December 6, 2012

To: Waterloo Region Home Builders’ Association
   Conestoga Heavy Construction Association
   Consulting Engineers of Ontario – Grand River Chapter
   Grand River Conservation Authority
   Kitchener-Wilmot Hydro
   Utility Coordinating Committee
   City Departments
   Stakeholders

To Whom It May Concern:

Re: City of Kitchener
2012 Development Manual Update
Final Wording

The City of Kitchener have been coordinating with representatives of the Waterloo Home Builders Association and Consulting Engineers of Ontario – Grand River Chapter, on minor changes to the current standards and procedures outlined within the City of Kitchener Development Manual, adopted by Council in 2010. The changes to the Development Manual have been finalized and executed by the Interim Deputy CAO, Infrastructure Services Department.

The updated Development Manual and list of changes will be available online for download on the City of Kitchener website on Monday December 10, 2012. The next Development Manual update is planned for 2015.

Yours truly,

Binu Korah, MBA, P.Eng.
Manager, Development Engineering

BK/tj
Attach.
c: B. Robinson
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A.1.2 page 1*</td>
<td>Purpose of Subdivision Control</td>
<td>2p**</td>
<td><strong>Change:</strong> Add after &quot;Streetscape Plan&quot;: &quot;Urban Forest Asset&quot;.</td>
</tr>
</tbody>
</table>
| 2 | A.1.2 page 2* | Purpose of Subdivision Control | 7p 5th bullet point | **Current:** "Community Services - includes Parks;"  
**Change to:**  "Operations includes Sanitary, Storm, Stormwater Management, Roads, Parks, Trails & Urban Forest, and" |
| 3 | A.5 page 6* | Pre-Grading Request | New bullet point | **Change:** Add new bullet point after last bullet point: "Completion of the Conceptual Master Tree Planting Plan & Urban Forest Soils Report." |
| 4 | A.6 page 6* | Pre-Servicing Request | New bullet point | **Change:** Add new bullet point after first bullet point "Consultant shall enter into an Engineering Agreement with the City and Subdivider for consultant obligations under the proposed works". |
| 5 | A.6 page 7* | Pre-Servicing Request | New sentence | **Change:** Add new sentence after last sentence in last paragraph: "Servicing approvals will expire after two (2) years of the issuance date for the works which have not been completed under the approval. The Consultant will be required to ensure any certificate of approvals issued by the Ministry of Environment are up to date." |
| 6 | A.8.3 page 8* | Geotechnical Investigation and Soils Report | 1p** | **Change:** Add new sentence to beginning of first paragraph: "All proposed plans of subdivisions must be accompanied by a Geotechnical Investigation." |
| 7 | A.8.3 page 8* | Geotechnical Investigation and Soils Report | New Paragraph | **Change:** Add new paragraph to bottom of section: "The soils report will include the Urban Forest Soils Report completed by a qualified expert and address all of the requirements of Section M.3.1." |
| 8 | A.8.3 page 9* | Servicing Design Brief or the Preliminary Servicing Report | New paragraph | **Change:** Add new paragraph before the last paragraph: "The report shall include a preliminary plan for sanitary sewer servicing, and another separate plan for preliminary storm sewer servicing. Each plan is to include pipe inverts, to illustrate how the system will properly drain, and match into existing conditions." |
| 9 | A.8.6 page 9* | Preliminary Grading Plan | New section | **Change:** Add new section after the Servicing Design Brief or the Preliminary Servicing Report section: "All proposed plans of subdivisions must be accompanied by a Preliminary Grading Plan. This plan shall include proposed grades and elevations at key locations to show how the proposed subdivision will meet lot grading and roadway grading requirements. Existing condition elevations are to be shown where matching proposed grades. Cross-sections shall show how the site will be graded. The design and calculation of overland flow routes are to be included to understand impacts on the proposed and surrounding lands." |
| 10 | A.8.12 | Master Tree Planting Plan | New Section | **Change:** Add new sentence: "Refer to Section M, Urban Forest - Tree Planting & Establishment." |
| 11 | A.9.1 page 10 | Table 1: Submission Drawings Table | New line item | **Change:** Add new line item: "Final Master Tree Planting Plan" |
| 12 | A.9.3 page 12* | Final Submission | First two bullet points | **Current:** "* Four (4) signed MOE applications as per the MOE submission form for each Storm Sewer, Sanitary Sewer, and Stormwater Management facilities;  
• Form 1 - Record of Watermains Authorized as a Future Alteration. The prescribed fee must be payable to the City of Kitchener;"  
**Change:** Remove first two bullet points, now included in A.12: |

* Page number may vary, however please follow the section number.  
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 13   | A.9.3     | Final Submission   | Item **A.9.3** 12   | 4th Bullet point                                                                                                                                | Current:  
  • Two (2) complete sets of drawings;  
  • Two (2) complete sets of drawings;  
  Change:  
  • Delete duplicate bullet point  |
| 14   | A.9.3     | Final Submission   | Item **A.9.3** 12   | 5th Bullet point                                                                                                                                | Current:  
  • One (1) complete set of drawings in 11 x 17 format;  
  Change to:  
  • Two (2) complete sets of drawings in 11 x 17 format;  |
| 15   | A.9.3     | Final Submission   | Item **A.9.3** 12   | 8th Bullet point                                                                                                                                | Change:  
  Remove the following sentence (now included in A.12):  
  • One (1) complete set of contract documents including tender form and specifications with insurance and City of Kitchener named as the insured, and  |
| 16   | A.9.3     | Final Submission   | Item **A.9.3** 12   | New Paragraph                                                                                                                                  | Change:  
  Add new paragraph at end of section:  
  "The above are required for approval of the engineering drawings. Approved engineering drawings is a single requirement for construction approval. For construction approval requirements refer to Section A.12.”  |
| 17   | A.9.4     | "As-Recorded" Submission | Item **A.9.4** 12 | 1p/3s**                                                                                                                                     | Current:  
  "For Park and Community Trails any changes in the original drawing by the Consultant Engineer or Landscape Architect are subject to the approval by the Supervisor of Site Development.”  
  Change to:  
  "For Park, Community Trails, and Urban Forest Asset, any changes in the original drawing by the Consultant Engineer or Landscape Architect are subject to the approval by the Supervisor of Site Development.”  |
| 18   | A.9.4     | "As-Recorded" Submission | Item **A.9.4** 13 | 10p**                                                                                                                                         | Current:  
  "The white paper hardcopy and the mylar copy “As-Recorded” submission will contain the following listed drawings:”  
  Change to:  
  "The white paper hardcopy and the mylar copy “As-Recorded” submission will contain the following listed stand-alone drawings:”  |
| 19   | A.9.4     | "As-Recorded" Submission | Item **A.9.4** 13 | 10p**                                                                                                                                         | Change:  
  Add new bullet point after last bullet point:  
  "Final Master Tree Planting Plan”  |
| 20   | A.9.4     | "As-Recorded" Submission | Item **A.9.4** 13 | 12p**                                                                                                                                         | Current:  
  "In supplement to “As Recorded” drawings, two separate AutoCAD files must be completed and submitted in a CD to Development Engineering staff (refer to the CAD standards manual under the Development Manual webpage).”  
  Change to:  
  "In supplement to “As-Recorded” drawings a digital Constructed Asset Data drawing in AutoCAD format must be completed and submitted in a CD to Development Engineering Staff (refer to CAD Standards Manual and Constructed Asset Data Submission Manual under the Development Manual Webpage).”  |

* Page number may vary, however please follow the section number.  
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 21   | A.9.4 page 13* | "As-Recorded" Submission | 13p** | Current:  
"Among the two required AutoCAD files is the "Asset Drawing" and Asset Data Tracking form (MS Excel spreadsheet). All fields within the tracking form must be complete if corresponding infrastructure was constructed, with the exception of bridges or culverts 3m or greater, which will require an Ontario Structure Inspection Manual (OSIM) standard form (pages 1 and 4 only)."

Change to:
"The Constructed Asset Data drawing must be completed if corresponding infrastructure was constructed, with the exception of bridges or culverts 3m or greater, which will require an Ontario Structure Inspection Manual (OSIM) standard form (pages 1 and 4 only). Pumping Stations are also an exception and will require a separate form. Both forms can be found on the Development Manual Webpage under the Constructed Asset Data Submission Section."

| 22   | A.9.4 page 14* | Table 2: Submission Requirements | Last Column | Current:  
"Digital: As Recorded Data Tracking Form (*.xls and *.pdf)."

Change to:
"Digital: Asset Drawing (*.dwg)"

| 23   | A.10.1 page 14* | General Drawing Requirements | New bullet point | Change: Add new bullet point after last bullet point:  
"All Lot Grading Plans, and Erosion Sedimentation Control Plans shall be certified by the Environmental Consultant as per the Tree Management Policy."

| 24   | A.10.5 page 15* | Drawings Package | New bullet point | Change: Add new bullet point after "Streetscape Plan":  
"Final Master Tree Planting Plan"

| 25   | A.10.5.4 page 16* | Composite Utility Plan | Entire Section | Change: Delete entire section. This information in this drawing is now included in the Final Master Tree Planting Plan.

| 26   | A.10.5.6 page 17* | Street Tree Planting Plan | Entire Section | Change: Change heading and text to:  
"Urban Forest Asset - Master Tree Planting Plan"

Refer to Section M of this manual for all tree planting and soil habitat soil zone requirements."

| 27   | A.10.5.12 page 18* | Lot Grading Plans | New Paragraph | Change: Add new paragraph after 1st paragraph:  
"Grading plans will only be reviewed in conjunction with the submission of servicing and SWM design details. The overall subdivision grading plan is to include enough elevations and grades on the interior of blocks to illustrate how the surface drainage will be managed/ directed until it is later developed through the Site Plan process. This design must consider drainage impacts from these large contributing block areas during this interim condition period, which could have negative affects to existing/future houses and roads. Positive drainage is required on the block itself to ensure water is not ponding. Where required, catchbasins/ ditch inlets/ hickenbottoms are to be installed on the blocks in order to capture this surface flow before it is directed onto the road. These structures are placed on private property, without easements, connected to the storm services which are to be provided to the block through the road servicing. The structures are temporary, and will be removed when the site is developed."

The City would like to see grading plans without retaining wall construction in new developments. Sometimes it may be necessary to have retaining walls on multiple properties that are reliant on one another. Retaining walls spanning more than one private property are to be avoided if at all possible and shall be considered only if there is a mechanism in place to ensure long-term maintenance and future repairs by the land owners. The Building Division should be contacted where a retaining wall permit is required."
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>A.10.5.12</td>
<td>Other Required Information shall show</td>
<td>New bullet points</td>
<td>Change: Add new bullet points after last bullet point: -Slopes and slope arrows along side lot lines; -Signature block for City approval within the title block; -Environmental Consultant certification as per the Tree Management Policy.”</td>
</tr>
<tr>
<td>29</td>
<td>A.10.5.14</td>
<td>Streetlighting and Electrical Distribution</td>
<td>3p**</td>
<td>Change: Add sentence after last sentence: “All electrical, street and ornamental lighting design will be done with awareness to the minimum tree planting and soil volume requirements identified in Section M.”</td>
</tr>
<tr>
<td>30</td>
<td>A.12</td>
<td>Construction</td>
<td>Revise section</td>
<td>Current: “Construction shall not commence without the following: • Approved Engineering drawings; • Ministry of the Environment (MOE) approvals; • A Letter of Credit posted with Development Engineering; • Administration Fees paid to Development Engineering; • An Insurance Certificate submitted to Development Engineering; • Pre-serving letter from Development Engineering, and • City approval of Contractor and contract documents. Prior to the start of construction and after the approval of engineering drawings, the Subdivider’s Consulting engineer shall arrange for a preconstruction meeting with City staff in attendance.” Change to: “Prior to any Servicing works starting on-site, the consultant must have received a servicing approval letter signed by the Manager of Development Engineering. This letter will also provide formal approval of the Subdivider’s contractor, and the Engineering Design. When clearance of the following items have been finalized, the Development Engineering Project Manager will recommend the Manager of Development Engineering to issue the servicing approval letter: a) Servicing Request Letter Received; b) Zoning; c) Draft Plan; d) Tree Management; e) Heritage; f) Lotless Blocks Draft Reference Plan; g) Draft Subdivision Final Lotting Plan; h) Entrance Feature Confirmation; i) Engineering Agreement (Subdivider shall submit a Consultant Appointment Letter to Engineering appointing a consultant); j) Registered Subdivision Agreement; k) Archeological; l) Decorative Lighting Confirmation; m) Approved Parking Plan; n) Approved Preliminary Tree Planting Plan &amp; Urban Forest Soils Report; o) MOE Approval for SWM**; p) MOE Approval for Sewers**; q) Kitchener Utilities Approved - Form 1 (watermains)***; r) Region of Waterloo Approved - Form 1 (watermains); s) GRCA Fill Permit; t) Other Agency Permits (MNR); u) Road Closure Permit; v) Neighbors’ Letters of Permission; ** Read as follows: 3p/2s means third paragraph, second sentence.</td>
</tr>
<tr>
<td>Item</td>
<td>Section</td>
<td>Heading</td>
<td>Paragraph /Sentence</td>
<td>Content</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
|      | A.12.1    | Road Closures/Detours        | New Heading Change: Add the following new paragraph.                                 | *Where a development requires the closure of a City street or detouring of traffic, a Road Closure/Detour Work Permit is required prior to commencement of the related works. In order to obtain this permit, the following process will apply:  
- Notification to the Traffic Project Coordinator, Transportation Services by the consultant/contractor as early as possible to schedule any road works/impacts on the neighborhood, and advise of upcoming works (this includes letter of notification to existing adjacent residents);  
- Request for road closure/detour to be submitted a minimum of five (5) working days in advance of the closure, and after the initial consultant contact. This should come from the contractor to the Traffic Project Coordinator;  

Note, not all of the above clearances may apply to all projects. The clearances may occur after, or simultaneous to the Final Drawing Submission (see Section A.9.3). Upon receipt and review that everything is in order, the City will then issue a letter approving the contractor and to permit commencement of construction. Prior to the start of construction, the Subdivider’s Consulting Engineer shall arrange for a preconstruction meeting with City staff in attendance.

* One (1) complete original set of executed contract documents including tender form and specifications with insurance certificate and City of Kitchener named as additional insured, plus one (1) photo copy of this complete document.

** City signature is required for MOE approvals. Four (4) signed MOE applications as per the MOE submission form for each Storm Sewer, Sanitary Sewer, and Stormwater Management facilities are to be submitted to Development Engineering for sign off.

*** Record of Watermains Authorized as a Future Alteration. The prescribed fee must be payable to the City of Kitchener.*
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
|      | A.15.1  | General                  | 1p**                | **Current:**

"All subdivisions are subject to two inspections:"

**Change to:**

"All subdivisions are subject to two inspections, Initial and Final. Completion of repairs shall not exceed a maximum of six months in order to finalize an acceptance, all deficiencies are to be rectified."

|      | A.15.2.2 | Surface Works           | 5th Bullet point    | **Current:**

"Trees;"

**Change to:**

"Trees & Soil Habitat Zone;"

|      | A.15.2.3 | Stormwater Management Ponds | Revise section | **Current:**

"All infrastructures within a SWM pond are to be inspected and accepted together as a whole. This includes the following:

- Inlet structure;
- Outlet structure;
- Grading within the pond;
- Maintenance access to the pond, and
- Stormwater Management pond plantings, living fences, rear lot plantings and buffers."

**Change to:**

"Where a new subdivision will outlet to an existing or proposed SWM pond, a cleanout maintenance security will be required, and will form part of the Subdivider’s Letter of Credit. The amount required for the maintenance security will be the Engineer’s estimated cost to clean out the pond two (2) times. Additionally, new subdivisions outletting to an existing SWM pond will be required to add the estimated cost to flush the storm sewers up to the SWM pond two (2) times. The estimated cost will be based on the City’s current sewer flushing rate per meter of pipe.

Where multiple Subdividers are responsible for the maintenance of the same pond, a Subdivider who has reached 95% build out can go through the pond acceptance process, or enter into an agreement with all other Subdividers to be released of their pond maintenance obligations. By entering into the agreement, the Subdividers agree to clean out the absolved Subdivider’s sediment from the pond and pipes. Further, the other Subdividers must have pond maintenance securities posted with the City.

Initial Acceptance of the SWM pond undergrounds forms part of the Initial Acceptance of the road underground services to base asphalt. An as-recorded survey of the SWM pond is required for Initial Acceptance of the SWM pond undergrounds.

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>The Subdivider shall install all landscaping of SWM areas above the five (5) year storm level in accordance with the approved plan, during the first planting season after occupancy of the first unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Initial Acceptance of the SWM pond surface works can take place before 95% of the catchment area is built out, and will be inspected and accepted as a whole with the exception of landscaping below the five (5) year storm level.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>At 95% build out of the catchment area, the pond must be surveyed and cleaned out; except if the survey proves the pond has less than 50% of the allowable sediment accumulation (less than 0.25m or 50% of the pond accumulation design depth, whichever is the least). After the pond has been cleaned out, the minimum two (2) year performance monitoring of the SWM pond can commence. At this point the consultant may request to have the pond cleanout security reduced from two (2) cleanouts, to one (1).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>At 95% build out of the catchment area, the pond must be surveyed and cleaned out; except if the survey proves the pond has less than 50% of the allowable sediment accumulation (less than 0.25m or 50% of the pond accumulation design depth, whichever is the least). After the pond has been cleaned out, the minimum two (2) year performance monitoring of the SWM pond can commence. At this point the consultant may request to have the pond cleanout security reduced from two (2) cleanouts, to one (1). After review of satisfactory monitoring results and prior to Final Acceptance, the pond must be cleaned out (not hold accumulated sediment), and landscaping below the five (5) year storm level can be planted. All items in the SWM Block (underground and surface works) are to be inspected as a whole, for Final Acceptance. SWM pond undergrounds will require an updated CCTV inspection, and as-recorded survey submission at Final Acceptance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subdivisions within the Doon South and Rosenberg Communities may have SWM infrastructure and monitoring requirements in addition to what is outlined in this manual. The acceptance of these SWM ponds and infiltration facilities (including infiltration facilities on City lands or within City easements on private property) will take place after satisfactory monitoring results are achieved, as described in their Subdivision Agreement, and in accordance with the relevant Sub-Watershed study.</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
|      |         | Stormwater Management Pond Undergrounds | Includes the following: | - Inlet piping and structures (Splitter MHs, Headwalls, etc.) - The inlet is to include all piping/structures within the SWM Block.  
- Outlet piping and structures (Weirs, Quantity and Quality control structures, etc.);  
- Cooling Trenches;  
- Infiltration structures;  
- Earth works required within the SWM Block;  
- Erosion protection such as gabion mats, rip rap treatment, etc.  
- Forebay weir;  
- Spillway;  
- Maintenance access (including final surface treatment - asphalt/concrete/turfstone). |
|      |         | Stormwater Management Pond Surface Works | Includes the following: | - Landscaping above the 5 year water elevation (tree types broken out);  
- Landscaping below the 5 year water elevation (tree types/aquatics broken out);  
- Sod;  
- Seed;  
- Topsoil;  
- Fine grading;  
- Walkways (stone dust/asphalt etc. to be broken out separately);  
- Fencing (types to be broken out separately);  
- Gates or entrance features;  
- Retaining walls (to be avoided where possible);  
- Cleanout Maintenance (Letter of Credit includes two cleanouts);  
- Monitoring;  
- Other infrastructure within the pond:"
| 35   | A.15.3  | Page 28* | Step 1: Subdivider’s inspection | 2p | Current:  
"Once the Consultant is satisfied that all noted deficiencies have been rectified and that the works, especially all sewers, manholes and catchbasins have been parged and cleared of debris, an inspection request shall be sent via email to Development Staff."

Change: Change sentence as follows:  
"Once the Consultant is satisfied that all noted deficiencies have been rectified and that the works, especially all sewers, manholes and catchbasins have been parged and cleared of debris, the CCTV can take place, and an inspection request shall be sent via email to Development Engineering Staff."

| 36   | A.15.2.3 | Page 30* | Step 2B: Surface works onsite inspection | 1p** | Change: Add sentence after first sentence:  
"Refer to Section M for the inspection and acceptance for all tree planting and soil habitat zones identified on the Master Tree Planting Plan."

| 37   | A.15.3  | Page 31* | Step 3: Maintenance Package submission by Consultant | New bullet points | Change: Add new bullet points after last bullet point:  
"As Recorded sanitary and storm sewer design flow spreadsheets in paper and ".xls" format.  
-Digital photographs of every water connection, including services to document that wrapping as per Corrosion Protection in the DGSSMS has been completed  
-CCTV Inspection Report — Free of deficiencies. Provide with the CCTV Inspection Report a general service plan which highlights and includes the total linear meters of storm (including catch basin leads), sanitary and GWMS sewers."
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 38   | A.15.3  | page 31* | Last bullet point | **Current:**
|      |         |         |                     | "3) Development and Reconstruction A-Recorded Tracking Form as an Excel Spreadsheet."
|      |         |         |                     | **Change to:**
|      |         |         |                     | "3) Constructed Asset Data drawing in AutoCAD SDF format." |
| 39   | A.15.4  | page 32* | New Paragraphs  | **Change:** Add new paragraphs above the last paragraph:
|      |         |         |                     | "Any old subdivisions that were Initially Accepted prior to June 2010 the following will apply, for subdivisions Initially Accepted after June 2010 the new process will apply. Prior to the final acceptance of the underground services, the consultant shall ensure all as-recorded information has been received by the City, including: mylars, "tiff" files, AutoCAD files.
|      |         |         |                     | Through collaborated efforts the City of Kitchener and the Region of Waterloo ensure water distributions pressures are within an acceptable range. To help ensure new development and future development pressures are adequate, the water pressure model used, requires updated data as new developments advance. Prior to the inspection of the watermain for Final Acceptance, Hydrant Fire Flow Test(s) (link to B.9.13) results are to be submitted to Kitchener Utilities. The number of tests required (minimum of one) will depend on the development being constructed (i.e. large subdivision with rolling topography vs. final remaining cul-de-sac bulb). Kitchener Utilities should be consulted prior to arranging the tests to determine the extent of the tests needed." |
| 40   | A.15.4  | page 33* | Add new bullet points | **Change:** Add new bullet points after last bullet point "Letter is to include initial acceptance date;" & "Attached copy of initial acceptance letter."
| 41   | A.15.5  | page 35* | 5p** | **Change:** Add bullet point to end of bullet points:
|      |         |         |                     | "The Subdivider shall meet all of tree planting requirements identified in Section M of this manual." |
| 42   | A.15.6  | page 35* | New row | **Change:** Add new row:
|      |         |         |                     | "Trees:

-wounds, trees planted too deep or high, poor tree vigor due to inadequate watering, volcano mulching."
| 43   | A.16.4  | page 37* | New paragraph | **Change:** Add new paragraph"
|      |         |         |                     | "All tree planting for landscape design elements will meet all tree and soil habitat zones requirements identified in Section M of this Manual." |

* Page number may vary, however please follow the section number.

** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 44   | A.16.5  | Insurance | Current: | "The Contract Document shall include: all addenda and the Form of Tender, five (5) million dollars liability insurance with the City (and other affected local authorities) and Consulting Engineer all named as additional insured, contain a 30day written cancellation notice, and Workplace Safety and Insurance Board. In addition to the above, the Engineering Consultant shall submit an insurance certificate with: five (5) million dollars liability insurance with the City (and other affected local authorities) named as additional insured, 30day written cancellation notice, described for the particular project."
|      |         |         | Change: | "The Contract Document shall include: all addenda and the Form of Tender, an insurance certificate addressed to the City of Kitchener with five (5) million dollars liability insurance with the City (and other affected local authorities and Consulting Engineer all named as additional insured), contain a 30day written cancellation notice, and Workplace Safety and Insurance Board. In addition to the above, the Engineering Consultant shall submit an insurance certificate addressed to the City of Kitchener with: five (5) million dollars liability insurance with the City (and other affected local authorities named as additional insured), 30day written cancellation notice, described for the particular project." |
| 45   | B.1     | Purpose of Site Plan Control | Change: | Add new paragraph to beginning of section: "Site Plan Control is a tool used to encourage high quality site and exterior building design. It is used to achieve appropriate siting and massing of a development on a site and to ensure safety, accessibility, attractiveness and compatibility of a development with the site context and overall urban landscape. It is also used by the City to secure land for road widenings and implement sustainable streetscape improvements in public boulevards adjoining development sites. To a large extent the Site Plan Control strategy is one of the key mechanisms for implementing the City’s policies." |
| 46   | B.1     | Purpose of Site Plan Control | Change: | Add the following bullet points: "- Adequate provision and maintenance of site-specific facilities required by the development or redevelopment; - Appropriate location and adequacy of services and utilities; - Compatibility of design between sites and minimization of any adverse impacts of the development or redevelopment on adjacent properties; - To secure necessary lands for the widening or improvements to streets and intersections; - To secure necessary pedestrian, public transit or cycling facilities; - To ensure the development or redevelopment is completed and maintained in accordance with the approved plans and design; - To ensure that the development is compatible with natural heritage features and cultural heritage features on site or on adjacent lands; - To ensure facilities are designed to have regard for barrier free and universal accessibility; - To ensure development or redevelopment incorporates Crime Prevention Through Environmental Design (CPTED) principles."
| 47   | B.1     | Purpose of Site Plan Control | Current: | "These "quality control" conditions allow City staff to review and approve applications to ensure the installation and maintenance of matters including, but not limited to: Change to: "These "quality control" conditions allow City staff to review and approve applications to ensure installation and maintenance. For a list of information and materials that may be required to process an application, refer to the following: - Schedule 1, City of Kitchener Official Plan (link); - Section 19.0, City of Kitchener Urban Design Manual (link)."

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
### City of Kitchener
2012 Development Manual
Update Wording

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 48   | B.3     | Site Plan Review Committee (SPRC) | 7p/2s** | **Current:**
"This 'Approval in Principle' letter will outline all of the Conditions Required for Issuance of Site Plan Approval any additional approvals that may be required prior to the issuance of Site Plan Approval."

**Change to:**
"This 'Approval in Principle' letter will outline all of the Conditions and any additional approvals required for issuance of Site Plan Approval."

| 49   | B.9.8   | Environmental Impact Study (EIS) | New paragraph | **Change:**
Add new paragraph after the last paragraph:
"Note, the term "Environmental Implementation Report" is the term for the combined "Preliminary SWMP" and EIS/GVO required in areas of the City where subwatershed studies have been completed, and / or where community plans reference / require such a "combined" supporting study."

| 50   | B.9.11  | Environmental Site Assessment (ESA) | Last sentence | **Current:**
"The Building Division may also require a RSC when a property is completing a zone change and going to a more sensitive land use for the proposed development."

**Change to:**
"The Building Division may also require a RSC when a property is changing the land use through a Site Plan application, Building Permit, or completing a zone change and going to a more sensitive land use for the proposed development."

| 51   | B.9.13  | Fire Flow Analysis | 6th bullet point | **Change:**
Add sentence to beginning of 6th bullet point:
"Due to the possibility of discoloured water, notify Kitchener Utilities or any key customers in the area if completing a private hydrant flow test."

| 52   | B.10    | Off-Site Works Permit | New Section | **Change:**
Add the following sentence:
"Refer to Procedure for Off-Site Works Permit By Private Contractors (Appendix E)."

| 53   | C.3     | Road Pavement Design | 2nd last paragraph | **Current:**
"On roads that are designed Industrial and/or Arterial or Secondary Arterial, a paved "kill strip" consisting of 50 mm HL-3 and 150 mm granular 'A', 450 mm in width, shall be constructed."

**Change to:**
"On roads that are designated Arterial, a concrete edge strip or "kill strip" shall be constructed as per Region of Waterloo Standard Drawing 211, Boulevard Concrete Edge Strip Detail."

| 54   | C.7     | Road Sub-Drains | 1p/1s** | **Current:**
"In general, sub-drains will be required to run continuous along both sides of all roads, as per OPSD 216.010."

**Change to:**
"In general, sub-drains will be required to run continuous along both sides of all roads, as per OPSD 216.021. Perforated PVC sub-drain shall be 150mm in diameter, and below road base."

| 55   | C.9     | Curbs | 1p** | **Change:**
Add to end of first paragraph:
"Granular A is to be compacted 150mm past the back of curb. Concrete barrier curb with standard gutter shall have additional width where sidewalk is adjacent to curb or concrete driveway ramps, as per OPSD 600.040."
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 56   | C.10    | Boulevards | 1p**             | Current:  
"The boulevard area shall be filled with 450 mm topsoil, compacted and sodded with No. 1 nursery sod. The boulevard is to be sided at grade with the top of the curb."

Change to:  
"For boulevards where trees will be planted, as identified on the Master Tree Planting Plan the approved topsoil will be installed to a depth of 450mm per the requirements of Section M of the manual and sodded with No. 1 nursery sod. All construction debris and surplus granular material will be removed to the required depth and replaced with parent material compacted to 85% proctor. For boulevards where trees will not be planted, at least 150mm of topsoil will be placed in the boulevard and sodded with No. 1 nursery sod."

| 57   | C.11    | Sidewalks | 7th bullet point | Current:  
"Intersection ramps shall be in accordance with Standard Drawing 114 or conform to Standard Drawing 117 Curb and Gutter with Adjacent Sidewalk, and"

Change:  
Fix drawing reference typo.  
"Intersection ramps shall be in accordance with Standard Drawing 116 or conform to Standard Drawing 117 Curb and Gutter with Adjacent Sidewalk, and"

| 58   | C.11    | Sidewalks | Last bullet point | Current:  
"Sidewalks at driveway ramps within Commercial and Industrial areas shall be a minimum of 200 mm thick concrete."

Change to:  
"Sidewalks at driveway ramps within Commercial and Industrial areas shall be a minimum of 200 mm thick concrete as per OPSD 310.01."

| 59   | C.11    | Sidewalks | New bullet point | Change to:  
Add new bullet point to end:  
"Where trees have been identified on the Master Tree Planting Plan the required root pathways will be placed in the parent material prior to the installation of sidewalks to meet all of the requirements of the Master Tree Planting Plan and Section M of this manual."

| 60   | C.12    | Walkways | 1p/2s**          | Current:  
"All walkways shall be a minimum of 6.0 m in width unless otherwise noted. They shall be excavated to a minimum depth of 300 mm. The excavation is to be backfilled with a minimum 225 mm compacted Granular “A” plus 50 mm HL 8 and 25 mm HL3A or HL 2 asphalt. On either side of the walkway, the Subdivider shall construct a 1.5 m high chain link fence consisting of industrial type posts, No. 9 gauge wire, except such fence shall be 0.9 m high when it is along the side of the property from the front of the house to the sidewalk (if there is no sidewalk, then to the back of curb) The said fencing shall have a 1-11/16” outside diameter (O.D.) top rail and single strand bottom tension wire 14.0 gauge fastened 450 mm or centre (Refer to Standard Drawing 111 Public Walkway Details)."

Change to:  
"All Walkway Blocks shall be a minimum of 6.0 m in width unless otherwise noted. The Subdivider will construct a 1.5 m wide by 125 mm thick concrete walkway to City of Kitchener current specifications over a minimum 150 mm compacted Granular “A” base. On both sides of the concrete sidewalk the Subdivider will place a minimum 150 mm of the specified topsoil material and fine grade to achieve positive drainage in accordance with the Approved Grading Plan, and sod using No. Nursery grown sod. At the property lines both sides, the Subdivider will construct on Walkway Block property a 1.2 m high galvanized chain link fence consisting of the specified materials including terminal posts and line posts cast into poured in place concrete footings, top and bottom horizontal railing, No. 9 gauge galvanized wire mesh with 38 mm x 38 mm openings. (Refer to Standard Drawings 111 Public Walkway Details and 507 Chainlink Walkway Details.)"
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 61   | C.12.1  | Walkways - Emergency Access | New Section | **Change:** Add new section:  
  "All Walkway – Emergency Access Blocks shall be a minimum of 6.0 m in width unless otherwise noted. The Subdivider will construct a minimum 4 m wide emergency vehicle carriageway. The carriageway will consist of a 1.5 m wide by 125 mm thick concrete walkway to City of Kitchener current specifications over a minimum 300 mm compacted Granular “A” base, and on both sides, a 1.25 m wide hot laid asphalt paved driving surface consisting of a 50 mm thick HL4 binder course and 40 mm thick HL3 wearing course to achieve a total 90 mm pavement over a minimum 300 mm compacted Granular “A” base. Both sides of the carriageway the Subdivider will place a minimum 150 mm of the specified topsoil material and fine grade to achieve positive drainage in accordance with the Approved Grading Plan, and sod using #1 Nursery grown sod. At the property lines both sides, the Subdivider will construct on Walkway – Emergency Access Block property a 1.2 m high galvanized chain link fence consisting of the specified materials including terminal posts and line posts cast into poured in place concrete footings, top and bottom horizontal railing, No. 9 gauge galvanized wire mesh with 38 mm x 38 mm openings. At the property line at both street frontages of the Walkway – Emergency Access Block, the Subdivider will install two of the specified Standard Park Gates cast into poured in place concrete footings, to achieve the locking vehicle barrier with minimum 1.5 m – maximum 1.8 m clear space centered on the concrete sidewalk. (Refer to Standard Drawings 114 Walkway – Emergency Access Details.)." |
| 62   | C.15    | Cul-De-Sacs | 2p | **Current:**  
  "Where an emergency access is required in accordance with the provision of the Emergency Services Policy, the emergency access shall be constructed as follows - A minimum width of 3.0 m; 225 mm compacted Granular “A”; 50 mm HL8 and 25 mm HL3A or HL2 asphalt. Where a walkway is incorporated with the emergency access, the width shall be 6.0 m and constructed in accordance with walkways specifications, refer to Section C.6."  
  **Change to:**  
  "Where an emergency access is required in accordance with the provision of the Emergency Services Policy, the emergency access shall be constructed as per Section C.12.1, Walkways - Emergency Access." |
| 63   | C.17    | On-Street Parking | 1p** | **Change:** Add new sentence after first sentence:  
  "An On-Street Parking Plan may be required in support of an application for a Plan of Subdivision in accordance with the Design Brief for Suburban Development and Neighbourhood Mixed Use Centres." |
| 64   | C.19    | Driveway Entrance | 1p** | **Current:**  
  "The Subdivider shall be required to provide for the excavation, paving and maintenance in good condition, until Final Acceptance, of each driveway from the travelled portion of the road to the lot line if there is no sidewalk. If there is sidewalk, the limit shall be from travelled portion of the road to the sidewalks. Residential driveways shall be constructed as per OPSD 351.010. The width of curb cut for apartment, commercial and institutional driveways shall take into account the basic width of the driveway and the radius of curvature as further outlined below. Where paired driveways are constructed between two adjoining properties, the curb cut-out shall be continuous (i.e. where the barrier curb is less than 1 meter between driveways). The radius of curvature from the road into apartment, commercial and institutional driveways shall be designed to accommodate the anticipated vehicular traffic without causing undue interference with the traffic flow on the street. As a minimum requirement, refer to OPSD 350.010." |

* Page number may vary, however please follow the section number.  
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change to:</td>
<td>&quot;The Subdivider shall be required to provide for the excavation, paving and maintenance in good condition, until Final Acceptance, of each driveway from the traveled portion of the road to the lot line if there is no sidewalk. If there is sidewalk, the limit shall be from the traveled portion of the road to the sidewalk (ramp). All driveway ramps in new development shall be constructed of concrete. Where there is no curb and gutter on the road, or where there is no sidewalk, asphalt or concrete pavement can be used for the ramp construction. Residential ramps are to be in accordance with Standard Drawing 109, where as commercial and industrial entrances are to be in accordance with OPSD 350.010. Where paired driveways are constructed between two adjoining properties, the curb cut-out shall be continuous (i.e. where the barrier curb is less than 1 meter between driveways). Where a driveway ramp is located on a stubbed street, a minimum of 6m between the ramp and dead-end-barricade is to be provided for snow maintenance, and this area must be included within the phase of the project and within the registered Plan of Subdivision. The number of lots allowed to front onto a stub street shall not exceed one per side. Any temporary roads or turning circles must be contained within the subject registered Plan of Subdivision.&quot;</td>
</tr>
</tbody>
</table>
| 65   | C.19    | Driveway Entances | Bullet point a) | Current:  
"a) Asphalt (OPSS 311 applies to this item)"
Change to:  
"a) Asphalt (City of Kitchener Standard Specification for Road Construction and Other Surface Works applies to this item)"

| 66   | C.19    | Driveway Entances | Bullet point b) | Current:  
"a) Concrete (OPSS 350 applies to this item)  
i) Residential –150 mm concrete and 100 mm for Granular ‘A’ base,  
ii) Commercial & Industrial – 200 mm concrete and 100 mm Granular ‘A’ base."
Change to:  
"a) Concrete (City of Kitchener Standard Specification for Concrete Curb, Ramp, and Sidewalk applies to this item)  
i) Residential –150 mm concrete and 150 mm for Granular ‘A’ base,  
ii) Commercial & Industrial – 200 mm concrete and 200 mm Granular ‘A’ base."

| 67   | C.21    | Entrance Features | New paragraph | Change:  
"All tree planting for entrance features will meet all tree and soil habitat zone requirements identified in Section M of this Manual."

| 68   | C.21    | Entrance Features | 5p** | Change:  
"Refer to the City of Kitchener, Urban Design Manual for further design details."

| 69   | C.22    | Fencing         | 1p** | Current:  
"Fencing shall conform to the City of Kitchener Fence By-laws 88-5, 2001-211, 2001-242 and Zoning By-law 85-1 and Chapter 630 of the City of Kitchener Municipal Code."
Change to:  
"Fencing shall conform to the City of Kitchener Fence By-laws 88-5, 2001-211, 2001-242 and Zoning By-law 85-1 and Chapter 630 of the City of Kitchener Municipal Code, and Section C of the City of Kitchener Urban Design Manual."

