SECTION 2

General

2.0 GENERAL

2.1 Previous Design Criteria

The City of Kamloops utility systems have been constructed over many years using design criteria that were in effect at the time. This current criteria is to be used when designing all new infrastructure and when assessing the adequacy of existing systems. Should an existing system not meet current criteria due to a change in the criteria, the Design Engineer will be responsible to judge whether a non-conformance to the criteria may be acceptable. This non-conformance must be submitted to the City Engineer for sign-off prior to detailed design. Sign-off by the City Engineer will not relieve the Design Engineer of liability normally associated with the design of utility infrastructure.

2.2. Funding for Required Works

In some cases the Applicant may be required to construct works that may be included in the Development Cost Charge (DCC) by-law or as a future City capital project. In either case the timing or availability of funding should be discussed with the City Engineer. This will not relieve the Applicant from funding the proposed work if required to advance the project.

2.3 Existing Services

Existing service information is available from the City. These records are made available on the understanding that the City cannot, and does not, guarantee their accuracy. The Design Engineer or user of such information shall make appropriate efforts to verify and ensure the accuracy of the information provided.

2.4 Approved Materials and Products

Materials and Products which are approved for use in the City of Kamloops are published in the list of approved products and materials posted on the City of Kamloops website (www.kamloops.ca). Some references to materials and products may be made in this manual but the Standard Drawings and Specifications take precedent. If the appropriate use of certain materials or products is in doubt, the Design Engineer is to confirm the acceptance of the material or product with the City Engineer prior to its incorporation into a design.

2.5 Units

The units for all design and construction shall conform to the Canadian metric system.

2.6 Drawing Preparation

Engineering drawings, details, sketches and digital files prepared for submission must conform to the City of Kamloops Engineering Drawing Submission Requirements.

2.7 Servicing Requirements Related to Zoning

The minimum infrastructure servicing levels required under various zones (as per zoning by-law) shall be in accordance with the Subdivision and Development Control By-law.

2.8 Application of/for Latecomers Related to Servicing Requirements

The *Local Government Act* and City of Kamloops provides for potential recovery of costs associated with excess or extended services installed by the Applicant. The Applicant and Design Engineer should familiarize themselves with conditions of these documents and their application to the Applicant's works.

2.9 Utility Statutory Rights-of-Way Acceptance and Widths

The use of statutory rights-of-way (SRW) shall be discouraged where there are alternatives and shall only be permitted at the discretion of the Approving Officer. Where specifically approved by the City Engineer to locate a City service within an SRW, the minimum widths of the SRW shall be:

(a) <u>for a single utility</u>

SRW width = twice the depth from surface to the invert of the pipe PLUS trench bottom width but not less than:
- 6 m minimum width

(b) <u>for two or more utilities within the same trench</u>

SRW width = twice the depth from surface to the invert of the deeper pipe PLUS trench bottom width but not less than:
- 6 m minimum width

When the utility is within a City road dedication but the distance from the property line to the centre of the main is less than one-half of the width necessary for a single utility, the difference shall be provided as an SRW on the adjacent lands.

In all cases the width of an SRW shall be sufficient to permit an open excavation with side slopes in accordance with WorkSafeBC Regulations and take into account steeply sloping terrain and other site specific conditions, without impacting on or endangering existing or future adjacent structures.

Any structure built adjacent to an SRW shall have foundations deep enough so as not to impact future work on utilities and the lands may be encumbered to stipulate specific conditions for construction.

One or more SRWs may be required to provide access to utilities at the discretion of the Approving Officer. The City Engineer will determine where and how many points of access are required.

The SRW is to be located entirely on one property.

The Design Engineer shall provide cross-sections on the design drawings, indicating the minimum safe distances to adjacent building footings based on a safe angle of repose from the limits of the excavation.

The maximum depth of sewers in an SRW shall be 3.5 m from finished ground surface to the pipe invert unless approved by the City Engineer.

2.10 Utility Separation: Sanitary Sewer or Storm Sewer vs. Water Mains

2.10.1 Horizontal Separation

Horizontal separation shall conform to the Standard Drawings but a minimum of three (3) m horizontal clear separation is to be maintained between a water main and either a sanitary sewer or a storm sewer in accordance with the requirements of the Interior Health Authority (IHA).

