

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

DESIGN DRAWING STANDARDS.

SECTION NO.

General Requirements	1.01 [↓]
Site Plan and Key Plan	1.02 [↓]
Plan and Profile Drawings - General	1.03 [↓]
Roads	1.04 [↓]
Storm and Sanitary Sewers	1.05 [↓]
Waterworks	1.06 [↓]
Ornamental Street Lighting Traffic Control Signals, Hydro, Phone, Gas and Cablevision Fibre Optics (Commercial and Private)	1.07 [↓]
Signage and Pavement Markings	1.08 [↓]
Detail Sheets	1.09 [↓]
Cross-Sections	1.10 [↓]
Landscape and Irrigation Plan Preparation	1.11 [↓]
Tree Management Plan	1.11A [↓]
Stormwater Management	1.12 [↓]
Certification of Works	1.13 [↓]

OTHER GENERAL REQUIREMENTS

-Not Used-	1.14 [↓]
-Not Used-	1.15 [↓]
Survey Control Monuments	1.16 [↓]

RECORD DRAWING STANDARDS

General Requirements	1.20 [↓]
Record Drawing Submission	1.21 [↓]
Digital Submission of Record Drawings	1.22 [↓]

CAD STANDARDS

Computer Aided Drafting Standards Overview	1.40 [↓]
Template Drawings	1.41 [↓]
Coordinate System (<i>REVISED JUNE 2026</i>)	1.42 [↓]
Layer Naming Conventions	1.43 [↓]
Standards Symbols and Abbreviations	1.44 [↓]

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

STANDARD DRAWINGS

DWG. NO.

Standard Layer Names – Sheet 1 of 3 (<i>REVISED JUNE 2026</i>)	G-1	□
Standard Layer Names – Sheet 2 of 3 (<i>REVISED JUNE 2026</i>)	G-1A	□
Standard Layer Names – Sheet 3 of 3 (<i>REVISED JUNE 2026</i>)	G-1B	□
Standard Abbreviations	G-2	□
Standard Materials and Hatch Patterns	G-3	□
Standard Symbols – Sheet 1 of 10 (<i>REVISED JUNE 2026</i>)	G-4	□
Standard Symbols – Sheet 2 of 10 (<i>REVISED JUNE 2026</i>)	G-4A	□
Standard Symbols – Sheet 3 of 10 (<i>REVISED JUNE 2026</i>)	G-4B	□
Standard Symbols – Sheet 4 of 10 (<i>REVISED JUNE 2026</i>)	G-4C	□
Standard Symbols – Sheet 5 of 10 (<i>REVISED JUNE 2026</i>)	G-4D	□
Standard Symbols – Sheet 6 of 10 (<i>REVISED JUNE 2026</i>)	G-4E	□
Standard Symbols – Sheet 7 of 10 (<i>REVISED JUNE 2026</i>)	G-4F	□
Standard Symbols – Sheet 8 of 10 (<i>REVISED JUNE 2026</i>)	G-4G	□
Standard Symbols – Sheet 9 of 10 (<i>REVISED JUNE 2026</i>)	G-4H	□
Standard Symbols – Sheet 10 of 10 (<i>REVISED JUNE 2026</i>)	G-4I	□
Street Light Table and Traffic Sign Table	G-7	□
Survey Code Descriptions and Description Key Set Sheet 1 of 3 (<i>REVISED JUNE 2026</i>)	G-8	□
Survey Code Descriptions and Description Key Set Sheet 2 of 3 (<i>REVISED JUNE 2026</i>)	G-8A	□
Survey Code Descriptions and Description Key Set Sheet 3 of 3 (<i>REVISED JUNE 2026</i>)	G-8B	□