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>C.23</td>
<td>Streetscape and Landscaping</td>
<td>1p**</td>
<td><strong>Current:</strong> “For further information on Street Trees refer to Section L.11 Street Trees located in the Parks section of the Development Manual.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Change to:</strong> “All tree planting will meet all tree and soil habitat zone requirements identified in Section M of this Manual.”</td>
</tr>
<tr>
<td>71</td>
<td>C.23</td>
<td>Streetscape and Landscaping</td>
<td>New paragraph</td>
<td><strong>Change:</strong> Add new paragraph after first paragraph: “A Streetscape Plan may be required in support of an application for a Plan of Subdivision in accordance with the Design Brief for Suburban Development and Neighbourhood Mixed Use Centres.”</td>
</tr>
<tr>
<td>72</td>
<td>C.24</td>
<td>Utility Installation</td>
<td>4p**</td>
<td><strong>Current:</strong> “The location of all street furniture locations shall be submitted with plans for driveway cut locations.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Change to:</strong> “A Streetscape Plan may be required in support of an application for a Plan of Subdivision in accordance with the Design Brief for Suburban Development and Neighbourhood Mixed Use Centres which would identify the location of all street furniture, driveway cut locations, entrance features, street trees, utility locations, traffic calming features and fencing/landscaping details for corner lots.”</td>
</tr>
</tbody>
</table>
| 73   | C.25    | Inspection & Testing     | New Section        | **Change:** Add new paragraphs:  

i) Sieve Analysis shall be performed in order to assure that the granular base courses meet the current City of Kitchener specifications. Representative samples are to be obtained by the Consultant prior to and during the road construction operation.  

ii) "Density Tests" shall be performed in order to assure that the granular base courses have been properly compacted to the current City of Kitchener Standard Specifications. Density Tests on the road subgrade shall be performed as directed by the geotechnical engineer.  

iii) A "Proof Roll" of the road subgrade shall be performed under the supervision of the geotechnical engineer to assure unsuitable road subgrade material is removed, refer to City of Kitchener Standard Specifications.  

iv) "Asphalt Tests" shall be performed in order to assure that the binder and surface asphalt meets the current City of Kitchener Standard Specifications.  

v) "Concrete Tests" shall be performed on curbs, sidewalks and driveway ramps in order to assure that the concrete meets the current City of Kitchener Standard Specifications.” |
| 74   | D       | Watermains               | New paragraph      | **Change:** Add new paragraph after the first paragraph: “Section D, Watermains, of the Development Manual has been structured to match the section headings of the DGSSMS. The underlined portion of the following Section D headings matches that of the DGSSMS (eg. D.B.2.1.1 would be Section B.2.1.1 of the DGSSMS).” |
| 75   | D       | Watermains               | Last paragraph     | **Current:** “Prior to commencement of the maintenance period for water connections, invert elevations at the property line in table form must be provided to Development Engineering staff who will forward the information to Kitchener Utilities.” |
|      |         |                          |                     | **Change:** Remove paragraph.                                                                                                                                                                          |
| 76   | D.B.2.7.5 | Minimum Clearance       | New sentence       | **Change:** Add the following sentence: “Minimum offset clearance from the back of curb to the face of a hydrant shall be a minimum of 1.0m.”                                                                  |

* Page number may vary, however please follow the section number.  
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 77   | D.D.2.5 | Watermain Installation | 1p** | Current: "The watermain shall be installed in accordance with AWWA C600 for Ductile Iron (DI) and AWWA C605 for Polyvinyl Chloride (PVC)."
  
  **Change to:** "The watermain shall be installed in accordance with AWWA C600 for Ductile Iron (DI) and AWWA C605 and OPSS 441 for Polyvinyl Chloride (PVC)."
| 78   | D.D.2.5.10 | Method of Construction | 1p** | Change: Delete first paragraph. |
| 79   | D.D.2.9.1 | Loading and Unloading | Entire Section | Change: Delete entire section and add "as per manufacturers instructions". |
| 80   | D.D.2.9.2 | Storing | Entire Section | Change: Delete entire section and add "as per manufacturers instructions". |
| 81   | D.D.2.10 | Clearing | Entire Section | Change: Delete entire section and add "as per OPS 201". |
| 82   | E | Sanitary Sewers | 1p** | Change: Add new paragraph after the first paragraph: "Section E, Sanitary Sewers, of the Development Manual has been structured to match the sections headings of the DGSSMS. The underlined portion of the following Section E headings matches that of the DGSSMS (eg. E.B.3.1.1 would be Section B.3.1.1 of the DGSSMS)." |
| 83   | E.B.3.1.9 | Selection of Bedding and Class of Pipe - Flexible Pipe | 1p** | Change: Delete paragraph. |
| 85   | E.B.3.2.1 | Structure | 1p** | Current: "Refer to DGSSMS" |
| 86   | E.B.3.3 | Services | New sentence | Change: Add new sentence after first sentence: "All abandoned services are to be capped at the main with a pre-manufactured end cap." |
| 87   | E.D.3.6 | Inspection & Testing | New Section | Change: Add new section: "The following inspection and testing work shall be carried out during and after construction of services."
  
  i) "Sieve Analysis" of the pipe bedding material to assure that the material meets City of Kitchener Standard Specifications. Representative samples are to be obtained by the Consultant prior to and during construction operations.
  
  ii) "Density Tests" shall be performed to assure that the pipe bedding material has been compacted properly.
  
  iii) "Density Tests" shall be performed on the backfill material to ensure proper compaction.
  
  iv) All sewers, maintenance holes and catchbasins must be flushed and cleaned prior to testing. A mandrel test shall be performed on all flexible pipe sewer mains and forcemains in accordance with the latest OPSS 410 standard.
  
  v) All sewer shall be tested for "Exfiltration or Infiltration" to assure that all joints and manholes are properly installed in accordance to the latest OPSS 410 standard.
  
  vi) TV Inspection to assure that no defects exist in the sewer lines. (Refer to specification for C.C.T.V Inspection and Sewer Line Cleaning). |

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>vii)</td>
<td>Full time inspection of all work during construction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>viii).</td>
<td>Physical/Visual inspection of all work after construction to ensure all defects are rectified prior to the City's inspections. The consultant's inspector is responsible for the following: To bring the general site servicing drawing and/or the as recorded drawings to the inspection; to provide all labour and equipment to assist City staff during the inspection and to ensure all structures have been pre-inspected and all imperfect work has been rectified by the contractor. Failure to comply with any of the above will result in cancellation of the inspection and a charge to the Developer.”</td>
</tr>
<tr>
<td>88</td>
<td>F</td>
<td>page 76* Storm Sewers</td>
<td>New paragraph</td>
<td>Change: Add new paragraph after the first paragraph: “Section F, Storm Sewers, of the Development Manual has been structured to match the sections headings of the DGSSMS. The underlined portion of the following Section F headings matches that of the DGSSMS (eg. E.B.4.1 would be Section B.4.1 of the DGSSMS).”</td>
</tr>
<tr>
<td>89</td>
<td>F.B.4.2.7</td>
<td>page 78* Selection of Bedding and Class of Pipe - Flexible Pipe</td>
<td>1p**</td>
<td>Change: Delete paragraph.</td>
</tr>
<tr>
<td>90</td>
<td>F.B.4.2.13</td>
<td>page 78* Head Walls</td>
<td>1p**</td>
<td>Change: Add new sentence to beginning of paragraph “Refer to DGSSMS.”</td>
</tr>
<tr>
<td>91</td>
<td>F.B.4.3.4</td>
<td>page 78* Tee Maintenance Holes</td>
<td>1p**</td>
<td>Current: &quot;Refer to DGSSMS&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change to:</td>
<td>&quot;Refer to DGSSMS and OPSD 707.010.&quot;</td>
</tr>
<tr>
<td>92</td>
<td>F.B.4.4.9</td>
<td>page 79* Rear Yard Drainage</td>
<td>1p**</td>
<td>Current: &quot;Refer to DGSSMS”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change to:</td>
<td>“Refer to DGSSMS and OPSD 705.030 &amp; 705.040”</td>
</tr>
<tr>
<td>93</td>
<td>F.D.3.6</td>
<td>page 80* Inspection &amp; Testing</td>
<td>New Section</td>
<td>Change: Add new section: “The following inspection and testing work shall be carried out during and after construction of services. “</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>i)</td>
<td>&quot;Sieve Analysis&quot; of the pipe bedding material to assure that the material meets City of Kitchener Specifications. Representative samples are to be obtained by the Consultant prior to and during construction operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii)</td>
<td>&quot;Density Tests&quot; shall be performed to assure that the pipe bedding material has been compacted properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>iii)</td>
<td>“Density Test” shall be performed on the backfill material to ensure proper compaction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>iv)</td>
<td>All sewer and maintenance holes must be flushed and cleaned prior to testing. A mandrel test shall be performed on all flexible pipe sewer mains, forcemains and catchbasin leads in accordance to the latest OPSS 410 standard.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>v)</td>
<td>All sewer shall be tested for &quot;Exfiltration or Infiltration&quot; to assure that all joints and manholes are properly installed in accordance to the latest OPSS 410 standard.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>vi)</td>
<td>TV Inspection to assure that no defects exist in the sewer lines. (Refer to specification for C.C.T.V Inspection and Sewer Line Cleaning).</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>vii) Full time inspection of all work during construction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>viii) Physical/Visual inspection of all work after construction to ensure all defects are rectified prior to the City's inspections. The consultant's inspector is responsible for the following: To bring the general site servicing drawing and/or the as recorded drawings to the inspection; to provide all labour and equipment to assist City staff during the inspection and to ensure all structures have been pre-inspected and all imperfect work has been rectified by the contractor. Failure to comply with any of the above will result in cancellation of the inspection and a charge to the consultant engineering.*</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>G.1</td>
<td>Introduction</td>
<td>10p** Change: Add bullet points to list of Watershed Studies: *- Melitzer Creek Master Drainage Plan; - Upper Shoemaker Creek Watershed Study; - Alder Creek Watershed Study and Upper Strasburg Creek Subwatershed Plan update; - Strasburg Creek Master Watershed Plan (1991) and Implementation Report (1996); - Or any new (Sub)watershed Study or Master Drainage Plan applicable to lands with the City of Kitchener.&quot;</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>G.2.1.6</td>
<td>Outlet Treatment</td>
<td>4p** Current: &quot;The invert of the outlet shall be located above the receiving watercourse five (5) year flood elevation (or where not available, the approved otherwise high water level), and the invert of the overflow weir shall be above the less frequent design storm flood elevation (eg. 100yr storm event) of the receiving watercourse. The larger design storm water elevation within the pond shall be below the underside of footing elevations of the surrounding buildings.&quot;</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>G.2.2.1</td>
<td>Roadway Conveyance</td>
<td>1p/3s** Current: &quot;The depth and extent of street flooding in new developments shall be limited in order to protect property and public safety, and allow emergency vehicle access, and shall not exceed flood depths for the 100 year storm event according to the following road classification: • Urban Arterial/Emergency Routes – 150 mm depth above the catchbasins • Local/Rural Arterial Collector – A review of the impact of this level shall be addressed during the design phase. Change to: &quot;The depth and extent of street flooding in new developments, including all road classifications, shall be limited to 0.15m above the centerline elevation in order to protect property and public safety, and allow emergency vehicle access.&quot;</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>G.2.2.2</td>
<td>Overland Flow Routes</td>
<td>1p** Change: Add new sentences after last sentence: &quot;The detailed design must show how the overland flow route will convey the flows within the subdivision and all contributing upstream areas. Overland flow routes are to be identified during the preliminary stormwater management design*.&quot;</td>
<td></td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>99</td>
<td>G.3</td>
<td>Watercourse Systems (In Relation to Stormwater Outlets)</td>
<td>New paragraph</td>
<td>Change: Add new paragraph before the first paragraph: &quot;Where a project will outlet directly to a watercourse, &quot;No Dumping&quot; fish style plates are to be placed in the concrete curb adjacent to the roadway catchbasins. The City will distribute the plates to the Developer or Contractor.”</td>
</tr>
<tr>
<td>100</td>
<td>G.3.1</td>
<td>Design Approach and Principles</td>
<td>5p**</td>
<td>Change: Add bullet point: &quot;- Transport Canada for Navigable Waters Permit.”</td>
</tr>
<tr>
<td>101</td>
<td>G.3.2</td>
<td>Setbacks</td>
<td>2p/1s**</td>
<td>Current: &quot;The Grand River Conservation Authority requires that setbacks from watercourse shorelines, and/or wetlands be established through watershed; subwatershed studies (Comprehensive EIS) or through a full EIS.” Change to: &quot;The Grand River Conservation Authority requires that setbacks from watercourse shorelines, and/or wetlands be established through watershed; subwatershed studies (Comprehensive EIS), scoped EIS, or through a full EIS.”</td>
</tr>
<tr>
<td>102</td>
<td>G.3.3</td>
<td>Access/Maintenance</td>
<td>1p**</td>
<td>Change: Add new sentence to beginning of first paragraph: &quot;Prior to Draft Plan Approval the developer/consultants must demonstrate that the discharge is to a legal outlet and that appropriate easements have been obtained.”</td>
</tr>
<tr>
<td>103</td>
<td>G.3.3</td>
<td>Access/Maintenance</td>
<td>1p/2s**</td>
<td>Change: &quot;GVO” to “General Vegetation Overview.”</td>
</tr>
<tr>
<td>104</td>
<td>Table 11</td>
<td>Comprehensive List of Available SWMP’s</td>
<td></td>
<td>Current: &quot;Regional or site specific study of receiver sensitivity and available retrofit opportunities in accordance with DC-By-law.” Change to: &quot;Most recent approved SWM Policy and Audit (and Implementation Procedures).”</td>
</tr>
<tr>
<td>105</td>
<td>G.5.1.1</td>
<td>Roof Leader Discharge to Surface/Infiltration facilities</td>
<td>1p**</td>
<td>Change: Add new sentence before second last sentence: &quot;Front yard infiltration facilities will only be constructed under a City easement and be maintained by the City where a Subwatershed Study or Master Plan has determined this to be mandatory requirement of development. All other infiltration facilities are to be located in rear yards, and have to be maintained by the property owner”</td>
</tr>
<tr>
<td>106</td>
<td>G.5.1.4</td>
<td>Cash-in-Lieu for Infill and Redevelopment</td>
<td>2p**</td>
<td>Current: &quot;- The Stormwater Management Policy Implementation Procedure for Development (link) was updated as part of the City-Wide Stormwater Management Plan, Annual Audit Report, AECOM, 2008.” Change to: &quot;-Most recent Council approved City-Wide Stormwater Annual Audit Report.”</td>
</tr>
<tr>
<td>107</td>
<td>G.6</td>
<td>Stormwater Management Facility Designs</td>
<td>New Paragraph</td>
<td>Change: Add new paragraph: &quot;In accordance with the Stormwater Management Policy, SWM facilities are to be centralized to provide a more cost effective approach through lower capital costs and long term maintenance costs. New subdivisions are to take into consideration upstream developable lands, future road widenings, and future roads, with coordinated efforts between all affected land owners. SWM facilities and related sewers should be designed to accommodate post development flows from the surrounding undeveloped lands within the overall catchment area, such that when the surrounding subdivisions within said catchment area develop, additional ponds are not required. After 95% build out of a Subdivider’s Plan of Subdivision is achieved and all SWM conditions have been met, the Subdivider can be released from the maintenance responsibilities of such facility. If a new Subdivision will outlet to an existing downstream SWM facility, the Subdivider must be responsible for the maintenance, performance (quality and quantity), and plantings of such facility until 95% of the Subdivider’s Plan of Subdivision is built out and all SWM conditions including monitoring have been met.”</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 108  | G.6.1   | Forebay | 1p**                | Current:  
"Consideration for forebay bottom lining shall be made if groundwater contamination has been determined to be an issue (as recommended by a geotechnical consultant)."

**Change to:**  
"Where groundwater interference or contamination is determined to be an issue, lining will be required (as recommended by a geotechnical consultant)."

| 109  | G.6.1   | Forebay | 2p/2s**             | Current:  
"In addition, the Consultant should determine how sediment removal would be conducted (i.e. equipment, forebay design)."

**Change to:**  
"In addition, the Consultant should determine sediment removal frequency and how sediment removal would be conducted (i.e. equipment, forebay design)."

| 110  | G.6.1   | 4. Berms | New sentence       | Change: Add new sentence after last sentence: "Turfstone in the SWM block is only to be utilized under the five (5) year stormwater storage elevation. Where residential lots back onto a SWM facility, a 1.5m chainlink fence shall be provided between the lots and the SWM block."

| 111  | G.6.1   | 6. Outlet Structures | 1p**                | Change: Add new sentence to beginning of paragraph "The minimum allowable diameter for an outlet orifice is 75mm (minimum 50mm orifice if protected with a perforated riser pipe design with smaller perforations)."

| 112  | G.6.1   | 8. Maintenance Access Roadways | New Paragraph | Change: Add new paragraph "Maintenance access roadways shall have a minimum width of 4.0 m; 300 mm compacted Granular "A"; 50 mm HL4 binder course and 40 mm HL3 surface course asphalt."

| 113  | G.6.1   | 13. As-Constructed Requirements | 3p**             | Change: Add sentence after first sentence:  
"This shall include monitoring requirements as determined by the applicable Subwatershed study or Watershed study or by Engineering staff."

| 114  | G.6.1.1 | Rainfall | 1p/1s**             | Change: Add wording "most recent" in front of "Rainfall Intensity Curve."

| 115  | G.10   | Quality Management | 3p**            | Change: Add new sentence to last Bullet (Basic):  
"There are no creek systems in the City of Kitchener where a basic water quality level of protection would be deemed appropriate."


| 117  | G.11.2 | Purpose | 2p**             | Current:  
"Evaluate the performance of the Stormwater and Environmental Management System (i.e. design and stormwater quantity and quality mitigation techniques). This does not include the storm sewer system."

**Change to:**  
"Evaluate the performance and effectiveness of the Stormwater and Environmental Management System..."
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>118</td>
<td>G.11.3</td>
<td>Types of Monitoring Plans</td>
<td>Modify Section</td>
<td>Current: Developers shall submit a Development Impact Monitoring Plan to the City for approval. The Grand River Conservation Authority, in addition to the City, may have input on Monitoring Plans. Generally, Monitoring Plans are either one of two types. The first is a stand-alone plan prepared for a single development and its associated infrastructure. The details of this type of plan would be part of the Preliminary and Detailed Stormwater Management Design Reports. The scope is normally limited to direct on-site infrastructure that is part of the development; this is paid for by the Subdivider. The second type of monitoring plan would be part of a Master Planning document, such as a Watershed Plan, Subwatershed Plan or Class Environmental Assessment, usually in support of a major land use change of broader scope. Such a plan is normally paid for by the Development Community. Its scope typically includes numerous environmental indicators and infrastructure elements as determined through consultation with stakeholders and agencies.</td>
</tr>
<tr>
<td>Change to:</td>
<td></td>
<td></td>
<td></td>
<td>&quot;Generally, there are two types of monitoring. The first is a “Development level” plan prepared for a single development and its associated infrastructure. The details of this type of plan would be part of the Preliminary and Detailed Stormwater Management Design Reports and may be discussed in an EIS. The scope is normally limited to direct on-site infrastructure that is part of the development, however off-site monitoring may be required to determine the effectiveness of the stormwater management infrastructure and possible impacts on the receiving system. This type of monitoring plan and implementation is paid for by the Subdivider. The second type of monitoring would be part of a Master Planning document, such as a Watershed Plan, Subwatershed Plan, Master Drainage Plan or Class Environmental Assessment. Its scope typically includes numerous environmental indicators and infrastructure elements as determined through consultation with stakeholders and agencies. Such a plan is normally paid for by the Development Community. The monitoring recommendations contained within these Master Planning documents will provide direction for “System Level” as well as “Development Level” monitoring programs.&quot;</td>
</tr>
<tr>
<td>119</td>
<td>G.11.4</td>
<td>Process/Protocol</td>
<td>1p**</td>
<td>Current: Each Consultant will be responsible to ensure that a Monitoring Plan is in place, and is satisfactory to the City. In the event that the subject development is part of an area which already has a Master Monitoring Plan in place, the Consultant shall document how the subject development and its infrastructure comply with the plan.</td>
</tr>
<tr>
<td>Change to:</td>
<td></td>
<td></td>
<td></td>
<td>&quot;Each Consultant will be responsible to ensure that a Monitoring Plan is in place, and is satisfactory to the City. In the event that the subject development is part of an area where a Master Plan has been completed, the Consultant shall document how the subject development, its infrastructure and its Development Impact Monitoring Plan complies within the Master Plan recommendations.&quot;</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 120  | G.11.4  | Process/Protocol | 3p**                | Current:  
"The Subdivider's Consultant, who shall be a qualified Professional Engineer or Environmental Professional acceptable to the City as appropriate will be responsible to prepare and submit annual reports to demonstrate that the monitoring has been completed to the satisfaction of Engineering and Environmental Planning staff."

Change to:  
"The Subdivider’s Consultant, who shall be a qualified Professional Engineer or Environmental Professional acceptable to the City as appropriate will be responsible to prepare and submit at a minimum, annual reports, or as required by Master Monitoring Plan (as outlined in e.g. Watershed, Subwatershed or Master Drainage Plan), to demonstrate that the monitoring has been completed to the satisfaction of Engineering and Environmental Planning staff. More frequent reporting may be required to monitor the performance of the stormwater management infrastructure."

| 121  | G.11.5  | Monitoring Periods | 1p/2s**             | Current:  
"Important factors for development impact monitoring include pre-construction, during construction and post-construction or substantially developed requirements. Subdivision Agreements and/or supporting studies to Development Applications that detail the time periods for monitoring. The monitoring plan will need to be detailed in the stormwater management report."

Change to:  
"Important factors for development impact monitoring include pre-construction, during construction and post-construction or substantially developed requirements. Subdivision Agreements and/or supporting studies to Development Applications detail the time periods for, and frequency of, monitoring. The monitoring plan will need to be detailed in the Preliminary and Detailed Stormwater Management Report."

| 122  | G.11.6  | What is Monitored | 1p/3s**             | Current:  
"The ultimate decision with regard to monitoring scope requirements rests with Development Engineering and Environmental Planning staff and commenting agencies, through the review of the Preliminary and Detailed Stormwater Management Reports."

Change to:  
"The ultimate decision with regard to monitoring scope requirements rests with Development Engineering and Environmental Planning staff and commenting agencies, through the review of the Preliminary and Detailed Stormwater Management Reports and EIS where applicable."

| 123  | G.11.6  | Table 12 Water Quality & Aquatic Habitat | New bullet points | Change:  
"- Stream baseflow and related groundwater systems;
- Fisheries - presence/absence, relative abundance."

| 124  | G.11.6  | Table 12 Natural Heritage System | Last bullet point | Current:  
"- Local Hydrology (water levels, soil moisture, etc.)"

Change to:  
"Local Hydrology, Hydrogeology (ground and surface water levels, soil etc.)."

| 125  | G.11.6  | What is Monitored | New paragraph | Change: Add new paragraph after last paragraph:  
"Monitoring requirements should follow the recommendations of the relevant Watershed study, or Subwatershed study. In the absence of this type of study, monitoring shall include the water quality parameters as noted in the most recent Stormwater Annual Audit Report from the City. When the recommendations of the relevant Watershed study, or Subwatershed study do not include the water quality parameters as noted in the most recent Stormwater Annual Audit, then those parameters are to be added to the scope of monitoring. Reporting shall be on a yearly basis and 4 hardcopies shall be provided to the City as well as a digital submission. The digital submission may require entering the water quality results in a spreadsheet or database, the format of which will be provided by the City."
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 126  | G.11.7  | Enforcement | 1p/2s** | **Change:** Delete sentence: "If the monitoring program is not part of a Master Monitoring Plan established within a Watershed Study, Subwatershed Study or Master Drainage Plan, the Developer will conduct the monitoring plan."
| 127  | G.11.7  | Enforcement | 1p/3s** | **Change to:** "Should the Consultant's annual reporting not be considered appropriate or compliant, the City may exercise the Letter of Credit and have the monitoring program completed by accredited professionals. The securities may also be used by the City to adjust the monitoring program, as necessary, including channels and stormwater management facilities for the monitoring period as defined by the City, the Grand River Conservation Authority and the Department of Fisheries and Oceans."
| 128  | G.12.5  | Watershed/ Subwatershed Plan | New Heading | **Change:** Add new heading and the following sentence: "Refer to the City of Kitchener Official Plan, and the Region of Waterloo Official Plan, for general guidance on minimum terms of reference for a Watershed/ Subwatershed Plan. Watershed/ Subwatershed Plans shall reflect and include the unique characteristics, opportunities and constraints of specific subwatershed systems."
| 129  | H.1     | Ornamental Lighting | 1p** | **Change:** Add sentence after first sentence: "The Subdivider shall confirm whether ornamental lighting will be used for the subdivision prior to servicing."
| 130  | H.1.2   | Maintenance | 1p/2p** | **Current:** "The contribution will be equal to 10% of the capital equipment cost plus applicable taxes for such equipment or minimum of $2,000.00, whichever is the greater."
|      |         |         |         | **Change to:** "The contribution will be equal to 10% of the capital equipment cost plus applicable taxes for such equipment or minimum of $2,000.00, whichever is the greater, prior to Initial Acceptance of the subdivision stage underground services."
| 131  | J.2     | General | 1p & 2p** | **Current:** "The Subdivider shall endeavor to retain all topsoil on site; the Topsoil Management Report shall address how much topsoil is located on the site and where the topsoil will be placed at what depths. Written permission from the Director of Engineering Services is required to remove any topsoil from the site.

Lots, including drainage ditches and swales, are to be completely top soiled and sodded with a minimum 150mm of topsoil for lot and a minimum 450mm of topsoil for boulevards within the City right of way and stormwater management facilities (to a maximum depth of 1.0 meters) and sodded or seeded as per the approved plan.

**Change to:** "Lots, including drainage ditches and swales, are to be completely top soiled and sodded with a minimum 150mm of topsoil. The soil depth for all tree planting areas will meet the requirements of the Master Tree Planting Plan and the requirements of Section M of the manual."
| 132  | J.3     | Rear Yard Catchbasins | New Bullet Point | **Change:** Add new bullet point "Rear yard catchbasins shall not have sumps."
| 133  | Table 15 | Easement Requirements | First row. second column | **Current:** "3.0m"

**Change to:** "5.0m"

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
</table>
| 134  | J.6 page 122* | Groundwater   | 1p**               | **Change**: Add new sentence after first sentence:  
"Third pipe ground water collection systems are not allowed to be installed to lower existing groundwater elevations to achieve the required groundwater separation." |
| 135  | L.1 page 125* | General       | 2p/2s**            | **Change**: Replace "Neighbourhood Design Guidelines" with "Design Brief for Suburban Development and Neighbourhood Mixed Use Centres" |
| 136  | L.1 page 125* | General       | 3p**               | **Change**: Replace "Neighbourhood Design Guidelines" with "Design Brief for Suburban Development and Neighbourhood Mixed Use Centres" |
| 137  | L.1 page 125* | General       | New Paragraph      | **Change**: Add new paragraph to end:  
"For all tree planting requirements for parks refer to Section M – Urban Forest – Tree Planting & Establishment section of the manual." |
| 138  | L.5.4 page 132* | Tree Planting | Entire Section     | **Change**: Delete paragraphs and add:  
"For all tree planting requirements and standards for parks refer to Section M – Urban Forest – Tree Planting " |
| 139  | L.8 page 137* | Criteria      | 1p**               | **Current**:  
"All areas designated for parkland are to have a minimum of 300 mm, to a maximum of 450 mm, of topsoil."  
**Change to:**  
"All areas designated for parkland, which are not identified as tree habitat zones, are to have a minimum of 300 mm of topsoil. All tree habitat zones will have the required soil volumes and depth identified on the Master Tree Planting Plan and meet all of the requirements in Section M of this manual." |
| 140  | L.11.1 page 141* | General | Entire Section | **Change**: Replace section with:  
"For all tree planting in parks refer to Section M – Urban Forest – Tree Planting & Establishment and the accompanying document Tree Planting & Establishment – Best Management Practices. All planting plans shall be prepared by a Landscape Architect and approved by the City. All plantings to be in accordance with the Canadian Standards for Nursery Stock (current Standards) as prepared by the Canadian Nursery Trades Association. Workmanship is to meet standards of Ontario Landscape Contractors Association and the City of Kitchener’s Best Management Practices." |
| 141  | L.11.2 page 142* | Park Trees   | Entire Section     | **Change**: Delete section. |
| 142  | L.11.1 page 150* | Planting Specifications | Entire Section | **Change**: Delete section. |
| 143  | L.11.2 page 151* | Materials    | Entire Section     | **Change**: Delete section. |
| 144  | L.11.3 page 151* | Plant Accessories | Entire Section | **Change**: Delete section. |
| 145  | L.11.4 page 153* | Plant Material | Entire Section     | **Change**: Delete section. |
| 146  | L.11.5 page 153* | Planting Time | Entire Section     | **Change**: Delete section. |
| 147  | L.11.6 page 153* | Excavation    | Entire Section     | **Change**: Delete section. |
| 148  | L.11.7 page 153* | Planting Mix Preparation | Entire Section | **Change**: Delete section. |
| 149  | L.11.8 page 153* | Planting Procedure | Entire Section | **Change**: Delete section. |
| 150  | L.11.9 page 154* | Tree Supports | Entire Section     | **Change**: Delete section. |
| 151  | L.11.10 page 154* | Mulching     | Entire Section     | **Change**: Delete section. |
| 152  | L.11.11 page 154* | Warranty Period | Entire Section | **Change**: Delete section. |
| 153  | L.11.12 page 154* | Final Acceptance | Entire Section | **Change**: Delete section. |

* Page number may vary, however please follow the section number.  
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph/Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>154</td>
<td>M</td>
<td>New Section</td>
<td>Entire Section</td>
<td>SEE ATTACHED SECTION M: &quot;Urban Forest - Tree Planting &amp; Establishment&quot;</td>
</tr>
<tr>
<td>155</td>
<td>Appendix A page 167*</td>
<td>Policies and Practices</td>
<td>Entire Section</td>
<td>Change: Updated links from current City website.</td>
</tr>
<tr>
<td>156</td>
<td>Appendix B page 168*</td>
<td>Standard Drawings</td>
<td>Entire Section</td>
<td>Change: Updated to include drawings.</td>
</tr>
<tr>
<td>157</td>
<td>Appendix C page 169*</td>
<td>Standardized Application Forms and Correspondence</td>
<td>Entire Section</td>
<td>Change: Deleted Appendix. This information is now included in updated Appendix A.</td>
</tr>
<tr>
<td>159</td>
<td>Appendix D page 170*</td>
<td>Consultant/Contractor Evaluation Form</td>
<td>Entire Section</td>
<td>Change: Deleted Appendix. This information is now included in updated Appendix A.</td>
</tr>
<tr>
<td>160</td>
<td>Appendix D page 170*</td>
<td>Construction Contract Documents</td>
<td>Entire Section</td>
<td>Change: New Appendix - Coming Fall 2013: Engineering Services Division has standardized the construction contract documents which includes the form of tender, general conditions, supplemental general conditions and standard specifications.</td>
</tr>
<tr>
<td>162</td>
<td>Appendix F page 176*</td>
<td>Master Planning (Watershed/Subwatershed)</td>
<td>Entire Section</td>
<td>Change: Delete entire section. Reference now made to the City of Kitchener and Region of Waterloo Official Plans, which provides guidance on minimum terms of reference for a Watershed/Subwatershed Plan.</td>
</tr>
<tr>
<td>163</td>
<td>Appendix E</td>
<td>Procedure for Off-Site Works Permit By Private Contractors</td>
<td>Entire Section</td>
<td>Change: New Appendix - &quot;Procedure for Off-Site Works Permit By Private Contractors&quot;</td>
</tr>
<tr>
<td>164</td>
<td></td>
<td>Itemized Calculation for Security Spreadsheet Items</td>
<td>New line item</td>
<td>Change: Add new line item “SWM Pond Maintenance”.</td>
</tr>
<tr>
<td>165</td>
<td></td>
<td>Itemized Calculation for Security Spreadsheet Items</td>
<td>New line item</td>
<td>Change: Add new line item “Decommission Temporary Infrastructure”.</td>
</tr>
<tr>
<td>166</td>
<td></td>
<td>K.E.S Standard Drawing Comparison Table</td>
<td>Change: Table updated.</td>
<td></td>
</tr>
<tr>
<td>167</td>
<td></td>
<td>Standard Drawings Index Table</td>
<td>Change: List updated.</td>
<td></td>
</tr>
<tr>
<td>168</td>
<td></td>
<td>Standard Drawing 18.0m Local R.O.W. #100</td>
<td>Change: Storm sewer standard location changed to center of lane.</td>
<td></td>
</tr>
<tr>
<td>169</td>
<td></td>
<td>Standard Drawing 20.0m Local R.O.W. #101</td>
<td>Change: Storm sewer standard location changed to center of lane.</td>
<td></td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>Standard Drawing</td>
<td>26.0m Local R.O.W.</td>
<td>#102</td>
<td><strong>Change</strong>: Storm sewer standard location changed to center of lane.</td>
</tr>
<tr>
<td>171</td>
<td>Standard Drawing</td>
<td>30.0m Local R.O.W.</td>
<td>#103</td>
<td><strong>Change</strong>: Storm sewer standard location changed to center of lane.</td>
</tr>
<tr>
<td>173</td>
<td>Standard Drawing</td>
<td>Residential Cul-De-Sac &amp; Standard Utility Locations For 20m R.O.W. Cul-De-Sac</td>
<td>#104</td>
<td><strong>Change</strong>: Removed manhole from island.</td>
</tr>
<tr>
<td>174</td>
<td>Standard Drawing</td>
<td>Flexible Pavement Design Curve Selection Data</td>
<td>#105</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index.</td>
</tr>
<tr>
<td>175</td>
<td>Standard Drawing</td>
<td>Flexible Pavement Design Frost Value</td>
<td>#106</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index.</td>
</tr>
<tr>
<td>176</td>
<td>Standard Drawing</td>
<td>Flexible Pavement Design Thickness Design Curves</td>
<td>#107</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index.</td>
</tr>
<tr>
<td>177</td>
<td>Standard Drawing</td>
<td>Perforated Sub-Drain Under Curb and Gutter</td>
<td>#108</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index. This is now replaced with OPSD 216.021.</td>
</tr>
<tr>
<td>178</td>
<td>Standard Drawing</td>
<td>Standard Drop Curb and Driveway Details</td>
<td>#109</td>
<td><strong>Change</strong>: Updated material and standard references. All curb cuts now 0.4m transition.</td>
</tr>
<tr>
<td>179</td>
<td>Standard Drawing</td>
<td>Construction Details of Sidewalk Curb and Gutters</td>
<td>#110</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index. This is now incorporated into Standard Drawings #116 &amp; #117.</td>
</tr>
<tr>
<td>180</td>
<td>Standard Drawing</td>
<td>Public Walkway Details</td>
<td>#111</td>
<td><strong>Change</strong>: Updated material and standard references.</td>
</tr>
<tr>
<td>181</td>
<td>Standard Drawing</td>
<td>Deciduous Tree Planting</td>
<td>#112</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index. Now located in Appendix C - Urban Forest Details.</td>
</tr>
<tr>
<td>182</td>
<td>Standard Drawing</td>
<td>Walkway/ Emergency Access Detail</td>
<td>#114</td>
<td><strong>Change</strong>: Turfstone replaced by asphalt pavement. Asphalt specification updated.</td>
</tr>
<tr>
<td>183</td>
<td>Standard Drawing</td>
<td>Typical Curb and Intersection Ramp Detail</td>
<td>#116</td>
<td><strong>Change</strong>: Notes and drawing updated.</td>
</tr>
<tr>
<td>184</td>
<td>Standard Drawing</td>
<td>Curb and Gutter With Adjacent Sidewalk</td>
<td>#117</td>
<td><strong>Change</strong>: Notes and drawing updated. 3.0m Curb transition.</td>
</tr>
<tr>
<td>186</td>
<td>Standard Drawing</td>
<td>Dimensional Standards For Precast Valve Chamber (For 300mm Gate Valve)</td>
<td>#200</td>
<td><strong>Change</strong>: Remove drawing from City of Kitchener Standard Drawings Index. Valves are to be direct bury.</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Heading</th>
<th>Paragraph /Sentence</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>187</td>
<td>Standard Drawing</td>
<td>Dimensional Standards For Poured Valve Chamber (For 450mm Gate Valve)</td>
<td>#201</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. Valves are to be direct bury.</td>
</tr>
<tr>
<td>188</td>
<td>Standard Drawing</td>
<td>Dimensional Standards For Poured Valve Chamber (For 600mm Gate Valve)</td>
<td>#202</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. Valves are to be direct bury.</td>
</tr>
<tr>
<td>189</td>
<td>Standard Drawing</td>
<td>Type &quot;C&quot; manhole Poured Concrete Manhole Max</td>
<td>#302</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. This is now replaced with OPSD 701.010.</td>
</tr>
<tr>
<td>190</td>
<td>Standard Drawing</td>
<td>Precast Manhole Tee</td>
<td>#303</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. This is now replaced with OPSD 701.010.</td>
</tr>
<tr>
<td>191</td>
<td>Standard Drawing</td>
<td>Precast Ditch Inlet with Sump</td>
<td>#304</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. This is now replaced with OPSD 705.030 &amp; 705.040.</td>
</tr>
<tr>
<td>192</td>
<td>Standard Drawing</td>
<td>Concrete Endwall with Apron for Storm Sewer Outlet</td>
<td>#305</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. This is now replaced with OPSD 804.040.</td>
</tr>
<tr>
<td>193</td>
<td>Standard Drawing</td>
<td>Downspout Connection Detail For Front Yard Infiltration Galleries</td>
<td>#307</td>
<td><strong>Change:</strong> Updated drawing to include overflow connection.</td>
</tr>
<tr>
<td>194</td>
<td>Standard Drawing</td>
<td>Front Yard Infiltration Facility Detail</td>
<td>#308</td>
<td><strong>Change:</strong> Updated location of: facility, observation wells, services, driveways.</td>
</tr>
<tr>
<td>195</td>
<td>Standard Drawing</td>
<td>Fence Footing</td>
<td>#500</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. Replaced with Standard Drawing #507.</td>
</tr>
<tr>
<td>196</td>
<td>Standard Drawing</td>
<td>Backstop Layout</td>
<td>#501</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. No longer applicable.</td>
</tr>
<tr>
<td>197</td>
<td>Standard Drawing</td>
<td>Major Backstop</td>
<td>#502</td>
<td><strong>Change:</strong> Remove drawing from City of Kitchener Standard Drawings Index. No longer applicable.</td>
</tr>
<tr>
<td>198</td>
<td>Standard Drawing</td>
<td>Community Trail - Asphal</td>
<td>#503</td>
<td><strong>Change:</strong> Adjusted asphalt specification.</td>
</tr>
<tr>
<td>199</td>
<td>Standard Drawing</td>
<td>Chainlink Fence, Walkway Block</td>
<td>#507</td>
<td><strong>Change:</strong> Added this new standard drawing.</td>
</tr>
<tr>
<td>200</td>
<td>Standard Drawing</td>
<td>Metal Gate - Trail</td>
<td>#508</td>
<td><strong>Change:</strong> Added this new standard drawing.</td>
</tr>
</tbody>
</table>

* Page number may vary, however please follow the section number.
** Read as follows: 3p/2s means third paragraph, second sentence.
APPENDIX A: POLICIES AND PRACTICES

See the following links for City of Kitchener Development policies and practices. The links and information described in this section may change and are not necessarily updated in this section; please visit the City of Kitchener website for current posted information.
Appendix A

Table of Contents

Development Services .......................................................................................................................... 4
Development Application Process ........................................................................................................ 5
Certificate of Occupancy ....................................................................................................................... 6
Committee of Adjustment ..................................................................................................................... 7
Community Plans ............................................................................................................................... 9
Demolition Control ............................................................................................................................. 10
Development Charges ......................................................................................................................... 11
Development Handbook ...................................................................................................................... 14
Development Manual ......................................................................................................................... 15
Heritage Permit .................................................................................................................................... 18
Letter of Compliance - Zoning ............................................................................................................. 19
Official Plan Amendment .................................................................................................................... 20
Part-lot Control ................................................................................................................................... 21
Plan of Condominium ......................................................................................................................... 22
Plan of Subdivision ............................................................................................................................. 23
Pre-Submission Consultation .............................................................................................................. 24
Sign Permits ....................................................................................................................................... 25
Site Alteration ..................................................................................................................................... 26
Site Plans ........................................................................................................................................... 28
Urban Design Manual ......................................................................................................................... 31
Zoning Bylaw ..................................................................................................................................... 32
Zone Change ....................................................................................................................................... 33
Building Standards ........................................................................................................................... 34
Appendix A

Annual Workshops....................................................................................................................................... 36
Backflow prevention.................................................................................................................................... 37
Building a Deck ........................................................................................................................................... 38
Building a Fence .......................................................................................................................................... 39
Building Permits .......................................................................................................................................... 40
Building Application & Standard Forms ..................................................................................................... 42
New Home - Permit Application Process .................................................................................................... 43
Development Services

Kitchener’s development services team provides service and professional advice related to:

- Building, landscape, site lighting, urban design, CPTED (crime prevention through environmental design), storm-water management, grading, fire route approvals, permits and inspections
- Engineering services
- Environmental conservation and planning
- Heritage conservation and planning
- Land-use planning, design and development

Doing so requires a multi-disciplinary approach involving planners, engineers, building inspectors, urban designers, landscape architects, CPTED specialists and other stakeholders.