In special circumstances, lesser separation for gravity sewers may be permitted by the IHA and accepted by the City Engineer provided that:

- The sewer main and water main are installed in separate trenches and the water main invert is at least 0.5 m above the crown of the sanitary sewer or storm sewer; or
- The sewer main and water main are installed in the same trench with the water main located at one side on a bench of undisturbed earth at least 0.5 m above the crown of the sanitary sewer or the storm sewer.

2.10.2 Vertical Separation

Where a sanitary sewer or storm sewer cross a water main, the sewer shall be below the water main with a minimum clearance of 0.5 m and the joints of the water main, over a length extending 3 m either side of the sewer main, are wrapped with an approved heat shrink compound.

Where trench lines cross at different elevations, an adequate support for the upper pipe shall be provided to span the trench width, regardless of the order in which each pipe is installed. Certain materials such as asbestos cement or vitrified clay pipe may require replacement in these areas.

2.10.3 Alternate Conditions

Subject to the approval of the IHA and when it is not possible to obtain proper vertical separation as stipulated above, the storm and sanitary sewer shall be constructed of PVC pipe the same pressure class as the water system or any sewer or water main joint within 3 m of the centre line of the crossing shall be wrapped with an impermeable material approved by Interior Health Authority (IHA) and the City Engineer.

2.11 Utility Separation: Storm and Sanitary Sewers in Common Trench

Storm and sanitary sewer separations are to conform to the Standard Drawings. Consideration will be given lesser separation in a common trench, provided that the design has taken into account:

- Interference with service connections;
- Stability of the benched portion of the trench;
- Maximum vertical separation between inverts shall be 0.5 m; and
- Conflicts with manholes and appurtenances.

In no case shall the centre on centre distance between sewer pipes be less than 1.2 m or the horizontal clearance between manholes or between pipes and manholes be less than 0.3 m. This allowance only applies in circumstances where 1050 mm diameter manholes are permitted and no deflection of pipes at manholes will be permitted to achieve this condition.

2.12 Access to City Infrastructure

All-weather vehicle access must be provided to City infrastructure. The access shall be a minimum 4.5 m wide and capable of supporting the intended maintenance vehicles, it shall be accessible from and extend to a public road allowance. A minimum centre line radius of 12 m is to be provided. Grades are not to exceed 20% for inlet structures and 12% for reservoirs, booster stations, and infrastructure requiring regular maintenance and inspections unless approved by the City Engineer. Variances from or additional site specific details may be required as directed by the City Engineer.

2.13 Special Pipe Installation Methods (Tunneling/Boring/Casing)

Where special methods for installation are required (e.g. through fill sections, tunneling, jacking, or boring), details of the placement methods and support for the pipe must be submitted with the overall design for the City Engineer's approval.

2.14 Authorization to Proceed with Construction

No construction is to proceed prior to:

- Having a current signed PLA letter from the City for the project;
- Receiving written authorization to proceed from the City Engineer;
- Receiving approved construction drawings from the City Engineer;
- Providing securities for works not within the Applicant's lands in a form acceptable to the City Engineer;
- Providing insurance in the amount of $5 million on City format;
- The Applicant providing a signed Latecomer Waiver or completion of a Latecomer Agreement. It should be noted this process requires approval by Council and may take two months or more, once the Design Engineer has provided all required documentation;
- Attaining any applicable road right-of-way usage permits; and
- Receiving a permit for construction from IHA (water only).

2.15 Customer Service Manual

The City of Kamloops Customer Service Manual will be one of a number of evolving web based documents available on the City website (www.kamloops.ca) to guide the Design Engineer through the design, construction, and approval process. It will provide procedural information for the Design Engineer such as:

- Design submission checklists;
- Construction approval parameters;
- Inspection phase parameters;
- Final subdivision approval (engineering component);
- Record drawing submissions;
- Responsibilities of the Design Engineer and/or other professionals;
- Testing procedures;
- Water meter designs including meter chamber details;
- Fire department requirements;
- Policies for working on or connecting to existing City infrastructure;
- Guidelines for inspection requirements; and
- Commercial garbage bin requirements.

The City is working to have the Customer Service Manual available in 2013.