City of Campbell River Data Standards Document – June 12, 2024

These specifications pertain to the preparation of the preliminary drawings and the complete set of drawings for a subdivision or development, including, as appropriate, storm drains, sanitary sewers, waterworks, roadways, curbs, lighting, sidewalks, hydro, gas, telephone and cable television, culverts, street trees, bridges and other permanent structures.

1. **Preliminary Drawing** The preliminary drawing of the proposed development should be at a scale of 1:1000, but other scales may be utilized subject to the approval of the City. The preliminary drawing submitted for preliminary approval need not comply with all the requirements of this document, but it shall show:
    a. The outside boundary of the property to be developed, and the boundaries between phases (if any) of the proposed subdivision.
    b. The relationship of the development to any adjacent existing or proposed roads.
    c. The dimensioned location and use of any existing buildings or other structures.
    d. The locations of any watercourses, including the high water mark or top of bank, and riparian zone.
    e. The locations and dimensions of all existing and proposed lot lines.
    f. The scale and date of the drawing and the direction of north.
    g. The locations of any existing easements or statutory right of ways.
    h. The location of any onsite utilities, water, storm or sewer mains.

2. **Drawings**
    a. The complete set of drawings shall clearly show the locations of all services, using offsets from property lines or boundaries of statutory right of ways.
    b. Elevations shall be relative to geodetic datum. Bench mark locations and elevations may be obtained from the City. A minimum of 2 monuments shall be shown on each set of drawings.
    c. All drawings shall be in metric measurement; all dimensions shall be shown to the nearest 10 mm. All elevations shall be shown to the nearest 10 mm except critical sewer elevations which shall be shown to the nearest 5 mm.
    d. Where a City of Campbell River standard plan exists it shall be sufficient to refer to the appropriate plan by reference number and date of issue. Where a standard plan does not exist, or is unsuitable for a particular case, detail drawings shall be prepared to conform generally with these specifications and so as to portray accurately the variance elements of the installation.
    e. Each plan view shall show sufficient grid reference points to permit the works to be related to Integrated Survey Area No. 28, Campbell River.
    f. Drawings shall bear the seal of a qualified Professional Engineer licensed to practice in British Columbia.
    g. Detention pond landscaping plans shall be prepared by either a registered Landscape Architect or a qualified Consultant and shall be submitted with all other engineering drawings.
    h. The Consultant shall submit such plans as may be required by Provincial and Federal Agencies having jurisdiction over the subject improvements. Copies of required approvals and/or permits and a print of each approved drawing shall be submitted to the City. Copies of drawings prepared by private utility companies and associate consultants shall be reviewed and certified by the Consultant as having been coordinated with all other works and services to be constructed.

3. **Preparation of Drawings**
    a. The title and revision block shall be located in the lower right corner of the drawing and shall contain a space where the City drawing number may be entered. The following information shall be shown on all plans when applicable.
        - lot and plan number, title block and north arrow, road names

- existing and proposed rights-of-way and easements
- lot lines substantially as shown on the approved preliminary layout plan

b. The following scales should normally be used:

Plan Description		Preferred	Acceptable
Location Plan	Horizontal	1:5000	
Overall Development Plan	Horizontal	1:1000	or 1:500
Topographic and Existing Structures Plan	Horizontal	1:1000	or 1:500
Catchment Area Storm Water Control Plan	Horizontal	1:1000	or 1:2500
Detention pond landscaping Plan	Horizontal	1:500	or 1:1000
Lot Grading Plan	Horizontal	1:1000	or 1:500
Plan/Profile	Horizontal Vertical	1:500 1:50	
Cross-Sections	Horizontal Vertical	1:100 1:25	
Structural Details		1:20	or 1:10

c. Both plan and profile must be referenced to a property line or road centreline; the lower half of the plan/profile sheet shall be the plan view.

4. Description of Development Plans

a. A complete set of drawings of the subdivision shall consist of the following:
- Location Plan
- Overall Development Plan
- Topographic and Existing Structures Plan
- Catchment Area and Storm Water Control Plan
- Detention pond landscaping Plan
- Lot Grading Plan
- Roadworks and Waterworks Plans and Profiles
- Sanitary and Storm Sewer Plans and Profiles
- Detail Plans
- Street Lighting Plans
- Landscape Plans
- Irrigation Plans

b. Where good cause can be shown, one or more of the above plans may be exempted upon approval from the City.

c. The Consultant shall submit additional design drawings as requested by the City where other specialized engineered structures are required.

5. Location Plan

a. The Location Plan shall show the location of the project relative to the surrounding district; it shall show a north arrow and major road names.

6. **Overall Development Plan**
    a. The purpose of the Overall Development Plan is to show the general layout of the subdivision and the relation of the various utilities to each other. Details of these utilities shall be shown on the plan/profile sheets. The Overall Development Plan shall show all existing and proposed legal lines, easements, roadworks, public and private utilities, street trees and community mail centres in the subject phase and any future phases.