Together, we provide seamless customer service to residents, developers, builders and others involved in the planning, design and construction of our city; and we strive to provide a safe, efficient, aesthetically pleasing, and environmentally friendly community for everyone to enjoy.

For more information, please contact:

- Building division - 519-741-2312
- Engineering division - 519-741-2406
- Planning division - 519-741-2426
Development Application Process

If you're interested in developing land in Kitchener, we offer a variety of resources to help guide you through the application process.

Resources

To help get you started, we offer a list of planning guidelines for you to review prior to filling out a development application.

Development Applications

Our development review team manages all applications for land development, including:

- Committee of adjustment
- Certificate of occupancy
- Demolition control
- Heritage permit
- Letter of compliance - zoning
- Official Plan amendment
- Part-lot control
- Plan of condominium
- Plan of subdivision
- Pre-submission consultation
- Sign permit
- Site plan
- Zone change

We are also responsible for the urban design program, community planning and growth management.

Development Application Fees

Kitchener city council has approved fees for development applications and processes. These fees are contained in our schedule of fees.

For more information, please contact us at 519-741-2426.
Certificate of Occupancy

change the type of use of a property, you may require a certificate of occupancy (also known as an occupancy permit), as required by the Ontario Planning Act and the city's zoning bylaw.

Section 2.3 of the bylaw states that no change may be made in the type of use of any land covered by the bylaw or in the type of use of any building on any such land without a certificate of occupancy from our planning division.

Parking plans may be required with the submission of some applications.

A certificate of occupancy is not required for single detached, duplex, semi-detached or street townhouse dwellings.

How To Get an Application

You can download a certificate of occupancy application or pick one up at the office of the planning division, located on the sixth floor of city hall.

For more information, please contact us at 519-741-2426
**Committee of Adjustment**

Five Kitchener city-council-appointed citizens make up the committee of adjustment. A panel of three members is present at each meeting and the Planning Act requires the committee to make its decision in public.

The Act gives the committee of adjustment the authority to:

- Grant minor variances from the city's zoning bylaw.
- Allow changes to legal non-conforming uses which the current zoning does not permit.
- Give consent for land severance to divide a parcel of land into more than one lot or as lot additions to abutting properties.
- Give consent to mortgages, partial discharge of mortgages and validation of title.
- Give consent to leases over 21 years, quit claims, easements and rights-of-way.

The city's Municipal Code gives the committee of adjustment authority to:

- Grant minor variances from the city's fence bylaw
- Grant minor variances from the city's sign bylaw

Fence and sign variance approvals are subject to ratification by city council.

To help you understand how the committee works - including details on the process, timing, fees and application deadlines - we've put together a comprehensive booklet for you to use as a reference before filling out the following applications:

- Minor variance application (fence or sign)
- Minor variance application (zoning)
- Consent application
- Certificate of consent - Steps to obtain deed endorsement
- Change of conditions application

2012 meeting schedule and deadlines

Our [2012 meeting schedule and deadlines](#) are available here.

Our [2013 meeting schedule and deadlines](#) are available here.

2012 fees (fees subject to change January 1)

You may obtain an application form from the Planning Division, located on the sixth floor of city hall.

**For minor variances** - please submit one original plus 13 copies of the application form and 14 detailed plans. The application fee is $1,020.24.

**For consents/validation of title** - please submit one original plus 15 copies of the application form and 16 detailed plans. The application fee is $1,211.23 per lot or block to be created.
For change of conditions to a provisional consent - please submit one original plus 15 copies of the application form and 16 copies of the original consent decision. The application fee is $608.70.

Other costs include:

- Deferral Fee -- $338.86
- Certificate of Official -- $147.87

For more information, please contact us at 519-741-2426.
Community Plans
Kitchener’s community plans are prepared for large areas undergoing new development and are intended to facilitate and coordinate decisions regarding:

- Location of community facilities
- Transportation networks
- Subdivision of land
- Distribution of densities
- Protection of the natural environment
- Timing and staging of growth
- Land use arrangement

Community plans have no legal status under the Planning Act of Ontario; however, they must conform to both the city's Official Plan and the Regional Official Plan.

These plans are adopted by city council, and are subject to the approval of Waterloo regional council when they are deemed to affect matters of provincial or regional significance.

Community plans are then repealed by city council once the areas affected by they are substantially completed.

We offer the following community plans, which include text and maps, for your information:

Community Plan Documents
- Block Plan (Bloomingdale Road, Stanley Avenue, Schweitzer Street, Grand Avenue)
- Bridgeport East Community (Secondary) Plan
- Brigadoon Community Plan
- Doon South Community Plan
- Grand River South Community Plan
- Hidden Valley Industrial Community (Secondary) Plan
- Hidden Valley Residential Community Plan
- Highland West Community Plan
- Huron Community Plan
- Laurentian West Community Plan
- Lower Doon Community (Secondary) Plan
- Pioneer Tower West Service Commercial Community (Secondary) Plan
- Upper Doon Community Plan
- Valleyview Road – Howe Drive Community Plan
- Block Plan 58 - Lower Doon
- Block Plan 65 - Lower Doon
Demolition Control

Kitchener city council must approve a demolition control application when all or part of a residential building is proposed for demolition.

Where a demolition is integrally related to or being sought to facilitate a new development, you should check to determine whether a site plan application is also required.

For more information, please contact us at 519-741-2426
Development Charges

Kitchener is an attractive location for developers to want to build their next venture. We believe properly planned growth in our city is good - but we also know growth costs money to maintain.

The Development Charges Act and its associated regulation allow municipalities in Ontario - like ours - to recover growth-related capital costs that are needed to service new development.

In order to do so, under the terms of the Act, we must prepare a development charge background study to determine our development charges, taking the following into account:

- A forecast of the amount, type and location of housing units, population and non-residential development anticipated in the city.
- The average capital service levels we've provided in the 10-year period immediately preceding the preparation of the background study.
- A review of future capital projects, including analysis of gross expenditures, funding sources and net expenditures incurred or to be incurred by the city, to provide for the expected development.

For more information, please download our 2009 development charges background study and amending 2010 background study.

Current Development Charges

Development charges are imposed to ensure that capital cost of meeting growth related demands for services is met, but does not place a financial burden on existing taxpayers. They also ensure that new taxpayers bear no more than the net capital cost related to providing current levels of service.

The 2012 City of Kitchener development charge rates are:

<table>
<thead>
<tr>
<th>Residential Development</th>
<th>Full Services Central Neighbourhoods</th>
<th>Full Services Suburban Area</th>
<th>Partial Services Suburban Area (no sanitary sewer services)</th>
<th>Partial Services Suburban Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single detached or semi-detached dwelling</td>
<td>$5,412/ dwelling unit</td>
<td>$9,435/ dwelling unit</td>
<td>$7,720/ dwelling unit</td>
<td>$7,587/ dwelling unit</td>
</tr>
<tr>
<td>Townhouse or street townhouse dwelling</td>
<td>$3,737/ dwelling unit</td>
<td>$6,517/ dwelling unit</td>
<td>$5,332/ dwelling unit</td>
<td>$5,241/ dwelling unit</td>
</tr>
<tr>
<td>Multiple or duplex dwelling</td>
<td>$3,066/ dwelling unit</td>
<td>$5,347/ dwelling</td>
<td>$4,375/ dwelling</td>
<td>$4,299/ dwelling</td>
</tr>
</tbody>
</table>

Appendix A
### Lodging house

<table>
<thead>
<tr>
<th>Unit</th>
<th>$1,622/ lodging unit</th>
<th>$2,830/ lodging unit</th>
<th>$2,316/ lodging unit</th>
<th>$2,276/ lodging unit</th>
</tr>
</thead>
</table>

### Non-residential Development

<table>
<thead>
<tr>
<th>Gross floor area of building</th>
<th>$17.94/ square metre ($1.67/ square foot)</th>
<th>$46.09/ square metre ($4.28/ square foot)</th>
<th>$33.96/ square metre ($3.16/ square foot)</th>
<th>$33.01/ square metre ($3.07/ square foot)</th>
</tr>
</thead>
</table>

Development-charge rates are typically adjusted as of January 1 each year.

To determine your applicable development-charge rates, download the following maps:

- [Core area: downtown and warehouse district](#)
- [Central neighbourhoods](#)
- [Suburban areas](#)

For more information refer to our development charge bylaws currently in effect:

- [2009-091](#)
- [2010-086](#)
- [2010-106](#)

### Other development charges may also be applicable:

- [Waterloo Regional District School Board](#) - $1,266 per new residential unit, or $0.92/ square foot non-residential (expires Dec 31, 2012).
- [Waterloo Catholic District School Board](#) - $425 per new residential unit, or $0.31/ square foot non-residential (expires Dec 31, 2012).
- [Region of Waterloo](#) - rates vary, call 519-575-4421 for more information

We accept payment of development charges at the time of the issuance of a building permit. The rate in effect on the day the building permit is issued applies. Payment of the Waterloo Region District School Board, Waterloo Catholic District School Board and Region of Waterloo development charges, if applicable, are payable to the City of Kitchener.

To determine your applicable development-charge rates, download the following maps:

- [Core area: downtown and warehouse district](#)
- [Central neighbourhoods](#)
- [Suburban areas](#)

For more information refer to our development charge bylaws currently in effect:

- [2009-091](#)
- [2010-086](#)
- [2010-106](#)
Other development charges may also be applicable:

- **Waterloo Regional District School Board** - $1,266 per new residential unit, or $0.92/ square foot non-residential (expires Dec 31, 2012).
- **Waterloo Catholic District School Board** - $425 per new residential unit, or $0.31/ square foot non-residential (expires Dec 31, 2012).
- **Region of Waterloo - rates** vary, call 519-575-4421 for more information

We accept payment of development charges at the time of the issuance of a building permit. The rate in effect on the day the building permit is issued applies. Payment of the Waterloo Region District School Board, Waterloo Catholic District School Board and Region of Waterloo development charges, if applicable, are payable to the City of Kitchener.
Development Handbook

Kitchener's development handbook is full of useful information and contacts to help direct you through our industrial and commercial development processes.

Some of the topics covered in the guide include:

- Attaining permits
- Development charges
- Steps involved in approval processes
- Taxes
Development Manual

Find out everything you need to know before planning your next development in our comprehensive development manual. Subscribe to our e-mail distribution list for regular updates.

Development Manual - Sept 2011 Release

Topics covered in the manual include:

- Subdivision
- Site plans
- Roads
- Water mains
- Sanitary sewers
- Storm sewers
- Stormwater management
- Streetlighting
- Natural gas
- Lot grading
- Erosion and sediment control
- Parks and community trails

Constructed Asset Data Submission

- CAD Standards Manual
- Constructed Asset Data Submission Manual
- Ontario Structural Inspection Manual Sample Forms (.pdf)
- Ontario Structural Inspection Manual Blank Forms (.pdf)
- Constructed Asset Drawing Spatial Data File (.sdf)
- Constructed Asset Drawing Template File (.dwt)
- Constructed Asset Drawing Export Script (.epf)
- Constructed Asset Drawing Tracking Form (.xls version 2007/2010)
- Constructed Asset Drawing Tracking Form (.xls version 2003)

Inspection Report

- Daily Report FT Inspection
- PT Inspection
- S & E Control Inspection
- Weekly Report

General Forms

- 2007 MOE APP Process-Servicing Application Checklist
- 2007 MOE APP Process-Storm Water Management Application Checklist
Appendix A

- Consultant Performance Evaluation Form
- Contractor Performance Evaluation Form
- Letter of Credit Spreadsheet Sample - Parks
- Maintenance Package Checklist
- Pipe Strength and Bedding Design Chart
- Site Grading, Erosion Control, Servicing & SWM Guidelines
- Subdivision Above Ground Services Warranty Form
- Subdivision Acceptance Status Spreadsheet Form
- Subdivision Letter of Credit Request to Reduce Sample
- Subdivision Letter of Credit Spreadsheet Form
- Subdivision Underground Services Warranty Form

Kitchener Utilities Forms

- 19mm Commercial Meter Set
- 19mm Residential Meter Set
- 25mm Meter Set
- 38mm Meter Set
- 50mm Meter Set
- 75mm Meter Set
- 100mm Meter Set
- 150mm Compound Meter Set
- Form 1 - Description Template
- Form 1 Future Authorization - Fillable and Saveable
- Meter Pits
- Policy for Properties Requiring Multiple Meters
- Water System Inspection Report
- Watermain Inspection Guideline

Standard Drawings

- Kit Standard Drawing Index June 2010
- CAD sample and Templates (ZIP file)
- KES Standard Drawing Comparison
- Pipes catalog (zip file)

Drawings (broken down individually)

- Standard Drawing Index
- 100-18m local road 18m ROW
- 101-20m minor collector 20m ROW
- 102-26m major collector 26m ROW
- 103-30m secondary arterial 30m ROW
- 104-cul-de-sac cul de sac
- 105-curve selection chart
- 106-frost value
- 107-thickness curves
- 108-perforated subdrain under curb
- 204-standard measurement for watermain construction
- 205-standard measurement for watermain construction
- 206-standard measurement for watermain construction
- 300-rainfall intensity curve
- 301-Pipe Strength and Bedding Design Chart
- 302-manhole type c
- 303-precast manhole tee
- 304-precast ditch inlet with sump
- 305-concrete endwall with apron for storm sewer outlet
- 306-internal grate (outlets only) for corrugated metal
Appendix A

and gutter
- 109-std drop curb and drwy ramp details
- 110-sidewalk
- 111-public walkway details
- 112-boulevard tree planting
- 113-CONCRETE-PAVING-BLVD
- 114-walkway-emergency access detail
- 115-temporary road detail
- 116-typical curb and intersection sidewalk ramp detail
- 117-curb and gutter with adjacent sidewalk
- 118-asphalt joint restoration detail
- 200-dimensional std for poured v.c for 300mm gv
- 201-dimensional std for poured v.c for 450mm gv
- 202-dimensional std for poured v.c for 600mm gv
- 203-Std Hydrant Install

pipe 750mm diameter and larger
- 307-Infiltration Detail
- 308-Infiltration Plan
- 400-urban lot grading type 'A' - back to front drainage
- 401-urban lot grading type 'B' - split drainage with walkout
- 402-urban lot grading type 'C' - back to front drainage with walkout
- 403-urban lot grading type 'D' -split drainage
- 404-cross section of grass swales
- 500-fence footing
- 501-backstop layout
- 502-major backstop
- 503-ASPHALT-TRAILS
- 504-SONTEDUST-PATH
- 505-TRAIL-WOODLAND
- 506-WALKWAY BLOCK SIDEWALK TERMINUS AT PARKLAND

Past Development Manual Updates

- September 2011 Development Manual List of Changes

View a list of changes to this webpage.
Heritage Permit

Under the Ontario Heritage Act, if you own an individually designated property (Part IV) or a property in a heritage conservation district (Part V), you need a heritage permit to alter your property in a way that affects the reasons why your property was designated.

The Act defines the term "alteration" as meaning to change in any manner and includes:

- To restore
- To renovate
- To repair
- To disturb

A heritage permit is also required for the erection or demolition of a building or structure on a designated property that is likely to affect the reasons for designation.

Heritage permit applications are available for download.

Prior to filling out and submitting your permit application, you may wish to review the information we've provided on the Municipal Heritage Register, our heritage conservation district plans and the Heritage Kitchener committee.

For more information, please contact Leon Bensason, coordinator, cultural heritage planning, at 519-741-2306.
Letter of Compliance - Zoning

A letter of compliance is usually requested if a property is being sold or mortgaged. They are usually obtained by a lawyer representing one of the parties in the transaction.

Information provided in a letter of compliance includes:

- Official Plan designation.
- Current zoning and whether the proposed use complies and pending zoning if applicable.
- Compliance with building setback regulations.
- Status of any building and plumbing permits on file.
- Whether there are any active zoning or property standard violations.
- Whether the property has any heritage significance.

To obtain a request form or for consultation or answers to specific questions regarding the letter of compliance, please contact us at 519-741-2426.
Official Plan Amendment

If you would like to make a change to Kitchener's [Official Plan](#), you must submit an [official plan amendment](#) application.

Examples of changes you may apply for include:

- Land-use designations
- Policies of the Official Plan

A [pre-submission consultation](#) meeting with our city planners is necessary, in advance of submitting your application.

For more information, please [contact us](#) at 519-741-2426.
Part-lot Control

If you own a property within a registered plan of subdivision in Kitchener, and you wish to subdivide a lot or a block for the purpose of selling, conveying, leasing or mortgaging, you may request us to pass a part lot control exemption bylaw.

We will give consideration to this method of land severance only for residential development fronting an existing or dedicated road, including:

- Semi-detached dwellings
- Linear townhousing
- Single detached dwellings within a lotless block

Only under special circumstances, if agreed to by the general manager of the development and technical services department, will we consider part lot control exemption for non-residential development.

A part lot control exemption bylaw can only be recommended for approval if no conditions are required to be applied to the division of the subject lands.

A part lot control exemption application is available for download.

For more information, please contact us at 519-741-2426.
**Plan of Condominium**

If you are proposing to sell individual units as condominium units in Kitchener, you must first obtain plan of condominium approval.

A [plan of condominium application](#) is required if you are proposing a standard condominium, a common elements condominium or a condominium conversion. If you are proposing a vacant land condominium a [pre-submission consultation](#) meeting is required and an application should be made using the application for [plan of subdivision or vacant land condominium](#).

If you are proposing a new build condominium development a [site plan application](#) will be required.

For more information, please [contact us](#) at 519-741-2426.
Plan of Subdivision

A plan of subdivision provides for a parcel of land to be legally divided to establish new public streets and to divide lands into two or more parcels in order to sell one or more parcels.

If you intend to subdivide land in Kitchener, please contact our planning staff to discuss your proposal.

A subdivision pre-submission consultation meeting will be scheduled to discuss where the subdivision fits, in terms of timing with our growth management plan, as well as how the proposed subdivision conforms to community plans, existing services and other city policies and guidelines.

Once these details are determined, you will be asked to fill out a plan of subdivision / vacant land condominium application.

For more information, please contact us at 519-741-2426.
Pre-Submission Consultation
A pre-submission consultation meeting is required prior to the acceptance of an application for:
- Official Plan Amendment
- Zone Change
- Site Plan Approval
- Plans of Subdivision
- Plans of Vacant Land Condominium

The purpose of this meeting is to identify those studies/reports required to commence processing of the development application(s), as well as to obtain and provide information required to better process the application.

To begin the process, you must complete a pre-submission consultation meeting request form.

For more information, please contact us at 519-741-2426
Sign Permits

The erection of signs is regulated by Kitchener's sign bylaw. The purpose of the bylaw is to regulate the location, size, and types of signs that are installed within our city.

The bylaw also addresses aesthetics, lighting and safety, functional and safety issues such as traffic, pedestrian and structural construction. Signs, whether they are small or large, need to be constructed and installed to avoid visibility problems and structural failure due to weather and age.

If you're interested in installing a permanent sign, please read our submission requirements before submitting a permanent sign permit application.

Portable Sign Permit Application

If you're interested in moving a sign from place to place, we must first approve your proposed locations.

A maximum of six permits may be issued for any one business or use per calendar year.

To apply for a permit, or for more information, please contact us at 519-741-3400 ext. 3284.

Temporary Sign Permit - Banner and Inflatable

A maximum of six permits may be issued for any one business or use per calendar year.

To apply for a permit complete an application form, or contact us at 519-741-3400 ext. 3284 for more information.
Site Alteration

Kitchener's site alteration bylaw was enacted to control site alteration activities within the city, such as the placing or dumping of fill; the removal of topsoil; and the alteration of the grade of land.

The following has been produced to provide citizens and developers with clarification as to when a site alteration permit is required.

The permitting process seeks to balance environmental and administrative considerations. The requirement of a permit allows the city to ensure:

- Unanticipated drainage and site alteration is prevented.
- Appropriate drainage patterns are maintained.
- Interference and damage to watercourses or water bodies is limited;
- Water quality is maintained.
- The use of hazardous and/or improper fill is prevented.
- Erosion and sedimentation is prevented.
- Natural heritage features such as wetlands, valley lands, and woodlands and areas of archaeological resources are protected.
- The city's natural topography, soils, and vegetative features are considered.

When is a Site Alteration Permit Required?

A site alteration permit is required:

- for all properties 0.405 hectares (1.0 acre) or greater.

A site alteration permit is not required:

- For properties less than 0.405 hectares (1.0 acre).
- the installation of a swimming pool, provided a pool permit is obtained.
- minor gardening or landscaping projects.
- normal farm practices.
- development that is undertaken with the appropriate planning approvals and building permits.

A site alteration permit will remain in effect for a period of 90 calendar days from the date of issuance.

A permit may be extended where an application to renew is filed at least 30 calendar days before the date of expiry upon making of a written request to the city's director of engineering, provided the proposed work, which was the subject of the permit, has not been revised.

Permit Application Process

If a site alteration permit is required, the applicant should submit the following items:

- A completed application form
- Five (5) copies of a detailed plan or survey
Appendix A

- Supporting studies or reports
- Payment of the required fees

**Permit Fees**

The associated fees are as follows:

- Site alteration permit: $107
- Site alteration permit revisions: $53.50
- Site alteration permit renewal: $53.50 (if a permit is renewed 30 calendar days before to the original expiry date)

Please note the application will not be accepted for processing until the fee is received.

For more information, please contact Binu Korah at 519-741-2974.
Site Plans

The City of Kitchener requires a site plan application if you are planning to:

- Construct a new building or addition.
- Undertake major building renovations, which substantially increase the size or usability of a building or structure.
- Establish a commercial parking lot.
- Making alterations to an already approved site plan

Site plan applications are not required for construction of:

- A single-family dwelling
- A semi-detached dwelling
- A duplex
- A farm building

We can normally process a full site plan application in six to eight weeks, depending on the complexity and nature of the application.

Types of Approval

In considering of your proposal, we may determine one of the following different types of approval is relevant:

**Stamp plan approval** - Projects with minor expansion or minor additions to an existing building may require only a stamp plan approval from our supervisor of site development.

**Site plan revision** - Projects which have an approved site plan or involve lands which are covered by a development/site plan agreement already registered against title which are in substantial compliance with a previously approved site plan may require only a revision to an approved site plan.

**Development agreement** - Projects which must have facilities or matters provided and/or maintained pursuant under the Planning Act - which may include widenings, access ramps, curbing, traffic direction signs, surfacing of loading, parking and access areas, walkways, lighting, landscaping, storage and collection areas, drainage and sewage easements, or grading - shall require a development agreement registered against title prior to the issuance of any building permits, as a condition of site plan approval.

Only complete submissions will be reviewed.

- [Pre-submission consultation](#)
- [Site plan approval submission requirements and application for full, minor and stamped plan applications](#)
- [Conditions required for the issuance of site plan approval](#)
- [Section 41 development agreement conditions](#)
- [Letter of credit for site development works](#)
- [Letter of credit chart [PDF]](#) (for print)
- [Letter of credit chart [XL]](#) (spreadsheet with updateable fields)
- [Parkland dedication policy](#)
Appendix A

- Telecommunication Tower and Antenna Protocol

Consultants submitting plans must also certify them and complete the applicable site development works notification forms:

- Professional engineer/consultant
- Landscape architect/designer
- Lighting engineer/consultant
- Noise study engineer/consultant
- CPTED engineer/consultant
- Urban designer review area map

Additional information may be found in our urban design manual.

For more information, please contact the planning division at 519-741-2426.

Digital Submission Requirements

We have developed a set of standards for submitting digital planning application drawings. Adherence to these standards will help streamline the processing of applications. Failure to comply with these requirements may delay the processing of an application.

As part of the digital submission requirements, we provide a standard title block file, which should be proportionally scaled to fit the site plan application drawing. A microstation format file is also available upon request. In an effort to assist you, we have prepared a site plan title block instructions on completing your digital submission requirements.

A legible, letter-sized hard copy printout of the submission contained in the provided title block must be submitted, along with the required large-size hard copies of the proposed site plan.

In the cases where a "Parkland Dedication Plan" is required in addition to a Site Plan Application. The City of Kitchener provides a Parkland Dedication Plan template which should be proportionally scaled to fit the site plan application.

For more information with regards to digital submissions, please contact us at 519-741-2851.

We have developed a set of standards for submitting digital planning application drawings. Adherence to these standards will help streamline the processing of applications. Failure to comply with these requirements may delay the processing of an application.

As part of the digital submission requirements, we provide a standard title block file, which should be proportionally scaled to fit the site plan application drawing. A microstation format file is also available upon request. In an effort to assist you, we have prepared a site plan title block instructions on completing your digital submission requirements.

A legible, letter-sized hard copy printout of the submission contained in the provided title block must be submitted, along with the required large-size hard copies of the proposed site plan.
In the cases where a "Parkland Dedication Plan" is required in addition to a Site Plan Application. The City of Kitchener provides a Parkland Dedication Plan template which should be proportionally scaled to fit the site plan application.

For more information with regards to digital submissions, please contact us at 519-741-2851.
Urban Design Manual

Kitchener's urban design manual is a comprehensive document intended to foster a high quality of urban design on a city-wide basis.

This handy, go-to resource provides members of the development community - as well as residents, special-interest groups, city council and staff - with important details on our urban design guidelines and urban design standards.

The manual also contains a separate section for design briefs, intended to provide detailed design suggestions and requirements for a specific site or type of land use.

The urban design manual can be accessed through the following links:

- [Part A - Urban design guidelines](#)
- [Part B - Design briefs](#)
- [Part C - Design standards](#)
Zoning Bylaw
Kitchener's zoning bylaw establishes and regulates the use of land by implementing the policies of our Official Plan, including:

- Permitted use of land
- Height and location of structures
- Lot size
- Density of development
- Parking requirements.

If you would like to amend our zoning bylaw, you must complete a zone change application. For searches related to a specific property address, you may find it helpful to access zoning information through our interactive online mapping tool. For more information, please call 519-741-2317.

Zoning By Law 85-1

- Certification Page
- Index of Amending By-laws
- Table of Contents
- Title Page
- Zoning Grid Key Map Index

- Appendix A - Zoning Grid Schedules
- Appendix B - Property Detail Schedules
- Appendix C - Special Use Provisions for Specific Lands
- Appendix D - Special Regulation Provisions for Specific Lands
- Appendix E - Temporary Use Provisions for Specific Lands
- Appendix F - Holding Provisions for Specific Lands
- Appendix G - Holding Provisions for Services and Roadworks
- Sections
**Zone Change**

A zone change is a process that changes the permitted use of land and/or the specific manner in which land is regulated (i.e. setback, height, etc). Kitchener city council can consider a zone change application only if the proposed amendment conforms with our [Official Plan](#).

A zone change application is a public process - which means the public has the right to comment on all proposed zone changes.

Typically, we require approximately four to six months to process a zone change application.

To begin the process, you must complete a request for a [pre-submission consultation](#) prior to submitting a [zone change application](#).

For more information, please [contact us](#) at 519-741-2426.
Building Standards

Whether you’re interested in constructing a building for new commercial office space, a warehouse to store parts used by many of our local manufacturers, or a block of buildings featuring a mixed use of residential and retail development - you must go through our building-permit application and subsequent approval processes before breaking ground.

This applies to industrial, commercial, institutional and multi-residential:

- Construction
- Alterations
- Changes of use

These processes are in accordance with our building bylaw; and they are in place to ensure your proposed development is safe, structurally sound and in conformance with our building and fire codes.

The housing and property section of our website includes information on residential building.

Building Enterprise statement of Revenue and Expenses

The building code act requires an annual report for collection of fees and costs to administer and enforce the act be made available to the public:

- 2011 Revenue & Expenses
- 2010 Revenue & Expenses

Building Code

The building code in force in Ontario is the 2006 Building Code Compendium. The Building Code is produced and distributed by the Ministry of Municipal Affairs and Housing. Copies can be obtained:

<table>
<thead>
<tr>
<th>Online</th>
<th>Publications Ontario website</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Phone</td>
<td>416-326-5300</td>
</tr>
<tr>
<td></td>
<td>416-325-3408 (TTY)</td>
</tr>
<tr>
<td></td>
<td>Toll free in Canada: 1-800-668-9938</td>
</tr>
<tr>
<td></td>
<td>Toll free in Ontario: 1-800-268-7095 (TTY)</td>
</tr>
<tr>
<td>By Fax</td>
<td>416-325-3407</td>
</tr>
<tr>
<td>In Person</td>
<td>Kitchener Public Library - There are copies of the 2006 Building Code Compendium available for in library use at the Kitchener Public Library Main Branch, located at 85 Queen St. N., in Kitchener.</td>
</tr>
<tr>
<td></td>
<td>Toronto</td>
</tr>
<tr>
<td></td>
<td>Monday to Friday</td>
</tr>
<tr>
<td></td>
<td>Publications Ontario</td>
</tr>
<tr>
<td></td>
<td>880 Bay St., 1st Floor</td>
</tr>
<tr>
<td></td>
<td>Toronto, ON M7A 1N8</td>
</tr>
<tr>
<td>E-laws</td>
<td>Some Code users may only require either the Building Code Act, 1992 or the Building Code (O.Reg. 350/06). Both these documents can be obtained online, at no charge, using E-laws.</td>
</tr>
</tbody>
</table>

For more information contact us at 519-741-2433
Annual Workshops

Every year, the City of Kitchener building division hosts an annual workshop for home builders, designers and contractors.

These workshops are prepared and presented by the building division staff as a method of updating the industry on matters such as recent or upcoming changes to the Ontario Building Code, modifications to application requirements and standard procedures.

The workshops also provide the opportunity for the industry to present any questions they may have to the building division staff.

Past Workshop Presentations

- 2011 - ICI/ Residential
- 2012 Requirements for New Construction - Pamphlet
- 2010 - Residential
- 2009 - Residential
- 2009 - ICI
- 2008 - Residential
- 2008 - ICI

For more information, please contact us at 519-741-2433.
Backflow prevention

In cooperation with Kitchener Utilities, the City of Kitchener's building division works with the community to help ensure the quality of our drinking water by reducing the amount of backflow that occurs in the water system.

Backflow essentially happens when water flows in the opposite direction. For instance, instead of running from the city's water system into a business or home, the water runs the reverse way. That means whenever a foreign substance, such as a bottle of weed killer is connected to the end of a garden hose, the potential for pollution is created.

The problem is of particular concern for commercial, industrial, institutional and large multi-residential buildings.

The installation of a mechanical device known as a blackflow preventor (BFP) can stop this problem before it occurs. These devices ensure unwanted substances do not enter the city's clean water supply.

We are determined to reduce backflow by ensuring more blackflow preventors are being used across the city -- the primary reason why we've introduced a backflow prevention bylaw that that affects commercial, industrial, institutional and large multi-residential buildings.

Many different BFP devices are available to protect the various types of cross connections.

We have provided the following guides to help all water customers upgrade their water systems:

- City of Kitchener general requirements for backflow preventor (BFP) installations
- City of Kitchener requirements for fire systems
- List of recognized BFP testers and qualified auditors. Please contact us to be added to Kitchener's List of "Recognized" BFP testers/auditors.
- BFP device inspection and testing report. This may be printed and faxed in or filled in using your PDF viewer. To submit electronically, click and fill in the light blue boxes of the PDF. Then click the envelope in the top left of the your PDF viewer and email the completed form to Marc Hilker.
- BFP cross-connection survey
- City of Kitchener backflow prevention program
- Disconnection options for private wells
Building a Deck

One of the most popular projects for a new homeowner to undertake is the construction of a new deck.

A building permit is required for all decks in Kitchener that are more than 0.6 metres (24 inches) above the finished ground, measured at any point; or if the deck is covered by a roof.

For more information, please review our deck information package containing deck construction regulations and permit requirements. Also remember decks and roofs have specific location regulations. Please contact us at 519-741-2433 for the requirements.
Building a Fence

One of the questions the City of Kitchener is frequently asked by homeowners is whether a building permit is required to build a new fence. The answer is: no.

However, there are regulations for height and location on your property.

For more information, please review our brochure on building a fence, containing fence regulations, or contact us at 519-741-2317.
Building Permits

Prior to starting a new construction project either inside or outside your home, you must first determine whether you require a building permit.

Projects that Require a Building Permit

- Detached garage, shed or accessory structure 108 square feet and greater (measured to the outside face of exterior walls)
- Attached garage, carport, shed or other roof structure of any size
- Decks greater than 24 inches above grade
- Finishing the basement of a house
- Adding a bedroom to the basement
- Additions to a building
- Enclosures for swimming pools with a depth of 36" or greater (including temporary or inflatable)
- Creating a duplex (a.k.a. in-law suite, accessory apartment, granny flat)
- Plumbing fixtures added or relocated
- Removing a load bearing wall, column, lintel or beam
- Re-insulating walls, ceilings or floors
- Woodstove or woodburning fireplace
- Installing a new window or door, or when increasing the width of the existing opening
- Pending location, a retaining wall that is greater than 3'-3" in height
- Solar Panels that are mounted to a building and have a face area of 5 square meters or greater
- Septic system installations and alterations
- Site servicing (water or sewer lines) for all building types
- New residential dwellings
- Demolition of a structure greater than 108 square feet in building area
- Tent or group of tents that is, more than 60m² (646 ft²) in aggregate ground area, attached to a building, or constructed within 3m (9'-10") of any structure
- Industrial, commercial, institutional and multi-residential construction or alterations or changes of use
- Backflow prevention device for lawn irrigation systems connected to potable water

Please note: We do not review or inspect electrical work. Please contact the Electrical Safety Authority at 1-877-421-2228 for electrical permits.

Projects that Do Not Require a Building Permit

- Structure less than 108 square feet measured from the outside face of walls (that does not contain plumbing)
- Gas fireplace
- Fence (but must comply with zoning regulations)
- Water softener installations
- Painting, wall papering, tiling, carpeting, cabinets, countertops, and similar finish work
- Door and window replacements (within the existing opening, where no structural members are changed)
- Installing new shingles on existing roof
• Removing a non-load bearing wall in a single, semi-detached or townhouse dwelling
• Replacing a plumbing fixture (i.e. toilet, bathtub or sink) with a new fixture in the same location

For more information, please contact us at 519-741-2433.
Building Application & Standard Forms

The City of Kitchener would like to assist you in obtaining information that will assist you and allow you to obtain your building permit as quickly as possible. The following list contains typical forms for you to download and include as part of your "complete" permit application.

Building Permit Application and Forms

- Application Form - [PDF](#) or [Word](#)
- Schedule 1 - Designer Information Form - [PDF](#) or [Word](#)
- Schedule 2 - Sewage System Installer Information Form - [PDF](#) or [Word](#)

Additional Standard Forms

- [Alternative solution form](#)
- [Building and fire code design form](#)
- [Commitment to general reviews by architect and engineers](#)
- [Demolition agreement](#)
- [Energy efficiency design summary (EEDS) form](#) (low rise residential)
- [Energy efficiency certification form](#) (other building types)
- [Flow control roof drainage declaration](#)
- [Ontario building code matrix](#)
- [Residential mechanical ventilation and heating/cooling design summary](#)

For more information, please [contact us](#) at 519-741-2433.
New Home - Permit Application Process

Kitchener's building division requires the following information with all new-home building-permit applications:

**Designer Requirements**

All drawings submitted for building permit applications are required to be prepared by either the owner or prepared and reviewed by a qualified designer, architect or professional engineer or a combination. Some drawings must be designed by a professional engineer when the design falls outside of the prescriptive requirements of Part 9, Division B of the Ontario Building Code.

The Building Code requires qualified and registered designers who review and take responsibility for design activities to include the following information on any documents submitted to a chief building official or registered code agency:

- The name and building code identification number (BCIN) of the registered firm.
- A statement that the qualified person has reviewed and taken responsibility for the design activities.
- The name and BCIN of the qualified person.
- The signature of the qualified person.

**Application Requirements**

The following is a list of documents required for the permit submission;

- Application form
- Two sets of drawings
- Schedule 1- Designer Information Form (one for HVAC calculations and one for house design)
- Heat loss/ gain calculations and mechanical summary form
- Energy efficiency design summary (EEDS) form (when drawings do not include this as a matrix)
- Sewage System Design (if applicable)
- Schedule 2- Sewage System Installer Information form (if applicable)
- Any other documents that pertain to your project

Visit our Applications and Standard Forms page to access these forms.

**Drawing Requirements**

The following is a list of drawings and information that may be required to accompany applications for permits according to the scope of work:

- Lot grading plan
- Foundation plan
- Floor plans/ framing plans
- Roof plans
- Building elevations
- Sections and details
- Truss layout drawings (if applicable)
Appendix A

All drawings shall be fully dimensioned, drawn at minimum 3/16" = 1'-0"; and note all sizes and types of construction materials to be used and their respective locations, finishes to all walls, ceilings and floors and all existing and proposed fire separations.

For more information, please contact us at 519-741-2433.
Building Standard Details

The City of Kitchener would like to help you obtain the information that will enable you to obtain your building permit as quickly as possible. Follow the links below for our typical details, which will assist you in your permit application and construction project.

