APPENDIX 12

Residential Infill Development Requirements and Engineering Drawing Requirements

Township of King
Design Criteria and Standard Detail Drawings

12.1 General Requirements

Applications are to meet the requirements of Section M of the Township's Design Criteria which include but are not limited to the following:

1. Design Drawings are to be prepared, sealed, and signed by a qualified Professional (i.e., Professional Engineer, licensed Engineering Technologist, Architect, Landscape Architect, or an Ontario Land Surveyor) competent in grading and servicing design.

2. Provide a grading design that is in conformance with the applicable requirements from Section M and the requirements noted below.

3. Demonstrate how the proposed development sanitary and water service can be provided. For properties serviced by septic and wells, the septic and well design will not be reviewed by the Township Engineering Department. Septic system will be reviewed by the Building Department. For water wells, including but not limited to siting, installing, and abandoning wells, it is the Owner's sole responsibility to comply with O.Reg. 903.

4. Demonstrate how erosion and sedimentation during construction will be controlled. See section below for details.

5. Any existing trees within the municipal road allowance to be removed will require compensation by the Community Services Department. The Community Services Department (or Public Works on their behalf) will advise on the requirement.

6. Stormwater management measures may be required to mitigate changes in runoff and groundwater recharge quality and quantity. The requirements are dependent on the site location relative to Village boundaries and environmental areas and the proportion of impervious area or hard surface area on the lot and/or the total building area. Refer to the stormwater related requirements in Section M.

7. For developments within the Village boundary, the Site Alteration By-law requires the lot to contain no more than 60% hard landscaping for single-detached or semi-detached dwellings and no more than 80% for townhouse dwellings. Additional requirements and permitting will be required if the hard landscaping area exceeds these thresholds.

8. Properties within the Oak Ridges Moraine are subject to additional requirements per Oak Ridges Moraine Conservation Plan (2017).

9. A post-construction stamped certification by a qualified Professional that the works have been completed and function as approved.

12.2 General Drawing Requirements

1. Hand drawn sketches or photographs are not acceptable.

2. Drawings for urban or suburban development are to be drawn at 1:250 metric scale. The scale chosen for estate residential or rural property development drawings must present all information clearly. Detail Drawings, Cross-Sections and Plan/Profile Drawings are to be drawn to scale.

3. The north direction is to be indicated on the plans.

4. Title Blocks are to include the drawing title, municipal address, the Designer's name, date, revision block and the qualified Professional's signature/stamp block.

5. The legal property description is to be included on the drawings. The full extent of the property is to be shown on the plans with property line distances and bearings labelled. All adjacent boulevards and municipal roadway pavement, sidewalks, aboveground services, etc.

6. Street names are to be labelled on all drawings.

7. Provide the geodetic benchmark description, location and elevation used for vertical control.

8. The grading and servicing designs are to be acceptable to the Consulting Engineer where the subdivision has not been assumed by the Township. Correspondence is to be received by the Township that the Consulting Engineer has reviewed the proposed Grading Plan and Servicing Plan and that they are in general conformance with the overall subdivision grading and servicing design.

9. The following typical notes should be included on and adhered to in submission plans, where applicable:

    a) Top of foundation wall is to be minimum 0.15 m above finished grade.

    b) A minimum of 1.22 m frost protection depth should be provided for all footings.

    c) A 0.6 m wide strip is to remain undisturbed along the property line.

    d) Hard surfaces to be sloped between 2% to 5%.

    e) The maximum slope in landscape area or side yards should be 5.0% or else a 3:1 slope should be applied (4:1 if the top and bottom of slope difference exceeds 1.0 m).

    f) Swales shall have a minimum grade of 2% and maximum side slopes of 3:1.

g) Swales shall range in depth from a minimum of 0.15 m to a maximum of 0.45 m.

h) Downspouts should discharge to grade and not connect to the storm lateral.

i) Boulevard to be restored with a minimum of 200 mm of topsoil plus sod.

j) Erosion and sediment control measures and tree protection fencing are to be in place prior to beginning construction.

12.3 Grading Information Requirements

12.3.1 General

1. The grading design for residential infill development is subject to the requirements noted in Section M5.00. Refer to Standard Drawing KS-405 as a sample of a general infill development grading plan.

