CITY OF OTTAWA SERVICING REPORT

Template

Abstract

This document is a companion or supplemental document to the “Servicing Study Guidelines for Development Applications, November 2009”

1.0 Introduction

1.1 Purpose and Use of the Servicing Report Template

The purpose of this report template is to provide supplemental guidance to the Servicing Study Guidelines November 2009, in the approval of servicing for proposals for development. This template provides guidance with respect to location and presentation of the required information, to provide greater consistency and to streamline approvals. This template is not a prescriptive standard, how and what information presented is at the discretion of the designer. As such, the Designer is responsible to provide sufficient information as required to support the design in accordance with Ottawa and Provincial Design Guidelines.

1.2 Types of Development Applications

While the focus of this template is detailed design for subdivision development, the template could be customized to apply to a site plan control Servicing Brief as well.

1.3 Organization of the Document

The document is organised as a servicing report with headings and descriptions of the type of content require in each section.

1.4 Roles and Responsibilities

The Project Designer or Consulting Engineer is responsible for

- The engineering design of the project, within the client and public interest.
- Providing a design that conforms to current City of Ottawa Design Guidelines and Standards, Provincial Standards, applicable Master Servicing Studies, Environmental Management Plans, and Community Design Plans, and good engineering practice.
- Identify where the above design criteria is undesirable or impracticable and propose design solutions
- Identifies if an approval for sewage works under Section 53 of the Ontario Water Resources Act (OWRA) is required and what type of application it will be (Transfer Review or Direct Submission).
- Identifies regulatory requirements, Class Environmental Assessment (EA) and Environmental Bill of Rights (EBR).
- Consideration of operation, maintenance and constructability in the design, and identification of any related temporary or interim works required for the construction of the project.
- Quality Control/Quality Assurance of engineering submission.
- Reviewing the City comments and addressing the City’s concerns

At all times the Designer is responsible for the quality, accuracy and communication of the project design. The designer is to take whatever measures deemed

necessary to be satisfied with the assumptions made during the design process to achieve the desired design.

The Reviewer (Project Manager/Senior Engineer/Junior Engineer, Engineer-in-training) is responsible for

- Confirming design compliance with current City of Ottawa Design Guidelines and Standards, Provincial Standards and applicable Master Servicing Studies, Environmental Management Plans, and Community Design Plans
- Providing comments that are clear and within established timelines.
- Coordinating and consolidating comments from internal technical stakeholders.
- Identify competing City interests and work with internal stakeholders to resolve conflicting technical comments.
- Work with the Designer to identify solutions to non-compliance issues
- Communication with the Design Engineer regarding the City's engineering concerns

The reviewer is not responsible for quality control/quality assurance of the engineering design or reports. Engineering submissions will be returned to the applicant if found to be absent of QA/QC.

Cover Page – (The below information should be contained somewhere on this page)

Title of Report

Project Name

Project Address

Date

Revised Date

Prepared for:

Developer/Owner's Name

Prepared by:

Engineering Firm Name

City of Ottawa File Number (D07-16-XX-XXXX)

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Introduction

The report should present the project; initially providing planning context and scale of development (number of units / expected population) and proceed into an engineering overview discussing the surrounding developments and connections. Location figure should be located in this section.

Site Description and Proposed Development

- Discuss the existing topography and location of the site. Describe the proposal development

Background Documents

- Discuss any other previous relevant studies including the Master Servicing Study and/or Environmental Management Plan and/or Infrastructure Master Plan and/or Subwatershed Study and/or Official Plan,

Existing Infrastructure

- Describe the existing system connection points.

Consultation and Permits

- Provide a summary indicating which agencies consulted in the preparation of this report. (transcripts/minutes/emails to be included in an appendix)
- Provide a list of permits required
- Reference the Development Servicing Study Checklist in the appendix.

Geotechnical Considerations

- Reference the current version of the geotechnical report

Deviations

Deviations from Guidelines and Standards

- This section can either be here or included in the appropriate servicing section below.
- Deviations to the requirements of the City and Provincial Guidelines and Standards should be listed
- Rationale for deviation clearly explained.
- If applicable, copies of the exception requests sent in parallel to the report and copied to an appendix

Deviation from MSS and/or EMP (if applicable)

- This section can either be located here or included in the appropriate servicing section below
- Request and rationale for deviation

Water Servicing

Design Criteria

- State the criteria followed for the design. This section should include a description of the following:
  - Unit densities and consumption rates
  - Required fire flow rate
  - System pressures
  - Watermain sizing and roughness coefficients
  - Hydraulic models

Proposed Servicing and Calculations

- For each phase of development covered by the report, describe the looped network proposed for the subdivision or the internal routing of the watermain. Sizes and lengths should be documented.
- For each phase of development that is covered by the report, state the maximum anticipated water demands from the zoning applied, or proposed development
- Provide FUS calculations for the design fire

Simulation Results

For each phase of development covered by the report, provide the following:

- Peak Hour Demand: Full analysis showing the system response to the demand and that the lower threshold is not reached
- Maximum Day Demand plus Fire Flow: Full analysis showing the system response to the demand and that the lower threshold is not reached- including graph/s
- High Pressure Check: Full analysis showing the system response to the demand and whether or not the upper threshold is reached

Provide figures showing proposed network nodes colour-coded or labeled according to pressures for each of the three above conditions.