- 9-2 - Garage Stair and Parking Space Size
- 9-3 - Deck Details
- 9-4 - Detached Garage and Shed - Floating Slab
- 9-6 - Detached Garage and Shed - Cross Section
- 9-7 - Detached Garage and Shed - Mudsill Anchorage
- 9-8 - Carport Details
- 9-9 - French Drain
- 9-10 - Addition on Piers - Cross Section
- 9-11 - Addition with Basement - Cross Section
- 9-12 - Air / Vapour Barrier Details
- 9-13 - Exterior Basement Stair Details
- 9-14 - Party Wall Details
- 9-15 - Exterior Wall Fire Resistance Rating Details
- 9-16 - Vaulted Ceiling Collar Tie Details
- 9-17 - Basement Egress Window Details

- Barrier Free - Washroom Details
- Barrier Free - Shower Details
- Barrier Free - Ramp Details

For more information, please contact us at 519-741-2433.
# City of Kitchener
## Standard Drawings Index

### 100 Roads
- 100 18.0m Local Road
- 101 20.0m Minor Collector
- 102 26.0m Major Collector
- 103 30.0m Secondary Arterial
- 104 Residential Cul-De-Sac & Standard Utility Locations
- 105 Flexible Pavement Design Curve Selection Data
- 106 Flexible Pavement Design Frost Value
- 107 Flexible Pavement Design Thickness Design Curves
- 108 Perforated Sub-Drain Under Curb and Gutter
- 109 Standard Drop Curb and Driveway Ramp Details
- 110 Construction Details of Sidewalk Curb and Gutters
- 111 Public Walkway Details
- 112 Boulevard Tree Planting
- 113 Concrete Paving - Sidewalk/Boulevard Adjacent to Boulevard Tree
- 114 Walkway/Emergency Access Detail
- 115 Temporary Road Detail
- 116 Typical Curb and Intersection Sidewalk Ramp Detail
- 117 Curb and Gutter with Adjacent Sidewalk
- 118 Asphalt Joint Restoration Detail

### 200 Watermains
- 200 Dimensional Standards for Precast Valve Chamber for 300mm Gate Valve
- 201 Dimensional Standards for Poured Valve Chamber for 450mm Gate Valve
- 202 Dimensional Standards for Poured Valve Chamber for 600mm Gate Valve
- 203 Standard Hydrant Installation
- 204 Standard As Built Measurement for Watermain Construction
- 205 Standard As Built Measurement for Watermain Construction
- 206 Standard As Built Measurement for Watermain Construction

### 300 Sewers
- 300 Rainfall Intensity Curve
- 301 Pipe Strength and Bedding Design Chart
- 302 Type 'C' Manhole Poured Concrete Manhole Max. 6.10m Depth
- 303 Precast Manhole Tee
- 304 Precast Ditch Inlet with Sump
- 305 Concrete Endwall with Apron for Storm Sewer Outlet
- 306 Internal Grate (Oulet Only) for Corrugated Metal Pipe 750mm Diameter and Larger
- 307 Downspout Connection Detail for Front Yard Infiltration Galleries
- 308 Front Yard Infiltration Facility Detail

### 400 Lot Grading
- 400 Urban Lot Grading Type 'A' - Back to Front Drainage
- 401 Urban Lot Grading Type 'B' - Split Drainage with Walkout
- 402 Urban Lot Grading Type 'C' - Back to Front Drainage with Walkout
- 403 Urban Lot Grading Type 'D' - Split Drainage
- 404 Cross Section of Grass Swales

### 500 Parks and Community Trails
- 500 Fence Footing
- 501 Backstop Layout
- 502 Major Backstop
- 503 Community Trail - Asphalt
- 504 Community Trail - Stonedust
- 505 Community Trail - Woodland Condition
- 506 Walkway Block Sidewalk Terminus at Parkland
- 507 Chainlink Fence - Walkway Block
- 508 Metal Gate - Trail
NOTES
1. UTILITY CORRIDOR (HYDRO & TELECOMMUNICATIONS) SHALL BE 0.6m WIDE.
2. UTILITY CORRIDOR TO HAVE A MINIMUM COVER OF 0.9m.
3. WATERMAIN TO HAVE MINIMUM COVER OF 2.0m for 300mm AND SMALLER DIAMETER AND 1.8m FOR 450mm DIAMETER AND LARGER.
4. CLEAR SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE AS PER MOE REQUIREMENTS.
5. MINIMUM SEPARATION BETWEEN THE SANITARY AND STORM SEWERS SHALL NOT BE LESS THAN 1.5m.
6. JOINT USE TRENCHES SHALL BE USED BY HYDRO AND TELECOMMUNICATION.

7. THE FOLLOWING IS A MINIMUM ROAD BASE AND WILL REQUIRE A SOILS REPORT VERIFICATION TO DETERMINE IF ADDITIONAL THICKNESS IS REQUIRED.
   - 40mm HL-3
   - 60mm HL-4 (100mm FOR BUS ROUTES)
   - 150mm GRANULAR "A"
   - 400mm GRANULAR "B"

8. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY.

18.0m LOCAL R.O.W.

The Corporation of The CITY OF KITCHENER

Kitchener

<table>
<thead>
<tr>
<th>SCALE:</th>
<th>N.T.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO.</th>
<th>REVISION</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MANUAL UPDATE</td>
<td>JULY 2012</td>
</tr>
</tbody>
</table>

STANDARD No.: 100
NOTES
1. UTILITY CORRIDOR (HYDRO & TELECOMMUNICATIONS) SHALL BE 0.6m WIDE.
2. UTILITY CORRIDOR TO HAVE A MINIMUM COVER OF 0.9m.
3. WATERMAIN TO HAVE MINIMUM COVER OF 2.0m for 300mm and smaller diameter and 1.8m for 450mm diameter and larger.
4. CLEAR SEPARATION BETWEEN WATERMAIN AND SEwers SHALL BE AS PER MOE REQUIREMENTS.
5. JOINT USE TRENCHES SHALL BE USED BY HYDRO AND TELECOMMUNICATION.

6. THE FOLLOWING IS A MINIMUM ROAD BASE AND WILL REQUIRE A SOILS REPORT VERIFICATION TO DETERMINE IF ADDITIONAL THICKNESS IS REQUIRED.
   40mm HL5
   100mm HL4
   150mm GRANULAR "A"
   450mm GRANULAR "B"

7. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY.
NOTES
1. UTILITY CORRIDOR (HYDRO & TELECOMMUNICATIONS) SHALL BE 0.6m WIDE.
2. UTILITY CORRIDOR TO HAVE A MINIMUM COVER OF 0.9m.
3. WATERMAIN TO HAVE MINIMUM COVER OF 2.0m for 300mm AND SMALLER DIAMETER AND 1.8m FOR 450mm DIAMETER AND LARGER.
4. CLEAR SEPARATION BETWEEN WATERMAIN AND SEWERS SHALL BE AS PER MOE REQUIREMENTS.
5. JOINT USE TRENCHES SHALL BE USED BY HYDRO AND TELECOMMUNICATION.

6. THE FOLLOWING IS A MINIMUM ROAD BASE AND WILL REQUIRE A SOILS REPORT VERIFICATION TO DETERMINE IF ADDITIONAL THICKNESS IS REQUIRED.
   - 40mm HL3
   - 100mm HL4
   - 150mm GRANULAR "A"
   - 450mm GRANULAR "B"

7. SUB-GRADE SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR DENSITY AT MAX. DRY DENSITY. REFER TO REGION OF WATERLOO STANDARD DRAWING 211 FOR BOULEVARD CONCRETE EDGE STRIP DETAILS.
### DRAINAGE

<table>
<thead>
<tr>
<th></th>
<th>OVER 50% SAND</th>
<th>UNDER 50% SAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. WATER TABLE BETWEEN 600mm &amp; 1200mm</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>2. WATER TABLE BELOW 1200mm—NO SEWERS</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>3. WATER TABLE BELOW 1200mm—SANITARY SEWERS</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>4. WATER TABLE BELOW 1200mm—STORM SEWERS</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5. WATER TABLE BELOW 1200mm—STORM &amp; SAN. SEWERS</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

FROST—SEE FROST VALUE CHART

### TRAFFIC

<table>
<thead>
<tr>
<th></th>
<th>MINIMUM ASPHALT</th>
<th>MINIMUM BASE 16mm CRUSHED GRAVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ARTERIAL STREETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>—ROUTE LONGER THAN 1.6km</td>
<td>100mm</td>
<td>150mm</td>
</tr>
<tr>
<td>—ROUTE SHORTER THAN 1.6km</td>
<td>100mm</td>
<td>150mm</td>
</tr>
<tr>
<td>2. RESIDENTIAL STREETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>—ROUTE LONGER THAN 0.8km</td>
<td>80mm</td>
<td>100mm</td>
</tr>
<tr>
<td>—ROUTE SHORTER THAN 0.8km</td>
<td>80mm</td>
<td>100mm</td>
</tr>
</tbody>
</table>

Use design curve if total value is within limits

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0–7</td>
<td>8–14</td>
<td>15–22</td>
<td>23–31</td>
<td>32–41</td>
</tr>
</tbody>
</table>

Add values from drainage, frost and traffic tables

FLEXIBLE PAVEMENT DESIGN CURVE SELECTION DATA
EVALUATION OF SOIL WITH RESPECT TO FROST SUSCEPTIBILITY INDICATED BY LARGE NUMBERS

BASED ON U.S. BUREAU OF SOILS CLASSIFICATION FOR PARTICLE SIZE

EXAMPLE 1. 20% CLAY
60% SILT
20% SAND

EXAMPLE 2. 30% CLAY
19% SILT
48% SAND
3% GRAVEL

FROST VALUE - 7

FLEXIBLE PAVEMENT DESIGN
FROST VALUE

The Corporation Of The
CITY OF KITCHENER

M.T.S.

Rev. Date: JUNE 2010

No. REVISION DATE Std. No.: 106
NOTES

1. FOR SOILS WITH C.B.R. LESS THAN THREE ASSUME C.B.R. = 3

2. WHERE MECHANICAL ANALYSIS INDICATES THAT SOIL HAS MORE THAN 50% SILT OR MORE THAN 60% VERY FINE SAND AND SILT AN ADDITIONAL 150mm OF CLASS 'B' GRANULAR MATERIAL IS TO BE ADDED TO DESIGN DETERMINED FROM THESE CHARTS.
GENERAL NOTES:

1. If the driveway is concrete, expansion joint material shall be installed at the back of the sidewalk.

2. Saw cuts shall be placed at the centreline of the driveway ramp and extended through the sidewalk and curb.

3. Except in new development, driveway ramps may be poured monolithically with the adjacent sidewalk, in which case tooled saw cut joints shall be placed along the front edge of the sidewalk, across the driveway entrance, where boulevard is less than 1.5m.

4. The distance along the curb from the extended edge of the driveway at the back of the sidewalk to the bottom of the depressed curb shall be 1/4 of the distance from the back of curb to the front of sidewalk to a maximum of 1000mm, but shall not be less than 500mm. New development shall be 0.3m.

5. Saw cuts shall be placed in the sidewalk where the driveway ramp taper intersects and in the curb at the bottom of grade transition.

6. Tooled joints in the driveway portion of the sidewalk shall be spaced equally to match the typical jointing of sidewalk as close as possible.

7. Where driveway ramp width exceeds 3000mm, a longitudinal saw cut joint is to be provided at the mid-point.

8. Allowable ramp widths at the sidewalk are between 3.65m and 7.30m.

9. Depressed curb and gutter at driveway entrances shall have an additional 50mm bench to support adjacent concrete ramps, refer to OPSD 600.040.

10. Refer to OPDS 350.010 for commercial/industrial ramp design.

11. Refer to City of Kitchener standard specifications and the development manual for further information.

12. For new development, ramp width at front of sidewalk is to equal the width of the driveway at the back of sidewalk.
CROSS SECTION OF COMBINED WALK, CURB & GUTTER

2% 4% 8% GRANULAR MATERIAL

CROSS SECTION OF COMBINED WALK, BOULEVARD, CURB & GUTTER

150 mm

VARIES

2% 2-5%

GRANULAR MATERIAL

NOTE:
CONCRETE STRENGTH 32MPa,
AIR ENTRAINMENT: 5% TO 8%
MIN. CEMENT CONTENT: 365kg/m³,
COARSE AGGREGATE: 20mm/NOMINAL MAX. SIZE
MAXIMUM WATER/CEMENTING MATERIALS RATIO 0.45

PLAN OF COMBINED WALK, CURB & GUTTER

EXPANSION JOINT EVERY 4.5m

1.5m

TYPICAL CURB RETURN & WALK

EXPANSION JOINT
R=9.0m

CONSTRUCTION DETAIL OF SIDEWALK, CURB & GUTTERS
NOTES:

FOR CONCRETE SIDEWALK DETAILS,
SEE CITY OF KITCHENER STANDARD SPECIFICATIONS.
CONC. SIDEWALK TO BE CENTRED IN R.O.W.
AREA NOT COVERED WITH CONC. S/W
TO BE SODDED WITH No.1 NURSERY
SOD INCLUDING A MINIMUM 0.15m OF
TOPSOIL.
NOTES

1. STANDARD PARKS GATE REQUIRED AT EACH END OF THE EMERGENCY ACCESS. REFER TO STANDARD DRAWING 508.

2. CONCRETE WALKWAY TO BE 125mm THICK AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF KITCHENER STANDARD SPECIFICATION FOR CONCRETE CURB, SIDEWALK, AND DRIVEWAY RAMPS.

PLAN OF SIDEWALK, CURB & GUTTER

NOTES:

1. SIDEWALK RAMP DETAIL TO BE INCORPORATED AT ALL INTERSECTIONS WHERE NEW RAMP CONSTRUCTION IS PROPOSED. MODIFICATIONS ARE SUBJECT TO APPROVAL BY THE ENGINEERING SERVICES DIVISION.

2. BOTTOM OF DEPRESSED CURB SHOULD LINE UP WITH BACK EDGE OF SIDEWALK.

3. THE SLOPE TRANSITION ZONE IS INTENDED TO ALLOW CONNECTION TO THE SIDEWALK AT ITS STANDARD ELEVATION USING A GRADIENT OF MIN. 0.5% AND MAX. 8% ALONG THE SIDEWALK.

4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF KITCHENER STANDARD SPECIFICATION

5. ALL MATERIALS SUPPLIED SHALL COMPLY WITH THE REQUIREMENTS OF THE APPROPRIATE CITY OF KITCHENER STANDARD SPECIFICATIONS.

6. TEXTURED SURFACE IS A COARSE BROOM FINISH WITH DEPTH VARIATIONS TO, BUT NOT EXCEEDING 6mm.
NOTES:

1. SIDEWALK RAMP DETAIL TO BE INCORPORATED AT ALL INTERSECTIONS WHERE NEW RAMP CONSTRUCTION IS PROPOSED. MODIFICATIONS ARE SUBJECT TO APPROVAL BY THE ENGINEERING SERVICES DIVISION.

2. THE SLOPE TRANSITION ZONE IS INTENDED TO ALLOW CONNECTION TO THE SIDEWALK AT ITS STANDARD ELEVATION USING A GRADIENT OF MIN. 0.5% AND MAX. 8% ALONG THE SIDEWALK.

3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF KITCHENER STANDARD SPECIFICATION FOR CONCRETE CURB, SIDEWALK, AND DRIVEWAY RAMPS.

4. ALL MATERIALS SUPPLIED SHALL COMPLY WITH THE REQUIREMENTS OF THE APPROPRIATE CITY OF KITCHENER STANDARD SPECIFICATIONS.

5. TEXTURED SURFACE IS A COARSE BROOM FINISH WITH DEPTH VARIATIONS TO, BUT NOT EXCEEDING 6mm.

6. ONLY SAW CUT JOINTS ARE PERMITTED IN THE DOWNTOWN (NO TOOLED JOINTING).

7. AT INTERSECTIONS WITH REGIONAL ROADS A MINIMUM OF 200mm THICK CONCRETE SHALL BE USED FOR WHEEL CHAIR RAMPS AND SIDEWALKS.
All joints, pipe holes, lift holes to be sealed by mortar grouting inside and outside.

Standard safety steps at 0.3m centers (aluminium).

Neoprene rubber gaskets.

550mm cut out of second ring.

Pipe on top of 300mm precast conc. section.

300mm ring on step.

Drain hole.

300mm min. fill on upper 'B'

Granular 'B'

Fill on upper 'B'

Granular 'B'

NOTES

1. All material placed around chamber to be properly compacted.
2. 1830mm min. from bottom of chamber to underside of precast cap.
3. Precast cap to be removable.
4. Precast concrete to comply with current CSA specifications.
5. Unless noted, all dimensions in millimetres.
6. A/R - as required by load and site conditions.
NOTES –
1. ALL CONCRETE TO BE 20 MPa.
2. MIN. 25mm THICK CASTING PLATE ON CHAMBERS, LOCATED IN TRAVELLED PORTION OF ROAD.
3. ALL MATERIAL PLACED AROUND CHAMBER TO BE PROPERLY COMPACTED.
4. A/R – AS REQUIRED BY LOAD AND SITE CONDITIONS.
NOTES –

1. ALL CONCRETE TO BE 20 MPa.

2. MIN. 25mm THICK CASTING PLATE ON CHAMBER LOCATED IN TRAVELLED PORTION OF ROAD.

3. ALL MATERIAL PLACED AROUND CHAMBER TO BE PROPERLY COMPACTED.

4. A/R – AS REQUIRED BY LOAD AND SITE CONDITIONS.
NOTES
1. REINFORCED CONCRETE PIPE MANUFACTURED TO CSA SPECIFICATION.

2. MANHOLE RISER MANUFACTURED TO CSA SPECIFICATION.

3. PRECAST MANHOLE RISER MAY BE SPIGOT OR BELL END UP, DEPENDING ON SUPPLIER.

4. MANHOLE RISER SECTION REINFORCING WELDED TO PIPE REINFORCING, JOINT GROUTED WITH NON-SHRINK MORTAR.

5. REFER TO OPSD FOR DETAILS OF FRAME AND COVER AND ADJUSTMENT.

6. RUNGS SHALL BE INSTALLED ON LEFT SIDE, LOOKING AT SPIGOT END OF PIPE.

7. RUNGS TO BE GALVANIZED AS PER OPSD & INSTALLED ON 300mm CENTRES TO SPRINGLINE.
1. Concrete to be C20/25 at 28 days.
2. All joints and lifting holes to be completely filled with 1:3 mortar mix and pointed before backfilling.
3. Where inlet is placed across ditch and is accessible to vehicular traffic, grate slope is to be 6:1 or flat.
4. This drawing is to be read in conjunction with OP20-403-01.
5. Section 'A-A'.
NOTES
1. FIELD TILES TO BE LOCATED BY FIELD ENGINEER. ALL EXPOSED EDGES TO HAVE 25mm CHAMBER.
2. ENERGY DISSIPATORS (CHUTE BLOCKS) MAY BE USED ON THE APRON AT THE DISCRETION OF THE ENGINEER.
3. ALL CONCRETE TO BE 20MPa COMPRESSIVE STRENGTH AT 28 DAYS & CONTAINING 5% TO 8% ENTRAINED AIR.
4. CONSTRUCTION JOINTS TO BE APPROVED BY THE ENGINEER.
5. REINFORCING BARS TO HAVE 50mm COVER.
6. FOOTINGS AND WALLS TO BE BACKFILLED WITH COMPACTED GRANULAR ‘B’
7. GRATING FOR CONCRETE ENDWALL REFER TO OPSD

<table>
<thead>
<tr>
<th>ENDWALL DIMENSIONS</th>
<th>PIPE DIAMETER IN MILLIMETRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 675 750 825 900 975 1050 1200 1350 1500 1650 1800</td>
<td></td>
</tr>
<tr>
<td>A 1070 1140 1220 1300 1370 1450 1520 1600 1680 1760 1840 1920 2000</td>
<td></td>
</tr>
<tr>
<td>B 2440 2440 2440 2440 2440 2440 2440 2440 2440 2440 2440 2440 2440</td>
<td></td>
</tr>
<tr>
<td>C 2770 2770 2770 2770 2770 2770 2770 2770 2770 2770 2770 2770 2770</td>
<td></td>
</tr>
<tr>
<td>D 1420 1500 1580 1650 1730 1800 1880 1960 2040 2120 2200 2280 2360</td>
<td></td>
</tr>
<tr>
<td>E 310 310 310 310 310 310 310 310 310 310 310 310 310</td>
<td></td>
</tr>
<tr>
<td>F 80 80 80 80 80 80 80 80 80 80 80 80 80</td>
<td></td>
</tr>
<tr>
<td>G 550 630 700 780 850 920 1000 1080 1160 1240 1320 1400 1480</td>
<td></td>
</tr>
<tr>
<td>H 2390 2460 2540 2620 2700 2780 2860 2940 3020 3100 3180 3260 3340</td>
<td></td>
</tr>
</tbody>
</table>

CONCRETE APRON FOR STORM SEWER OUTLET

The Corporation Of The CITY OF KITCHENER

KITCHENER

No. REVISION DATE Std. No.: 305

Scale: N.T.S. Rev. Date: JUNE 2010
NOTE:

1. SANITARY AND WATER CONNECTIONS SHALL BE PLACED IN A COMMON TRENCH AND BE INSTALLED TO THE CENTER OF A SINGLE FAMILY LOT. VERTICLE/HORIZONTAL SPACING OF SERVICES AS PER M.O.E. AND O.B.C. FOR A SEMI-DETACHED LOT THE CONNECTIONS SHALL BE INSTALLED TO THE QUARTER POINTS OF THE LOT.

2. FRONT YARD INFILTRATION FACILITIES SHOULD BE SHARED BETWEEN TWO HOUSES ON THE OPPOSITE SIDE OF THE PAIRED DRIVEWAYS.

3. THE FRONT YARD INFILTRATION FACILITY SHALL HAVE MINIMUM 2.44M SEPARATION WITH THE WATER SERVICE.

4. SEWER AND WATER SERVICE CONNECTIONS SHALL NOT BE INSTALLED WITHIN 1.5M OF THE CENTER OF A SUBMERSIBLE TRANSFORMER VAULT OR WITHIN 0.9M OF A PROPOSED ELECTRICAL SERVICE STUB.

5. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN 3.0M OF A PROPOSED LIGHT POLE OR HYDRO POLE STANDARD.
NOTE:
ALL POST DEPTH SHALL BE
AS PER CK-135 SPECIFICATION.
NOTE: EXCAVATE TO MINIMUM DEPTH OF 15" [390mm] OR END OF TOPSOIL LAYER TO A MAXIMUM Depth of 33" [840mm]. FILL ADDITIONAL EXCAVATED TOP SOIL WITH COMPACTED GRANULAR 'B' BASE TO A MAXIMUM DEPTH OF 18" [450mm].
NOTES:

1. ALL FENCING AND FASTENERS TO BE GALVANIZED PRIOR TO FABRICATION.
2. EXTRUDED BLACK VINYL COATING MAY BE APPLIED PROVIDED ALL FENCING MATERIALS ARE GALVANIZED PRIOR TO COATING. WHERE VINYL COATING APPLIED, ALL FENCING ELEMENTS TO BE COATED.
3. MID-BRACING RAILS REQUIRED WHERE FENCE HEIGHT IS GREATER THAN THAT SHOWN ON THE DETAIL. MID-BRACE TO BE 43mm Ø RAIL ON TERMINAL, CORNER, STRAINING OR GATE POSTS.
4. WIRE MESH SHALL BE MEASURED AT 9 GAUGE PRIOR TO GALVANIZING AND/OR ADDITIONAL COATING.
5. CONCRETE FOOTINGS TO BE 20Mpa STRENGTH AT 28 DAYS
6. ALL PIPE TO BE SCHEDULE 40.
METAL GATE TRAIL

The Corporation Of The CITY OF KITCHENER

NOTES:
1. ALL CONNECTIONS ARE WELDED WITH COMPLETE SOLID WELD
2. ALL STEEL ON GATES TO BE HOT DIPPED GALVANIZED AFTER FABRICATION
APPENDIX C: Urban Forest Details - Tree Planting & Establishment Best Management Practices

See the following link to the City of Kitchener website: (Link)
# Urban Forest Details - Tree Planting & Establishment

## Best Management Practices

### Asset Management

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF.1.1</td>
<td>Site Inspection Report – Tree Planting and Soil Habitat Zone</td>
</tr>
<tr>
<td>UF.1.2</td>
<td>Initial Acceptance Certificate – Tree Planting and Soil Habitat Zone</td>
</tr>
<tr>
<td>UF.1.3</td>
<td>Final Acceptance Certificate – Tree Planting and Soil Habitat Zone</td>
</tr>
</tbody>
</table>

### Planning

(AutoCAD file downloads city website)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF.2.3</td>
<td>Preliminary Master Tree Planting Plan Template</td>
</tr>
<tr>
<td>UF.2.4</td>
<td>Final Master Tree Planting Plan Template &amp; Detail Sheet</td>
</tr>
<tr>
<td>UF.2.5</td>
<td>Minimum Tree Planting Requirements Table – Tree Planting Analysis (available for download city website)</td>
</tr>
</tbody>
</table>

### Soils

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF.3.1</td>
<td>Soil Habitat Zone &amp; Volume Requirements For Trees In Boulevards</td>
</tr>
<tr>
<td>UF.3.2</td>
<td>Soil Habitat Zone &amp; Root Pathways - Type 1 (Big O Pipe)</td>
</tr>
<tr>
<td>UF.3.3</td>
<td>Soil Habitat Zone &amp; Root Pathways - Type 2 (Silva Cells)</td>
</tr>
<tr>
<td>UF.3.4</td>
<td>Soil Habitat Zone Installation &amp; Specifications</td>
</tr>
<tr>
<td>UF.3.5</td>
<td>Soil Habitat Zone &amp; Silva Cells</td>
</tr>
<tr>
<td>UF.3.6</td>
<td>Soil Volume Calculator (available for download city website)</td>
</tr>
</tbody>
</table>

### Tree Planting & Establishment

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF.4.1</td>
<td>Standard Deciduous &amp; Coniferous Tree Planting Detail</td>
</tr>
</tbody>
</table>
Operations, Infrastructure Services Department

Site Inspection Report - Tree Planting and Soil Habitat

Date: ______________________________________________________________

Project Name: _______________________________________________________

Registered Plan #: __________________________________________________

Site Address: _________________________________________________________

Owner’s Name: _______________________________________________________

Consulting Landscape Architect: _________________________________________

Initial Acceptance ☐ Final Acceptance ☐

Contractor: __________________________________________________________

Those in Attendance at Meeting: _________________________________________
________________________________________________________________________
________________________________________________________________________

The above is considered to be a true and accurate recording of the site conditions. All contract documents, development guidelines and City of Kitchener Standard Specifications govern this inspection report. All deficiencies are to be remedied by the Developer or their representatives within 30 days or as approved by the assigned City of Kitchener staff representative.

Agreed to by all parties on: ____________________________ INSPECTION #: ______________________

Operations Representative (Name) Consultant Landscape Architect/Representative (Name)

________________________________________ (Signature) ______________________________ (Signature)
1. **Soil Habitat Zone**
   1.1. Y □ N □ Soil report received.
   1.2. Y □ N □ Required quantity of LST, MST, SST soil habitats installed per approved plan.
   1.3. Y □ N □ Soil habitat zones excavated per approved plan.
   1.4. Y □ N □ Soil test results meet requirements per approved plan.
   1.5. Y □ N □ Soil depths and volumes installed, compacted per approved plan.
   1.6. Y □ N □ No soil settlement present.
   1.7. Notes: __________________________________________________________
        __________________________________________________________
        __________________________________________________________

2. **Root Pathways**
   2.1. Y □ N □ Root pathways installed per approved plan.
   2.2. Notes: __________________________________________________________
        __________________________________________________________
        __________________________________________________________

3. **Tree Planting**
   3.1. Y □ N □ Quantity of LST, MST & SST trees planted per approved plan.
   3.2. Y □ N □ All trees 50 mm balled and burlapped per approved plan.
   3.3. Y □ N □ Tree species per approved plan.
   3.4. Y □ N □ Tree health and structure at time of planting per approved plan.
   3.5. Y □ N □ Trees planted at correct height.
   3.6. Y □ N □ Trees straight and staked correctly.
   3.7. Y □ N □ Mulching per approved plan (width, depth, type, no volcano, excess soil).
   3.8. Notes: __________________________________________________________
        __________________________________________________________
        __________________________________________________________

4. **Tree Maintenance**
   4.1. Y □ N □ Tree stewardship and watering being carried out.
   4.2. Y □ N □ Required maintenance (staking, mulching, public education) being carried out.
   4.3. Y □ N □ Noted problems (e.g. resident not participating in tree stewardship, vandalism).
   4.4. Y □ N □ *At final acceptance:* Trees are healthy and vigorous and no longer require supplementary watering.
   4.5. Notes: __________________________________________________________
        __________________________________________________________
        __________________________________________________________

A record of all deficiencies per address will be provided by the Consultant Landscape Architect to the Operations representative.
Initial Acceptance Certificate – Tree Planting and Soil Habitat

Date: __________________________
Project Name: __________________________ Registered Plan #: __________________________
Site Address: __________________________ Owner’s Name: __________________________

Pursuant to the City of Kitchener Subdivision Agreement No. __________________________ and
dated __________________________, I __________________________ of the firm __________________________ hereby certify that the municipal improvement work
noted herein meets all the requirements for a Initial Acceptance Certificate as specified in the said
subdivision agreement mentioned above, and is constructed in accordance with the City of Kitchener
Subdivision Manual. I hereby recommend this municipal improvement for approval of the Initial
Acceptance Certificate.

______________________________
Consultant Landscape Architect (Name)    Date

______________________________
(Signature)

______________________________
Signing Officer (Consulting Firm) (Name)    Date

______________________________
(Signature)

Approved/Rejected on:

Date __________________________ City of Kitchener Operations Reviewer

Causes for Rejection: (see attached inspection report) __________________________

I hereby certify that the items listed as reasons for rejection on the attached report have been
corrected.

______________________________
Consultant Landscape Architect

City of Kitchener Operations Reviewer

Date Maintenance Period to Start: __________________________

Anticipated Date Maintenance Period to End: __________________________

cc: Consultant Landscape Architect
Engineering
Date: __________________________
Project Name: __________________ Registered Plan #: ________________________
Site Address: ____________________ Owner’s Name: ____________________________

Pursuant to the City of Kitchener Subdivision Agreement No. _________________ and
dated __________________________, I ________________________________ of the firm
________________________________________ hereby certify that the municipal improvement work
noted herein meets all the requirements for a Final Acceptance Certificate as specified in the said
subdivision agreement mentioned above, and is constructed in accordance with the City of Kitchener
Subdivision Manual. I hereby recommend this municipal improvement for approval of the Final
Acceptance Certificate.

________________________________________
Consultant Landscape Architect (Name) Date
________________________________________
(Signature)

________________________________________
Signing Officer (Consulting Firm) (Name) Date
________________________________________
(Signature)

Seal

Approved/Rejected on:
________________________________________
Date City of Kitchener Operations Reviewer

Causes for Rejection: (see attached inspection report) ________________________________

I hereby certify that the items listed as reasons for rejection on the attached report have been
corrected.

________________________________________
Consultant Landscape Architect

City of Kitchener Operations Reviewer

Date Maintenance Period to Start: __________________________

Anticipated Date Maintenance Period to End: __________________________

Digital As-Built Plans received  Y ☐    N ☐

cc: Consultant Landscape Architect
    Engineering
Minimum Soil Volume (SV) Requirements by Tree Size

<table>
<thead>
<tr>
<th></th>
<th>Large Stature Tree (LST) ≥500cm</th>
<th>Medium Stature Tree (MST) ≥400cm</th>
<th>Small Stature Tree (SST) 20 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum SV for one tree</td>
<td>45 m³</td>
<td>28 m³</td>
<td>17 m³</td>
</tr>
<tr>
<td>Minimum SV per tree where soils shared</td>
<td>30 m³</td>
<td>18.5 m³</td>
<td>11 m³</td>
</tr>
<tr>
<td>Allowable shared soil volume</td>
<td>15 m³</td>
<td>9.5 m³</td>
<td>6 m³</td>
</tr>
</tbody>
</table>

Minimum Soil Depths for Residential Street Tree Plantings

<table>
<thead>
<tr>
<th></th>
<th>Boulevard with utilities</th>
<th>All other areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restored Soil Depth</td>
<td>0.45 m</td>
<td>0.90 m</td>
</tr>
<tr>
<td>Soil Depth Will Not Exceed 1 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
This detail shows a typical design where the tree is planted in the boulevard. Where trees are planted elsewhere (e.g. flank, park) the soil area layout will vary.

See drawing UF.3.2 for Tree Root Pathway detail

Soil volume under sidewalk not included in calculation unless Silva Cells or approved equivalent is used.
Note: A minimum of three root pathways will be accepted for small stature trees under special circumstances.

Plan
Scale 1:100

Section
Scale 1:100

Section
Scale 1:20

Notes: If Granular 'A' exceeds 150mm depth - excess will be removed in the root pathway area and replaced with parent material.

A minimum of five root pathways required for large and medium stature trees, while three root pathways will be accepted for small stature trees under special circumstances.
Type 2 Root Pathways will be used where the soil volumes in the boulevard and front lawn are not sufficient to meet the minimum soil volume requirements for large or medium stature trees. The minimum number of required Silva Cells for root pathways below the sidewalk is six. Where lot setbacks and soil volumes are limited, Silva Cells will need to be maximized to achieve the required soil volumes. Refer to UF.3.1 for required soil volumes.

See drawing UF.3.1 for Soil Habitat and Volume Requirements for tree size.

Mature Tree Root Zone

Install Silva Cell system or approved alternate to meet soil volume requirements for trees. See Silva Cell Detail (UF.3.5) for detailed information.
Subgrade Preparation

1. Scarify (subgrade) parent material with a toothed blade to a depth of 100mm where there are no underground utilities.
2. Where drain lines are identified slope the subgrade to the drain.
3. Drain lines if required.
4. Slopes adjacent to infrastructure are to be 1:1.

Soil Installation

1. 300 mm soil lifts
2. Lifts to be compacted to 80% standard proctor density.
3. Compost added to top lift (A Horizon) if specified.
SAMPLE SILVA CELL LAYOUT WITH PASSIVE IRRIGATION
Scale 1:200

Note: The location, size and design of the passive irrigation system, and soil testing/inpection port shall be determined by the Project Designer and Irrigation Consultant, and approved by Operations. All irrigation systems will be approved by Operations staff and will be consistent with current City of Kitchener Operations standards.

SECTION
Scale: N.T.S.

This detail has been provided by Deep Root, with minor modifications. All Silva Cell designs will be reviewed and approved by Deep Root and City of Kitchener Operations staff.
TREE MUST BE STRAIGHT IN HOLE WITHOUT ANY SUPPORT.

TREE TRUNK AND BRANCHES WILL NOT BE DAMAGED DURING TRANSPORT OR PLANTING AND WILL BE FREE OF WOUNDS AT TIME OF INSPECTION.

PRUNE TO REMOVE BROKEN AND/OR INTERFERING BRANCHES ONLY. DO NOT PRUNE LEADER. REMOVE ALL NURSERY TABS/TIES, ETC.

TIES SHALL BE GREEN ARBORITE, OR APPROVED EQUIVALENT. TIES SHALL FORM A LOOSE LOOP AROUND THE STAKE AND LOOP IN A FIGURE 8 AROUND THE TRUNK OF THE TREE. SECURE ARBORITE TO THE STAKE USING 1" GALVANIZED ROOFING NAILS (SEE FOLLOWING SHEET FOR DETAIL).

2x2 WOODEN STAKES WITH FLEXIBLE TIES, PERMITTING TREE TO MOVE.

EXPANDABLE PROTECTIVE TREE GUARD 200MM HIGH

STRUCTURAL ROOTS WILL BE JUST BELOW SURFACE (.5-7.5CM). ROOT FLARE MAY NOT BE VISIBLE ON YOUNG TREES. SEE STRUCTURAL ROOT DEPTH DETAIL.

50MM ORGANIC MULCH OR SHREDDED BARK. DO NOT MOUND AT BASE OF TRUNK. MULCH TAPERED TO GROUND LEVEL AT TRUNK.

100MM X 150MM WIDE SOIL RING

450MM (18") TO 900MM (36") SOIL DEPTH TREE PLANTING PER APPROVED TREE PLANTING PLAN.

BREAKUP COMPACTED SOIL FROM HOLE AND BACKFILL IN 150MM LIFTS. TAMPER TO PREVENT SETTLEMENT.

REMOVE BURLAP AND TWINE FROM TOP 1/3 OF Root ball. Cut top horizontal wire of wire basket in four places and fold down into planting soil unless basket is a low profile.

WIDTH OF TOP OF PLANTING HOLE WILL BE AT LEAST 1.5 TIMES ROOTBALL DIAMETER.

PLACE ROOTBALL ON UNDISTURBED SOIL IF HOLE IS DUG TO DEEP, COMPACT SOIL UNDER TO maintain required depth of structural roots. COMPACT SOIL.

A

DECIDUOUS TREE PLANTING DETAIL

SCALE: N.T.S.

100mm

100mm

FINISHED GRADE

75mm MAX

UPPERMOST STRUCTURAL ROOT

B

STRUCTURAL ROOT DEPTH DETAIL

SCALE: N.T.S.

STANDARD TREE PLANTING FOR DECIDUOUS & CONIFEROUS TREES
TREE PLANTING DETAILS

1. DAMAGED TREES, TREES WITH POOR FORM OR ROOT STRUCTURE AND TREES NOT MEETING THE CANADIAN STANDARDS FOR NURSERY STOCK WILL BE REFUSED. THE CONTRACTOR IS ALSO RESPONSIBLE TO ENSURE THAT ALL PLANT MATERIAL, INCLUDING CULTIVARS AND TREE SIZES ARE PROVIDED AND INSTALLED AS STATED ON THIS PLAN. NO ALTERNATIVES, INCLUDING SPECIES, TREE SIZE WILL BE ACCEPTED UNLESS APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.

2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE LOCATION OF ALL UTILITIES AND OTHER OBSTRUCTIONS ABOVE AND BELOW GROUND.

3. DURING THE TRANSPORTING, STORAGE AND PLANTING OF THE TREES THE CONTRACTOR WILL USE APPROPRIATE WORK PRACTICES TO NOT DAMAGE THE TREE, OR ROOT BALL. THE CONTRACTOR WILL ALSO ENSURE THAT THE TREE DOES NOT SUFFER DROUGHT STRESS DURING THIS OPERATION.

4. ALL TWINE AND BURLAP WILL BE BIO-DEGRADABLE. IF THE TREE HAS BEEN REBURLAPED THE OUTER BURLAP OUTSIDE OF THE WIRE BASKET WILL BE REMOVED.

5. TREES WILL BE PLANTED IN ACCORDANCE TO THE PLANTING DETAIL. THE DEPTH OF THE PLANTING HOLE WILL BE DETERMINED BY THE DEPTH OF THE ROOT BALL, ENSURING THAT THE TREES STRUCTURAL ROOTS ARE 2.5 TO 7.5 CM WITHIN THE FINISHED GRADE. SEE DETAIL 4.

6. A 100 MM HIGH AND 150 MM WIDE SOIL RING WILL BE CREATED AT THE EDGE OF THE TREE HOLE. EXCESS SOIL WILL NOT BE ADDED TO THE ROOTBALL, ALL EXCESS SOIL WILL BE REMOVED FROM THE SITE.

7. 50 MM OF AN ORGANIC MULCH WILL BE APPLIED TO THE SURFACE OF THE SOIL RING AND ROOTBALL. THE MOUNDING OF SOIL AND MULCH WITHIN THE ROOTBALL AND AGAINST THE TREE TRUNK IS PROHIBITED.