7. **Topographic and Existing Structures Plan**
    a. The Topographic and Existing Structures Plan shall show the locations of all buildings and structures to be retained, all natural boundaries such as steep banks, watercourses and areas of unstable soil on and adjacent to the subdivision. Where the slope of the existing ground is in excess of fifteen (15) percent contour lines at two (2) metres or less spacing shall be shown, with major contours (every 10 metres) in bold.

8. **Catchment Area and Storm Water Control Plan**
    a. The Catchment Area and Storm Water Control Plan shall show the whole of the drainage catchment area to the point of discharge to a trunk storm sewer or natural watercourse. The plan shall show the design runoff coefficient, area and flow. Required upgrades to downstream drainage structures shall be shown as far as the receiving trunk storm sewer or watercourse.
    b. This plan shall show the location of the major storm-flow route(s).

9. **Detention Pond Landscaping Plan**
    a. The detention pond landscaping plan will contain the location, quantity and planting methods for the wetland and buffer areas. It shall also include information on site preparation methods, as well as a schedule for maintenance during the first growing season.
    b. The detention pond landscaping plan may be refined and adjusted during construction subject to City approval in order to adapt to changing field conditions.
    c. Detention pond landscaping plans shall be submitted for review and approval as part of the stormwater control plan and shall include the following information:
        - plan view of area, detailing pond location and surrounding areas.
        - details showing each zone and depth.
        - details indicating how aquatic and terrestrial areas shall be vegetatively stabilized.
        - locations and quantities of wetland plants to be planted in each appropriate zone.
        - locations and quantities of native plant species and grasses to be planted in each appropriate zone.
        - a list of wetland plants, showing total quantities, sizes and spacing.
        - a list of native plant species and grasses to be planted in buffer and surrounding areas, showing total quantities, sizes and spacing.
        - location of maintenance access.
        - a detailed program for the care and maintenance of the landscape for one growing season after the original planting.
    d. Final detention pond landscaping plans (working drawings) showing all major or minor changes from the detention pond plan may be required when all construction has been completed and prior to planting. Final detention pond landscaping plan should reflect altered depths and availability of wetland stock. Areas for planting must be shown on the design plan, or as-built and also located in the field.

10. **Lot Grading Plan**
    a. The Lot Grading Plan shall show the post-development ground elevation at each corner of the lots and at any breakpoints, the elevations of centre-line or roadways, and the locations of storm drain inlets. For each lot it shall show the minimum base of footing elevation, and the minimum underside of floor joist elevation of the building to be constructed thereon and, where necessary, details of the grading around it to direct

surface water away from the building and any other necessary grading or drainage features. Where such building is adjacent to or liable to be affected by a major flow flood path, the highest elevation of the major hydraulic grade line opposite such building shall be shown.

b. Where any design ground elevations are below top of curb, the plan shall show the method of disposition of surface water.

11. Roadworks Plans & Profiles

a. Plans and profiles shall be shown for all proposed roadways, utility rights of way, walkways, trails and bicycle paths. Where a new roadway is the continuation of an existing roadway or where the work may be extended at a future date the plans and profiles shall extend a minimum 50 m beyond the work to be constructed.

b. The following information shall be shown on the plan:
   - all roads including sidewalks, walkways and emergency access routes, their widths, and their offsets from property lines. The roadway width shall be measured between the curb faces (low point in gutter). Where a sidewalk is constructed adjacent to a vertical curb, the curb width shall form part of the sidewalk width.
   - details of intersections with spot pavement and gutter elevations at all critical points.
   - curb returns and cul-de-sac bulbs, complete with spot gutter elevations.
   - hydrant, pole, electrical kiosks, and mailbox locations.
   - locations of catch basins referenced to centreline chainage, and catch basin rim elevations.
   - typical cross-section if different from standard plan.
   - locations of street name signs and traffic control signs.
   - locations of traffic islands, retaining walls, guardrails and barricades.

c. The following information shall be shown on the profile:
   - the existing ground profile and finished pavement profile at true centreline length projected above the plan in as close a relationship as possible.
   - percent grade to two decimal places.
   - station and elevations of BVC, EVC and PVI.
   - length of vertical curve.
   - elevations along the vertical curve at intervals not exceeding 7.5 metres.
   - elevations and stations of low or high spots of vertical curves.
   - where the levels of existing ground vary considerably across the right-of-way, cross-sections shall be shown at intervals not exceeding 15 metres.

d. On crossfall sections, a profile should be shown for each gutter and the elevation of each gutter should be shown either on the profile or in tabular form.

12. Waterworks Plans & Profiles

a. Where both roadways and waterworks are required, the two plans and profiles may be combined.

b. The following information shall be shown on the waterworks plan:
   - locations of existing and proposed pipe centreline, pipe size, type and class, hydrants, valves, thrust blocking, fittings and all related appurtenances in relation to road, easement and adjacent property and lot lines.
   - location where the mains terminate.
   - the extent of work required by the Municipality in making the connection to the existing water main.
   - locations of service connections. Connections not conforming to the standard offset require a reference to a lot line.
   - if mains are to be connected to existing mains without a valve, a note must be made as to isolation procedures during testing and flushing.

c. A water main profile is only required where there is a conflict with other utilities and/or the pipe is not to be laid at a constant depth of 1.2 metres below the finished grade.

d. The following information shall be shown on the profile:
   - profile line of the existing and finished grade above the pipe, and the crown profile of the pipe.
   - pipe deflections and bends.
   - other utilities crossing the water main.