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

DESIGN DRAWINGS STANDARDS

1.01 GENERAL REQUIREMENTS

- .1 A complete set of construction drawings consists of separate drawings, of some or all, of the following as determined by the **City Engineer**: *(REVISED JUNE 2026)*
 - (a) Site plan and key plan
 - (b) Plan and profile for roadways, drainage and storm sewers *(REVISED JUNE 2026)*
 - (c) Plan and profile for sanitary sewers and watermains
 - (d) Plan and profile for sanitary and storm sewers for common trench designs
 - (e) Plan of proposed street lighting, hydro, telephone, cablevision and gas
 - (f) Plan of proposed signage and pavement markings
 - (g) Plan of proposed landscaping and irrigation
 - (h) Plan of proposed sanitary sewer tributary area plan
 - (i) Plan of proposed storm sewer tributary area plan
 - (j) Tree Management Plan
 - (k) Additional plans showing the proposed site grading plan, **stormwater management** plan
 - (l) Additional plans showing any special details and cross sections
- .2 Maximum drawing size is Arch D (24 in x 36 in; 610 mm x 915 mm). *(REVISED JUNE 2026)*
- .3 All drawings must be metric. Drawing scales and scale bars are to be shown on all drawings. *(REVISED JUNE 2026)*
- .4 The drawings are neat and legible, with adequate clearance margins between the drawing information and the title block border. Notes and text describe the proposed work in sufficient detail to facilitate construction. Limits of construction and match lines are clearly marked on the drawing. *(REVISED JUNE 2026)*
- .5 North arrow must be shown for every plan on a drawing, and located at the upper left or right of the corresponding plan. *(REVISED JUNE 2026)*
- .6 All text to be vertical upper case lettering. The minimum height of lettering for proposed work is 2.5-mm and for existing structures is 1.80-mm. Avoid overlaps of annotation elements such as symbols, dimensions and text. *(REVISED JUNE 2026)*
- .7 Construction notes are to be boxed and located around the perimeter of the drawing, tagged to the drawing feature. *(REVISED JUNE 2026)*

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- .8 All elevations shown on drawings must be metric geodetic datum. The source and location of the datum must be clearly noted on each drawing in the general notes. Refer to Section 1.42 - Coordinate System [→]. (REVISED JUNE 2026)
 - .9 The drawing title block includes the following information: (REVISED JUNE 2026)
 - (a) Project Name
 - (b) Project Location
 - (c) Drawing Title
 - (d) Consulting Company Name or Logo
 - (e) City of Nanaimo Logo
 - (f) Drawing Scale and scale bar (REVISED JUNE 2026)
 - (g) City of Nanaimo Engineering File Number
 - (h) BP Number, DP Number and SUB Number
 - (i) City of Nanaimo Drawing Number
 - (j) Revision
 - (k) Professional of Record Authentication (Name, Seal, Signature and Date) (REVISED JUNE 2026)
 - (l) Firms Permit to Practice number (REVISED JUNE 2026)
 - .10 Standard details, such as manholes, catch basins, hydrants, and similar appurtenances, that comply with the City Standard Drawings, are annotated with the applicable drawing numbers. Standard symbols for the various utilities, as shown on Standard Drawing No.'s G-4 to G-4I [], and Standard Drawing No. G-3 - Standard Materials and Hatch Patterns [], are to be used and may be shown in a legend on the drawings. (REVISED JUNE 2026)
 - .11 All drawings must bear the authentication of the Professional of Record responsible for the design. (REVISED JUNE 2026)
 - .12 Numerical values shown on the Construction drawings are to be shown to two (2) decimal places unless accuracy warrants otherwise. (REVISED JUNE 2026)
- 1.02 SITE PLAN AND KEY PLAN
- .1 The Site Plan of the construction works scale is 1:1000 or larger. (REVISED JUNE 2026)
 - .2 The Site Plan includes but is not limited to the following: (REVISED JUNE 2026)
 - (a) existing watercourses
 - (b) pavement, curbs
 - (c) ditches, culverts, storm sewers, manholes, temporary cleanouts, inlet/outlet structures and catch basins
 - (d) sanitary sewers, manholes, temporary cleanouts
 - (e) watermains, valves, hydrants, PRV stations, air valves, flushouts
 - (f) all pertinent property, right-of-way and easement lines