8. THE TREE WILL BE WATERED IMMEDIATELY AFTER PLANTING AND THE PLACEMENT OF THE MULCH, WITH THE TREE SAUCER BEING COMPLETELY FILLED WITH WATER.

9. AN EXPANDABLE TREE COVER 200MM HIGH WILL BE PLACED AROUND THE BASE OF THE TREE.

10. TWO WOODEN STAKES 50MM X 50 MM X 2 M WILL BE PLACED OUTSIDE OF THE ROOT BALL AND FLEXIBLE TIES WILL BE USED.

11. TREES NOT PLANTED TO THIS SPECIFICATION, AND NOT AT THE APPROVED DEPTH, OR TREES THAT SETTLE AFTER PLANTING WILL BE REMOVED AND REPLANTED AT THE CONTRACTORS EXPENSE. IF THE TREE BALL CANNOT BE REMOVED FROM THE HOLE INTACT TO THE SATISFACTION OF GSD, THE TREE WILL BE REPLACED AT THE CONTRACTORS FULL EXPENSE.

12. TREE TO BE WATERED AND MULCHED IMMEDIATELY FOLLOWING PLANTING.

13. TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS EXISTING GRADE, FOLLOWING SETTLEMENT.
APPENDIX D: CITY OF KITCHENER – STANDARD SPECIFICATIONS

See the following link to the City of Kitchener website: (Link)
City of Kitchener Standard Specifications (CKSS)

The Corporation of The City of Kitchener Standard Specifications are supplemental specifications and amend and take precedence over the Ontario Provincial Standard Specifications, the Ministry of Transportation of Ontario, the Regional Municipality of Waterloo Standard Specifications (RWSS) and Special Provisions (RWSSP), the Region of Waterloo and area municipalities Design Guidelines and Supplemental Specifications for Municipal Services (DGSSMS), and the City of Kitchener Development Manual (CKDM).

Where these specifications are used for work done by a utility proponent or other Contractors not working on a City of Kitchener contract, clauses in these specifications related to “Measurement of Payment” and “Basis for Payment” do not apply.

Definitions

Section 100 General
CKSS 150 Allowance for Water Treatment
CKSS 151 Construction near Trees
CKSS 152 Provide Performance, Labour, and Material Payment Bonds
CKSS 153 Site Specific Health and Safety Plan
CKSS 180 Management of Excess Materials

Section 200 General Grading
CKSS 206 Grading
CKSS 209 Embankments

Section 300 Pavement
CKSS 310 Hot Mix Asphalt
CKSS 314 Untreated Granular Sub Base, Base, Surface, Shoulder, and Stockpiling
CKSS 351 Concrete Sidewalks, Driveway Ramps and Driveways
CKSS 352 Concrete Steps
CKSS 353 Concrete Curb and Gutter
CKSS 355 Installation of Interlocking Concrete Pavers

Section 400 Drainage, Watermains, and Utility
CKSS 401 Trenching, Backfilling, and Compacting
CKSS 405 Pipe Subdrains
CKSS 407 Maintenance Hole, Catchbasin, Ditch Inlet and Valve Chamber Installation
CKSS 408 Adjust Frames and Covers
CKSS 409 CCTV Survey and Mandrel Testing of Sewers
CKSS 410 Pipe Sewer Installation
CKSS 416 Pipeline Installation by Jack and Bore
CKSS 441 Watermain Installation
CKSS 442 Corrosion Protection of Watermains
CKSS 493 Temporary Potable Water Supply System
Section 500  Miscellaneous
CKSS 501  Compacting
CKSS 510  Removal
CKSS 517  Dewatering of Excavation
CKSS 518  Groundwater Treatment
CKSS 560  Precondition Survey of Structures
CKSS 561  Test Pits for Soil Characterization
CKSS 562  Provide Garbage, Recycle, Green Bin and Yard Waste Pick Up and Transportation
CKSS 563  Railway Flagman and Inspection
CKSS 564  Unshrinkable Backfill
CKSS 565  Site Office

Section 600  Electrical
CKSS 603  Installation of Ducts

Section 700  Traffic Safety
CKSS 706  Traffic Control, Vehicular and Pedestrian Signage
CKSS 710  Pavement Markings
CKSS 760  Traffic Sign Installation
CKSS 761  Handrail Installation

Section 800  Environmental and Landscape
CKSS 801  Provide Tree Protection
CKSS 802  Topsoil
CKSS 803  Sodding
CKSS 805  Temporary Sediment and Erosion Control Measures
CKSS 850  Terraseeding
CKSS 851  Construct Landscaping

Section 900  Structural
CKSS 960  Retaining Wall

Section 1000  Aggregates
CKSS 1010  Material Specifications – Base, Subbase, Select Subgrade, and Backfill Material
CKSS 1303  Material Specification – Admixtures for Concrete
Definitions

Boulevard means that part of the road from the edge of the roadway to the nearest property line.

Driveway means that part of the City or Regional Road that provides vehicular access to and from the roadway and an adjacent property.

kg means kilograms

m means metres

mm means millimetres

PGAC means Performance Graded Asphalt Cement.

Proponent means a person who undertakes Work on a City or Regional road, not including any person working under contract with the City or Region.

Provide means supply labour, materials and equipment required for complete installation of the work.

Region means The Regional Municipality of Waterloo.

Regional Road means a road under the jurisdiction of the Region.

road includes, but is not limited to, a common and public highway, street, avenue, un-assumed public right-of-way, parkway, driveway, square, place, bridge, viaduct or trestle, any part or which is intended for or used by the general public for the passage of vehicles and includes the area between the property lines thereof.

roadway means that part of a City or Regional road either that is improved, designed or ordinarily used for vehicular traffic including cycling lanes, shoulders and curb and gutter.

sidewalk means that part of a City road with a surface improved with asphalt, concrete or gravel for the use of pedestrians.

vehicle includes, but is not limited to, a motor vehicle, trailer, traction engine, farm tractor, road-building machine, bicycle and any vehicle drawn, propelled or driven by any kind of power including muscular power.
CKSS 150
ALLOWANCE FOR WATER TREATMENT

150.01 General

The allowance for water treatment is intended to cover the cost of contaminated groundwater treatment and disposal as outlined in the Form of Tender should they be required over the course of this project.

150.02 Basis for Payment

The allowance for water treatment is intended to cover the cost of contaminated groundwater treatment and disposal as per the items in the Form of Tender.

All payments under this item must be approved in advance, and in writing, by the Contract Administrator and the Owner. Under no circumstances shall the Contractor proceed with expenditure of this item without prior knowledge of the Owner and approval from same. In the event that all or a portion of the allowance is not expended on this project, the Contractor shall not be entitled to payment of this lump sum Contract item.
CKSS 151
CONSTRUCTION NEAR TREES

REFERENCES

City of Kitchener Municipal Tree By-Law

151.01 Definitions

**Border Trees** means trees that have only part of their trunk, at ground level, growing on municipal lands. These trees have joint ownership.

**City Tree** means trees that are owned fully by the municipality and are those trees where the full trunk, at ground level, is located on municipal lands.

**Critical Root Zone (CRZ)** means the area that extends from the trunk of the tree to at least the outer limits of the crown of the tree. Unless specifically stated the TPZ does not extend into the roadway, but does extend into the front lawn where trees are located in the boulevard.

**DBH** means the Diameter at Breast Height, taken 1.4 metres above ground level.

**Guide for Plant Appraisal** means the Council of Tree & Landscape Appraisers, most recent edition.

**Root Habitat Conservation Zone (RHCZ)** means the area that extends 1 to 2 times beyond the tree’s dripline, and reflects the root habitat required for healthy, mature trees. In residential areas this zone includes the boulevard, front lawns, driveways and side lawn. Tree root growth is highly variable.

**Root Plate** means the area at the base of a tree where the roots and stem merge, see the Tree Management Plan Detail for more information.

**Scaffolds** means the primary structural branches of the crown

**Tree Protection Zone (TPZ)** means the area of ground surface being protected from damage by mechanical excavation, including sidewalk.

**Urban Forestry** means a representative from Operations Division, Design and Development or their designate.

151.02 General

Where it has been determined that the Contractor has 1) failed to comply with the required tree protection measures and / or 2) causes unauthorized damage to a City or Border tree the Contractor will be responsible for the following as determined by Urban Forestry and Contract Administration Services.

1. For each incident for which the Contractor is responsible, the Contractor will:

   1.1. Be charged an assessment fee of $1,500 for each tree not identified as being a Significant Tree.

   1.2. Be charged an assessment fee of $2,500 for each tree identified as being a Significant Tree.

   1.3. On projects of high value, Urban Forestry in consultation with the Contract Administrator may decide to set higher values for specific projects. Higher values will be identified in the tender documents.
1.4. Be responsible for any additional costs borne by Urban Forestry in excess of those stated in Part 1.1 and 1.2. This may include, but not be limited to: tree inspection / consulting / assessment costs and any required remedial arboricultural treatments (e.g. tree pruning, wound treatment, watering).

1.5. Provide any assistance in terms of on-site equipment, labour requested by Operations at no cost to the Owner.

1.6. Adhere to any written direction by Urban Forestry and the Contract Administrator to prevent additional damage.

2. Where Urban Forestry identifies a long-term concern regarding the trees’ structural integrity and health because of unauthorized construction damage the Contractor will also be responsible for the following:

2.1. For a period of two years, the Contractor will be responsible for any additional costs borne by Urban Forestry in excess of those stated in all of Part 1. This includes, but is not limited to; tree inspection / consulting / assessment costs and any required remedial arboricultural treatments (e.g. tree pruning, fertilization, watering).

2.2. Where the tree has been damaged to the degree that it is unsafe or deemed unworthy of preservation, either: 1) at the time of the incident or 2) during the two year period after the contract, the Contractor will be responsible for the value of the tree as determined by the Guide for Plant Appraisal, along with the removal and replacement costs of the tree as determined by Urban Forestry and the Contract Administrator.

3. When a Sub-Contractor is working on the site all costs all fees associated with damage will be assigned to the General Contractor.

4. All assessed and associated costs identified in the foregoing sections will be deducted from the total amount payable to the General Contractor through the contract between the Owner and the General Contractor.

5. All tree issues on public lands, unless otherwise noted, are the responsibility of Urban Forestry. Urban Forestry is solely responsible for the assessment of all damage to trees, tree appraisal, and decisions regarding remedial arboricultural treatments, decisions regarding any tree removals and all recommendations regarding new tree plantings.

151.03 Kitchener’s Municipal Tree Bylaw

Section 690.4.1 states that; “Any Contractor, commission or corporation or any other organization, person or individual, having a contract for paving streets, constructing sidewalks or excavating or doing any work on City property, shall when executing such work or contract take all necessary steps to avoid injuring any tree and in this connection, shall obey any lawful direction given by a responsible officer of the Department.”

151.04 Tree Protection During Construction

Where protective measures are not taken around trees, construction activities can have a significant and long-term effect on trees resulting in their decline and death.

- Under Chapter 690.4.1 these specifications state the standard practices that will be carried out while working around City / Border Trees.
In reading this document the Contractor shall also refer to the tender documents, the tree management and planting plan, and details in the drawing set. Additional tree protective measures for specific projects are stated in the Tree Management Plan. Where a difference in the level of protection exists between this Specification and the Tree Management Plan the level of protection stated in the Tree Management Plan will be followed.

During the length of this contract the Urban Forestry Representative may request additional tree protective measures.

Where the Contractor fails to carry out the required tree protective measures and/or cause unauthorized damage the Contractor will be responsible for any costs and associated responsibilities assigned to the Contractor.

With respect to this contract Urban Forestry are solely responsible for the assessment of all damage to trees, tree appraisals, and decisions regarding remedial arboricultural treatments, tree removals and recommendations regarding new tree plantings.

151.05 Tree Management Plan

151.05.01 Critical Root Zone (CRZ)

Critical Root Zones extend from the trunk of the tree to at least the outer limits of the tree's crown. Urban Forestry may identify larger protection zones for Significant Trees. Unless stated in the Tree Management Plan, the Critical Root Zones do not extend into the roadway.

151.05.02 Significant Trees

 Significant Trees are high value old growth trees that have special tree maintenance and protection measures applied. Urban Forestry may also identify other trees as being significant due to their social, heritage or environmental values. Significant Trees are identified with an “S” on the drawings. All standard protective measures and any additional measures stated in the Tree Management Plan apply. Significant trees have larger CRZ, and higher damage assessments.

151.05.03 Protective Fencing

Prior to any construction activities the Contractor will install all tree protective fencing identified on the Tree Management Plan. Unless the Contractor is authorized to work within the Critical Root Zone by the Community Services Representative the protective fencing will remain in place until the end of the contract.

151.05.03.01 Trees located within boulevard

For trees located within the boulevard fencing will run the full length of the Critical Root Zones and be installed approximately 300 mm behind the curb.

151.05.03.02 Trees located within the front lawn

Fencing for trees located in the front lawn will be placed approximately 300 mm in from the edge of the sidewalk closet to the tree and run the length of the Critical Root Zones.
151.05.04 Tree Signage

Urban Forestry will install Tree Protection Signs along the protective fencing. Signs will not be removed without the approval of Urban Forestry and will be returned to the Kitchener Operations Facility at the end of the contract.

151.06 Restrictions within Tree Protection Zones

Except where stated in this specification and approved within the Tree Management Plan the following activities and practices are prohibited within the Critical Root Zone;

1.1. No mechanical damage to the trees root plate, tree trunk or scaffolds will occur at any time. Excessive and careless damage to tree branches is also prohibited.

1.2. No open excavation will occur within the Critical Root Zone.

Exception: Where approved in the Tree Management Plan the Contractor will carry out Boring \ Hydrovacing \ Excavating as directed within the Critical Root Zone to establish services to the property line. For all lateral sanitary sewers the Contractor will identify and mark the location of the lateral sewer using an electronic pipe and cable locator. The location of the pipe will be marked on the surface from the edge of the road to 1 metre beyond property line. The Contractor, Urban Forestry Representative and Contract Administrator will review all works within the Critical Root Zone prior to any work starting. Urban Forestry will determine the appropriate work method including open excavation, hydrovacing, or the use of a small excavator. Urban Forestry may request that exploratory root work with the use of a hydrovac is carried out first. Once the work method is approved all roots greater than 2.5 cm will be cut cleanly with a pruning saw, no roots larger than 10 cm will be cut without the approval of Urban Forestry. Backfilling will occur as soon as possible and soil will be placed along the edge of the root cut zone to minimize root desiccation. Where backfilling cannot occur immediately after the work, the Contractor will cover the hole with plywood to protect the roots of all Significant Trees.

1.3. No construction materials, excavated soil, waste material, construction trailers, storage areas, chemical or washout water will be deposited or stored within the critical root zone habitat or root habitat conservation zone.

Exception: Where approved by Urban Forestry the Contractor may temporarily store excavated soils within the Critical Root Zone or RHCZ. All excavated material will be placed on plywood sheets so that all excavated material is confined to the plywood area. Excavated material will not be stored in the Critical Root Zone for more than 24 hours.

1.4. No equipment will be parked or move through the tree protection zone.

Exception: Where approved the Contractor may operate equipment within the Critical Root Zone. Wherever possible hydraulic shovels will operate from the roadway. If equipment must be physically located within the Critical Root Zone the Contractor will follow all directions specified by Urban Forestry and the Contract Administrator.

1.5. No construction vehicle within the roadway will be left idling under a tree unless it is being used.

151.07 Tree Roots within the Roadway

Critical Root Zones do not extend into the existing roadway unless stated in the Tree Management Plan. Where roots are encountered within the roadway the following procedures will be carried out.
1.1. Where a Significant Tree has been identified in the Tree Management Plan as requiring a root inspection no road excavation will occur until the root inspection has been completed. A root inspection by the Urban Forestry Representative will be carried out after the asphalt and curbs have been removed. The Contractor will provide any assistance requested by Urban Forestry. Additional protective measures may be applied to these trees after the inspection.

1.2. Where excavation within the roadway occurs within 2 m of a tree not identified as Significant the Contractor will cut cleanly all roots greater than 2.5 cm at the limits of excavation.

151.08 **Tree Roots and Curb Removal / Installation**

Curb removal will be done with care, if necessary curb removal will be done by hand to minimize damage. Within the Critical Root Zone no excavation beyond the original curb will occur until reviewed by the Community Services Representative and Project Contract Administrator. To minimize root damage the Contractor may be required to hand form, limit excavation from back of curb or carry out other steps.

151.09 **Sidewalk Reconstruction**

Where identified in the Tree Management Plan existing sidewalks will be left intact within the Critical Root Zone.

Sidewalk removal within the Critical Root Zone will be done with care. If required the Contractor will manually remove the sidewalk to minimize tree damage. Equipment used to remove sidewalks will work as much as possible outside of the Critical Root Zones. Equipment working within the Critical Root Zone and travel through the zone will be limited and done with care.

The Project Contract Administrator and the Urban Forestry Representative will review all sidewalk construction within Critical Root Zones, prior to sidewalk reconstruction, to identify any conflicts with existing roots and the new sidewalk. Where necessary changes in the sidewalk grade, design or construction may be required.

The contractor will use appropriate work practices so as not to tear, or damage any roots under or adjacent to a sidewalk, unless approved for removal. All roots approved for removal that are larger than 5 cm will be cut cleanly with a pruning saw. No root will be left exposed and all roots to be protected will be covered immediately to minimize desiccation.

151.10 **Landscape Restoration**

No re-grading or restoration will occur within the limits of the Critical Root Zone, unless approved by Urban Forestry. Only disturbed areas previously approved will be restored. Where required restoration will be limited to top dressing and seeding, work within this area may require hand work.

151.11 **Tree Removals, Pruning, Stumping**

Unless identified on the Tree Management Plan the Contractor will not remove any City or Border Tree, or carry out any arboricultural treatments unless approved by Urban Forestry.

Where the Contractor is permitted to remove trees and grind stumps all work will be carried out by qualified and competent tree workers with demonstrated work experience within urban residential areas. The work will be done using approved arboricultural practices (e.g. tree removals, rigging, aerial lifts, etc.) and will be consistent with all provincial regulations and industry standards.
151.12 Private Trees

Urban Forestry has no jurisdiction over trees growing on private property, however the City has the same level of interest in protecting private trees as it does City trees. The Contractor will follow all direction by the Contract Administrator and Urban Forestry to work around and protect private trees.
CKSS 152
PERFORMANCE, LABOUR, AND MATERIAL PAYMENT BONDS

152.01 General
The value of the performance bond shall be equal to one hundred percent (100%) of the contract price.

The value of the labour and materials payment bond shall be equal to fifty percent (50%) of the contract price.

152.02 Basis for Payment
The work of this item shall include all costs associated with providing these bonds. Payment for this item will be pro-rated to match the percentage of the work completed at the time of each progress payment certificate.
CKSS 153
SITE SPECIFIC HEALTH AND SAFETY PLAN

153.01 General

To ensure such that workers and public are protected from any adverse effects due to excavation and/or handling of impacted materials. A Site Specific Health and Safety Plan (HASP) relating to construction activities shall be prepared by the Contractor prior to commencing field work. The HASP should be designed to identify potential hazards, which will likely be encountered by personnel at the Site during assessment or construction activities. All activities at the site must be conducted in compliance with applicable federal, provincial, and municipal regulations.

Regular Health and Safety meetings will be held by the Contractor to review compliance.

As a minimum, the Contractor shall consider in their Health & Safety Plan:

153.02 Spill Procedures

The following are spill procedures which are to be posted at the site trailer:

- Determine nature of spill and method of safe response;
- Terminate the spill and contain spilled material;
- Contact the MOE Spill Action Centre at 1-800-268-6060;
- Undertake clean-up and appropriate verification sampling; and,
- Provide proper waste manifesting and disposal to a facility licensed to accept the material.

153.03 Fire

Any fire would be reported to the local fire department and MOE Spills Action Centre for appropriate response.

153.04 Workplace Accident

Respond with first aid, and then notify the local Hospital of situation and transport injured person or call 911 Emergency as the severity of the case requires; and, Contractor to advise the Ministry of Labour as per the requirements, of the Occupational Health and Safety Act.

153.05 Levels of Protection

Required personal protective equipment; chemical-resistant or leather boots, with CSA approved safety toe and steel shank; shirt and pants under disposable or site dedicated coveralls; hard hat; optional personal protective equipment; chemical resistant outer gloves; safety glasses with side shields, or splash goggles, or face shield; and, hearing protection.

Contractors Site Safety Officer shall:

- Choose protective clothing and equipment (PPE);
- Conduct regular safety meetings with workers;
- Provide appropriate disciplinary action when unsafe acts or practices occur;
- Provide emergency treatment and decontamination procedures for the specific type of exposure that may occur at the site;
- Periodically inspect protective equipment;
- Ensure that protective clothing and equipment are properly stored and maintained;
• Ensure entry and exit at the Access Control Points;
• Confirm each team member’s ability to perform;
• Monitor the works parties for signs of stress;
• Monitor on-site hazards and conditions;
• Know emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control centre, fire department, and police department;
• Coordinate emergency medical care;
• Set-up decontamination lines and decontamination solutions appropriate for the type of chemical contamination on site;
• Control the decontamination of all equipment and personnel; and,
• Ensure that all required safety equipment is available and in proper working order.

153.06 Air Monitoring Program

When contaminated fill is encountered during on-site excavation and construction activities, monitoring of air quality will be completed by the Contractor’s Site Safety Officer for worker protection and adherence to the Contract, and in order to ensure the protection of human health and the environment.

The lab results of the air quality will be reported to the Owner on a daily basis, and will be used by the Owner for evaluating the effectiveness of the control measures employed by the Contractor, during the work.

Hand-held, real time measurement devices can be used to collect on-going information related to the presence of air borne dust and contaminants during soil excavation. A meteorological station can be set up in order to evaluate wind direction, speed and ambient temperatures.

Ambient air quality shall be monitored in order to confirm that dust and airborne contaminant control measures are effective, and to ensure that any potential off-site air quality impacts caused by the operations are minimized. Air quality monitoring shall be conducted during excavation at upwind/downwind locations as per O. Reg. 419/05. These measures will be used to verify that fence line concentrations of relevant parameters are within acceptable limits, as defined by MOE and/or assist in identifying the need for specific control measures.

Portable testing equipment includes but may not be limited to:

• Photo-Ionization Equipment – monitor for the presence of VOCs; and
• Multi-Gas Meter(s) – monitor the excavation and breathing zone for levels of oxygen, methane, carbon monoxide, hydrogen sulphide, and combustible vapours.

153.07 Basis for Payment

Payment for this item shall include time required to make any revisions based on comments by the Owner, Ministry of Labour, or other stakeholders, as well as a training seminar conducted by the Site Safety Officer to present the HASP to all project personnel. This item also includes payment for the Site Safety Officer along with necessary monitoring and reporting, equipment / supplies, to carry out their duties throughout the project. Reporting to consist of weekly summaries in a format suitable to the Owner, and to include at a minimum a summary of air quality data collected, odour complaints received, visitation by regulatory authorities, incidents, direction to the Contractor (if any).

Payment will be made on a pro-rated basis determined on each payment certificate based on the percentage of project completed.
CKSS 180
MANAGEMENT OF EXCESS MATERIALS

REFERENCES

OPSS 180 – Management of Excess Materials
OPSS 206 – Grading

180.01 General

Excess materials shall be managed in accordance with OPSS 180, as supplemented and amended by the following additional requirements. The Contractor shall make every effort to reuse excess material as suitable backfill.

All excavations shall be done in accordance with the latest edition of the Occupational Health and Safety Act, and provincial regulations. The Contractor shall be responsible for the condition of all excavations. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

Excess material that includes asbestos waste shall be managed in accordance with all applicable legislation, including but not limited to, Ontario Regulation 278/05 (as amended).

180.02 Characterization of Excess Material

The Contract Administrator may conduct analytical sampling (at Owner’s expense) during and upon the completion of soil excavation activities to review the excess soil management and disposal alternatives and to assess the environmental quality of the soil at the final limits of the excavations (walls and floor). Analytical sampling should be completed according to the MOE’s “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario – 1996”, with sample collection frequency according to Table 4.1A of the document. Analytical samples will be compared to the MOE 2011 Table 2 Standards (Community Use).

Where the Contract Administrator has collected soil samples for laboratory analysis, the Contractor is advised that receipt of analytical results may take approximately 3 to 5 business days. As a result, the Contractor shall guide its operations accordingly, and without claim for project delay.

Should the presence of elevated concentrations of contaminants above the MOE Table 2 Standards be identified, collecting additional samples for Toxicity Characteristic Leaching Procedure (TCLP) will be required in order to assess the appropriate disposal approach, as discussed below.

Currently in Ontario, the requirement for classifying a waste soil pile as hazardous or non-hazardous for disposal purposes, is TCLP testing, as per Ontario Regulation 558/00. The Owner will complete all required TCLP sampling and testing performed by a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) in accordance with Ontario Regulation 558, and provide the results to the Owner and the Contractor.

The Contractor shall provide 48 hours’ notice to the Contract Administrator to arrange for suitable environmental inspection of the excavation, and shall cooperate fully and coordinate his forces accordingly to allow for the timely sampling of the material. No areas may be backfilled until the Contractor is directed to do so by the Contract Administrator. At the direction of the Contract Administrator, the Contractor shall backfill the area with approved material that includes the reuse of non-impacted excavated soil and clean imported fill. No compensation will be provided to the Contractor for delays while the Owner’s representative is sampling the soil from the excavation and assessing the analytical results. If the analytical results indicate that the contaminants were not fully removed to allow
the work to proceed, the Contractor may be required to excavate further (vertically and laterally) only upon approval of the Owner, to remove the impacted soils. The determination to remove additional material (fill or native materials) from the work area will be made by the Contract Administrator and direction provided to the Contractor.

180.03 Document Submission Requirements

Any excess excavation shall be disposed of at a site provided by the Contractor and approved by the Contract Administrator upon receipt of OPSF 180-2. At the completion of the project, the disposal site shall be levelled to the satisfaction of the disposal site owner and the Contract Administrator and a release letter (OPSF 180-3) from the Owner(s) of such disposal site(s) must be provided by the Contractor to the Contract Administrator prior to Certification of Substantial Performance.

180.04 Conditions on Management by Disposal as Non-Hazardous Waste

All excess materials (including, but not limited to: bituminous pavement; concrete; fabricated metal and plastic; wood; masonry; pipes; surplus or unsuitable excavated earth and rock; and other wastes that are not otherwise designated for salvage or reuse by the Owner shall be removed from the Working Area and properly transported and re-used or disposed off-site in accordance with all applicable legislation at the Contractor's sole expense. In particular, impacted soil material, exceeding the MOE Table 2 Standards, excavated from the work area shall be transported to a licensed landfill facility for final disposal.

OPSS 180.07.05 b) is deleted in its entirety.

The Contractor shall remove contaminated soils beneath the municipal road right-of-way to the limits and grades directed and approved by the Contract Administrator. Abandoned or redundant foundations or piping that is removed by the contractor shall not be mixed with contaminated materials for disposal offsite at a landfill unless specifically authorized by the Contract Administrator. During excavation activities, asbestos transite piping may be encountered. The contractor will be required to source separate this piping and dispose of it offsite at an MOE approved landfill in accordance with all applicable regulations.

Contaminated soils that may be wet may require blending with a stabilizer for solidification before off-site disposal in order to pass slump tests. Suggested examples of stabilizers include cedar chips, sawdust, or a commercially available product.

180.05 Conditions on Management by Re-Use

Following removal of the asphalt pavement, the Owner's Representative will retest the granular road base to determine whether the material is environmentally and geotechnically suitable for reuse as backfill (meet MOE Table 2 Standards). The Contractor shall cooperate with the Owner and construct stockpiles in locations as to not interfere with the conduct of the work. The Owner will furnish results and instructions to the Contractor regarding reuse of the material within 5 working days.

180.06 Hauling, Receiving, and Disposal Site

The Contractor shall comply with the Environmental Protection Act, including Ontario Regulation 347/90 (as amended), and shall use appropriately licensed haulers and receivers for all waste transportation and disposal, as required.

All removed asphalt and concrete from the site shall be taken to the Owner’s Battler Yard (1585 Battler Road).

For all other excess material the Owner has not designated or identified specific haulers, receivers, and/or disposal sites for excess materials generated under this Contract. The Contractor is solely
responsible for identifying and selecting appropriate haulers, receivers, and/or disposal sites required to complete the work of this Contract.

The Contractor shall name all haulers, receivers, and/or disposal sites for all excess materials in the spaces provided in the Tender Bid and shall attach additional sheets as necessary.

Depending on the sample results (i.e. contaminant concentrations), the material will then either be accepted as non-hazardous waste, with applicable tipping fees being applied, or rejected based on the criteria of the landfill’s Environmental Compliance Approval (ECA). If contaminated soil is rejected by the designated receiving landfill at any time during the contract, the Contractor will still be responsible to haul the material to an alternate landfill location, licensed by the MOE and approved by the Contract Administrator that will accept the specific non-hazardous waste, at no extra cost to the Owner.

Upon confirmation that contaminated soils are classified as non-hazardous for disposal, the Owner will provide direction to the Contractor to load and haul the impacted fill to an MOE approved site. It is the responsibility of the Contractor to ensure appropriate disposal of all the contaminated soils. All sites to be verified by the Contract Administrator for acceptability. As a specific requirement on this project, the Contractor’s waste hauler must possess a valid Ministry of the Environmental Compliance Approval for Waste Management System to haul non-hazardous waste to a disposal site. It is the responsibility of the Contractor to ensure that this requirement is met.

The Contractor is responsible for all arrangements with the waste hauler, and site facility, including any analytical data required by the disposal site. The Contract Administrator will provide the Contractor with all available characterization data.

If the contractor chooses to use an alternate disposal site, relevant contact information should be provided to the Owner prior to beginning the excavation. The Contract Administrator shall review and verify all ECA’s furnished by the Contractor for compliance with the specifications herein, and Ontario Regulations.

180.07 Basis for Payment

The Form of Tender provides an estimate of the quantities of materials that fall under the various standards provided in O. Reg. 511/09 (as amended). Under no circumstances shall the Contractor claim additional payment from the Owner related to the characterization of quality, designation of waste types, delineation of quality and extent of excess material, estimation of quantity, and costs (whether accurate and correct or not) associated with excavation, removal, segregation, temporary stockpiling, loading, transportation and re-use or disposal of excess materials, including excess earth and rock generated by the Contract work.

180.07.01 Reuse of Material On-site

Where material that has been tested and determined by the Owner’s Representative to be suitable for backfill onsite, the work will be paid per the cubic metre as determined through field measurements as agreed upon by the Owner and the Contractor.
CKSS 206
GRADING

REFERENCES

OPSS 206 – Construction Specification for Grading
OPSS 501 – Construction Specification for Compacting

206.01 Construction

The Contractor shall exercise due care at all times to prevent the granular base and sub-base materials from becoming contaminated by clay or other types of deleterious materials.

The Contractor and the Contract Administrator shall jointly inspect the sub-grade prior to placement of granular materials for the road base.

206.02 Measurement for Payment

Payment will be made on a percentage completion basis to complete all work. The quantity includes roadway, driveway ramp, driveway, trails, parking areas, and boulevard shaping, grading, compaction and preparation for placement of the specified material.

206.03 Basis for Payment

This work shall include all labour, equipment and materials to shape the subgrade of the road to the satisfaction of the Contract Administrator.
CKSS 209
EMBANKMENTS

REFERENCES

OPSS 209 – Construction Specification for Embankments over Swamps and Compressible Soils
OPSS 501 – Construction Specification for Compacting

209.01 Construction

Earth subgrade materials shall be compacted to a density of 95% Standard Proctor Dry Density.

In no case will the Contractor be permitted to construct the embankment by side dumping.

Embankment construction shall not commence until approved and operative compacting, shaping and watering equipment is on site.
CKSS 310
HOT MIX ASPHALT

REFERENCES

OPSS 310 – Construction Specification for Hot Mix Asphalt
OPSS 501 – Construction Specification for Compacting

310.01 Material

The use of reclaimed asphalt pavement (RAP) shall be permitted in binder course only. Up to 20% by mass of RAP shall be permitted in the binder mix.

Only virgin material will be permitted for use in surface asphalt.

310.01.01 Quality Control

The Contractor shall provide samples of aggregate and asphalt cement to an authorized material testing company at least three weeks in advance of any paving operations in order to determine a proper asphalt mix design.

The Contractor shall pave a trial batch shall be required prior to accepting an asphalt mix design.

When the design mix has been determined by the testing company and approved by the Contract Administrator, the Contractor shall maintain this mix throughout the project within the allowable tolerances specified under section 1150.04 "Preparation and Composition of Mixture" in the OPSS Specification for "Hot Mix, Hot Laid Asphaltic Concrete."

310.02 Construction

The Contractor shall give the Contract Administrator at least 48 hours notice before commencement of any paving operations or continuation of paving operations after delay of more than five days at the discretion of the Owner or Contract Administrator, in order to ascertain whether the roadway is in the proper condition for paving.

The Owner’s standard practice is to leave frames and grates at binder asphalt elevation. When frames and grates have been left at surface asphalt elevation as directed by the Contract Administrator or when the road is being prepared for surface asphalt paving, asphalt padding or ramp shall be placed around all catchbasins manholes, valves, edge of existing pavement and gutter or where directed by the Contract Administrator until the surface course of asphalt is completed.

If catchbasin lids are to be left at surface asphalt elevation for an extended period of time, drains are to be installed to collect surface water runoff.

310.02.01 Operational Constraints

The asphalt binder course shall be laid no earlier than April 15th, and no later than November 30th, or as directed by the Contract Administrator.

The asphalt surface course shall be laid no earlier than May 1st, and no later than October 30th, or as directed by the Contract Administrator.
310.03 Measurement for Payment

Hot mix asphalt pricing based on the liquid asphalt cement price index (applies to items paid on a tonnage basis only).

The Owner will adjust the payment to the Contractor based on changes to the Ministry of Transportation’s (MTO) PGAC price index unless the Contractor opts out by notifying The Owner in writing within five business days of the award of the contract. Once the contractor has opted out of the payment adjustments based on the index, the Contractor will not be permitted to opt back in. The price index will be published monthly in the MTO Contract Bulletin and displayed on the OHMPA (www.ohmpa.org) and MTO websites (www.rags.mto.gov.on.ca). The price index will be used to calculate the amount of the payment adjustment per tonne of new asphalt cement accepted into the Work. The price index will be based on the price, excluding taxes, FOB the depots in the Toronto area, of asphalt cement grade PG 58-28 or equivalent. One index will be used to establish and calculate the payment adjustment for all grades.

A payment adjustment per tonne of new asphalt cement will be established for each month in which paving occurs when the price index for the month differs by more than $15.00/tonne from the price index for the month prior to tender opening. When the price index differential is less than $15.00/tonne, there will be no payment adjustment for that month. Payment adjustments due to changes in the price index are independent of any other payment adjustments made to the hot mix tender items. The payment adjustment per tonne will apply to the quantity of new asphalt cement in the hot mix accepted into the Work during the month for which it is established. The payment adjustment for the month will be calculated by the following means:

1. **When AC Prices are Rising** by more than a $15.00/tonne difference: the payment adjustment to be paid to the Contractor is the result of subtracting the price index for the month prior to tenders closing from the price index in effect when paving took place, minus the $15.00 float, multiplied by the number of tonnes of PGAC incorporated in the mix(s) as determined by field samples. If the answer is negative, no adjustment is made.

2. **When AC Prices are Falling** by more than $15.00/tonne difference: the payment adjustment made in favour of the Owner is the result of subtracting the price index in effect when paving took place, plus $15.00 from the price index for the month prior to tenders closing, multiplied by the number of tonnes of PGAC incorporated in the mix(s) as determined by field samples.

The quantity of new asphalt cement includes all grades of asphalt cement supplied by the Contractor with and without polymer modifiers. For each month in which a payment adjustment has been established, the quantity will be calculated using the hot mix quantity accepted into the Work and its corresponding asphalt cement content as required by the job mix formula except for mixes which contain reclaimed asphalt pavement.

For mixes which contain reclaimed asphalt pavement, the quantity of new asphalt cement will be determined from the difference between the asphalt cement content required by the job mix formula and the asphalt cement content of the reclaimed asphalt pavement incorporated into the hot mix, as calculated by the Contract Administrator.

**Example 1 – AC Prices Increasing**

- PGAC 64-28 specified, 3,000 tonnes of HL3 @ 5.0% AC (150.0 tonnes AC)
- Price Index on May 5th, 2003 on tender closing is the published April 2003 index $330/tonne (PG 58-28)
- Price Index on August 17th-24th, 2003 actual paving dates – $365/tonne (PG 58-28)
- Payment adjustment to be paid to the Contractor: 
  
  $$([(365 - 15) - 330] 	imes 150 \text{ tonnes AC} = 20 \times 150 \text{ tonnes AC} = 3,000.00$$
Example 2 – AC Prices Decreasing

- PGAC 58-28 specified, 4,500 tonnes of HL8 @ 4.6% AC (207.0 tonnes AC)
- Price Index on May 5th, 2003 on tender closing is the published April 2003 index $330/tonne (PG 58-28)
- Price Index on October 11th – 18th, 2003 actual paving dates - $285/tonne (PG 58-28)
- Payment for hot mix items reduced by:
  \[ \$330 - (\$285 + \$15) \] \times 207 \text{ tonnes AC} = \$30 \times 207 \text{ tonnes AC} = \$6,210.00

If the field sample shows that the percentage of AC exceeds the standard specification, then 5.0% shall be used for calculating AC adjustments.

If the field sample shows that the percentage of AC does not meet the standard specification of 5.0%, then (depending on the deviation from 5.0%, and other deficiencies reported) at the discretion of the Contract Administrator the asphalt laid will either be rejected and the asphalt will be removed and relayed. Or the Contract Administrator will use the AC field results to calculate the AC adjustment.

Contractors should bid the hot mix asphalt item using the cost of the PGAC specified. The AC Price Index is only a tool for qualifying hot mix prices and is not intended as a standard AC price to be incorporated into the contract bid.

The payment adjustment calculated using this formula is full compensation for any and all PGAC grades specified.

There will be no AC price adjustment for asphalt placed on a square metre / per metre basis.

If the AC Index has not changed more than $15.00 per tonne up or down, no adjustment is required. Only the amount of the change that is greater than $15.00 is used to calculate payment adjustments.

310.04 Basis for Payment

Unless otherwise stated in the Contract it is expected that all work will be carried out during week days. However if it is deemed necessary to complete paving operations on weekends and such timing necessitates the Contractor paying over-time premiums for labour beyond that which the Contractor might normally pay, then the Contractor shall account for such extra labour costs in their prices.
CKSS 314
UNTREATED GRANULAR, SUBBASE, BASE, SURFACE, SHOULDER, AND STOCKPILING

REFERENCES

OPSS 314 – Untreated Granular, Subbase, Base, Surface, Shoulder, and Stockpiling

314.01 Construction

314.01.01 Granular A for Temporary Access

All Granular A placed shall be on compacted native material or on Granular B as approved by the Contract Administrator and shall be flush with the adjacent existing sidewalk and, or driveway areas. Temporary voids left by sidewalk removal for service installations will be backfilled and shall be included and paid under the appropriate lateral service installation items.