13. Sanitary and Storm Sewer Plans & Profiles

a. The sewer plans shall show the tie-in to existing systems and provision for future extensions where appropriate. Sanitary sewer manholes shall have alphabetical identifications. Storm sewer manholes shall have numerical identifications.
b. The following information shall be shown on the sewer plan:
   - locations of the pipe centreline, manholes, cleanouts, and other appurtenances in relation to road, easement and adjacent property and lot lines.
   - locations and invert elevations of service connections at property line. Connections not conforming to the standard offset require a distance from an iron pin or lot line.
   - existing and proposed power and telephone poles.
   - dimensions of easements.
   - elevations of the existing ground at the centre of the lot.
   - horizontal curve information as detailed under Roadworks when curved sewers are proposed.
   - locations of ditch lines, culverts and ditch inverts when they are to be retained.(on storm sewer plans only)
   - culvert diameter and invert elevations, details of intake and outlet structures.(on storm sewer plans only)
   - structural details of all manholes not covered by City standard plans.
   - existing buildings to be connected to the sewers, and existing building sewer outlets, if any.
   - direction of flow.
c. The following information shall be shown on the profile:
   - the profile line of existing and proposed finished road grade above the pipe, and the inverts of the proposed sewers at all manholes or changes in grade.
   - size, type and class of pipe.
   - distance between manholes, and manhole rim elevations.
   - distance between manholes and cleanouts.
   - percent grades to two decimal places.
   - invert elevations of inlet, outlet and branch lines at manholes.
   - other underground utilities crossing the sewers.

14. Detail Plans

a. Detail plans of structures such as special manholes, or outlet structures shall be shown on the appropriate plan or on a separate sheet.

15. Street Lighting Plans

a. The following information shall be shown on the Street Lighting Plan:
   - street light pole locations and type.
   - luminaire type and wattage.
   - effective coverage of the street light, shown as a dashed circle (isofoot candle curve)
   - street light conduit locations and offsets.
   - street light service panel locations.
   - location of power source.
   - locations of existing and proposed hydro and telephone poles.
   - size of ducts, type and size of wire.
   - location of grounding points.

16. Landscape Plan

a. The following information shall be shown on the Landscape Plan:
   - property lines
   - buildings, edge of pavement, curblines and curbs, sidewalks, lighting fixture locations, surface utilities and related service boxes or other elements that would affect the landscape and street tree location.
   - Location of all existing vegetation to remain.
   - Location of retaining walls and slopes that exceed 3:1 vertical.
   - Location of all proposed trees, shrubs, ground cover and lawn areas.
   - Indication of which areas will be seeded vs sodded lawn.
   - Plant list showing botanical name, common name, size at planting, quantity, typical spacing, and root zone volume of supplied growing medium for trees.

17. Irrigation

a. The following information shall be shown on the Irrigation Plan:
   - property lines
   - buildings, edge of pavement, curblines and curbs, sidewalks, lighting fixture locations, surface utilities and related service boxes or other elements that would affect the landscape and street tree location.
   - Location of all existing vegetation to remain.
   - Location of retaining walls and slopes that exceed 3:1 vertical.
   - Location of all proposed trees, shrubs, ground cover and lawn areas (may be light tone).
   - Indication of which areas will be automatic vs manual watering systems.
   - Planting hydrozones – areas of similar water requirement e.g. high, medium, low.
   - Schematic layout showing all points of connection, winterization facilities, timeclocks, heads, valves, piping, sleeves, and other elements critical to construction and maintenance of the irrigation system.
   - Notes to indicate the operating pressure of design precipitation rate of each circuit.
   - Notes to indicate recommended timeclock settings for each circuit – with separate settings for spring, summer, and fall.

18. Completion Package / Record Drawings

a. Following construction the following submissions are required:
   i. Letter of Certification from a P.Eng. that the work meets City Standards
   ii. Construction Costs per Bylaw 3948 Section 3.4, 6.4 and 6.5 (as applicable)
   iii. A Deficiency list with schedule of remedy and cost estimates
   iv. Service Record Cards
   v. Record Drawings - Digital copies of the record drawings showing the works as actually constructed in PDF, DWF and DWG formats, shall be submitted to the City prior to issuance of certificate completion. They shall be certified and sealed by the Consultant to be a true record of the installation.
   vi. Water meter and back flow preventor information
   vii. Stormwater management maintenance manual per Bylaw 3948 MMCD Design Guidelines Supplemental Section 4.15.1
   viii. Construction Inspection Reports
   ix. Material Testing Reports – as per MMCD Construction Specifications
   x. CCTV of sanitary drainage mains and services as per Bylaw 3948 MMCD Construction Specifications Supplemental Sections 33 30 01S 3.18 and 33 40 01S 3.12
   xi. Electrical Permits (for street lighting)

b. Prototype Autocad drawings with the required variables, layers, text styles, dimension styles, line types and blocks have been created and are available from the City. Plans shall be prepared based on the City's prototype drawings.