2. The estimated volume of earth expected to be imported or exported from a site is to be noted on the drawing if not provided in separate written correspondence to the Township. The estimate may be in terms of cubic meters of earth or the number of tandem dump truck loads in order for the Township to assess potential impacts to the condition of area roadways and potential disturbance to surrounding area land uses.

3. Show existing easements including the legal description. Copies of the easement documentation are to be submitted showing the purpose of the easement and the parties involved.

4. Add a note to the plan where a swimming pool is proposed that it is subject to a separate permitting process and is not approved as part of the grading design review.

5. Show all existing and proposed utilities, hydrants, poles, transformers, pedestals, chambers, valves, manholes, etc.

6. Show existing and proposed structures with dimensions. Label the function of accessory buildings. Identify all existing features or structures proposed to be demolished or removed.

7. Existing topographic elevations from a geodetic survey are to be shown including elevations at key locations on existing property lines and 10 m beyond the subject property lines to establish drainage areas and outlet locations. Contours may be shown in addition to surveyed spot elevations. Sufficient topographic detail is to be provided to interpret drainage patterns, swales, changes in slopes, existing structures, services or features, ground elevations at trees, catchbasins, maintenance holes, valve boxes, hydrants, retaining walls, etc.

8. Provide proposed finished grade design elevations at key locations including at drainage break points, swale inverts adjacent to grades at building foundations, where proposed grades match the 0.6 m wide undisturbed strip within the lot, driveways, entrances, etc., with directional slope arrows and the calculated percentage of slope.

9. Swales are to be located internal to the subject site, and adjacent to but not within the 0.6 m wide undisturbed strip along existing property lines.

10. Where multiple lots are being created as part of the development, internal swales are to be located on the common lot lines.

11. Label all existing trees including trunk diameter. Accurately show the extents of the canopy (dripline) relative to the proposed area of disturbance. Identify trees proposed to be preserved and those proposed to be removed.

12. Show all roof leader downspout locations with splash pads which are based on the Architectural Drawing roof design. Show roof leader collector pipe systems (if not shown on a Servicing Plan) connecting to LID facilities as part of the proposed SWM system. Roof leader overflows should be directed toward the street or large green space area and away from adjacent properties as much as possible.

13. Show all entrance locations, label the number of stair risers and elevation at entrance.

14. Provide building finished first floor, finished basement slab, underside of footing, and top of foundation wall elevations. Where extended footing depths are necessary to meet minimum frost cover requirements, the extents of the extra depth footings is to be shown on the plan with the underside of footing elevation noted.

15. Show the proposed driveway alignment, elevations, slope (i.e., from the garage to the street line and from the street line to the road) and construction materials.

16. Show walkways to entrances and proposed patios and auxiliary buildings.

17. A table showing lot coverage breakdown of the proposed impervious and hardscape areas on the plan.

18. Reversed sloped driveway will not be permitted without the specific approval of the Director of Public Works. Refer to Section M7.03.

19. Review the construction haul route and street frontage, and confirm if there is half-load restriction along the route in accordance to Township's website (https://www.king.ca/half-load-restrictions). Add a note on the drawings to read "XXX Road along the frontage is subject to half load restrictions limiting vehicle weights to 5,000 kg per axle from March 1st to May 31st or year-round (as applicable)."

20. For all retaining walls in excess of 1.0 m and within a distance to the property line equal to the height of the wall, a detail design drawing as noted below prepared, sealed, and signed by a Professional Engineer is to be provided to assure a proper design of the wall. The retaining wall design drawing is to include the following:

    a) A statement that “The wall has been designed in accordance with accepted engineering principles” is to be included on the drawing.

    b) A statement that “The wall is suitable for the geotechnical condition of the site and for the loading type” is to be included on the drawing.

21. The grading design for residential infill development is also subject to the requirements noted in Section M5.00.

12.3.2 Erosion and Sedimentation Controls

1. Show the construction entrance location with a mud-mat to reduce mud tracking.

2. Siltation control fencing is to be shown around the entire perimeter of the property.

3. Show the location (and dimensions where appropriate) of interceptor swales, rock check dams, sediment ponds/sediment basins, filter fabric under street catchbasin grates, etc.