314.02 Measurement for Payment

314.02.01 Granular A for Temporary Access

Measurement will be by the tonne for walkways and vehicle access areas. Payment at the Contract unit price shall be full compensation for all specified and incidental work required to complete the item to the satisfaction of the Contract Administrator.

314.03 Basis for Payment

Payment for these items shall include the application of water as required to achieve compaction.

Monitoring and maintenance of the temporary access for pedestrian and vehicular use will be the responsibility of the Contractor and shall be considered to be included in the unit price.

314.03.01 Granular A for Temporary Access

The work of this item shall include all labour, equipment and materials required to provide a neatly trimmed, compacted Granular A surface for a temporary pedestrian access and walkway in sidewalk and access areas disturbed during construction.

In addition, this item shall be for the temporary provision of vehicle access in various driveway and access locations as may be required for temporary movement of vehicles during construction activities.
CKSS 351
CONCRETE SIDEWALKS, DRIVEWAY RAMPS AND DRIVEWAYS

REFERENCES

OPSS 351 – Concrete Sidewalk
OPSS 501 – Construction Specification for Compacting
OPSS 1303 – Material Specification for Admixtures for Concrete

351.01 Material

All concrete supplied shall comply with the requirements of the latest edition of C.S.A. Standard A23.1, "Concrete Materials and Methods of Concrete Construction".

All concrete supplied under this specification shall contain the following mix proportions:

a) Minimum cement content shall be 365 kg/m³.
b) Water / cement ratio shall be 0.45 for C-2 Class of Exposure in accordance with C.S.A. Standard A23.1, Table 1, Definitions for C, F and N Classes of Exposure.
c) Maximum nominal size of course aggregate shall not exceed 20mm and gradation limits shall meet the requirements of C.S.A. Standard A23.1, Section 4.2.3.3.2 / 4.2.3.4.2 Grading.
d) Sump shall be 70mm. (+/- 20mm tolerance)
e) Air entrainment shall be 5-8% in accordance with OPSS 1303, "Material Specification for Air Entrainment and Chemical Admixtures for Concrete".
f) Minimum compressive strength for Normal and General Use (GU) Portland Cement Concrete shall be 32 MPa at 28 days. Alternative cement types, such as High-Early Strength (HE), may be considered by the Contract Administrator on a project by project basis.

351.02 Construction

The highest standards and quality of work will be required, and the Contractor's attention is drawn to the clauses on tolerances and curing.

The Contractor shall ensure that the concrete supplier utilizes appropriate aggregates that do not contain deleterious particles that cause concrete popouts. The maximum allowable tolerance for popouts will be 10 popouts per square metre of sidewalk placed. Any sidewalk with popouts greater than this tolerance shall be removed and replaced at the contractor's expense. A popout is defined as a deleterious particle size, a minimum of 13mm wide with a minimum depth of 3mm.

Where the minimum required thickness cannot be achieved, polypropelene fiber reinforcement shall be added to the concrete mix prior to placement.

351.02.01 Trial Section

Before proceeding with the curb work under this Contract, the Contractor shall at the discretion of the Contract Administrator construct a thirty (30) metre trial length to establish the adequacy of their equipment and quality of work.

The adequacy of the Contractor's equipment and quality of work will be determined by the Owner or Contract Administrator on inspection of this trial section of sidewalk or driveway ramp before the Contractor is permitted to proceed with the remaining work.
Should the trial section fail to conform to the specification requirements in any respect, it shall be removed and replaced by the Contractor, at their own expense, otherwise, it shall remain a part of the work.

351.02.02 Tolerances

Vertical tolerances for new concrete sidewalks shall not exceed ± 12mm.

351.02.03 Subgrade for Sidewalk and Driveway Base Preparation

351.02.03.01 Sub-grade

The sub-grade is that portion of the terrain upon which the base is constructed. All soft and spongy sections of the subgrade must be excavated and filled with approved granular or site generated materials. Materials for fill shall be placed and compacted in 150mm layers.

351.02.03.02 Base

Thicknesses for Granular Base Course Class "A" shall consist of a minimum of 150mm for residential driveways and 200mm for commercial / industrial driveway entrances, unless noted in the contract documents.

The degree of compaction achieved shall be 100 % Standard Proctor Dry Density.

After completion, the base shall be maintained at its true grade and cross-section until the concrete slab has been placed thereon, and shall be checked for trueness of grade and cross section before the concrete is placed.

Immediately before placing the concrete, the subbase shall be wetted down or alternatively an impervious underlay used to prevent loss of water from the concrete.

351.02.04 Formwork

The forms for curbs, sidewalks and driveway ramps shall be free of warp and other defects and shall be of sufficient strength to resist breaking or bending out of shape. Forms which are not considered acceptable by the Owner or Contract Administrator shall be removed from the site.

Forms shall be firmly staked to the established lines and grades, and the tops of all forms shall conform to the proposed grade of the finished structure. The depth of forms shall be at least equal to the edge thickness of the slab and maintained in good working condition. Forms must be checked for alignment and elevation before concrete is poured. The Owner or Contract Administrator reserves the right to change formwork as required.

351.02.05 Placing Concrete

The concrete shall be deposited on the base as closely as possible to its final position with a minimum of rehandling. The concrete shall be placed high and screened off with a template riding on the side forms to compress the concrete and bring it to the required elevation and contour. The concrete shall be spaded along the sides of the forms.
351.02.06  Thickness

At intersections the thickness of the concrete sidewalk shall be increased to 200mm from the extension of the end of radius at the curb perpendicular to the back of the sidewalk. Concrete at commercial loading areas shall be 200mm thick. Thickness at all other locations shall be as per the City of Kitchener Development Manual.

Where standard thickness cannot be obtained due to obstructions (i.e. tree roots), Polypropelene fiber reinforcement shall be added to the concrete mix.

351.02.07  Finish

A broom finish is required for both sidewalks and curbs. A coarse textured broom finish with depth variations to, but not exceeding 6mm shall be provided for approach walkways for intersection ramp construction as per City of Kitchener Development Manual Standard Drawings. Broom finish for the curb is to be perpendicular to the roadway.

The top edges of curbing shall be finished with a tool producing a rounded edge of not more than 13mm radius at the inside face.

The edges and divisions in sidewalks shall be finished with an edging or grooving tool of 13mm radius and not more than 75mm in width.

The finish of connections to private sidewalks or driveways shall conform as closely as possible to that of the existing sidewalk.

After the side forms have been removed, any cavities, honey-combing or other defects shall be repaired.

Trip hazards greater than 20mm as per O. Reg. 239/02 will not be accepted.

351.02.08  Date Imprint

The Contractor shall install date imprints at intersection ramps and sections of sidewalk repair 7.5 metres or greater in length. The imprint shall include the numerals of the current year into the surface of the sidewalk and shall be not less than 6mm in depth and 75mm in height. No additional compensation shall be given to the Contractor for such imprinting beyond that provided for the construction of the said sidewalk.

For reconstruction projects where an existing street name / date imprint is embedded in the existing sidewalk, the Contractor shall take extreme care to remove the original street name / date stamp and place it in the new sidewalk as directed by the Owner or Contract Administrator.

351.02.09  Curing

Immediately after the surface has sufficiently hardened, the sidewalk shall be covered with canvas or burlap and kept moist throughout the period of six consecutive days.

The use of liquid membrane-forming curing compound is also permitted. The compound shall be applied behind the final finishing operation after all free water has disappeared from the surface but not later than one hour after the completion of finishing. The application rate shall be 0.2 l / m² or as specified in OPSS 351.07.12.
The application of curing compounds to vertical concrete surfaces shall be required immediately after the removal of forms if such forms are removed within a period of 72 hours from the time of placement of the concrete.

351.02.10 Backfilling

Where an existing sidewalk is repaired, the Contractor shall be required to carefully remove the existing sod and topsoil to enable the forming for the new sidewalk to be installed. This sod and topsoil must be replaced to the satisfaction of the Owner or Contract Administrator upon removal of the forms. New topsoil and sod may be required as determined by the Owner or Contract Administrator.

In the case of new sidewalks, the edges of the walk shall be backfilled with the surrounding material once the forms are stripped. Such material shall be placed at a 1:1 slope between the surface of the sidewalk and the base.

351.02.11 Impressed Concrete

The installation of impressed concrete shall be carried out by specialist firms engaged in the type of work specified, and using workers skilled and experienced in the various aspects of such work. The contractor or sub-contractor must be able to demonstrate proof of ability and examples of impressed concrete installations. Impress concrete using mat forms approved by the Owner or Contract Administrator. Patterns of impression and the direction of forms to be used are to conform to detailed drawings and site directions from the Contract Administrator.

“Double Soldier Course” impressions provided by Proline Concrete Tools or approved equal shall be installed as brick banding behind the back of curb. For wider areas exceeding the width of the band (0.4m), a “Single Soldier Course” shall be provided around the perimeter of the pour with a “Cobble Stone” finish centre, provided by Brickform/Solomon Colours Inc. or approved equal. Ensure all forms are clean and free of any contaminants.

The Contractor is expected to plan concrete pours to ensure impressing operations proceed at the optimum time in the curing schedule for each pour.

Provide a natural finish on the slab surface. The finished slab texture must be sufficiently coarse for pedestrian and vehicular traffic, as determined by the Owner or Contract Administrator. Where finished impressed slab surfaces are not acceptably coarse, sandblast these to the satisfaction of the Owner or Contract Administrator. There will be no additional cost to the Owner for such work. Protect adjacent surfaces from exposure to sandblasting operations.

No steel trowels, steel floats, or power trowels are to be used on the finished surface. Do not modify the finished impressed slab after removing mat forms prior to concrete set.

Sealants shall be applied to the finished slab. Saw cut finished slab according to detailed drawings and site directions from the Owner or Contract Administrator and according to control joint specifications. Special attention will be paid by the Owner or Contract Administrator to the specified tolerances of finished slab grades. Achieve positive drainage and slab tolerances.

351.02.11.01 Mat Forms

Supply mat forms to achieve the specified paving patterns. All mats are to be subject to the approval of the Landscape Architect. Mats shall be able to achieve a consistent slab surface with no grade variations except for dummy joints. Dummy joints shall produce impressions in the finished slab surface which measure no greater than 6.5 mm in width and 6.5 mm in depth.
351.02.11.02 Mat Forms Release Agent

The release agent shall only be an evaporating, non-staining liquid release agent which does not visually modify the finished appearance of the pigmented concrete slab.

351.02.12 Shut-Off Valves, Gas Boxes, Etc.

The Contractor shall adjust to the sidewalk surface all curb boxes, valve chambers and maintenance covers which are located in the walk and free of concrete debris. Care must be taken to ensure that the extension barrels covering shut-offs are truly vertical. Where new valves or extension sleeves are necessary by reason of a change in grade, they will be supplied and installed by the relevant utility commission. The horizontal movement of any shut-off valve made necessary by a change in the width of the walk will be attended to by the relevant utilities at no expense to the Contractor.

The cost of adjusting curb stop boxes shall be included in the unit price bid for the sidewalk construction, unless otherwise noted. Valve chamber and maintenance cover adjustments shall be paid for at the unit price bid in the contract Form of Tender.

351.02.13 Bond Breaker

A bond breaker shall be placed between the back of curb and adjacent concrete poured against it.

351.02.14 Expansion Joints

Expansion joint material shall be Type “A” bituminous fibreboard, in accordance with OPSS 1308 “Material Specification for Joint Filler (Concrete), manufactured specifically for use in concrete driveway and sidewalk construction.

Expansion joint material shall be a minimum of 9 mm to a maximum of 13 mm in width and extend the full thickness of the concrete. Alternative materials such as ‘Deck-o-foam’ (manufactured by W.R.Meadows) or approved equal shall be considered by the Owner or Contract Administrator on a project by project basis.

Expansion joint material shall be cut to the full cross-sectional shape of the sidewalk and placed at the following intervals:

- Every 10\textsuperscript{th} panel minimum - 12\textsuperscript{th} panel maximum (i.e. - 1.5 m panel lengths shall be placed every 15.0m to 18.0m).
- Where the sidewalk section to be replaced is less than 18m and greater than 6m in length, place the expansion joints at both ends of the new section.
- Adjacent to rigid structures, including, driveways, foundation walls, utility chambers and vaults and “box-outs” for other surface features, as illustrated in OPSD 310.020, 310.040 and CKDM Std. Dwg. 109

Expansion joint material shall be placed prior to pouring concrete and under no circumstances shall expansion material be forced into freshly poured concrete. Expansion joints shall be neatly cleaned off on both sides of the joint material so that the material is completely visible when finishing is completed. All rubble and imperfections that may affect the contact of expansion joint material with vertical faces, including burrs, gravel, etc. are to be removed prior to placement and pouring of concrete.

Expansion Joints shall be located to minimise the detrimental effects of thermal expansion and to minimise the negative impacts, including risk of trips, due to location and placement, including long term inherent deterioration of expansion material.
351.02.15 Contraction Joints

Contraction joints (for transverse and longitudinal crack control) shall be saw cut to a minimum depth of ¼ of the slab thickness or, 40 mm, whichever is greater. The width of the joint shall be 5mm maximum.

Sawing shall commence as soon as the concrete has hardened sufficiently to permit sawing without excessive ravelling, usually within 6 to 24 hours of placement. Joints shall be saw cut day and night, if necessary, in order to prevent uncontrolled shrinkage cracking.

Contraction joints for sidewalks shall be saw cut using the centre line of tooled jointing as a guide. Contraction joints shall be provided using the following spacing and layout guideline:

- New standard width sidewalks (up to 1.8 m in width) shall be saw cut at every 3rd panel spacing (maximum 4.5 m). Where sidewalks are repaired under maintenance programs, contraction joints shall be placed as directed by the City's representative.
- Wider sidewalks and areas of concrete paving shall be jointed as recommended by the Ready Mixed Concrete Association of Ontario (RMCAO) and the Canadian Portland Cement Association.
- Panel thickness, area of coverage, and location and dimensions of existing features must all be taken into account in determining jointing details. A jointing detail plan will be required from the contractor, for approval, prior to approval of formwork for placement of concrete.
- Contract Administrator shall approve the layout of all chalk lines and/or provide direction on the Owner's requirements, prior to saw cutting.
- Large concrete paving areas (sidewalk and parking), generally, will not require tooling prior to saw cutting.
- Driveway ramps constructed of concrete may be poured monolithically with adjacent sidewalk, if directed by the Owner or Contract Administrator, to permit a smooth grade transition. Where expansion joints cannot be applied, the edge of sidewalk adjacent to concrete driveway ramps shall be tooled and saw cut to delineate the width of sidewalk area. The inclusion of edge curbs at the sides of residential concrete driveways is no longer a practice of the Owner. The need for side curbs at industrial, commercial and institutional driveway entrances shall be reviewed on a case by case basis.

When curb and gutter is placed by the extrusion method, contraction joints shall be formed by saw cutting the hardened concrete within 6 to 24 hours of placing the curb and gutter to prevent uncontrolled cracking. The width of the joint shall be 5mm maximum and the depth 60mm minimum. Maximum spacing of contraction joints shall be 3.0 metres. Under no circumstances, shall wet-cut tooled joints be used on machine or hand placed curbs, unless directed by the Owner or Contract Administrator.

351.03 Measurement for Payment

351.03.01 New Sidewalk

All sidewalks and combined walks shall be measured by the square metre. The reference line for measurement shall be along the centre line of the walk for the purpose of payment.

351.04 Basis for Payment

The payment for the unit prices bid for concrete construction shall include the cost of all labour, equipment and materials required to perform the work necessary.
351.04.01 New Sidewalk

The unit price bid for new sidewalk shall be as stipulated in the Form of Tender and include normal excavation, expansion and contraction joints as required, application of curing compound and protection of the concrete from acts of vandalism, and the elements of weather such as extreme heat, cold and rain. Normal excavation is the volume calculated from the finished sidewalk grade to the bottom of the granular material. If additional excavation is required to meet the proposed sub-grade elevation of the sidewalk, the Contractor shall be paid under the appropriate unit price bid in the Form of Tender.

In a case where the elevation of the new sidewalk is to be increased, the contractor shall supply and place the appropriate materials as directed by the Contract Administrator. The Contractor shall be paid under the appropriate unit prices bid in the Form of Tender.

Supply and placement of specified granular base material will be paid under the appropriate unit prices bid in the Form of Tender.

351.04.02 Panel Replacement Sidewalk

Basis for payment as stated below shall apply only where the work is being completed as a separate annual program.

The unit price bid for the replacement sidewalk shall include break-out, removal and disposal of the existing sidewalk as well as restoration of the existing topsoil and sod. New topsoil and sod shall be placed when directed by the Owner or Contract Administrator where the restoration using existing topsoil and sod is unsatisfactory.

In most cases, the existing granular base will be satisfactory and additional granular material will not be required. However, where additional granular material is required, the Contractor shall remove the existing base material as directed by the Owner or Contract Administrator. In this circumstance, the unit price bid shall include the excavation required. Any additional granular material shall be paid under a separate item in the Form of Tender.
CKSS 352
CONCRETE STEPS

REFERENCES

OPSS 352 – Concrete Steps
OPSS 1303 – Material Specification for Admixtures for Concrete

352.01 Material

All concrete supplied shall comply with the requirements of the latest edition of C.S.A. Standard A23.1, "Concrete Materials and Methods of Concrete Construction".

All concrete supplied under this specification shall contain the following mix proportions:

a) Minimum cement content shall be 365 kg/m³.
b) Water / cement ratio shall be 0.45 for C-2 Class of Exposure in accordance with C.S.A. Standard A23.1, Table 1, Definitions for C, F and N Classes of Exposure.
c) Maximum nominal size of course aggregate shall not exceed 20mm and gradation limits shall meet the requirements of C.S.A. Standard A23.1, Section 4.2.3.3.2 / 4.2.3.4.2 Grading.
d) Slump shall be 70mm. (+/- 20mm tolerance)
e) Air entrainment shall be 5-8% in accordance with OPSS 1303, "Material Specification for Admixtures for Concrete".
f) Minimum compressive strength for Normal and General Use (GU) Portland Cement Concrete shall be 32 MPa at 28 days. Alternative cement types, such as High-Early Strength (HE), may be considered by the Contract Administrator on a project by project basis.

352.02 Measurement for Payment

Payment will be made on the basis of the square metre area of the tread, which will include a 0.30 metre wide strip at the top of each set of steps, to construct new steps as outlined in the Form of Tender.

352.03 Basis for Payment

The work for this item shall include all excavation, formwork, base preparation, reinforcing bars, concrete placement, finishing and curing, etc., all in accordance with OPSS 352 and OPSD 512.011.
CKSS 353
CONCRETE CURB AND GUTTER

REFERENCES

OPSS 353 – Construction Specification for Curb and Gutter
OPSS 1303 – Material Specification for Admixtures for Concrete

353.01 Material

All concrete supplied shall comply with the requirements of the latest edition of C.S.A. Standard A23.1, "Concrete Materials and Methods of Concrete Construction".

All concrete supplied under this specification shall contain the following mix proportions:

a) Minimum cement content shall be 365 kg/m$^3$.
b) Water / cement ratio shall be 0.45 for C-2 Class of Exposure in accordance with C.S.A. Standard A23.1, Table 1, Definitions for C, F and N Classes of Exposure.
c) Maximum nominal size of course aggregate shall not exceed 20mm and gradation limits shall meet the requirements of C.S.A. Standard A23.1, Section 4.2.3.3.2 / 4.2.3.4.2 Grading.
d) Maximum slump for curb and gutter shall be 45mm.
e) Air entrainment shall be 5-8% in accordance with OPSS 1303, "Material Specification for Admixtures for Concrete".
f) Minimum compressive strength for Normal and General Use (GU) Portland Cement Concrete shall be 32 MPa at 28 days. Alternative cement types, such as High-Early Strength (HE), may be considered by the Contract Administrator on a project by project basis.

353.02 Construction

353.02.01 Trial Section

Before proceeding with the curb work under this Contract, the Contractor shall at the discretion of the Contract Administrator construct a thirty (30) metre trial length to establish the adequacy of their equipment and quality of work.

The adequacy of the Contractor’s equipment and quality of work will be determined by the Owner or Contract Administrator on inspection of this trial section of curb before the Contractor is permitted to proceed with the remaining work.

Should the trial section fail to conform to the specification requirements in any respect, it shall be removed and replaced by the Contractor, at their own expense, otherwise, it shall remain a part of the work.

353.02.02 Tolerances

Vertical tolerances for new concrete curbs shall not exceed $\pm \ 12$mm.

A cross-sectional variation of curb and gutter (at any one point) shall not exceed $\pm \ 6$mm.
353.02.03    Bench

The curb and gutter system shall be constructed with a 50mm bench throughout as per OPSD 600.040, 600.060, 600.080, 600.090, and 600.110. The bench height from the bottom of the curb shall vary due to the various types of curbs to be installed.

353.02.04    Depressed Curb

In circumstances where intersection ramps are adjacent, the top back portion of the curb shall be depressed 125mm through the entrance and 100mm depressed through driveway entrances. At driveways where concrete sidewalk is curb-faced, the top back portion of the curb shall be depressed 75mm through the entrance. All curbs shall be constructed in accordance with the latest revision of the Ontario Provincial Standard Drawings and City of Kitchener Standard Drawings.

353.03    Measurement for Payment

Curbs and combined curbs and gutters shall be measured along the line of the face of curb on curves as well as straight lines.

353.04    Basis for Payment

The unit price bid for curb or curb and gutter construction shall include the excavation required to set the various components to the required line and grade as well as compaction of the base. Normally, the gravel base will be in place and additional gravel should not be required. However, where additional gravel is required, it will be paid for at the unit price bid in the Form of Tender.

The unit price bid for combined curb and gutter construction shall exclude the cost for all adjustments of any appurtenances located within the concrete. Maintenance covers, catchbasins, water and gas valves adjustments shall be paid separately under the appropriate unit prices bid in the Form of Tender.
CKSS 355
INSTALLATION OF INTERLOCKING CONCRETE PAVERS

REFERENCES

OPSS 355 – Installation of Interlocking Concrete Pavers

355.01 Material

The Contractor shall reuse the existing concrete pavers where salvaged and/or supply new ones as necessary to complete the work. New pavers used to supplement the salvaged ones shall be colour matched as closely as possible to the existing pavers.

The Contractor shall consult with the Contract Administrator while colour matching prior to ordering pavers.

For new installations concrete pavers shall be one of the following or approved equivalents:

- Unistone, Interlocking paving stone, as manufactured by Unilock Limited, or approved equal. Dimensions 225 mm. x 112.5 mm. x 80 mm. Minimum compressive strength of 48 MPa, maximum water absorption of 5% and freeze/thaw resistance equal to C.S.A. A82.2 - 1967. Colour to be used is Autumn Red.

- Mini-cobble, Concrete Paving Stones, as manufactured by D. Barnett and Co. Limited, or approved equal. Dimensions 210 mm. x 68 mm. x 60 mm. Minimum compressions strength of 40 MPa, maximum water absorption of 5% and freeze-thaw resistance equal to CSA AB2-2 - 1967. Three (3) different colours to be used which form the “Autumn Blend” colour pattern.

Edge restraints shall be Snap Edge® or approved equal

355.01.01 Bedding Sand

Clean, sharp sand free from all debris and organic matter. Sand to be 100% passing the #16 sieve and 10% passing the # 200 sieve.

355.02 Construction

In the event that additional interlocking pavers are required to replace those salvaged from the site which have been damaged after removal, the Contractor shall replace the materials at their own cost.

All work that affects private driveways, walkways, paths and/or patios and like will require the Contractor to cooperate with the property owner(s) and to communicate the extent of the work, timing of impact and reinstatement, and to obtain a satisfactory sign off from the property owner(s) that the work of reinstatement has been completed to the private property owner(s)’s satisfaction.

Granular A shall be compacted to 95% SPDD and leveled to a finished depth of 150mm prior to placement of concrete pavers and patio stones.

Where concrete pavers abut grass or landscaped/garden areas edge restraints shall be used to prevent lateral movement. The edge restraints shall be secured to the base as per manufacturer’s specifications.

The surface of stones shall meet all adjacent walls and curbs flush and at precisely the same grade as adjacent surfaces.
All edges of paving stone, where abutting a curb, wall, manhole cover or other material shall have a gap of no greater than 10 mm or otherwise specified, between the edge of the paving stone and the abutting material.

After specified stone is laid in specified pattern, spread polymeric sand over surface, brush into joints, then compact. The paving stone shall be compacted with a vibrating plate tamper until the stones are firmly imbedded.

Finished surface shall run true to grade with no bumps or hollows.

Joints between pavers are to be filled with polymeric sand.

355.03 Measurement for Payment

Payment for this item shall be by the square metre at the unit price quoted in the Form of Tender.

355.04 Basis for Payment

The work for this item shall include all labour, equipment and material necessary to install salvaged concrete pavers, including the purchase and supply of additional pavers if required as indicated on the contract drawings to original conditions or better and as directed by the Contract Administrator.
CKSS 401
TRENCHING, BACKFILLING, AND COMPACTING

REFERENCES
OPSS 401 – Trenching, Backfilling, and Compacting
DGSSMS

401.01 General
Class "B" bedding material for pipe shall meet the requirements as specified in DGSSMS and OPSS 401 and shall be thoroughly compacted in 200 mm. layers to a minimum of 95% SPDD.

If, in the opinion of the Contract Administrator, the excavated material is unsuitable for use as backfill, (i.e. - if the Contractor cannot attain the minimum required degree of compaction using the excavated material as backfill), the Contractor shall be directed by the Contract Administrator (in writing) to either use appropriate site generated material or import fill as per the recommendation of the Geotechnical Consultant.

Backfilling of trenches must be kept within 15 metres of pipe laying unless by permission or instruction of the Contract Administrator. The Contractor shall arrange the work so that a minimum length of trench is open over weekends and other idle periods.

Surface restoration shall be to City of Kitchener Standards and the limits shown on the contract drawings.

401.02 Measurement for Payment
Payment shall be included in the unit price of the sewer, watermain, forcemain, and culvert.

401.03 Basis for Payment
The costs for sub-excavating and disposal of the unsuitable subsurface material shall be paid according to the rates as specified in the Form of Tender.

The work of this item shall include all labour, equipment and materials required to supply, place and compact suitable backfill of unspecified depth in areas specified by the Contract Administrator including grading and compaction to a minimum of 95% SPDD, all in accordance with OPSS 401, except as extended or amended herein.

No payment shall be made for normal trenching to required subgrade elevations, for servicing (storm and sanitary sewers, watermain, culverts, forcemains, etc.). No payment shall be made for backfill and compacting with suitable excavated material.
CKSS 405
PIPE SUBDRAINS

REFERENCES

OPSS 405 – Pipe Subdrains
OPSD 216.021
DGSSMS

405.01 Material

Subdrains shall be 150mm corrugated high-density polyethylene 210 kPa tubing, perforated with geotextile sock filter. As per OPSD 216.021 the first 1m from the point of connection at the structure shall be non-perforated.

405.02 Construction

Subdrains shall be installed on the upstream side of catchbasins as per the City of Kitchener Development Manual and/or as directed by the Contract Administrator.

405.03 Basis for Payment

The work of this item shall include all labour, materials and equipment required to install and connect to catchbasins and catchbasin manholes 150mm dia. subdrains in locations shown on the contract drawings, including specified bedding and backfill material as per OPSD 216.021.
CKSS 407
MAINTENANCE HOLE, CATCHBASIN, DITCH INLET AND VALVE CHAMBER INSTALLATION

REFERENCES

OPSS 407 – Maintenance Hole, Catchbasin, Ditch Inlet, and Valve Chamber Installation
DGSSMS

407.01 Material

407.01.01 Round PVC Drain Basins

In grassed areas with no traffic loading, Drain Basins shall be Nyloplast Drainbasin by ADS.

If the manhole is to be placed in a traffic loading area Chief Municipal Approval is required. Concrete collar shall be provided as per manufacturer’s specification.

407.01.02 Precast Structures

Resilient connectors are to be used for all rigid and flexible sanitary pipe connections. Resilient connectors in storm maintenance holes are to be used for flexible pipe only.

407.02 Construction

407.02.01 Precast Structures

Manholes to have min. 3 courses and max. 5 courses of adjustment units and parged on the outside only with 15mm of cement mortar between top of concrete and frame as per OPSD 704.010

All manholes, including catchbasin manholes to be benched as per OPSD 701.021. Benching shall be three quarters of the diameter of the largest pipe.

Special manhole structures shall be constructed according to the details shown on the drawing.

Unless otherwise noted on the contract drawings all frames and covers set in asphalt curb shall be set to base asphalt elevation as shown on the contract drawings. All frames and covers set in sodden, topsoiled or landscaped areas shall be set to finished grade elevation.

407.02.02 Connection to Existing

In the case of existing manholes, the connection shall be deemed to include all manhole reconstruction and re-benching.
407.03 Basis for Payment

407.03.01 Precast Structures

The cost to supply and install new manhole and catchbasin frames and covers with adjustment units are **not** to be included in these unit prices and will be paid for separately. The cost to construct drop structures and install safety platforms are to be included in this item where shown on the Contract Drawings.
CKSS 408
ADJUSTMENT OF FRAMES AND COVERS

REFERENCES

OPSS 408 – Adjusting or Rebuilding Maintenance Holes, Catch Basins, Ditch Inlets, and Valve Chambers
OPSD 704.010 – Precast Concrete Adjustment Units for Maintenance Holes, Catch Basins, and Valve Chambers

408.01 Construction

The Contractor shall adjust to the finished grade of the road or boulevard or whatever finished grade is applicable, frame and cover for all chambers, maintenance holes, catchbasins, valve boxes, water service boxes, gas valves, and other items required to be raised to finish grade. Maintenance hole adjustments are to be made only after binder asphalt has been laid.

408.02 Measurement for Payment

Measurement for payment will be on an each basis for adjustments and payment at the Contract unit price and shall be full compensation for all specified and incidental work required to complete the item of work to the satisfaction of the Contract Administrator.

408.03 Basis for Payment

The work of this item shall include all labour, material and equipment required to adjust existing features as outlined above to meet the final grades of boulevards, sidewalks, roadways or other finished areas, including excavation, removal of existing brickwork as applicable, supply and installation of precast/pre-manufactured adjustment units, parging, backfilling and compaction to 100% SPDD all in accordance with OPSS 501, except as extended or amended herein.
CKSS 409
CCTV SURVEY AND MANDREL TESTING OF SEWERS

REFERENCES

OPSS 409 – Closed-Circuit Television Inspection of Pipelines
DGSSMS

409.01 General

Prior to final acceptance, the City will undertake a CCTV inspection of all sewers, at no cost to the Contractor. However, the Contractor must correct any deficiencies found before the Final Acceptance Certificate can be issued.

The Contractor will flush and clean sewers and manholes prior to testing and inspection. Testing shall be done in the presence of the Contract Administrator. The Contractor shall supply all water for cleaning and testing. A mandrel test shall be performed on all flexible pipes in accordance with OPSS 410 which shall consist of a successful pass of a (“Pig” of at least 95% City requirement) of the nominal inside diameter, pulled through the sanitary and storm sewer after the base asphalt has been laid. Inspect all manholes for defects and signs of leakage. Repair visible leaks or faults as approved by or as directed by the Contract Administrator.

No part of the work will be accepted until the sewers are clean and free from sand, earth, mud or other obstructions.

The alignment of sewers between manholes may be tested at each section as laid. The Contract Administrator may order a strong light supplied by the Contractor to be shone through the pipe from manhole to manhole. If less than one half of the full diameter of the pipe at the light source is visible from the far end, the section of pipe is to be re-excavated and the pipe relayed to the correct line and grade.

The Contractor, upon completion of the base asphalt, shall notify the Contract Administrator that the sewer lines are ready for final inspection and shall make all the necessary arrangements for, and pay all the costs involved in the inspection of the sewers by a firm specializing in CCTV inspection of sewers. Compensation for the CCTV Inspection will be made by the specific item in the Form of Tender.

Any breaks, leakages, or other deficiencies found in the sewer system shall be repaired at the Contractor’s expense.

It shall be the responsibility of the Contractor to ensure that the CCTV inspection firm prepares a complete, written report, duly signed and authorized, describing the condition of the system with specific reference to all deficiencies noted. All CCTV work shall be performed and completed in Accordance with the (P.A.C.P.) Pipeline Assessment Certification Program and by certified operators.

The Contractor shall supply a hard copy report (with a map) and a new DVD video record (three (3) copies) of all observations summarizing the CCTV Inspection to WRc standards. If in the opinion of the Owner, re-inspection is required as a result of inadequate cleaning or any other deficiencies, the Contractor shall re-clean or make good all required repairs and re-inspect the sewer at no additional cost to the Owner. The Owner shall undertake at its cost, a final inspection of the sewers prior to the end of the 2 year maintenance period. Any and all required deficiencies shall be the responsibility of the Contractor and shall be rectified by the Contractor prior to the Owner’s final acceptance.

Final acceptance of the sewer system will not be granted until the inspection report and related data has been received and accepted by the Owner and all deficiencies corrected to the satisfaction of the Owner.
CKSS 410
PIPE SEWER INSTALLATION

REFERENCES

OPSS 410 – Pipe Sewer Installation in Open Cut
DGSSMS

410.01 General

410.01.01 Service Laterals

The location of all existing service laterals is based where possible, on historic records and CCTV inspection. In some cases, the records of status and location of existing sanitary laterals and cellar drain connections may be incomplete. As a result, the exact location of laterals and drains will be determined at the time of installation. Both the sanitary lateral and the cellar drain (where present) must be connected to the new main. It is the responsibility of the Contractor to investigate all lateral connections encountered in the course of replacing sanitary and other sewers.

410.02 Material

410.02.01 Service Laterals

For trenchless installations service pipe shall be HDPE-DR17 pipe with no more than one butt fused joint per service.

410.03 Construction

410.03.01 Maintenance of Sewage Flows

In addition to the requirements of the Region of Waterloo’s Sewer Use By-Law 1-90, and the Environmental Protection Act (O. Reg. 347/90), the Contractor will not be permitted to pump sanitary sewers outside of normal working hours (unless approved by the Owner), in the event there are pumping failures. The Contractor must provide temporary, watertight, PVC, main reconnections at the end of each day’s construction activities.

In addition, all service laterals exposed and intercepted must be connected to the new main. Temporary service reconnections shall be watertight PVC connections. At no time will raw sewage be permitted to stand in open trenches.

The Contractor shall be required to provide for (Silent) pumps and generators to accommodate for a range of flow rates.

Upon request estimated flows can be obtained from the Contract Administrator.

410.03.02 Locate Existing Service Lateral

The Contractor shall investigate all existing lateral service pipes as shown on the Contract Drawings and as they are exposed in the roadway while installing the new sewer main, the contractor is to insert a plumber’s fish tape into this service pipe and connect thereto the electronic pipe and cable locator tracing
wire. The signal given off by the fish tape can then be picked up by the locator unit above ground at the property line.

This method of locating existing service laterals will be as directed by the Contract Administrator and undertaken when an exact location is required prior to excavating at the property line by the Hydro-Vac or mini-excavator method.

The Contractor shall use this method to identify the exact location of laterals and drains as necessary to ensure reconnection of all live systems.

410.03.03 Sewer Main Installation

Rubber gasket joints shall be used for horizontal elliptical concrete pipe where manufactured sizes allow. Mortar joints are to be as per ASTM C507.

The use of "Lox Seal" Sewer compound as supplied by National Coupling Limited, or approved equivalent may be considered by the Owner.

410.03.04 Service Lateral Installation

When connecting a new 100mm dia pipe to an existing 150mm dia pipe, an eccentric adapter connector must be used to provide a uniform transition at the inverts of these pipes. The possibility may arise where both the cellar drain and sanitary can be combined into one sound connection, with the use of proper wye connections, adaptors, reducers, etc. Where combined sewer connections are warranted, only one payment for the connection will apply, as per the appropriate tender item.

The trenchless method shall create an opening for the 100mm dia. sanitary service pipe, and (if required) a 25mm dia. water service pipe installation in the same tunnel.

Hydro-Vac excavations at the property line or as directed by the Contract Administrator should be completed to facilitate the reconnection of the service pipe. The Contractor may be allowed to excavate for, the tunnel access pits at the property line, with the use of a mini-excavator in lieu of the Hydro-Vac method, provided that the maximum trench opening at the surface does not exceed 2.0m X 2.0m.

410.03.05 Connect to Existing

The Contractor shall construct all connections to join the work to existing services.

When a connection is to be made, the Contractor shall expose the end of the existing service or main for inspection by the Contract Administrator. All connections are to be watertight.

410.04 Measurement for Payment

410.04.01 Maintenance of Sewage Flows

Payment will be made on a percentage completed basis to complete all work.

410.04.02 Sewer Main Installation

Payment will be made on a prorated basis with 90% being paid on completion of the appropriate section, with the remaining 10% being paid upon acceptance by the Owner of all testing.
**410.04.03 Service Lateral Installation**

Individual connections, with all necessary adaptors, reducers, etc., will be paid for on an each basis as outlined in the Form of Tender.

**410.05 Basis for Payment**

**410.05.01 Service Lateral Installation**

Unless otherwise provided in the Schedule of Unit Prices, no additional payment shall be made to reconnect a service lateral to the existing service. The Contractor is responsible to allow for excavation, bedding, pipe installation, cover, and backfill a minimum of one (1) metre past the limit of the right-of-way.

**410.05.02 Locate Existing Service Lateral**

The work of this item shall include all labour, equipment and materials required to locate existing sanitary, cellar drain and storm service pipes, by using an electronic pipe and cable locator, a plumber’s fish tape, or CCTV video survey.

**410.05.03 Connection to Existing**

No claim by the Contractor shall be allowed for any delays due to changes in design which may be required due to the revealed conditions.
CKSS 416
PIPELINE INSTALLATION BY JACKING AND BORING

REFERENCES

OPSS 416 – Pipeline and Utility Installation by Jacking & Boring

416.01 Definitions

Carrier Pipe is the pipe which conveys sewage flow, non-potable water, or potable water.

Casing Pipe is the pipe which houses the carrier pipe.

416.02 General

Prior to installing the casing and carrier pipe the Contractor shall submit shop drawings two (2) weeks prior to the planned work for review and approval to the Contract Administrator.

416.03 Basis for Payment

416.03.01 Steel Casing

The unit price shall include the supply of all equipment, labour and materials necessary to install a steel casing to the diameter, wall thickness, length, and method as shown on the Contract Drawings and as indicated on the Form of Tender. The work for this item shall also include installation of spacers, joint restraints, filling of the void between the casing and carrier, welding, and anodes as per manufacturer’s instructions.
CKSS 441
WATERMAIN INSTALLATION

REFERENCES

OPSS 441 – Watermain Installation in Open Cut
DGSSMS

441.01 Material

441.01.01 Watermain

Concrete pressure pipe may only be used on a case by case basis if approval is obtained from the Chief Municipal Engineer as defined in the DGSSMS.