A water age analysis may be required to support an interim phase(s) of development or as required as per section 4.1.2 Water Quality Related Design Requirements – Ottawa Water Design Guidelines.

Summary and Conclusions

- Summarize the proposed design. Confirm the expanded system will not have problematic impacts from the proposed development. .
- Provide figure showing proposed network with watermains identified according to diameter
- Specific properties that will require pressure reducing valves are to be identified on the servicing plan

- The full Boundary Conditions response from the City should be included in the appendix.

Sanitary Servicing

Design Criteria

- Provide design flows based on proposed uses.
- Provide population densities assigned to residential units.
- Specify minimum and maximum pipe velocities and minimum allowable pipe slope.
- Confirm level of service objectives as specified in Section 4 of the City's Design Guidelines.

Proposed Sanitary Servicing and Calculations

- Provide sewer design spreadsheets using the City of Ottawa Design Criteria. Hydraulic models may be used in complex situations and in the assessment of sanitary sewer overflows.
- Provide tables and discussion of demands on the system and the HGL results
- Provide confirmation of available capacity for the proposed development in the of downstream sewer system
- Describe the proposed servicing plan for the subject site. The summary should include a description of sewer alignments, proposed pipe sizes and location(s) of sewer outlet.

Temporary Flow Restriction (if applicable)

- Discussion of temporary orifice flow controls as per Section 6.7 Ottawa Sewer Design Guidelines.

Summary and Conclusions

- Summarize the analysis performed, and confirm that the proposed design meets the sewer design guidelines and municipal standards
- Provide figure showing proposed sewer layout and pipe diameters

Storm Servicing and Stormwater Management

Background

- Describe existing drainage patterns for the site and the existing storm network adjacent to site
- MSS, EMP, and/or Subwatershed study and approved changes or amendments
- level of service restrictions
- flooding history (if appropriate)
- receiving waterbody
- Municipal Drain (if applicable)

Storm Servicing Strategy

- Discussion of how the overall stormwater management system functions, how it fits into the surroundings, external drainage areas, anything unusual about the design.

Proposed Storm Servicing

Design Criteria (Minor and Major Systems)

- Quantity, Quality, and erosion/volume control (with reference)
- If an Oil Grit Separation is proposed, the Particle Size Distribution (PSD) is required; it should correspond to local soil conditions based on geotechnical investigations.
- Design storms, historical storms and IDF curves
- Discussion of pipes, inlets, controls (typically, but not exclusively ICDs), LID measures and stormwater pond(s), instream works, if required.

Runoff Coefficient

- Provide tables and discussion with supporting calculations

Minor System

- Description of the minor system
- Identify and discuss all partially and totally submerged storm sewers in the report. Any significant changes from the MSS must be justified.
- Confirm that sufficient cover (frost protection) is provided everywhere.
- The maximum HGL as well as the USF elevations should be shown on the Plan and Profiles and documented in the main body of the report.
- Consideration of hydraulic losses due to bends, junctions, and pipe transitions should be demonstrated.

Minor System Allowable Capture Rate

- Tables and discussion
- Overland drainage information (e.g. depth of flow, velocity and spill over to next segment)

- Proposed inlet capture rates. Provide supporting documentation regarding the inlet rating curves used in the model (CB capacity, ICD/lead pipe flow restriction).

Major System

- A description of the major system should be included in this section. Information such as the outlet, cascading flows, ditch flow, etc, should be included. Identify rear yard systems, not modeled. The report must demonstrate that the proposed design complies with the requirements indicated in the OSDG and subsequent Technical Bulletins.

Inlet Control Devices (ICDs)

- Tables should be included showing the approach flow, the capture flow and the associated depth of water and storage used.

Infiltration Considerations (if applicable)

- The determination of groundwater levels and gradients is to conform to the City's Hydrogeological and Terrain Analysis Guidelines.
- Designs that involve infiltration are to conform to the City's Hydrogeological and Terrain Analysis Guidelines.

Stormwater Management Facility

- Discuss how the proposed design complies with the MOE Stormwater Management Planning and Design Manual (e.g. storage volume, slopes, depth), and if applicable, clearly documents any deviations
- A description of the emergency overflow structure should be provided
- Design details/shape in accordance with the full intention of the Stormwater Management Facility Guidelines (Draft) and brief calculations on settling velocity and depth and quality control- full calculations can be placed in an appendix.
- In all cases where SWM ponds or LIDs are proposed, the City's Hydrogeological and Terrain Analysis Guidelines are to be followed.
- The need for a liner should be discussed in the report based on the existing geotechnical and hydrogeological conditions.

