualifications of the person giving first aid;
- a description of the illness or injury;
- the first aid given to the worker;
- the date and time of the illness or injury;
- the date and time the illness or injury was reported;
- where at the work site the incident occurred;
- the work-related cause of the incident, if any.

183(3)

The employer must retain the records kept under this section for three years from the date the incident is recorded.

First aid records access

184(1)

This section applies to records of first aid given to a worker.

184(2)

Subject to section 8 of the *Act*, a person who has custody of records must ensure that no person other than the worker has access to a worker's records unless

- the record is in a form that does not identify the worker,
- the worker has given written permission to the person, or
- access, use and disclosure of the information is in accordance with an enactment of Alberta or Canada that authorizes or requires the disclosure.

184(3)

An employer must give a worker a copy of the records pertaining to the worker if the worker asks for a copy.

APPENDIX I: MUNICIPAL IMPROVEMENT AGREEMENT (MIA) GUIDELINE

MUNICIPAL IMPROVEMENT AGREEMENT CONSTRUCTION GUIDE

Disclaimer: This information is provided as a guide to assist developers in the MIA process. This does not supersede the agreement between the owner & the City of Edmonton. In cases of conflict, the agreement supersedes all instructions in this guide. Also, this guide addresses the construction & certificate process only. Please refer to your agreement for details on the security release process, invoices, etc.

1.0 PRIOR TO CONSTRUCTION

After the agreement has been executed and and outstanding conditions satisfied and prior to beginning any construction under this Agreement, the Owners shall:

a) obtain the Engineers **approval of the Engineering Drawings** (as necessary). Please contact Esther Anderson at 780-977-7773 for direction;
b) obtain an On Street Construction and Maintenance Permit (the **OSCAM Permit**) from Traffic Operations (780-442-6458);
c) ascertain, as necessary, the location of all existing utilities on, above, beneath, and adjacent to the Development Lands and clearly stake or identify the location of such utilities;
d) ensure that all impacted utility operators have received adequate notice of the proposed construction of the Municipal Improvements;
e) provide forty eight (48) hours written notice to the Construction Inspection **Senior Engineer** of the Owner's intention to construct the Municipal Improvements;
f) arrange for an onsite pre-construction meeting to take place with all relevant City departments, and;
g) if a Municipal Improvement is crossing a utility right-of-way or located in a utility right-of-way, provide copies of utility Crossing Agreements permitting the Municipal Improvements to be constructed across, or to be located on, the utility right-of way. This can be provided with the written notice in (e) above, or at the Pre-Construction Meeting.

2.0 DURING CONSTRUCTION

2.1 Owners Role During Construction

Throughout the construction process, the Owners are required to, among other things:

a) ensure that all impacted utility operators have received adequate notice of the proposed construction of the Municipal Improvements;

APPENDIX I: MUNICIPAL IMPROVEMENT AGREEMENT (MIA) GUIDELINE *(CONT.)*

b) retain an Engineering Consultant in order to provide direction and any engineering certifications required in order to meet the Owners' obligations under this Agreement;
c) have a representative on site at all times to manage the construction, monitor contractors, and ensure that the work is being done in accordance with this Agreement;
d) shall comply at all times with the terms of the OSCAM Permit;
e) arrange for erosion and sedimentation control measures as required;
f) ensure that all construction conforms to City Design & Construction Standards (available on The City of Edmonton website);
g) retain a copy of all applicable test results, including test results for all materials placed during MIA construction and for any subgrade preparation;
h) notify the City prior to the construction of significant items as detailed in the City of Edmonton Design and Construction Standards;
    - https://www.edmonton.ca/city_government/urban_planning_and_design/city-design-construction-standards.aspx

And, If engineering drawings were required as part of the agreement:

i) ensure that copies of the approved Engineering Drawings and any Redlines are on site at all times during the construction of the Municipal Improvements (if applicable);
j) collect and record as-built information for the Municipal Improvements;
k) submit Redlines to the City for approval for any deviations from the approved Engineering Drawings; and
l) communicate any deviations from the approved Engineering Drawings to the appropriate City inspectors.