441.01.02 Hydrants

Approved hydrant manufacturers shall be as per DGSSMS.

441.01.03 Services

Approved service boxes shall be as per the City of Kitchener’s Development Manual, and the DGSSMS.

441.02 Construction

441.02.01 Watermain

The Contractor will be required to install watermain in accordance with the City of Kitchener standards and specifications and OPSS 441. Please refer to City of Kitchener Development Manual and Region of Waterloo DGSSMS for further information.

All pipes up to and including 600mm diameter shall be delivered to the work area with end covers and a tamper evident seal on only the bell end. Refer to OPSS 441 “Transporting, unloading, storing and handling pipe.” for full requirements. Placement of anodes shall be in accordance with the standard specifications and located as per the contract drawings.

441.02.02 Connect to Existing

The Contractor will be required to expose the existing watermain at the points of connection to determine the exact depth and location, so that the proper fittings can be pre-arranged for connection at a later date. New watermains shall not be connected to the existing watermains until they have been pressure tested, chlorinated, flushed, bacteriological tested and accepted by the Owner.

441.02.03 Hydrants

Hydrant installation shall be as per CKDM Std. Dwg. 203 (including tracer wire).
441.02.04 Valves

The Contractor will be required to install watermain valves in accordance with the DGSSMS standards and specifications. Placement of anodes shall be in accordance with the standard specifications and located as per the contract drawings. Do not install tracing wire up valve boxes.

441.02.05 Services

Where an existing copper water service is found to be in good condition and means of its replacement may be deemed to be difficult due to above ground conflicts, Kitchener Utilities (KU) is to inspect the service to verify its condition. If KU deems that the service does not need to be replaced then the Contractor shall join to the existing service with same material. For existing polyethylene pipe stiffeners (one on each side) and a ‘Philmac’ compression fitting or approved equivalent as per manufacturer’s specification shall be installed.

Installation of services shall be as per the City of Kitchener’s Development Manual (Section D.D.2.7.1)

The location records for existing water service laterals may be incomplete. The exact location of the service will be determined at the time of construction.

The Contractor will be permitted to deviate from straight-line installations to avoid disruption to trees/roots, etc. Hand excavation should be expected and will be required to avoid tree root damage. The Contractor must install the new service from the point of connection at the main to the existing service at/or beyond the property line. All curb stop valves, main stops and service boxes will be replaced with new ones. The Contractor will be required to furnish all fittings needed to connect to the existing service regardless of its size, type and/or condition.

441.02.06 Commission Watermain System

The proposed watermain is to be commissioned into service as per the guidelines set out in section D.2.8 of the Region of Waterloo’s DGSSMS.

441.03 Measurement for Payment

441.03.01 Watermain

The watermain shall be measured along the centerline of the pipe in the horizontal plane from end to end at the point of connection to the existing water supply system.

441.04 Basis for Payment

441.04.01 Watermain

The unit price bid shall include all labour, equipment and materials, including all bends, fittings, adaptors, tees, crosses, joint restraints, restraining glands, thrust blocks, tracer wire, anode, etc., to complete the work.
441.04.02 Connect to Existing

The price for this item shall include all labour, equipment and materials to connect to the existing water supply system. The work shall also include the exposure of the existing watermain at the points of connection to the new watermain prior to proposed installation as directed by the Contract Administrator.

441.04.03 Hydrant

The price for this item shall include supply of all labour, equipment and materials to install hydrants in accordance with the City of Kitchener Development Manual.

441.04.04 Valves

The unit price bid shall include all labour, equipment and materials, including all restraining glands, thrust blocks, tracer wire, etc., to complete the work.

441.04.05 Services

The price for this item shall include supply of all labour (including hand digging around tree roots), equipment and materials to complete the work in accordance with Region of Waterloo SSMS E2-04, E2-05, E2-06, E2-07 details. The Contractor is responsible to allow for excavation, bedding, pipe installation, cover, and backfill a minimum of one (1) metre past the limit of the right-of-way.
CKSS 442
CORROSION PROTECTION OF WATERMAINS

REFERENCES

DGSSMS

442.01 Construction

If the existing watermain is non-metallic, connect the new tracing wire to the existing tracing wire by using a copper split bolt wrapped with dielectric tape as per DGSSMS.

If the existing watermain is metallic, the tracing wire shall not under any circumstances be connected to the existing main or to metallic fittings or valves connected to the existing metallic main.

Installation of corrosion protection for metallic fittings shall be as per the DGSSMS.

442.02 Measurement for Payment

Payment will be per each metallic fitting completed.

442.03 Basis for Payment

The payment for this item shall include all labour, equipment, and materials necessary to complete the work as described in the specifications.
CKSS 493
TEMPORARY POTABLE WATER SUPPLY SYSTEM

REFERENCES

DGSSMS

493.01 General

Temporary watermain shall be installed and commissioned prior to starting any removals.

The Contractor will be required to supply, install and maintain a temporary, potable water system and shall furnish for review and approval by Kitchener Utilities, a detailed work plan, supplemented with sketches, drawings and details as to how the system will be implemented as per the DGSSMS.

The Contractor shall visit the site prior to the tender submission to be certain of the necessary work required to complete the temporary watermain plan for fire suppression and potable water requirements.

493.02 Construction

Aboveground piping shall be placed in such a manner as not to be endangered by equipment or vehicular traffic, pose hazard for pedestrians (tripping, etc.), and constructed to safeguard against vandalism/tampering.

The Contractor shall install a backflow preventer on the temporary system as per the DGSSMS. The size of the backflow preventer shall correspond to the largest diameter of the temporary watermain installed.

493.03 Measurement for Payment

Payment will be made on a pro-rated basis, 70% following supply and installation and 30% following removal of the system.

493.04 Basis for Payment

The price for this item shall include all labour, equipment, and materials (including backflow preventer), to implement and decommission the temporary watermain system, including preparation of the work plan, supply, installation, initial and ongoing bacteriological tests, and maintenance. The Contractor should also include the cost to provide sampling of the temporary watermain.

The price for temporary watermain shall include the cost to connect and disconnect to properties listed in the contract documents that require an after business hour (off peak) connection to the temporary watermain system.
CKSS 501
COMPACTING

REFERENCES

OPSS 501 – Compacting

501.01 Construction

Earth subgrade materials shall be compacted to a density of 95% Standard Proctor Dry Density (SPDD).

Granular A and B shall be compacted to a density of 100% SPDD.

Water shall be applied on the granular material to achieve compaction.
CKSS 510
REMOVAL

REFERENCES

OPSS 510 – Removal
OPSS 610 – Removal of Electrical Equipment and Materials

510.01 Removal

510.01.01 Curb and Sidewalk

In reconstruction and/or rehabilitation projects the Contractor shall remove existing curbs or sidewalks in short sections only, as specified by the Contract Administrator. All traffic and pedestrian control procedures shall be in accordance with the latest edition of the "Occupational Health and Safety Act and Regulations for Construction Projects" and the manual of "Uniform Traffic Control Devises, Field Edition", as issued by the Province of Ontario. In any circumstance, wherever necessary, the Contractor shall maintain and supply temporary walkways and traffic thruways using delineators, barricades, and/or caution tape as directed by the Contract Administrator.

510.01.02 Soil (Inert) Disposal

Where and as directed by the Contract Administrator and/or the Geotechnical Consultant, the Contractor shall excavate unsuitable subsurface material (including trench excavation) and/or soft spots and dispose of the material off-site.

Material that is excess to the project that can be shipped to another property will be determined by the Owner's Representative through environmental and geotechnical testing. The Contractor shall excavate to the lines and grades specified in the contract and take all steps reasonable to control the flow of water for dewatering, minimize open lengths of trench, and to the extent reasonable and practicable reuse, approved native material.

510.02 Salvage

510.02.01 Landscaping Features

All material designated to be salvaged (i.e. pavers, retaining walls, etc.) shall be stored in a secure location and separated and catalogued from other like products and materials in order to maintain distinction as to its location of origin.

510.02.02 Traffic / Road Signs

The Contractor may not remove existing stop signs due to Provincial regulatory requirements. Where stop signs are to be removed the City shall provide a temporary stop sign in its place. All other signs which are removed during construction shall be stored securely on site by the Contractor.
510.03 Measurement for Payment

510.03.01 Asphalt

Some driveways may have a coating of asphalt over the existing concrete and in this case, the concrete item removal will govern, i.e., one payment will be made for this removal, not both.

510.03.02 Concrete

Measurement shall be per square metre for sidewalks and driveways, per linear metre for curb and gutter, and per square metre area of the tread for steps.

510.03.03 Soil (Inert) Disposal

Payment for offsite movement of designated inert soils (approved by the Owner) to another property shall be measured by the tonne using scale house tickets. If tickets cannot be provided due to the location of the disposal site the Contractor shall declare such prior to shipment of material off-site and the truck box method will be used at the time of shipment in cubic metres, as agreed upon by the Owner.

For the purposes of conversion to tonnes the following conversion rates will apply for each soil type.

<table>
<thead>
<tr>
<th>Soil type</th>
<th>Unit Weight (kg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>1,800</td>
</tr>
<tr>
<td>Gravel</td>
<td>2,000</td>
</tr>
<tr>
<td>Sand</td>
<td>1,900</td>
</tr>
<tr>
<td>Silt</td>
<td>1,600</td>
</tr>
</tbody>
</table>

For soil types not listed above or for a mixture of those shown, a unit weight shall be agreed upon between the Contractor and the Owner prior to soil removal.

The quantities specified for the unit prices are estimates based on the best available information. Variances of actual quantities from estimates shall not be considered as valid cause for price adjustments.

For removal of unsuitable subsurface materials measurement will be by the in-place cubic metre with no allowance for bulking and will be based on extension of the approximate average depth and approximate average square metre area of the subexcavation based on measurements taken by the Contract Administrator’s field representative at the time of work.

510.03.04 Traffic / Road Signs

Measurement for traffic and/or road sign removal shall be per each location. Where multiple signs are mounted on one post, payment shall be for one removal only.

510.03.05 Watermain and Appurtenances

Measurement for payment for watermain and water service removal shall be per linear metre along the centre line of pipe including all inline facilities, bends, or other appurtenances, while removal of valve chambers and hydrants will be on each basis for the number of units removed under this item.
510.04  Basis for Payment

510.04.01  Asphalt

The work of this item shall include all labour, equipment, materials and sawcutting as required to remove asphalt pavement materials specified in the Schedule of Items and Prices, and disposal of the same off site.

510.04.02  Concrete

The work of this item shall include all labour, equipment, materials and sawcutting as required to remove concrete road base, reinforced concrete road base, sidewalks, curb and gutter, driveways, and driveway ramps, steps and disposal of the same off site.

510.04.03  Soil (Inert) Disposal

The work for these items shall include labour, equipment and materials required to excavate, load, transport, unload at another property, and written proof of acceptance of the material by the property owner. No additional payment shall be made for the Contractor to level, grade, or compact the material at the receiving site.

510.04.04  Traffic / Road Signs

The work of this item shall include all labour, equipment and materials required to carefully remove all existing traffic signs within the limits of the project, and as may be required to permit the construction of the various items of work. Signs shall be stored in a safe and secure location so as to prevent damage or theft.

510.04.05  Watermain and Appurtenances

The work of this item shall include all labour, equipment and materials required to remove existing watermain pipe, valves, hydrants, watermain services and/or other appurtenances as specified in the Schedule of Items and Prices and/or as illustrated on the Contract Drawings, all in accordance with OPSS 510, except as extended or amended herein. Payment at the Contract unit prices shall be full compensation for all specified and incidental work required to complete the items of work to the satisfaction of the Contract Administrator.
CKSS 517
DEWATERING OF EXCAVATION

REFERENCES

OPSS 517 – Dewatering of Pipeline, Utility, and Associated Structure Excavation
Region of Waterloo Sewer Use By-Law 1-90

517.01 General

Surface and ground water shall only be discharged with the approval of the Owner directly to adjacent watercourse, ditches, or sewer. Groundwater shall be tested by the Owner prior to allowable discharge; the anticipated turn-around for the results is four (4) working days. The Contractor shall make every effort to reduce the level of sediment in the discharge effluent.

517.02 Dewatering

The contractor shall be responsible for:

- Dewatering, depressurizing, draining, and maintaining trenches, tunnel excavations, sewer excavations, structural excavations, and foundation excavations in a stable condition;
- Protecting work against surface runoff, snow melts and rain waters;
- Providing a poly tank for temporary storage of ground water prior to discharge;
- Disposing of removed ground water; and
- Ground water control including both dewatering and depressurization of water bearing soil layers.

Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from cut slopes or bottoms of excavations, and disposing of removed water. The intent of dewatering is to increase the stability of tunnel excavations and excavated slopes; prevent dislocation of material from slopes or bottoms of excavations; reduce lateral loads on shoring; improve excavating and hauling characteristics of excavated material; prevent failure or heaving of the bottom of excavations; and to provide suitable conditions for placement of foundations, backfill materials, waterproofing, drainage, and construction of structures and other installations.

Depressurization includes reduction in piezometric pressure within strata not controlled by dewatering alone, as required to prevent failure or heaving of excavation bottoms.

Excavation drainage includes keeping excavations free of surface and seepage water.

Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the work from any source of surface water.

Equipment and instrumentation for monitoring and control of the ground water control system as per conditions imposed by the MOE Permit to Take Water (PTTW), the Region of Waterloo Sewer Use By-Law 1-90 and the Compliance Agreement as contained within the Contract Documents.

The Contractor shall not begin to discharge any water from the poly tank without the written authority of the Owner.
517.02.01 Performance Requirements

Design a ground water control system to produce the following results:

- Reduce the hydrostatic pressure affecting the excavations, cut slope stability and foundation subgrades.
- Develop a dry and stable subgrade for subsequent construction operations.
- Preclude damage to adjacent buildings, structures and utilities, and other work.
- Prevent the loss of fines, seepage, boils, quick condition, or softening of the foundation soils.
- Maintain stability of sides and bottom of excavations.

Ground water control systems may include single-stage or multiple-stage well point systems, eductor and ejector-type systems, deep wells, or combination of these equipment types.

Provide drainage of seepage water and surface water, as well as water from any other source entering the excavation. Excavation drainage may include placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping. Provide ditches, berms, pumps and other methods necessary to divert and drain surface water from excavation and other work areas.

Locate ground water control and drainage systems so as not to interfere with utilities, construction operations or adjacent properties.

Provide an adequate number of piezometers installed at the proper locations and depths as required to provide meaningful observations of the conditions affecting the excavations.

Protect monitoring wells installed during the site investigation.

Decommission piezometers and monitoring wells installed during site investigation as per O. Reg. 372/07.

517.02.02 Equipment and Materials

Equipment and material selection are the prerogative of the Contractor as necessary to achieve the desired results for dewatering.

Eductors, well points, or deep wells, where used, must be furnished, installed and operated by an experienced Contractor regularly engaged in ground water control system design, installation, and operation. All equipment must be in good repair and operating order.

Sufficient standby equipment and materials shall be kept available to ensure continuous operation, where required.

Provide thermal protection for the dewatering system against freezing temperatures where required.
517.02.03 Submittals

Submit a Ground Water and Surface Water Control Plan for review by the Contract Administrator prior to start of any field work. The Plan shall be signed by a Professional Engineer registered in the Province of Ontario.

Submitted plan to include the following, but not limited to:

- A description of proposed groundwater control systems indicating arrangement, location, depth and capacities of system components, installation details and criteria, and operation and maintenance procedures.
- A description of proposed monitoring and control system indicating depths and locations of piezometers and monitoring wells, monitoring installation details and criteria, type of equipment and instrumentation with pertinent data and characteristics.
- Operating requirements, including piezometric control elevations for dewatering and depressurization.

Submit the following records upon completion of initial installation:

- Installation and development reports for well points, eductors, and deep wells.
- Installation reports and baseline readings for piezometers and monitoring wells.
- Baseline analytical test data of water from monitoring wells.
- Initial flow rates.

Submit the following records on a weekly basis during operations:

- Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization.

Submit the following records at end of work:

- Decommissioning (abandonment) reports as per O. Reg. 372/07 for monitoring wells and piezometers installed by others during the design phase and left for Contractor’s monitoring use, and those installed by the Contractor.

517.03 Water Control

517.03.01 Ground Water Control

Monitor operations to verify that the dewatering system lowers ground water piezometric levels at a rate required to maintain a dry excavation, resulting in a stable subgrade for carrying out subsequent operations.

Where hydrostatic pressures in confined water bearing layers exist below excavation, depressurize those zones to eliminate risk to uplift or other instability of excavation or installed works. The piezometric elevations shall be at least 500mm below the lowest excavation elevation.

Remove ground water control installations.

Remove pumping system components (such as eductors, well points, or deep wells and piping) after the permanent dewatering system is fully functional.

Decommission piezometers and monitoring wells in accordance with Ontario Regulation 372/07.
The use of submersible drainage pumps pumping at a controlled rate installed in a sump lined with 19 mm. clear stone acting as a filter material may be permitted with the approval of the Contract Administrator.

517.03.02 Surface Water Control

Intercept surface water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. This includes temporary works required to protect adjoining properties from surface drainage caused by construction operations. Divert surface water and seepage water into sumps and pump it into designated drainage channels or storm drains. Provide settling basins as required.

517.04 Measurement for Payment

For mobilization and demobilization payment will be made on a lump sum basis with 80% of the item being paid once the dewatering system is fully operational, the remainder is to be paid upon demobilization of all dewatering equipment and forces.

For payment of a well point dewatering system the lineal metre measurement shall apply to the length along the centerline of the road where header pipe is installed.

517.05 Basis for Payment

The work for this item shall include all labour, materials, equipment, techniques and methods to lower, control, remove sediment and handle ground water in a manner compatible with construction methods and site conditions; monitor effectiveness of the installed system; provide for continuous system operation, including nights, weekends, and holidays; and arrange for appropriate backup when electrical power failure occurs. The Contractor shall comply with conditions in the PTTW, the Compliance Program with the Region of Waterloo for discharge to the sanitary sewer, The Occupational Health and Safety Act, regulations for Construction Projects, local by-laws and all other regulations of the Ontario Ministry of Labour and MOE Regulations for disposal of materials.

The Contractor shall include in their mobilization and demobilization costs the effort required to relocate the dewatering pump and poly tank as necessary to facilitate construction.

No extra payment for the removal of ground water from excavations will be made unless specific item(s) for well pointing systems are provided in the Form of Tender, and any method employed by the Contractor to this end, including the use of clearstone, shall be carried out at the Contractor's own expense. Any clearstone used for the aforementioned purpose shall be for dewatering purposes only and shall not be accepted in lieu of specified bedding or backfill material.

No additional payment will be entertained for a possible delay in furnishing the groundwater sampling results to the Contractor.
CKSS 518
GROUNDWATER TREATMENT

REFERENCES
OPSS 517 – Dewatering of Pipeline, Utility, and Associated Structure Excavation
OPSS 518 – Control of Water from Dewatering Operations
Region of Waterloo Sewer Use By-Law 1-90

518.01  General
Liquids handling, liquids treatment and disposal will be the responsibility of the Contractor during all excavation and backfilling operations. Long-term groundwater treatment is not included in this contract.

518.02  Construction
The Contractor shall ensure that all groundwater entering excavations as well as surface water which has contacted potentially contaminated soil on the site is collected, as it will be considered to be wastewater and will not be suitable for direct discharge.

The Contractor is responsible for all maintenance of the water treatment system including winterization, filter changes, and any media (e.g. granular activated carbon) changes. The Contractor is also responsible for any costs incurred for the changing and disposal of any spent carbon or other media from the water treatment plant. Water quality may be variable indicating that concentrations of detected compounds may fluctuate. In addition, the Contractor shall satisfy themselves regarding any other compounds not listed in the tables provided by the Owner, particularly those compounds that may affect water treatment such as changing of carbon units, filters, etc. No additional payment or claim will be considered for any costs incurred such as changing of carbon units, filters, etc. caused by reasonable variability in chemical concentrations, or chemical compounds or parameters not listed or provided.

From an operational view, system maintenance and filter change-out would occur on a regular basis based on routine analysis, before any level that exceeds the specified maximum permissible limit. It is the responsibility of the Contractor to assess the condition of the effluent on a regular basis and to determine when maintenance is required and to ensure that effluent discharged to the sanitary or storm sewer does not exceed the permissible limit.

A flow meter will be installed to record the actual volume of discharged water. Test ports before and after the treatment filters will allow for sampling collection for laboratory analysis of target compounds before treated groundwater is discharged to the sewer. The proposed effluent quality will not result in an odour concern within the sewer.

Wastewater handling will not include direct discharge to ground surface.

To confirm that the Contractor’s mobile water treatment unit is functioning satisfactorily, the Contract Administrator, in cooperation with the Contractor, will proceed as follows:

- A batch volume of treated effluent, with a volume of 53,000 L representing a Baker tank volume, would be stored and tested to confirm compliance with O.Reg. 511/09 (as amended) Table 2 Standards, the Region of Waterloo Sewer Use By-Law 1-90, and any other applicable limits as set out in the Compliance Program with the Region of Waterloo. If contaminants are detected above the respective limits in the effluent, the batch volume of water shall be retreated at the Contractor’s expense. The retreated batch(s) of effluent will be retested at the Contractor’s expense until compliance is confirmed.
• The Contract Administrator upon receipt of satisfactory laboratory analysis that confirms that the treated effluent does not exceed the respective limits will authorize the Contractor to discharge the treated effluent to the sewer with any and all conditions set out in the valid and proper Environmental Compliance Approval(s) (ECA), and/or Region of Waterloo Compliance Program.

• All subsequent operation and conformance to the ECA for discharge to the sewer shall be the responsibility of the Contractor. This shall include testing, reporting, monitoring requirements.

Operation of the treatment facility and discharge to any sewer shall not be permitted without written authorization from the Owner.

518.03 Dewatering Effluent Discharge to Sanitary Sewer

Treatment of all dewatered liquids shall meet the Sanitary Sewer-Use By-law 1-90 criteria and any applicable permit criteria for discharge to the sanitary sewer.

The sampling requirements for discharge to the Regional Municipality of Waterloo Sanitary Sewer (RMOW) are expected to be as follows:

• 3 batch volumes of pre-treated effluent, each with a volume of 53,000 L representing a Baker tank volume, that would be stored, tested and results forwarded to the RMOW for approval prior to discharge. The Contractor must allow for the temporary stopping and re-starting of dewatering operations while the Region is reviewing each of the three batch data sets. After 3 consecutive batches that successfully meet the Sanitary Sewer-Use By-law 1-90 criteria, then discharge would occur directly to the sanitary sewer and water quality testing would occur as set out below.

• Pre-treated effluent will then be tested daily for the first week to confirm the system is functioning properly. After the first week, effluent will be tested weekly to confirm compliance with the Sanitary Sewer-Use By-law 1-90 criteria.

The above sampling requirements will be the responsibility of the Owner. Any additional sampling requirements to verify the proper operation and treatment capability of the Contractor’s treatment system shall be paid by the Contractor. Laboratory sampling results will be received within 3 to 5 days of sampling.

Provided the dewatering effluent meets the Sanitary Sewer-Use By-law 1-90 and the sewer use agreement direct discharge to the sanitary sewer can commence following approval from the RMOW and Owner. Be advised that representatives from the RMOW may conduct Site inspections and sampling of treated effluent for their own independent verification that the terms of the Permit are being met. The Contractor shall provide access to the water treatment system to the Contract Administrator and RMOW’s representative for inspection and testing purposes. The Contractor will be in breach of the terms of this contract if it knowingly violates any condition or requirement for testing set out in the Region of Waterloo Compliance Program or described herein.

Should the dewatering effluent fail to meet the conditions of the sewer use agreement, then treatment of the groundwater may be necessary prior to discharge to the sanitary sewer.

The Contractors mobile water treatment plant shall include the following at a minimum, as a requirement of Sewer-Use agreement with the RMOW:

• The system is required to pre-treat the complete volume of dewatering liquids. The system must include the following elements:
- **Influent Equalization Tank** – A 53,000 L Baker tank (or approved equivalent) will be used to even the flow into the treatment train. The tank will be baffled to allow grit and sediment to settle out before treatment.

- **Filtration for Sediment Removal** – The Contractor shall establish an appropriate method to remove grit, sediment, and suspended solids prior to discharge to the effluent tank.

- **Effluent Tank** – A 53,000 L (11,800 gal.) Baker tank (or approved equivalent) will be used to store treated effluent prior to discharge.

### 518.04 Dewatering Effluent Discharge to Storm Sewer

In the event that discharge to the sanitary sewer is not available at the time of construction, alternate disposal of dewatered liquids will be required as directed by the Contract Administrator. The Contractor’s mobile water treatment plant shall include the following at a minimum as a requirement of discharge to the storm sewer:

- The system is required to pre-treat the complete volume of dewatering liquids. The system must include the following elements:
  - **Influent Equalization Tank** – A 53,000 L Baker tank (or approved equivalent) will be used to even the flow into the treatment train. The tank will be baffled to allow grit and sediment to settle out before treatment.
  - **Prefilter** – The first step in the treatment is a micronic filter to remove any suspended solids in the water. The filter is an interchangeable pleated paper cartridge housed in an epoxy-lined carbon steel canister.
  - **Two (2) Carbon Adsorption Units** – The next step is the treatment system is carbon adsorption to remove the dissolved organic contaminants. The system will use a minimum of two (2) units connected in series. Depending on the size of the carbon vessels chosen the Contractor may choose to add additional units in parallel to accommodate the flow. The contaminant removal will be achieved in the first unit with the second unit acting as a back-up in the case of breakthrough.
  - **Effluent Tank** – A 53,000 L Baker tank (or approved equivalent) will be used to store treated effluent prior to discharge.

### 518.05 Off-Site Water Disposal

If instructed by the Contract Administrator to dispose of impacted groundwater to an MOE approved disposal facility, the Contractor is solely responsible for arranging a disposal facility including manifesting and providing any analytical data that the disposal facility requires. The Owner shall provide the Hazardous Waste Information Network (HWIN) number to the Contractor.

### 518.06 Basis for Payment

#### 518.06.01 On-Site Water Treatment

Payment for mobilization and demobilization shall only be paid upon written authorization from the Contract Administrator permitting the Contractor to setup the mobile treatment facility on-site.

Payment for the handling and disposal of wastewater to the sanitary sewer or to the storm sewer will be made according to the specified lump sum and unit rates per cubic metre provided in the Form of Tender. Costs are to include all labour equipment and supplies for cleaning, start-up, continuous operation and
maintenance of the system and components for the duration of dewatering activities, including all mandatory reporting requirements. Costs also include all labour, equipment and supplies related to changes of filters and filter media.

No additional payment will be made for power supply and use, winterization, movement of the system and associated equipment within the limits of the project site, re-processing of treated water, site security, malfunction of equipment, addition/removal of treatment components, standby time, system modification due to improper operation, maintenance, testing, or sampling pursuant to the ECA and/or Region of Waterloo Compliance Program is to be made by the Contractor.

Payment for groundwater treatment items will only be made if the dewatering effluent does not meet O.Reg. 511/09 (as amended) Table 2 Standards and/or the Region of Waterloo Sewer Use By-Law 1-90 and the Compliance Program with the RMOW.

No payment will be made for discharge of treated groundwater to the sewer without written approval from the Owner.

518.06.02 Off-Site Water Disposal

Payment for the handling and offsite disposal of wastewater to a licensed wastewater treatment facility to include all load manifests, testing fees by the receiver, reporting requirements, vacuum truck equipment, and miscellaneous pumps and hoses. No additional payment will be made for truck standby time during loading and unloading, loads rejected by the receiver, load restriction or surcharges.
CKSS 560
PRECONDITION SURVEY OF STRUCTURES

560.01 General

The Contractor will retain a mutually agreed upon specialist firm to conduct pre-condition inspections of structures in proximity to this project, record the condition of such structures, make arrangements for a program of vibration monitoring during the construction (as may be necessary), and conduct follow-up inspections and investigations (as maybe necessary).

The completion and verification, in writing to the Owner, that all pre-condition inspections of all structures shall be done before the scheduled start of construction. Failure to satisfy this condition may be treated, at the Owner's discretion and without claim of waiver, as a material breach of the contract.

560.02 Work

The general requirements for these surveys will include a video and photographic record, a fully documented (hardcopy and digital PDF) inventory and bound report(s) with photographic examples. The report shall include a reference map showing buildings surveyed by location and a summary of significant and/or notable deficiencies or matters of concern to the proposed project. The inspection and survey report shall document the following minimum information:

Conditions of:

Building Exterior - all exposed walls, doors, window, roof if possible and any other permanent or fixed structures, including, retaining walls, garage(s), carport(s), landings, porches, etc.

Building Interior - all rooms, exposed walls, floor and ceiling, doors, windows, stairs and landings as well as any other pertinent fixtures.

Landscaping Features - such as fountains, garden walls, driveways and hard surfaced walkways (concrete, impressed concrete, etc.)

Within 7 days of receipt from the Contractor and/or specialist firm of the municipal addresses where a pre-condition survey will be carried out, the Owner will provide to the Contractor the name and addresses of the corresponding property owners.

Before the pre-condition surveys are carried out, the Owner will provide an introductory form letter explaining the purpose and procedure of the survey. The letter must be delivered to each property owner prior to the survey being undertaken.

560.03 Measurement for Payment

Measurement for payment will be lump sum with 50% paid upon project startup and the remainder being paid in full once final reports has been provided to the Owner.

560.04 Basis for Payment

This Item shall include all labour, equipment and materials required to provide a complete pre-condition survey of structures as required by the scope of the work described below, including the submission of the detailed survey results to the Owner prior to the scheduled start of construction, and follow up inspections as required.
CKSS 561
TEST PITS FOR SOIL CHARACTERIZATION

561.01 Construction

561.01.01 Test Pits During Construction

The Contractor shall excavate at locations agreed upon with the Contract Administrator test pits to a minimum of 1.2m below ground surface (b.g.s.) for the purposes of obtaining soil samples for characterization of contaminants.

The Contractor shall upon completion of the test pit backfill with the excavated material. For projects where this work forms the part of a larger contract, granular A shall be used for restoration to existing grade above the backfilled material, all granular material to be compacted to 100% SPDD.

561.01.02 Exploratory Test Pits

The Contractor shall upon completion of the test pit backfill with the excavated material and compacted to 95% SPDD. Asphalt edges shall be saw-cut in a diamond pattern in the direction of the flow of traffic. A minimum of 90 mm of HL4 (two lifts of 45mm) asphalt (compacted to 98% SPDD) placed to finished grade

561.02 Basis for Payment

The work of this item shall include all labour, equipment, materials and sawcutting as required to excavate, stockpile, and backfill test pits for soil characterization to the depth specified in the Contract Documents and locations as directed by the Contract Administrator.

Payment for restoration items such as asphalt shall be paid for under their respective items in the Form of Tender.
CKSS 562
PROVIDE GARBAGE, RECYCLE, GREEN BIN AND YARD WASTE PICK UP AND TRANSPORTATION

562.01 General

The Contractor will be required to pick up, transport, and return (in the case of bins) garbage, recycle, green bin and yard waste materials when access to these areas are denied because of the Contractor’s activities or deemed unacceptable by the Region of Waterloo’s Waste Management Division.

562.02 Measurement for Payment

Payment for this item will be pro-rated to match the percentage of the work completed at the time of each progress payment certificate.

562.03 Basis for Payment

The work of this item shall include all costs associated with the pickup and transportation of garbage, recycle, green bin and yard waste items, as required by the Regional Municipality of Waterloo, Waste Management Division as well as other waste collection firms.
CKSS 563
RAILWAY FLAGMAN AND INSPECTION

563.01 General

The Contractor shall be responsible for coordinating with the Railway Authority to arrange for their on-site inspector(s) to be present for the duration of any work within or adjacent to the Railway Right-of-way as required by the Railway Authority.

563.02 Basis for Payment

The Contractor shall be responsible for all Railway inspection costs, including all incidental items as provided in the Form of Tender. Any inspection costs over and above the amount listed in the Form of Tender shall be at the Contractors’ expense, and shall be considered a full part of the work.
CKSS 564
UNSHRINKABLE BACKFILL

REFERENCES

OPSS 1359 – Material Specification for Unshrinkable Backfill  

564.01 Material

The controlled density fill material used shall be a ready mixed flowable fill as manufactured by local ready mixed concrete producers. The controlled density fill shall consist of and meet the following requirements:

- **Cement**
  - Type 10 Portland Cement
  - 25 kg/m³

- **Aggregates**
  - In accordance with CSA (CAN3-A23.1)

- **Slump**
  - 160mm to 200mm for trench backfill, or as per pumping specifications

- **Strength**
  - 0.07 MPa within 24 hours
  - maximum 0.4 MPa at 28 days

- **Air Entrainment**
  - In accordance with CSA (CAN3-A23.1)

564.02 Construction

The Contractor is to ensure the method and equipment being used will not damage the abandoned pipe.

564.03 Measurement for Payment

Payment shall be at the Contract unit price per cubic metre for trench backfill, or at the per cubic metre price bid for filling abandoned pipe, and shall be full compensation for all specified and incidental work, to the satisfaction of the Contract Administrator.

564.04 Basis for Payment

The work of this item shall include all labour, material and equipment required to supply and place controlled density fill, to fill in-situ voids and abandoned pipes inaccessible to mechanical compaction equipment, in order to provide protection and structural support to utilities and other plant as requested by the Contract Administrator.
CKSS 565  
**SITE OFFICE**

565.01  **General**

The Contractor shall provide for the duration of the Contract, for the sole use of the Contract Administrator and their representatives, a field office in good condition having a minimum floor area of 12.0m², a plan bench 1.0m wide x 2.4m long including a drafting stool, adequate windows, a telephone and an electrical service hookup (which shall be maintained by the Contractor at the Contractor’s expense), a lockable door, a desk with drawers and four chairs. The office shall be heated and/or cooled (at the Contractor’s expense), to maintain a temperature level between 20 degrees C and 24 degrees C. The office shall be erected and moved as, where and when the Contract Administrator directs. The office shall be maintained in a clean condition by the Contractor. On completion of the contract work, or as otherwise directed by the Contract Administrator, the field office shall be removed from the site by the Contractor. The site office shall remain the property of the Contractor.

The Contractor shall provide, and setup a Wi-Fi internet connection in the site office. The cost for an Internet Service Provider shall be included in the unit price.

The Contractor shall also provide an air-conditioning window unit, fire extinguisher, and first aid kit for the site office.

565.02  **Basis for Payment**

Payment for this item will be pro-rated to match the percentage of the work completed at the time of each progress payment certificate and shall be for the supply, operation, maintenance, and removal of the site office as described herein.
CKSS 603
INSTALLATION OF DUCTS

REFERENCES

OPSS 603 – Installation of Ducts
OPSD 2101.01 – Duct Installation in Trenches

603.01 Material

Unless otherwise noted on the contract drawings or in the Form of Tender the following approved materials should be used according to their corresponding installation method:

- Rigid PVC Type 2 (open cut installation)
- HDPE DR13.5 (for horizontal directional drilling installations)

603.02 Construction

Duct shall be complete with solvent welded joints for PVC, and butt fused for HDPE, caps on all open ends and a ‘string’ for cable pulling through the duct. A minimum of three (3) metres of string shall be rolled up at each end of the duct outside of the cap to provide sufficient working material for pulling.

A minimum of 100mm of sand compacted to 95% SPDD shall be used for bedding material, with a minimum cover above the largest duct obvert (in the duct bank) of 300mm of sand compacted to 95% SPDD.

603.03 Measurement for Payment

Payment will be made per linear metre of duct installed regardless of the method of installation.

603.04 Basis for Payment

The work of this item shall include all labour, materials, equipment required to install duct at locations specified on the contract drawings. The price for this item shall also include the installation of electronic ball markers as provided by the Telecommunications Company and coordination with the respective stakeholder.
CKSS 706
TRAFFIC CONTROL, VEHICULAR AND PEDESTRIAN SIGNAGE

REFERENCES

OTM Book 7
OPSS 706 – Traffic Control Signing

706.01 Measurement for Payment

The work of this item shall include all labour, equipment and materials required to provide traffic control measures and installation/removal of signage in accordance with the Occupational Health and Safety Act for Construction Projects and as outlined in the Contract documents. The work shall also include all coordination efforts required by the Contractor to deal with traffic operations in conjunction with the City of Kitchener, the Regional Municipality of Waterloo, emergency services, Grand River Transit, School Board transit and other needs of the community.

706.02 Basis for Payment

Payment on a percentage of completion basis shall be considered compensation in full for all specified and incidental work required by the Contractor to coordinate traffic control and operations on this Contract. Payment will be made on a pro-rated basis determined on each payment certificate based on the percentage of project completed.
CKSS 710
PAVEMENT MARKINGS

REFERENCES

OTM Book 11
OPSS 710 – Construction Specification for Pavement Marking

710.01 Material

Pavement markings applied on surface asphalt at finished grade are to be thermoplastic.
Pavement markings applied on base asphalt shall be organic paint.

710.02 Construction

Pavement markings shall be applied at locations as shown on the contract drawings and as directed by the Contract Administrator.

Stop bars shall be 0.6m wide; crossing ahead markings shall be 0.3m wide.

710.03 Basis for Payment

The work of this item shall include all labour, material and equipment necessary to provide pavement markings as shown on the Contract Drawings and as directed by the Contract Administrator.
REFERENCES

OTM Book 5

**760.01 Material**

All sleeves, posts, and brackets for installation of signs are to be supplied by the Owner given 10 working days’ notice.

All traffic signs to be installed will be supplied by the Owner.

**760.02 Construction**

A sign inventory will be supplied to the Contractor by the Owner for locations of traffic signs. The Traffic Project Coordinator will meet with the Contractor to review and pre-mark installation locations. Upon completion of installation the Contractor will notify the Owner for inspection purposes.

**760.03 Basis for Payment**

The Contractor shall be responsible for any relocation costs associated where the initial sign placement by the Contractor was incorrect.

The Contractor shall be responsible for any costs associated for replacement of signs due to damage or theft as a result of improper storage.
CKSS 761
HANDRAIL INSTALLATION

761.01 Material
The top rail and posts shall be 38mm square cast iron tubing painted with an exterior flat black finish. The bottom rail and pickets shall be 25mm square tubing.

761.02 Construction
The top rail shall be set at 900mm above the concrete surface (to the centre line of the square tubing). The bottom rail shall be set at 450mm above the concrete surface (to the centre line of the square tubing).

The railing structure shall be surface mounted with a minimum base plate diameter of 140mm and thickness of 6mm (complete with a neoprene gasket).

Posts shall be set vertically; all exposed corners shall be ground smooth. All joints shall be shop welded. Welding to conform to CSA W59.

761.03 Measurement for Payment
Measurement for payment will be on the per metre basis. The limits of the railing shall be measured as end to end in a horizontal plane from centre to centre of outermost railing posts.