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- (g) road allowance and easement dimensions
 - (h) lot numbers and existing legal plan numbers
 - (i) street addresses
 - (j) one metre contour lines for slopes greater than 10% existing and proposed
 - (k) power and telephone and street light poles
 - (l) plan and profile drawings reference numbers
 - (m) gas mains, underground hydro, telephone, street lights and cable and their related appurtenances
 - (n) survey control monuments
 - (o) routing of all major storm flow including the 1:100 AEP (1% AEP) storm event
(REVISED JUNE 2026)
- .3 A Key Plan to a small scale, (e.g., 1:10,000), showing the location of the works in relation to major streets, is positioned in the upper right-hand section of the drawing sheet. (REVISED JUNE 2026)
- .4 A drawing index includes the drawings titles, sheet numbers, and the City drawing number. (REVISED JUNE 2026)
- .5 The following notes are shown on either the site plan or the first drawing of the set:
(REVISED JUNE 2026)
- (a) "All work and materials are as described in the City of Nanaimo manual of 'Engineering Standards & Specifications' or as otherwise approved by the City Engineer." (REVISED JUNE 2026)
 - (b) "Connection to, or alteration of, existing City-owned utilities, requires authorization by the City Engineer."
 - (c) "A 'Permit to Install Works Within Streets, Lanes and City Property Areas', will be required where construction is to be undertaken in City of Nanaimo right-of-ways and/or on City of Nanaimo owned utilities or properties."
 - (d) "Upon approval of the permit the City of Nanaimo's Engineering Construction Branch must be notified forty-eight (48) hours prior to commencement of work." (REVISED JUNE 2026)
 - (e) "Contractor is to comply with all applicable Ministry of Forests, Ministry of Land, Water, and Resource Stewardship and Fisheries and Oceans Canada requirements at all times during construction. (REVISED JUNE 2026)

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

1.03 PLAN AND PROFILE DRAWINGS - GENERAL

Each Plan and Profile drawing shows, but not be limited to, the following information: *(REVISED JUNE 2026)*

- .1 Drawings are to be to the following scales unless otherwise approved: *(REVISED JUNE 2026)*

Horizontal -	1:250 for all drawings except; 1:500 for single utility drawings only
Vertical -	1:50 for drawings with plan view scale of 1:250 1:100 for drawings with plan view scale of 1:500
Note: In areas of steep slope, the standard 5x vertical can be reduced to 2.5x exaggeration for clarity. <i>(REVISED JUNE 2026)</i>	

- .2 All cadastral information including property, right-of-way and easement lines and dimensions, is shown in sufficient detail to relate design to surrounding and adjacent properties. This information is included on all drawing submissions. *(REVISED JUNE 2026)*
- .3 Legal descriptions and civic addresses of existing properties.
- .4 Road dedication allowance dimensions. *(REVISED JUNE 2026)*
- .5 Existing pavement, curbs, sidewalks, ditches, driveways, lanes, retaining walls, buildings, trees and shrubs within the right-of-way. Note significant trees on and within 5 metres of the right-of-way.
- .6 All existing underground and surface utilities and services are to be labeled with (material type and elevation) including but not limited to the following: *(REVISED JUNE 2026)*
- (a) sanitary sewers, storm sewers, watermains and appurtenances
 - (b) street light poles, conduit and appurtenances
 - (c) hydro poles and underground wiring ducts and appurtenances
 - (d) telephone poles, underground wiring ducts and appurtenances and fibre optic cables
 - (e) gas mains and appurtenances
 - (f) cable television ducts and appurtenances
 - (g) traffic control devices, poles, conduits, signs and painting
 - (h) irrigation systems
- .7 All relevant topographic information. For slopes greater than 10 percent, one (1) metre contour lines are required. *(REVISED JUNE 2026)*