2.2 Role of the City During Construction

The role of the City during the construction process is for audit purposes, and includes, among other things:

a) ongoing site visits and monitoring in order to verify that the work is in accordance with the Standards and the Engineering Drawings(if applicable); and
b) monitoring and enforcing erosion and sedimentation control measures.

3.0 Upon Completing Construction

Upon completion of the construction and installation of the Municipal improvements, the Developer Owner shall apply in writing for the Construction Completion Certificate (CCC).

The CCC is conditional on the following:

1. **A passing visual inspection by the City of Edmonton**

   A passing visual inspection will require satisfaction of the following criteria:

APPENDIX I: MUNICIPAL IMPROVEMENT AGREEMENT (MIA) GUIDELINE *(CONT.)*

- The asset is fully constructed to the requirements of the approved Engineering Drawings and City Standards
- There are no safety hazards
- There are no deficiencies
- The asset functions as intended at the time of inspection

The City inspector will inspect within 30 days of the request & provide notification of the outcome. If any of the above criteria are not met, the inspection report will identify the presence of deficiencies resulting in an incomplete and/or failed visual inspection. All deficiencies must be repaired. The developer must verify the repairs prior to requesting another formal inspection. This process will continue until the improvement conforms to the criteria above.

2. **Acceptable Materials Testing**
   Once a visual inspection has passed, the Developer must also submit all pertinent test results, acceptable Plan of Record drawing (if required) and supporting documents for each improvement.

   Note: Failure of the materials testing may invalidate the passing inspection and require the improvement(s) be removed and replaced, followed by a new visual inspection.

3. **Engineer sign off of the CCC certificate.**

4.0 Maintenance Period between CCC & FAC

The two year (2 year) Maintenance Period shall commence on the date the City Inspector provides a passing visual inspection in conjunction with the CCC process.

During this time, the Owner shall, upon notice in writing from the City, correct any maintenance deficiency determined by the City. In the event the Owner fails to correct any maintenance deficiency within thirty (30) days of receipt of written notification, the City may do all the work necessary, in the opinion of the City, to correct the deficiency and may draw on the security deposit for this purpose.

5.0 Final Acceptance Certificate

Upon expiry of the Maintenance Period the Owner shall apply in writing to the City for a Final Acceptance Certificate (FAC) .

The FAC is conditional on the following:

APPENDIX I: MUNICIPAL IMPROVEMENT AGREEMENT (MIA) GUIDELINE *(CONT.)*

1. A **passing visual inspection** by the City of Edmonton
    - A passing visual inspection will require satisfaction of the following criteria:
    - The asset is fully constructed to the requirements of the approved Engineering Drawings and City Standards
    - There are no safety hazards
    - There are no deficiencies
    - The asset functions as intended at the time of inspection

    The City inspector will inspect within 30 days of the request & provide notification of the outcome. If any of the above criteria are not met, the inspection report will identify the presence of deficiencies resulting in an incomplete and/or failed visual inspection. All deficiencies must be repaired. The developer must verify the repairs prior to requesting another formal inspection. This process will continue until the improvement conforms to the criteria above.

2. **Acceptable Materials Testing**
   Developer to submit all applicable testing results for all materials placed for FAC repairs and subgrade preparation. (If applicable – we will inform you of the need for any further testing). This is not always needed at FAC.

3. **Engineer sign off of the FAC certificate.**

6.0 CONTACT INFORMATION

Inquiry Type	Name	Phone Number	E-mail
Contact the project coordinator for all Inquiries **excluding** the ones listed below.	Esther Anderson	780-944-7773	esther.anderson@edmonton.ca
OSCAM Permit	Traffic Operations Branch	780-442-6458	roaduse.permit@edmonton.ca
Inspection Requests Notification of start of construction Technical (engineering) inquiries	For Addresses **North** of the River & in Cloverbar/Aurum, contact **Senior Engineer** Loli Fernandez	780-944-7683	loli.fernandez@edmonton.ca
	For Addresses **South** of the River excluding	780-496-1799	annie.duong@edmonton.ca
	Cloverbar/Aurum, contact **Senior Engineer** Annie Duong		

APPENDIX J: MUNICIPAL IMPROVEMENT AGREEMENTS (MIA) CCC AND FAC REQUIREMENTS

Municipal Improvement Agreements (MIA) CCC and FAC Requirements

Requirements for the Request for Inspection (CCC & FAC)