761.04 Basis for Payment
The work for this item shall include all labour, equipment and material required to install the handrail.
CKSS 801
TREE PROTECTION

REFERENCES

OPSS 801 – The Protection of Trees

801.01 Construction

The work of this item shall include all labour, equipment and materials required to supply, erect, and maintain temporary fencing (orange, plastic fence, 1.2 metre high with metal “T” bar supports at maximum 6 metre spacing) complete with a 10mm nylon top rope (woven through the top of the fencing). Fencing to be located around existing trees (as specified on the Tree Management Plan) and/or along both sides of the roadway (at the curb line or sidewalk area), to protect the trees and pedestrians from the Contractor’s activities. Fencing may also be located to delineate other construction activities as noted elsewhere in the Special Provisions.

The Contractor shall include in the pricing of this item, any and all costs required to remove and reinstate sections of the protective snow fencing as may be required for the removal and replacement of lateral services, utilities, and related work. All temporary fence placed will remain the property of the Contractor upon removal.

801.02 Measurement for Payment

801.02.01 Tree Protection Fencing

Measurement for this item will be on a linear metre basis for all new temporary fencing installed on the project irrespective of the number of occasions the temporary fence may be relocated for construction purposes.

No payment will be made for short-term removal/replacement (i.e. service installations).

Payment at the unit price per linear metre shall be considered full compensation for all specified and incidental work required to complete the item of work to the satisfaction of the Contract Administrator.

801.02.02 Provide Tree Protection

This lump sum payment will be released at the time of Final Completion.

Any applicable assessment fees will be deducted from the amount shown in the Form of Tender, as outlined in CKSS 151. If these assessment fees exceed the amount in this item, then a negative amount will apply.

801.03 Basis for Payment

801.03.01 Tree Protection Fencing

The work for this item shall include all labour, equipment and materials necessary to setup, maintain and remove tree protection fencing as directed by the Contract Administrator.

Payment shall be 70% of the unit price upon initial installation and the 30% balance upon removal.
801.03.02  Provide Tree Protection

The work of this item shall include all associated extra costs, (not included in payable items elsewhere in the Form of Tender), that the Contractor will incur in order to provide for the protection of trees, as specified in CKSS 151 and on the Tree Management drawings, including all handwork as required to protect tree roots while preparing for sod placement.
CKSS 802
TOPSOIL

REFERENCES
OPSS 802 – Topsoil

802.01 Material

The imported screened topsoil shall be friable, neither heavy clay nor of very light sandy nature; containing a minimum of 4% organic matter for clay loams and 2% for sandy loams to a maximum of 20% by volume. Imported topsoil shall be free from subsoil, roots, grass weeds, toxic materials, stones, foreign objects and with an acidity range (pH) of 6.0 to 7.5. Topsoil containing crabgrass, couchgrass or noxious weeds will not be accepted.

802.02 Construction

Screened topsoil shall be spread to a minimum compacted depth of 150 mm. The Contractor shall fine grade, to a uniform surface, the areas or locations to be topsoiled. In order to ensure proper integration of the topsoil with existing surface, the latter shall be free of all vegetation and other debris and free of stones which would not be covered by the depth of topsoil specified, and shall be loose to a depth of 25 mm at the time of placing topsoil. The Contractor shall perform such mowing, raking and picking up of debris, and such discing, harrowing or other means of scarification as may be necessary to comply with this requirement, and shall dispose of all debris at the Contractor's expense. All clods or lumps shall be pulverized and any roots or foreign matter shall be raked up and removed by the Contractor. Surface shall then be rolled in two directions and all depressions filled and smoothed. Topsoil shall be level with the sidewalk and curb. All surfaces on which sod is placed shall be loose, at the time of placing the sod.

802.03 Measurement for Payment

Measurement for payment will be on a cubic metre basis, as per quantities recorded on supplied load tickets.

802.04 Basis for Payment

The work of this item shall include all labour, equipment and material required to import place and grade screened topsoil. Payment shall be on a cubic metre basis of topsoil.
CKSS 803
SODDING

REFERENCES

OPSS 803 – Sodding

803.01 General

Notwithstanding the 24-month warranty period, as stipulated in the Supplemental General Conditions, the areas sodded under the Contract are limited to a shorter warranty period as follows:

a) The Contractor shall continue to provide on-going maintenance, including watering, to the sodded areas for a period of thirty (30) calendar days from the installation of the sod, for sod work completed on or before October 15th. For sod installed after October 15th, the Contractor shall be responsible for the complete maintenance of the sod up to May 15th of the following year. Following these time periods, the full responsibility for the maintenance of the sod throughout will be transferred to the property owner.

b) Any settlements in sodded areas arising from excavation work as part of this project will be the responsibility of the Contractor for the full duration of the 24 month warranty period. The Certificate of Final Acceptance for this project will be withheld until all sod in the above-mentioned rectification areas has met the time requirements described in Part (a) above.

803.02 Material

Sod shall be No. 1 grade nursery grown sod to specifications published by the Canadian Nursery Trades Association. The sod shall be in vigorous growing condition, free from weeds and crabgrass, cut from well-established turf, permeated with roots and contains sufficient moisture to maintain its vitality during transportation and placing.

No. 1 Kentucky Bluegrass, Fescue sod shall be grown from minimum 40% Kentucky Bluegrass and 30% Creeping Red Fescue in accordance with the Classifications of the Nursery Sod Growers Association. Sod shall contain no more than 2% of other strains or species of grasses or clover of which twitch grass shall not constitute more than 0.5%. Sod shall be two years old from the time of original seeding be well rooted, free from stones, grubs and burned or bare spots, and shall be fresh at the time of lying. The screened topsoil shall be removed of all debris prior to the placement of sod.

803.03 Construction

All sod shall be cut by approved methods and shall be of a thickness as specified by the Nursery Sod Growers Association of Ontario, but shall not exceed 30mm nor be less than 25mm in thickness. Sod shall be cut in pieces, 1 square metre in area.

All sod must be delivered to the job within 24 hours of being cut and shall be placed within 36 hours of being cut.

The sodded area shall be watered immediately upon completion until the area is saturated to the satisfaction of the Contract Administrator.

Where required fertilizer shall be delivered to the site in standard containers, labeled to indicate its weight, analysis and manufacturer. Fertilizer shall be stored in such a manner that it is kept dry and its effectiveness is not impaired. Fertilizer shall be 8-32-16, a complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen. Payment for the fertilizer is to be included under this item.
803.04 Measurement for Payment
Payment shall be on a square metre basis of sod laid.

803.05 Basis for Payment
The work of this item shall include all labour, equipment and material required to cover topsoiled areas.
CKSS 805
TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES

REFERENCES

OPSS 805 – Temporary Erosion and Sediment Control Measures

805.01 Material

805.01.01 Sediment Fence

Sediment fence shall be Terrafence by Terrafix Geosynthetics Inc., or approved equivalent installed to manufacturer’s silt fencing specifications.

805.02 Maintenance

Sediment traps shall be inspected and cleaned daily for damage and / or sediment build-up.

805.03 Basis for Payment

805.03.01 Sediment Trap in Catchbasin Lid

The work for this item shall include all labour, material and equipment necessary to construct sediment traps in existing catchbasin lids adjacent to the downstream limits of the project or newly installed catchbasin lids as identified by the Contract Administrator.

There will be no additional payment to maintain sediment traps, including replacement if damaged.

805.03.02 Sediment Fence

Payment for this item shall be paid on the per metre basis of temporary sediment fence installed, maintained, and removed as per manufacturer’s specifications.
CKSS 850
TERRASEEDING

850.01 Material

The following specifications shall be applicable to all products and installation methods outlined below, regardless of brand name.

The following information pertains to Filtrexx™ GrowthMedia™ Blanket but construction and maintenance shall be applicable to an approved equivalent product selected by the Contractor to be utilized.

GrowthMedia™ used for Filtrexx™ GrowthMedia™ Blankets (or approved equivalent) shall be weed free and delivered from a well-decomposed source of organic matter. The media shall be produced using an aerobic composting process meeting or exceeding M.O.E. 101, C.C.M.E. Type “A” and Type “AA” regulations, and Compost Quality Assurance Program, (C.Q.A.) including time and temperature data indicating effective weed seed, pathogen and insect larva kill. The GrowthMedia™ shall be free of any refuse, contaminants or other materials toxic to plant growth. Non composted products will not be accepted. Test methods for the items shown below should follow USCC TMECC guidelines for laboratory procedures:

a. PH – 5.0-8.0 in accordance with TMECC 04.11-A, “Electrometric pH Determinations for Compost”

b. For seeded GrowthMedia™ Blankets, seed must be incorporated at the time of application in the entire depth of the GrowthMedia™ blanket, at rates per sq. m as acceptable to the Contract Administrator. The following particle sizes shall also be followed: 100% passing a 50mm (2") sieve, 99% passing 25mm (1") sieve, minimum of 60% passing a 12.5mm (1/2") sieve. All other testing parameters are to remain the same.

c. Moisture content of less than 60% in accordance with standardized test methods for moisture determination

d. Material shall be relatively free (i.e. less than 1% by dry weight) of inert or foreign man-made materials.

e. A sample shall be submitted to the Contract Administrator for approval prior to being used and must comply with all local, provincial and federal regulations

The GrowthMedia™ Blankets will be placed at locations indicated on the drawings and as directed by the Contract Administrator. Unless otherwise specified, Filtrexx™ GrowthMedia™ Blanket shall be installed at a minimum depth of 75mm (3") with Lock Down netting or adhesion additive in areas where the slope exceeds an angle that would be too steep to provide satisfactory binding of the blanket to the soil.

The Contractor shall routinely inspect the installation upon its completion and shall maintain the Filtrexx™ GrowthMedia™ Blanket in a functional condition at all times during the construction and maintenance phases of the project.

Should the GrowthMedia™ Blanket fail, separate or otherwise deteriorate, it shall be immediately repaired or replaced at the expense of the Contractor.

Seeding the Filtrexx™ GrowthMedia™ Blanket shall be incorporated for the entire depth of the blanket. Should germination of the seed not be satisfactory, the Contractor shall overseed the area.
The Contractor shall be a certified Filtrexx™ Installer as determined by Filtrexx Filtrexx™ Canada Inc. Certification shall be considered current if appropriate identification is provided during the time of bid or at time of application.

850.02 Measurement for Payment

Payment for this item shall be by the square metre with a depth of 75mm (3") of exposed slope face for work completed. In support of this criteria, the Contractor shall provide proof that a 75mm (3") depth of GrowthMedia™ Blanket has been applied. Depth of the blanket may be measured in random locations at the time of application.

850.03 Basis for Payment

The work for this item is to consist of the furnishing, installing, maintaining and terraseeding of existing and newly constructed portions of slope area that are unvegetated and includes the area disturbed by construction. Terraseeding shall consist of the application of a blanket with an approved seed mixture incorporated throughout the depth of the blanket.
CKSS 851
CONSTRUCT LANDSCAPING

851.01 Construction

Landscaped areas shall be restored to match original conditions or better. The Contractor shall use like materials wherever possible. All work that affects private property will require the Contractor to cooperate with the property owner(s) and to communicate the extent of the work, timing of impact and reinstatement, and to obtain a satisfactory sign off from the property owner(s) that the work of reinstatement has been completed to the property owner(s)’s satisfaction.

851.02 Measurement for Payment

Payment for this item shall be Lump Sum for each property affected as listed in the Form of Tender.

851.03 Basis for Payment

The work for this item shall include all labour, equipment and materials required to reinstate landscaped areas instead of placement of sod.
CKSS 960
RETAINING WALL

960.01 Material
For new installations acceptable products are PISA2® by Unilock or GRANDE® Wall by Hanson Hardscape or approved equivalent.

960.02 Construction
In the event that additional retaining wall blocks are required to replace those salvaged from the site, the Contractor shall supply replacement materials without additional cost.

All work that affects a private retaining wall will require the Contractor to cooperate with the property owner(s) and to communicate the extent of the work, timing of impact and reinstatement, and to obtain a satisfactory sign off from the property owner(s) that the work of reinstatement has been completed to the property owner(s)’s satisfaction.

Granular bedding, backfill and drainage shall be as per the manufacturer’s specifications.

The Contractor shall submit shop drawings prepared by a Professional Engineer licensed in the Province of Ontario for review by the Contract Administrator.

960.03 Basis for Payment
The work for this item shall include all labour, equipment and material necessary to install precast concrete retaining wall blocks as indicated on the contract drawings as directed by the Contract Administrator.

The cost for granular bedding, backfill and sub-drain for drainage behind the wall shall be included in the unit cost for this item.
CKSS 1010
MATERIAL SPECIFICATIONS – BASE, SUBBASE, SELECT SUBGRADE, AND BACKFILL MATERIAL

REFERENCES
OPSS 1001 – Material Specification for Aggregates – General
OPSS 1010 – Material Specification for Aggregates – Base, Subbase, Select Subgrade, and Backfill Material
RWSSP 1010.01

1010.01 Material

The use of recycled concrete or RAP in Granular A and B mixes will be acceptable so long as the requirements of Tables 1 and 2 contained herein are met.

1010.01.01 Granular A

Granular Class A shall conform to the latest requirements of the Ontario Provincial Standard Specifications, OPSS 1001, 1010, “Material Specification for Aggregates – Base, Subbase, Select Subgrade and Backfill Material”.

Granular A shall satisfy all requirements of Tables 1 and 2 of this specification and unless otherwise specified shall be:

- Crushed cobbles and/or gravel and mixing with natural sand.
- Crushed gravel composed of naturally-formed, hard, durable, uncoated particles.
- Crushed rock composed of hard, uncoated, cubical fragments, produced from rock formations or boulders of uniform quality and shall be free from intrusions or seams, or from sources showing signs of disintegration by the elements or other cause.

1010.01.02 Granular B

Granular Class B sub-base shall conform to the latest requirements of the Region of Waterloo Standard Specification, RWSSP 1010.01, Granular B.

Granular B material shall be composed of clean, hard, durable uncoated particles free from lumps of clay, shale or other objectionable materials and shall satisfy all requirements of Tables 1 and 2 of this specification for the material required.

Materials for selected granular base courses Class B shall be obtained from deposits of pit-run sand or gravel, talus rock, quarries, disintegrated granite or other suitable granular materials.

Crushing of Granular B shall not be required except the Contractor may, at their option, elect to crush any oversize present in the deposit as an alternative to screening.
### Table 1

<table>
<thead>
<tr>
<th>Physical Test</th>
<th>Granular Base Course</th>
<th>Granular Subbase Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Granular A</td>
<td>Granular B (Type II)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Region of Waterloo Std.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Special Provision</td>
</tr>
<tr>
<td>Los Angeles Abrasion % Loss Maximum</td>
<td>60</td>
<td>--</td>
</tr>
<tr>
<td>Petrographic Number Maximum</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>Percent Crushed Minimum* Minimum</td>
<td>50</td>
<td>--</td>
</tr>
<tr>
<td>Plasticity Index</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

*The percent of crushed material will be determined by examining the fraction retained on the 4.75mm. sieve and dividing the weight of the crushed particles by the total weight retained on the 4.75mm. sieve.
## 1010.01.04 Gradation Requirements

Table 2

<table>
<thead>
<tr>
<th>Sieve Designation</th>
<th>Granular Base Course</th>
<th>Granular Subbase Course</th>
<th>53mm Crusher-run</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Granular A</td>
<td>Granular B</td>
<td></td>
</tr>
<tr>
<td>150 mm</td>
<td>---</td>
<td>100</td>
<td>---</td>
</tr>
<tr>
<td>106 mm</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>53 mm</td>
<td>---</td>
<td>---</td>
<td>100</td>
</tr>
<tr>
<td>37.5 mm</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>26.5 mm</td>
<td>---</td>
<td>50-100</td>
<td>---</td>
</tr>
<tr>
<td>22.4 mm</td>
<td>---</td>
<td>---</td>
<td>65-100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>85-100</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>16.0 mm</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>13.2 mm</td>
<td>65-90</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>50-73</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>35-55</td>
<td>20-55</td>
<td>28-70</td>
</tr>
<tr>
<td>1.18 mm</td>
<td>15-40</td>
<td>10-40</td>
<td>12-50</td>
</tr>
<tr>
<td>300 um</td>
<td>5-22</td>
<td>5-22</td>
<td>5-25</td>
</tr>
<tr>
<td>150 um</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>75 um</td>
<td>2-8</td>
<td>0-8</td>
<td>0-8</td>
</tr>
</tbody>
</table>

*Where Class A is obtained from rock quarry sources, a maximum of 10% passing the 75um sieve will be permitted.*
CKSS 1303
MATERIAL SPECIFICATIONS – ADMIXTURES FOR CONCRETE

REFERENCES

OPSS 1303 – Material Specifications for Admixtures for Concrete

1303.01 Curing Compound

Curing compound shall meet the requirements of OPSS Form 1315 - Material Specification for White Pigmented Membrane Curing Compound for Concrete.

1303.02 Coloured Concrete

Decorative coloured and/or impressed concrete shall be considered in the following locations for new developments and road reconstruction projects;

Major gateways/entranceways, mixed-use corridors, roundabouts, signalized intersections, commercial centres and the downtown core (area generally bounded by Weber Street, CN Railway Tracks near Victoria Street, Charles Street and Cedar Street).

If required by the Owner or Contract Administrator the following specifications shall apply for the supply of coloured concrete pigment.

   a) “Black” coloured concrete shall refer to the following pigment: colour XB5599 “Charcoal Black”, previously provided by Elementis Pigments Inc. (now Davis Colours Inc. www.daviscolour.com)
   b) Red” coloured concrete shall refer to the following pigment: colour #RB2199 “Tile Red”, previously provided by Elementis Pigment Inc. (now Davis Colours Inc. www.daviscolour.com)
   c) Portland to pigment ratio shall be 5%, unless noted in the Form of Tender
   d) Only a clean uncoloured curing compound may be used which will not affect the final colour of the pigmented concrete. A white pigmented curing compound may be used only upon natural, unpigmented concrete.
APPENDIX E: Procedure for Off-Site Works Permit by Private Contractors

See the following link to the City of Kitchener website: (Link)
**Procedure for Off-Site Works Permit by Private Contractors**

In order for a private contractor to complete the servicing works within the City of Kitchener right of way, the following steps and procedures need to be followed, assuming the connection is on a City road oppose to a Regional road.

1. The Development Engineering will receive a service connection request via phone, public inquiry or mainly through site development applications. In order for a service request to be considered, Development Engineering needs to receive a site grading and servicing plan stamped by a Professional Engineer (unless otherwise agreed upon) showing the proposed and existing conditions for the site works. Development Engineering will review/approve the plan and ensure it meets City standards.
   a. Please note that if Engineering decides that Kitchener Utilities will do the water servicing connection or decommissioning within the right-of-way please follow the process in **Attachment 1**.

2. After the plans are deemed acceptable, three (3) different contractor quotes must be submitted to Development Engineering.
   a. The contractor may be selected from our working list of suggested contractors:
      - Morleys Contracting Ltd.
      - Musselman Excavating
      - J. Weber Contracting Ltd.
      - Erisman Construction Inc.
      - Mc Gillivray & Sons Contractors Ltd.
   b. Or an alternate contractor
      - If an alternate contractor is chosen, Development Engineering must receive and follow-up with two (2) references. The city must also receive confirmation from the two (2) references of the satisfaction of work completed by the contractor prior to Development Engineering accepting the contractor.
   c. The contractor quotes must be submitted on the City of Kitchener Standard Quote Template (**Attachment 2**) to ensure all quotes are standardized and complete.

3. Development Engineering will review all three (3) quotes submitted for completeness and costs. If the quotes are deemed complete and are within a reasonable price range, the applicant may select the contractor. If the lowest quotation is unreasonable lower than the others, the second lowest may be selected subject to further discussion with Development Engineering.

4. Development Engineering will complete a Standard Cost Estimate Letter accepting the selected quote from the contractor as well as including the engineering fees identified in the current City of Kitchener Fee Schedule and contingency. This letter will be sent to the owner of the property to complete all of the required items (**Attachment 3**) 
   a. 10% contingency will be applied to any contractors on the suggest working list (noted above in 2.a)
   b. 20% contingency will be applied to any alternate contractors. If alternate contractors wish to be put on the suggested working list they must fully complete the Off-Site Works Process within The City of Kitchener.
c. For a list of all additional engineering fees please refer to the current City of Kitchener Fee Schedule approved by Council. This can be found on The City of Kitchener website.

5. The applicant must come in to The City of Kitchener’s Engineering Division to fill out the Off-Site Works Permit Application Form (Attachment 4). This is to sign off that money was given by the applicant and money was received by The City of Kitchener. The application form must be completely filled out before deemed complete by Development Engineering.

6. The engineering guarantees will be deposited and held in the form of a letter of credit or certified cheque through Development Engineering, separate from the Site Development Letter of Credit which is held by the Planning Department for on-site works. If the developer is posting a letter of credit they should call the Legal Department (519-741-2268) ahead of time to verify the financial institution providing the letter of credit is acceptable to The City of Kitchener. This should be done the day of obtaining the letter of credit. The letter of credit/certified cheque will be deposited and held for a minimum of two years from Initial Maintenance Acceptance, until the final inspections are complete and satisfactory to the City of Kitchener, at which time the letter of credit will be released as the City will take ownership of the infrastructure. The letter of credit may be reduced after the infrastructure is put on maintenance by up to 50%.

7. After the City of Kitchener’s Engineering Department has accepted the contractor to do the work within the right-of-way valuable information regarding that contractor must be submitted to Development Engineering including: main contractor contact person, emergency phone number of the contractor and e-mail address of the contractor.

8. The developer must submit all insurance papers for the contractor to Development Engineering which will require further approval from the City of Kitchener’s Risk Management Division. This form must be filled out in our City of Kitchener Standard Insurance Template (Attachment 5).

9. Once the Off-Site Works Permit application form is deemed complete, engineering staff will sign and date the application form. Engineering staff will create the Off-Site Works Permit (Attachment 6) and send it to the applicant and other City Staff. This Off-Site Works Permit is required on site at all times during construction.

10. The developer is responsible for employing a Professional Engineering to inspect and oversee the work completed in the right of way at all times.

11. The developer/contractor is responsible for obtaining all necessary permits including a Road Closure Permit from Transportation Services or from the Region of Waterloo and Plumbing Permits from the Building Department prior to any work commencing.

12. After the Off-Site Works Permit is issued, Development Engineering will then complete a pre-construction inspection and note any existing deficiencies.

13. For all watermain connections, Kitchener Utilities will complete the tapping of the water line at the main, inspection and bacteria testing. Kitchener Utilities are required to be notified by the contractor at least two (2) days prior to requiring the tapping. Please contact Carlos DaCosta 519-741-2600 ext.4535 to arrange for the tapping.
14. If a property requires capping/abandonment of an existing line, Kitchener Utilities will complete the capping if the watermain is in a separate trench from the sanitary. If the services are in a common trench then the contractor will complete the capping when installing the new services.

15. During the construction, Development Engineering will perform site inspections. Development Engineering is required to be notified by the contractor at least two (2) days prior to the inspection of the open trench. Please contact the Technologist that issued the Off-Site Works Permit. The developer must ensure that prior to backfilling the trench, Development Engineering and Kitchener Utilities have completed a final inspection. If the developer fails to notify Development Engineering to obtain a final inspection then Development Engineering will require the trench to be opened back up for inspection prior to any works going on maintenance. If additional inspections are required or deemed necessary then Development Engineering will require additional inspection fees.

16. Once the work within the right-of-way is complete and restored, the developer is required to send in a letter to Development Engineering that will request the new works to be put on maintenance. Included in the request must be the City of Kitchener’s Maintenance Package Checklist for Initial Acceptance (Attachment 7) stamped by a Professional Engineer that can certify the installation process and all required documents/test results must be submitted along with it.

17. Development Engineering will complete an inspection and require any deficiencies to be rectified and re-inspected prior to Initial Acceptance and the two (2) year maintenance period commencing. If additional inspections are required due to deficiencies then additional inspection fees will be required by the City of Kitchener’s Engineering Department. The developer will receive a letter from The City of Kitchener notifying them that the infrastructure has been put on maintenance.

18. Once the work is on maintenance, the developer can send in a letter to Development Engineering requesting the letter of credit/guarantee be reduced by 50%. Development Engineering will process the letter of credit reduction and send a notification as such to the developer.

19. During the two (2) year maintenance period, any problems arising from the construction and service installation will be the developer’s responsibility.

20. After two (2) years maintenance period is over, the developer is required to send in a request for Final Acceptance of the works. Included in the request will be CCTV video and report which will be reviewed and sign off by The City of Kitchener’s Engineering Department. Development Engineering will complete another round of inspections and if any deficiencies are noted, they are to be rectified prior to re-inspection taking place. If additional inspections are required due to deficiencies then additional inspection fees will be required. Once the inspection and CCTV video and report are found acceptable, the infrastructure will be taken over by The City of Kitchener. The developer will receive a letter from The City of Kitchener stating the infrastructure has been accepted.

21. After The City of Kitchener has taken ownership of the infrastructure, the developer can send in a request to release the remaining letter of credit.
1. The Development Engineering will receive a service connection request via phone, public inquiry or mainly through site development applications. In order for a service request to be considered, Development Engineering needs to receive a site grading and servicing plan stamped by a Professional Engineer (unless otherwise agreed upon) showing the proposed and existing conditions for the site works. Development Engineering will review/approve the plan and ensure it meets City standards.

2. After Engineering finds the plan acceptable, a cost estimate will be prepared for the servicing works along with all restoration costs. Engineering will be using the council approved fees for the current year and a standard cost estimate letter (for City Staff to do the Off-Site Works) will be sent to the applicant (Attachment 8).

3. Once the applicant comes in with a certified cheque an application form must be filled out and signed (Attachment 4). Most items in the application form will be not applicable.

4. Once Engineering has accepted the cheque and the application form has been filled out the condition to satisfy payment to engineering through the Site Plan Approval process is completed.

5. Engineering will then cash the cheque and create a work order to ensure Utilities schedules the work as soon as they can.
### Standard Itemized Cost Estimate from Contractors

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site Plan Number:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project Address:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Owner:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prepared By:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 1. GRADING

##### a) Rough Grading

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization/demobilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary site trailer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearing and grubbing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sawcuts in asphalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sawcuts in curb/gutter and sidewalk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topsoil stripping and stockpiling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-grading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import/export of soil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removals and disposals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary site entrance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2. SERVICING

##### a) Storm Servicing

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchbasin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catchbasin manhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____ mm ø storm sewer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe insulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sump connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

##### b) Sanitary Servicing

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary Manhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____ mm ø sanitary sewer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe insulation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### c) Water Servicing

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valves and appurtenances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____mm ø water pipe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe insulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. SURFACING

#### a) Surface Works

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granular &quot;A&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granular &quot;B&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HL4 (Base) asphalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HL3 (Surface) asphalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold patch asphalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### b) Restoration

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Sidewalk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Markings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrier Curb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top soil and sod</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal:** 0.00  
**HST:** 0.00  
**Grand Total:** 0.00
Attachment 3 – Standard Cost Estimate Letter

January 13, 2012

Company Name
Mr. John Smith
Address of company
Kitchener, ON N2H 4X3

Dear Mr. Smith:

RE: Address of services – Description of development
CITY OF KITCHENER

The City of Kitchener is now permitting City approved contractors to do the off-site works within the City Right-of-Way. All necessary information must be submitted to the Engineering Division to obtain an Off-Site Works Permit for the proposed work. This permit must be on-site throughout the construction period.

To obtain this Off-Site Works Permit the following must be completed:

☐ The Engineering guarantee for off-site works was paid in full in the amount of $___________. This amount should be separated into two payments. The first payment will be in the form of a cheque for the amount of $_______. The second payment will be in the form of a cheque or Letter of Credit for the amount of $_______. Please bring these two payments, made out the City of Kitchener, to the 9th floor, City Hall.

☐ The City of Kitchener must approve the servicing drawings provided.

☐ The City of Kitchener must approve the contractor hired to complete the work within the right-of-way.
  o Contractor Name:________________________________________

* Suggested contractors:
  • Morleys Contracting Ltd.
  • Musselman Excavating
  • J. Weber Contracting Ltd.
  • Ersman Construction Inc.
  • Mc Gillivray & Sons Contractors Ltd.

☐ The City of Kitchener must receive all important contractor information.
  o Main contact person:________________________________________
  o Emergency phone number:___________________________________
  o E-mail address:____________________________________________

☐ The City of Kitchener must receive and approve the contractor insurance forms.

When the City receives the cheque, an application form must be filled out (in person) for the works to be completed by the approved contractor within the City Right-Of-Way.

Regards,

________________________________________
Name of Technologist, C.E.T.
Job Title
OFF-SITE WORKS PERMIT APPLICATION FORM
2012

Name of Applicant

Date

No. & Street Address of Applicant

Telephone Number

City & Postal Code of Applicant

Contact Person
Name: __________________________
Phone: _________________________

Location of Site:

Municipal Number
Street

Prior to the issuance of the Off-Site Works Permit, the applicant must fulfill all conditions below:

☐ The cost estimate for off-site works was paid by certified cheque or Letter of Credit in full in the amount of $___________.

Payment Received Date

Payment Received By

☐ The City of Kitchener has approved the servicing drawings provided.

☐ The City of Kitchener has approved the contractor hired to complete the work within the right-of-way.
  ○ Contractor Name: ____________________________________________

☐ The City of Kitchener has received all important contractor information.
  ○ Main contact person: _________________________________________
  ○ Emergency phone number: _________________________________
  ○ E-mail address: ____________________________________________

☐ The City of Kitchener has received and approved the contractor insurance forms

NOTE:
1. The Applicant must obtain an Off-Site Works Permit prior to work being completed on the site or within the right-of-way.
2. This offsite works permit is not the approval needed from Transportation Services, please contact Stephanie Brasseur 519-741-2373 for any and all work in the right of way and proper permits must be in place prior to any work commencing.
3. Contact Engineering at 519-741-2406 at the following times:
   ● Commencement of construction
   ● Prior to backfilling trench
4. Prior to the initial maintenance inspection, Engineering must receive all the necessary construction test results. If no deficiencies are noted, 50% of the guarantee will be refunded while the remaining 50% will be held for the 2 year maintenance period.

5. The developer/owner is responsible for the completed works with the municipal R.O.W. for the 2 year maintenance period.

6. Prior to final acceptance and release of remaining guarantee, all works must be up to City standards.

**Services to be completed within the Municipal Right-of-Way**

<table>
<thead>
<tr>
<th>Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary Connection</td>
<td></td>
</tr>
<tr>
<td>Water Service</td>
<td></td>
</tr>
<tr>
<td>Storm Connection</td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td></td>
</tr>
<tr>
<td>Sidewalk</td>
<td></td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td></td>
</tr>
<tr>
<td>Guarantee – Blvd. Land./Driveway Ramp</td>
<td></td>
</tr>
<tr>
<td>Sump pump connection (right or left side of the house)</td>
<td></td>
</tr>
</tbody>
</table>

Signature of Applicant

Application Accepted By

Acceptance Date
STANDARD CERTIFICATE OF INSURANCE

*** This form must be completed and signed by your insurer or insurance broker. ***

Note: 1. Proof of insurance will be accepted on this form only (with no amendments).
2. Insurance company must be licensed to operate in Canada.

This is to certify that the Insured, named below is insured as described below.

Insured: Name & Address:

Telephone Number:

Fax Number:

Location and nature of operation or contract to which this Certificate applies:

<table>
<thead>
<tr>
<th>Type of Insurance</th>
<th>Company &amp; Policy #</th>
<th>Policy Dates</th>
<th>Limits of Liability / Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1 – Primary</td>
<td></td>
<td></td>
<td>Bodily Injury &amp; Property Damage</td>
</tr>
<tr>
<td>Comprehensive General</td>
<td></td>
<td></td>
<td>$ __________________ Inclusive</td>
</tr>
<tr>
<td>Liability (Occurrence Basis)</td>
<td></td>
<td></td>
<td>$ __________________ Aggregate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$ __________________ Deductible</td>
</tr>
<tr>
<td>Section 2</td>
<td></td>
<td></td>
<td>Bodily Injury &amp; Property Damage</td>
</tr>
<tr>
<td>Automobile Liability</td>
<td></td>
<td></td>
<td>$ __________________ Inclusive</td>
</tr>
<tr>
<td>Section 3</td>
<td></td>
<td></td>
<td>$ __________________ Inclusive</td>
</tr>
<tr>
<td>Excess / Umbrella</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Insureds as required by contract:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The Corporation of the City of Kitchener</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Other:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PROVISIONS / AMENDMENTS / ENDORSEMENTS:

A. Comprehensive General Liability Insurance (and Excess, if any) is extended to include the following coverage: Cross Liability and Severability of Interest Clause, Premises and Operations Liability, Blanket Contractual Liability, Products / Completed Operations, Personal Injury, and Non-Owned Automobile Liability.

B. With respect to the Comprehensive General Liability Insurance (and Excess, if any), THE CORPORATION OF THE CITY OF KITCHENER, its officers and/or officials, employees and volunteers (and “other” entities as outlined in Section 4 above) have been added as Additional Insureds but only with respect to liability arising out of the operations of the Named Insured.

C. The Comprehensive General Liability Insurance (and Excess, if any) Policy(ies) identified above shall protect each Insured in the same manner and to the same extent as though a separate policy has been issued to each, but shall not increase the Limits of Liability as identified about beyond the amount or amounts for which the company would be liable if there had been only one Insured. Any failure to comply with any provision of the insurance policy by the Named Insured shall not affect coverage provided to The Corporation of the City of Kitchener.

D. The policy(ies) identified above shall apply as primary insurance and not excess to any other insurance available to THE CORPORATION OF THE CITY OF KITCHENER.

E. If cancelled or changed to reduce the coverage as outlined on this Certificate, during the period of coverage as stated herein, thirty (30) days (ten (10) days if cancellation is due to non-payment of premium) prior written notice by registered mail will be given by the Insurer(s) to:
This certificate is executed and issued to the aforesaid Corporation of the City of Kitchener, the day and date herein written below.

<table>
<thead>
<tr>
<th>Name of insurance company or broker (completing form):</th>
<th>Telephone number:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(                )</td>
</tr>
<tr>
<td>Address:</td>
<td>Fax number:</td>
</tr>
<tr>
<td></td>
<td>(                )</td>
</tr>
<tr>
<td>Name of authorized representative or official (please print):</td>
<td>Signature of authorized representative or official:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OFF-SITE WORKS PERMIT
No. ___-2012

Issued Date:

This permit allows (applicant) and (contractor) to work within the City right-of-way at (address).

By issuance of this permit, the applicant has fulfilled all conditions below.

☐ The cost estimate for off-site works was paid in full in the amount of $__________.

☐ The City of Kitchener has approved the servicing drawings provided.

☐ The City of Kitchener has approved the contractor hired to complete the work within the right-of-way. (This is not the approval needed from Transportation Services for road closure.)
   o Name of Contractor:
   o Main contact person:
   o Emergency phone number:
   o E-mail address:

☐ The City of Kitchener has received and approved the contractor insurance forms.

__________________________________________________________
Issued By

__________________________________________________________
Contact Number

cc. Emergency Contact List

NOTE:
1. A copy of this permit must be available on site when work is being performed.
2. This offsite works permit is not the approval needed from Transportation Services, please contact Stephanie Brasseur 519-741-2373 for any and all work in the right of way and proper permits must be in place prior to any work commencing.
3. If the municipal right-of-way is not restored to City Standards by the approved contractor by the time the road is open to the public and City Forces are called out to do the repair, the full cost for the repair will be taken from the developers guarantee held by The City of Kitchener.
4. Contact Engineering at 519-741-2406 at the following times:
   • Commencement of construction
   • Prior to backfilling trench
   • Following restoration
5. Kitchener Utilities must be contacted for all water service tappings and inspections (Carlos DaCosta 519-741-2600 ext.4535)
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Included</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1.0</td>
<td>Letters</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Formal Letter of Request</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Engineer's Letter of Certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>Sewers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Sanitary Sewers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.1</td>
<td>Backfill Material Testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.2</td>
<td>Pipe Bedding Material Testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.3</td>
<td>Inspection - Clearance from Engineering (Email)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Storm Sewers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.1</td>
<td>Backfill Material Testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.2</td>
<td>Pipe Bedding Material Testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.3</td>
<td>Inspection - Clearance from Engineering (Email)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td>Watermain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Initial Inspection (See Note 1)*:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Tracer Wire - Conductivity Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Backflow Prevention Device Certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Satisfactory Inspection by Utilities (Memo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td>Roads - Sub-grade, Granular &quot;A&quot; and Granular &quot;B&quot; Material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Granular &quot;B&quot; Material Sieve Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Granular &quot;A&quot; Material Sieve Analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please Refer to Notes on Page 2 of this Check List
## MAINTENANCE PACKAGE CHECK LIST

<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Included</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5.0</td>
<td>Roads - Base Asphalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Mix Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Full Marshall Test Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Inspection - Clearance from Engineering (Email)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0</td>
<td>Roads - Surface Asphalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Mix Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>Full Marshall Test Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>Inspection - Clearance from Engineering (Email)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0</td>
<td>Roads - Concrete Curb and Gutter, Concrete Sidewalk and Driveway Ramps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1</td>
<td>Inspection - Clearance from Engineering (Email)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1) Items 3.1.1 to 3.1.3 are to be sent directly to Kitchener Utilities Prior to requesting an inspection with Carlos Da Costa
2) The "Initial Acceptance Package" is to be sent directly to Engineering - Katie Pietrzak or Eric Rieke

We _____________________________ certify the above and hereby recommend official commencement of the 24 month warranty period.

Consultant's Signature                                                  P. Eng Stamp
### For City Use Only - Initial Acceptance

<table>
<thead>
<tr>
<th>Kitchener Utilities Clearance:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IS - Engineering CCTV Clearance (at the request of the City):</td>
<td></td>
</tr>
<tr>
<td>IS - Engineering Clearance:</td>
<td></td>
</tr>
<tr>
<td><strong>INITIAL ACCEPTANCE DATE:</strong></td>
<td></td>
</tr>
<tr>
<td>Reviewed by:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td></td>
</tr>
</tbody>
</table>

### For City Use Only - Final Acceptance

<table>
<thead>
<tr>
<th>Kitchener Utilities Clearance:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IS - Engineering CCTV Clearance:</td>
<td></td>
</tr>
<tr>
<td>IS - Engineering Clearance:</td>
<td></td>
</tr>
<tr>
<td><strong>FINAL ACCEPTANCE DATE:</strong></td>
<td></td>
</tr>
<tr>
<td>Reviewed by:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td></td>
</tr>
</tbody>
</table>
Date

Dear Sir or Madam;

RE: Address
CITY OF KITCHENER

The Engineering fee for the off-site works is $x,xxx.xx. Please bring a cheque made out to the City of Kitchener, to the 9th floor, City Hall. When the City receives the cheque an application form must be filled out for the works to be completed by City Forces.

Yours truly,

______________________________
Name of Technologist, C.E.T.
Job Title

S:\Sections\Development Engineering\Site Plans\Admin\Off-Site Works\New Servicing Process - Oct 2012\Servicing by private contractors - Nov. 2012.doc