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- .8 Right-of-way and/or roadway centerline stationing are metric standards (0+000) at 20 metre intervals and related geometrically to legal property lines or survey monuments. Stationing runs left to right where possible and upstream on gravity pipes. *(REVISED JUNE 2026)*
 - .9 Plan and Profile drawings must be drawn with the profile on the bottom of the drawing sheet and be lined up under the plan. Utility and roadway stationing, inverts, diameter, material type, class and grade information must be located across the bottom of the profile. *(REVISED JUNE 2026)*
 - .10 Profile elevations are to be placed at both sides of the profile. Split profiles must show elevations on both sides of the break. The number of split profile views are to be limited to two per drawing sheet, only when necessary. This applies to all drawings. *(REVISED JUNE 2026)*
- 1.04 ROADS
- In addition to Section 1.03 [→], the following information is required: *(REVISED JUNE 2026)*
- .1 All proposed works, complete with existing elevation tie-in points and offsets from roadway centerline, including: pavement, curbs, sidewalks and poles. *(REVISED JUNE 2026)*
 - .2 Stations of the beginning of curve (BC) and end of curve (EC) of roadway centerline and curb return horizontal curves together with the curve information including delta angle, radius, tangent length and arc length. *(REVISED JUNE 2026)*
 - .3 Details of intersections with spot elevations at all critical points including grades and elevations of curb returns.
 - .4 Catch basin rim elevations and locations related to roadway centerline stationing. *(REVISED JUNE 2026)*
 - .5 Existing ground profile and finished pavement profile along the pavement centerline with elevations at 20 metre intervals.
 - .6 Crossfall or crown information with gutter elevations at change points.
 - .7 Proposed roadway centerline grade. *(REVISED JUNE 2026)*
 - .8 Stations and elevations of beginning of vertical curve (BVC), end of vertical curve (EVC) and vertical point of intersection (VPI). *(REVISED JUNE 2026)*
 - .9 Vertical curve information including the radius, length of curve and sag or crest K value.
 - .10 Elevations along the vertical curve at ten (10) metre intervals.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- .11 Elevation and station of low and high spots of vertical curves.
 - .12 Where the slope of existing ground is greater than 10% across the right-of-way, cross-sections are to be shown at intervals not exceeding twenty (20) metres.
(REVISED JUNE 2026)
 - .13 Where there is an elevation difference of more than 1.2 m from the design roadway centerline to a suitable building site on the adjacent parcel, driveway grades and profile are to be shown the drawings. (REVISED JUNE 2026)
 - .14 Where only a half road is being constructed, the full width design cross-sections is required to ensure the design suits the future development of adjacent properties.
(REVISED JUNE 2026)
 - .15 Typical street cross-section shows the right-of-way width, proposed roadway design structure, pavement width, sidewalks, curbs, underground utilities, hydro, power and street light poles, hydrants and their related offsets. (REVISED JUNE 2026)
 - .16 Additional design details as required.
- 1.05 **STORM AND SANITARY SEWERS**
- In addition to Section 1.03 [→], the following information is required: (REVISED JUNE 2026)
- .1 Include common trench designs on the same construction drawing.
 - .2 All proposed storm and sanitary works including manholes, drop pipes, temporary cleanouts, catch basins, inlet/outlet structures, pipe work, ditches, culverts, inspection chambers, services and wyes, complete with offsets for mains, rim elevations, stations related to the roadway centerline, and pipe inverts at manholes and pipe grad breaks. (REVISED JUNE 2026)
 - .3 Existing ground profile and finished ground profile along the centerline of the proposed sewer.
 - .4 Distance between manholes with proposed grade of pipe.
 - .5 Stations and elevations of the BC, and EC of all horizontal curves with the curve information including radius and arc length.
 - .6 Stations and elevations of the BVC, EVC, and VPI of all vertical curves with the curve information including the length of vertical and maximum pipe deflection. Elevations along vertical curves at the (10) metre intervals.
 - .7 Existing and proposed pipe crossings to be shown in profile and to include pipe size, type and invert. (example: EX 200 dia. AC WTR; INV:101.11)