- Surface improvement clean and free of debris
- Roads and gutters water flushed immediately prior to inspection
- Deficient areas marked with spray paint and cross referenced to numbers used on Deficiency List and Index Map
- Refer to the Transportation Inspector Guideline for detailed requirements for each Municipal Improvement

Requirements for the Construction Completion Certificate (CCC) Application

- CCC Test Results (clay, gravel, concrete, asphalt, etc.)
- For MIA's that require engineering drawings (as part of the Servicing Agreement), Plan of Record drawings will be required
- Defect assessment for concrete and asphalt. Agreed upon and accepted by contractor (in writing)
- Tangible Capital Asset form (ie Asset Cost Form)
- Application for Street ID's submitted to Transportation Operations (if applicable)
- Street lighting installed for Roads CCC, unless otherwise specified in the Transportation Inspector Guideline (if applicable)
- Application for energization of street lights (if applicable)
- Request to Transportation Operations for paint lane markings (if applicable)

Requirements for the Final Acceptance Certificate (FAC) Application

- 6 months prior to the Warranty Period End Date, the Developer/Consultant may contact the City for an FAC Inspection
- Any additional FAC repairs will be noted in the Deficiency Report (issued by the City)
- FAC Test Results (clay, gravel, concrete, asphalt, etc.)
- Summary Defect Assessment (from CCC)
- Billing Advice (issued by the City)

This list is not exhaustive and additional items may be required on a case-by-case basis at the sole discretion of the City.

APPENDIX K: RECORD DRAWINGS

RECORD DRAWINGS

Volume 1 of the Design and Construction Standards, Chapter 1, Clause 11 states:

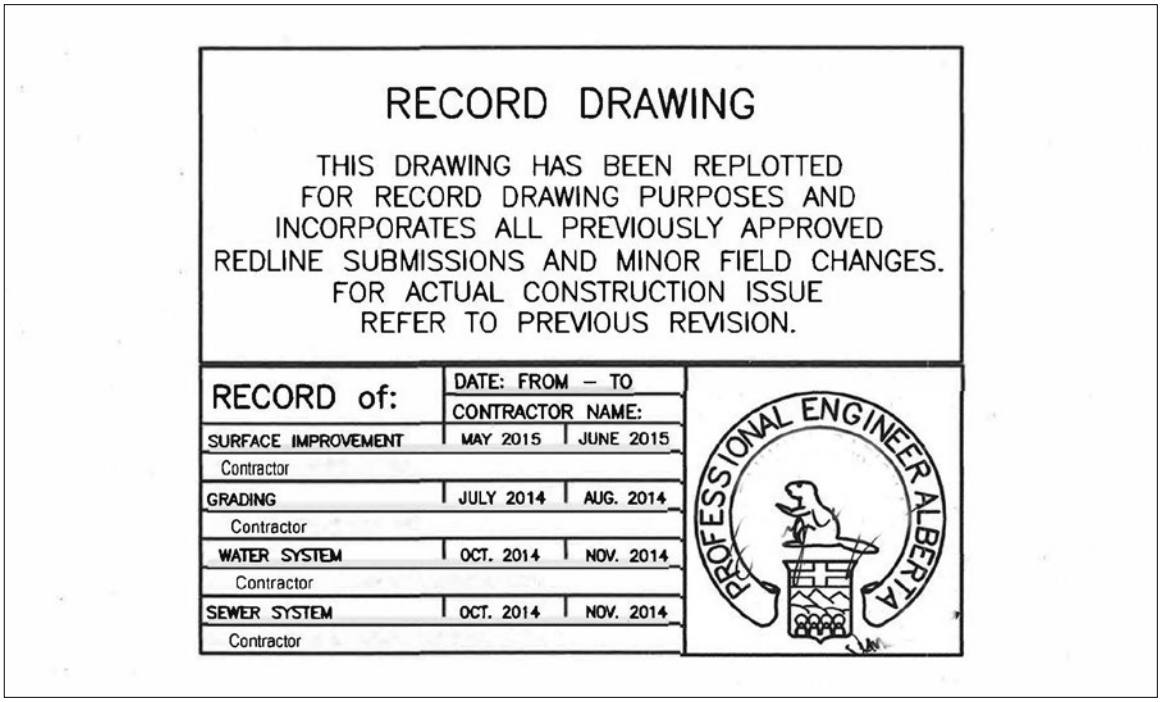
11.1 As-Built Requirements for Surface Improvements