Stormwater Management Modelling

Dual Drainage Design

- Discussion, with rationale, of the application of dual drainage principles to the proposed design
- Flow from adjacent developments, level of detail of modeling and assumptions of adjacent communities

Major Drainage Design

- Explanation of flow routes and calculation of overland flow routes, in accordance with the design requirements of the Sewer Design Guidelines
- Show the major system flow paths and the extent of ponding for the 100-yr 3-hr Chicago storm and identify the stress test (static + dynamic) elevations.
- Description of the typical ROW cross section used for the major system calculation.

Hydrologic Analysis:

- This section deals with the methodology used to undertake the hydrologic analysis. The model(s) used must be clearly described as the methodology. A detailed schematic must be provided so that the model output can be easily followed. Drainage area plans do not count as model schematics. If the software used is not standard software used by the city, further information will need to be provided in the appendix to make sure that it will provide satisfactory results. As per Section 3.5.4, the designer is to confirm choice of model prior to modeling the system. .
- Provide a description of the downstream boundary conditions with supporting documentation.

Parameters:

This section outlines all of the hydraulic parameters used in the model. If a parameter is different from a typical value, the reasoning behind the change must be clearly explained. A description of the parameters followed by a tabular summary is required. Typical parameters include:

-Design Storms (distribution, duration and time step)
-Minor system capture
-Area,
-imperviousness, and runoff coefficients
-infiltration method:
    - SCS method: Modified Curve Number (CN*)
    - Horton method: Fo, Fc and Dcay
-Time to Peak
-Subcatchment Width
-Slope
- Initial Abstraction
- Manning's Coefficient
-Baseflow (if any)
- Other parameters related to specific software

Simulation Results:

Provide a detailed summary in the main body of the report in the form of tables. The tables should include the static and dynamic depth of flow for

each segment. Provide a summary of pre- and post-development conditions flows in tabular format.

Climate Change Analysis:

- This section is required to address the potential impacts of Climate change. The city requests that 100 year IDF curves be increased by 20% and used in the model runs. The modeling results must be presented in tabular form and compared against normal 100 year results. The intent here is to see the impact of a larger storm. This is not to be used for design, however water should not be entering homes with this simulation (i.e. via foundation drains or windows).

Temporary Inlet Control Devices:

This section is to provide design information with respect to temporary ICDs to be used to at the junction with the existing infrastructure.

Temporary Works Required by Development

Identify any temporary construction works required during site development that could impact boundary conditions, and assumptions used in hydrologic and/or hydraulic modelling. Where appropriate, include model runs representing these interim scenarios and confirm that design criteria are still satisfied. The report is also to indicate whether the temporary works needs to be included in the scope of works requiring approval under the Ontario Water Resources Act and conservation authority regulations.

Summary and Conclusions

Summarize the analysis performed to confirm that the proposed design complies with the Municipal and Provincial guidelines and standards, and that the proposed design conforms with the applicable MSS.

Instream works required

- *Description, design details, fluvial-g and fisheries support*

Sediment and Erosion Control

- Sediment and erosion control shall be explicitly detailed and shall be detailed on the drawings
- Methods for control of all phases shall be listed

Conclusions

- Briefly describe how the proposed design meets or exceeds applicable City guidelines, and how the designer took into consideration, the information provided by the Geotechnical Engineer, Environmental Consultant or other technical experts that provided information considered in the design.
- Report to be signed and sealed by a licensed Professional Engineer, and signed by the QA/QC Reviewer.

Appendices

- All sections following are on an "as required" basis

- Correspondence
  - Provide a record of the type of communication, who was present, and what was said and, if necessary, clear indication of who will follow up with whom- if discussions are continuing.
  - Correspondence is required between the applicant and the local MOECC office
  - Stormwater Pond Unit (if applicable)
  - Water Resources Unit (if applicable)
  - Provide a copy of previous comments and responses

- Modelling
  - Provide a list of models provided with a brief description (e.g. rainfall used, d/s boundary conditions).
  - Modelling input and output files should be printed (where practical) and a digital copy of all files (with various storm types & durations and historical storms) should be provided via one of:
    - CD
    - DVD
      ftp: site
    - /memory stick, etc.)
- Stormwater Calculations

  - Storm Pond Calc: Full versions of calculations of settling dimensions and dimension ratio, etc.
  - Storm water management Full calcs: Modified Rational Method calculations, ponding tables, IDF Curves, ICD capture rates/curves, pump design and pump curves
  - Storm sewer design sheets

- In-steam works
  - Hydraulic modeling (HEC-RAS)

- Sanitary Calculations
  - Full versions of calculations, sanitary design sheets.

- Water Calculations
  - Water demand and FUS calculation sheets,
  - Plan of junctions (with ID's labelled), existing and proposed watermains (with sizes colour coded) extracted from the water distribution model.
  - Tabular results and plans of simulation results under basic day, maximum day plus fire and peak hour conditions.

- Oil/Grit Separator analysis
- Copies of Deviation Request(s)
- Checklist
- Detailed Drawings (folded)