4. Provide Standard Detail Drawings of ESC measures. The Designer should adopt the ESC Notes and Detail Drawings included in Appendix 1 from the TRCA standard ESC documentation.

12.4 Servicing Information Requirements

1. Provide the known location of existing storm and sanitary sewer services and the water service, if applicable. Service locations from available as-built drawings may be requested from the Township.

2. Show the proposed sanitary and storm services sizes and alignments, including existing invert elevations at the street line and proposed invert elevations at the building envelope.

3. Label design slopes on the sanitary and storm service connections.

4. Show the proposed water service size and alignment and new curb stop to be provided at the street line.

5. A fixture count calculation per OBC should be conducted to confirm if the proposed water service or existing water service to be re-used is adequately sized for the proposed dwelling.

6. For lots on private services, show the on-site well and septic bed locations including connecting pipes and pump chambers and treatment chambers as applicable. Note indicating if the existing services are to be re-used or abandoned should be included.

7. Include notes stating all required construction materials and specifications.

8. Sump pumps are discouraged. If the property is currently serviced by a storm lateral or other lots along the same street are serviced by storm laterals, a sump pump will not be permitted and the proposed foundation drain must be discharged via a storm connection.

9. Show the sump pump outlet location, where applicable. The discharge is to be directed toward the street and away from adjacent properties.

10. For developments that will be serviced by the municipal sanitary system, service connections shall be solely gravity-fed. Use of grinder or ejector pumps will be considered only where achieving minimum grade is not possible and is subject to specific approval of the Director of Public Works.

11. Proposed sanitary connections are to be installed with surface clean-outs equipped with steel caps per the Standard Drawings.

12. Section views of proposed service connections may be required.

13. New storm, water, and sanitary connections, and existing connections to be abandoned for residential infill development are also subject to the requirements in Sections M7.04, M7.05 and M7.06.

12.5 Stormwater Management Information Requirements

If stormwater management is identified to be required per Section 12.1 above and Sections M6.00 through M6.07, the following is required:

1. A Stormwater Management Report or Design Brief which describes the criteria and design methodology used in the analysis and includes figures, calculations, drawings and details based on the design requirements outlined in Sections M2.00 and M6.00 through M6.07 for infill developments.

2. Summarize the proposed development characteristics and the site location relative to the environmental areas noted in Sections M6.00 through M6.04 and state the Design Criteria that apply to the site.

3. Pre-development and post-development drainage area figures including internal and external drainage area boundaries based on topography and runoff coefficients or imperviousness for existing and proposed conditions. Figures showing complete external drainage areas are to be provided, where applicable.

4. Calculations of the weighted runoff coefficients and times of concentration for each drainage area based on the drainage area characteristics. Provide supporting information and summarize any other hydrologic parameters used in the analysis (i.e., hydrologic computer model input).

5. Confirm the Township's current rainfall design parameters have been used in a Rational Method or a hydrologic computer analysis.

6. Calculations of pre-development and post-development peak flows, retention and detention storage facility sizing based on hydrologic computer models or the Modified Rational Method. Calculations and documentation required as outlined in Sections M6.05 and M6.06. Digital and hard copies of spreadsheet and computer model input and output files are to be submitted.

7. Where required, prepare and submit Water balance calculations using an industry-recognized procedure. Support the input parameters selected for the analysis and provide background calculations. Document the infiltration deficit in comparison to storage required for peak flow and erosion control as a basis for infiltration LID proposals.

8. The post-development versus pre-development flow results for each drainage outlet are to be shown in a summary table.

9. Pipe sizing calculations to demonstrate conveyance capacity.

10. A plan showing proposed downspouts, swales, collection system piping and appurtenances, storage facilities, overflows and outlet locations, including the sizes, slopes, elevations and dimensions of proposed works.

11. Cross-sections and detail drawings as necessary to show the size, configuration and construction materials associated with the storm drainage, LIDs and SWM systems.

12. The location of proposed works relative to structures, septic systems, property lines, etc. are to be shown in plan and cross section views.

13. Flow control devices such as orifice plates, weirs or structures are to be shown and dimensioned.

14. Material specifications for the storm drainage and SWM systems are to be included on the drawings.