11.1.1 All data shown on the construction drawings shall be changed to as-built information, including:

- Elevations of the catch basins, manhole covers and curb returns on the plan and profile drawings,
- as well as any grade changes which exceed the design grade by more than 0.1% (or 25mm).
- Curve radii, distances from back-of-walk to property line and sidewalk widths on the plan and profile drawings.
- Type of curb, whether rolled faced or vertical faced on the overall plan.
- Elevations at either top-of-curb or lip-of-gutter.
- The month and year of completion and the name of the contractor.

11.1.2

If the cross-section design has been changed in width or structure, then this shall be changed to as-built on the typical section plan.



APPENDIX K: RECORD DRAWINGS *(CONT.)*

City Planning

Memorandum

URBAN FORM AND CORPORATE STRATEGIC

The requirement for all submissions is one (1) full set of RECORD DRAWINGS, which consists of:

1. **One (1) PDF file**, professionally stamped (signed & date), with all drawings combined into a single file. All drawings must include the Overall Road and Sidewalk Plan, Plan Profiles, and Cross Section Details.

   a) An Engineer's dated stamp is required for all permanent surface improvements and temporary features and must reflect the **as-is conditions at the time of signing**.
      - Ensure ALL Redline approvals are incorporated in the record drawings.
      - The overall road and sidewalk plan markups must also be reflected in plan/profile drawings. As a suggestion, the software *Bluebeam* (or similar) can be a tool in assisting the creation of these plans.
      - All temporary features must exist according to the approved designs. Exemptions will apply for the following:
        - Boat ramp in the municipal reserve lot (turfstone).
        - The temporary feature is physically superseded by the construction of the adjacent stage. Confirmation of construction in the adjacent stage must be identified in the record drawings.
      - The as-constructed cross section structure of various road types (Arterial, Collector, Residential, Alley, SUP, etc.), whether or not it differs from the approved design, must be identified in the PDF drawings.
        - Confirm the gravel type, 20A or 63B, installed for the construction of the improvement.
        - Indicate which SUP structure, standard or alternate, was installed for the construction.
        - Pipeline crossing road structures are to be indicated on the overall road and sidewalk plan.
        - If an area (ex. 100m^2) differs from the approved design, indicate the alternate road structure, based on the geotechnical recommendation, in the overall road and sidewalk plan and consult with the inspector. Consultants are encouraged to document the alternate road structure with the inspector at the time of installation.

APPENDIX K: RECORD DRAWINGS *(CONT.)*

- Plan/profile drawings
  - If the as-constructed grade exceeds the design grade by 25mm or 0.1%, outlined in Section 11.1.1 of the COE Design & Construction Standards, display and clearly identify both design and as-constructed grades.
  - Although the inspectors recognize limitations of the GPS vertical accuracy, in the rare case that deviation from design grade is greater than 35mm or 0.5% (2-5% of all profiles), consult with the inspector to determine the need of a new grade line.

2. **One (1) CADD file** of the overall surface drawing.

The file must be of the following properties:

- This CADD file does not require a Professional Engineering stamp but must match the stamped/signed PDF file.
- Geo Referenced to NAD 83 3TM Central Meridian -114 Degree
- Microstation V8i is preferred, but AcadR12.DXF is also acceptable.
- Must contain overall road and sidewalk, alley, shared use path (SUP) etc., including all lot lines & Street Names - not including the title block.
- The file must be in 2D.
- Oriented to City of Edmonton GIS Base system.
- Plan/Profile drawings are not to be submitted in CADD format.
- Street Furniture is not required.

Record drawings, which consists of the PDF file and the CADD file, can be submitted at **any time** after all permanent surface improvements have been constructed, but must be submitted no later than **6 months PRIOR** to the LAST surface improvement FAC due date. All record drawing submissions shall be sent to developmentinspections@edmonton.ca using the following (but not limited to these methods):

- FTP / ShareFile / ShareZone or **other** – hosted by the consultant
- courier/mail
- EPlan is currently unavailable as a submission method

CATERPILLAR