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- .8 For proposed service connections, the offset location referenced to property line and invert elevation at the property line. Offset distance to include prefix "S" for sanitary and "D" for storm, (i.e. S 2.4m or D 3.0m). Reference Standard Drawing No. T-7, Section 4.0 []. Service inverts are to be in a table. *(REVISED JUNE 2026)*
 - .9 Location of existing buildings on properties served by storm and sanitary sewers.
 - .10 Basement elevations for existing buildings.
 - .11 For storm, the profile shows the hydraulic grade line for the **minor system** and **major system**, and minimum elevation for habitable area. The plan view shows the **overland flow path**, if applicable. *(REVISED JUNE 2026)*
 - .12 The design flow and **Annual Exceedance Probability (AEP)** are to be noted on each storm drawing. *(REVISED JUNE 2026)*
 - .13 Material, type, size, inverts and flow direction to be shown for all proposed and existing culverts.
 - .14 Additional design details as required.
- 1.06 WATERWORKS
- In addition to Section 1.03 [→], the following information is required: *(REVISED JUNE 2026)*
- .1 For new construction, all proposed waterworks attributes including size, type and class of pipe, hydrants, valves, joint restraints, fittings and all related appurtenances with offsets and stationing related to roadway centerline. For all rehabilitation, all proposed waterworks as stated above, are shown with offsets and stationing related to the centerline of pipe alignment. *(REVISED JUNE 2026)*
 - .2 Locations of proposed service connections including an offset distance from an iron pin or lot corner. Offset distance to include the prefix "W", (i.e. W 1.2 m).
 - .3 Existing ground profile and finished ground profile, and invert profile along the centerline of the proposed watermain.
 - .4 All other pertinent service crossings to be shown in profile (e.g., sewer mains, gas mains, etc.).
 - .5 Extent of work required in making the connection to existing watermains.
 - .6 If the proposed watermain alignment or profile varies from the roadway centerline, the following details are provided: *(REVISED JUNE 2026)*
 - (a) stations of the BC and EC of horizontal curves together with curve information including delta angle, radius, tangent length and arc length.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- (b) stations and elevations of the BVC, EVC, AND VPI of vertical curves together with curve information including curve length and maximum pipe deflection required.
 - (c) elevations along vertical curves at (10) metre intervals.
 - (d) proposed grades.
- .7 Pipes requiring joint restraints are to be shaded, labeled and dimensioned from adjacent fitting showing the length of pipe requiring restraint. *(REVISED JUNE 2026)*
- .8 Additional design details as required.
- 1.07 ORNAMENTAL STREET LIGHTING, TRAFFIC CONTROL SIGNALS, HYDRO, PHONE, GAS AND CABLEVISION FIBRE OPTICS (COMMERCIAL AND PRIVATE)
- .1 In addition to Section 1.03 [→], the following information is included for the plan view: *(REVISED JUNE 2026)*
- (a) pole, conduit and appurtenances locations with offsets and stationing related to roadway centerline. *(REVISED JUNE 2026)*
 - (b) size, type, class of conduits.
 - (c) schematics of wiring details for street lights and traffic signals.
 - (d) details of detector loops, the location of the power source and all other wiring circuits on traffic signals.
- .2 Street lights are to be numbered and pertinent information, (i.e. wattage, lamp type, pole height and location including coordinates as per Section 1.42 - Coordinate System [→]) are to be shown as per Standard Drawing No. G-7 []. *(REVISED JUNE 2026)*
- .3 The plan scales are 1:1000, 1:500, or 1:250. *(REVISED JUNE 2026)*
- .4 Traffic signal drawings generally conform to Section 10.02 - Traffic Signals []. *(REVISED JUNE 2026)*
- 1.08 SIGNAGE AND PAVEMENT MARKINGS
- .1 A separate plan is prepared in all cases for signage and pavement markings. This plan details all eradications, alterations, additions and new regulatory and advisory signage and line painting. The design conforms to the *Manual of Standard Traffic Signs and Pavement Markings* or the *Manual on Uniform Traffic Control Devices* (MUTCD). The following items are shown: *(REVISED JUNE 2026)*
- (a) Lane widths, median radii and taper ratios.
 - (b) Dimensioned location and type of new or relocated signs.
 - (c) Completed Traffic Sign Table as per Standard Drawing No. G-7 [].
- .2 The plan scales are 1:500 or 1:250. *(REVISED JUNE 2026)*

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- .3 For drawing clarity, show curb locations only. Do not show utilities, legal information or addresses.

1.09 DETAIL SHEETS

- .1 Where there is not a sufficient room on the plan and profile drawings, design details for the particular drawing may be provided on a separate sheet.
- .2 Scale is determined by the designer to suit the design detail, and included for each detail. *(REVISED JUNE 2026)*
- .3 Where street cross-sections are required they may be provided on a separate sheet. *(REVISED JUNE 2026)*

1.10 CROSS-SECTIONS

- .1 Cross-section scale is 1:100 horizontal to 1:20 vertical (5:1 vertical exaggeration) or 1:100 horizontal to 1:50 vertical (2:1 vertical exaggeration) in steep slope situations. *(REVISED JUNE 2026)*
- .2 Starting at the lower left hand corner of the drawing sheet, cross-sections are to be placed up the sheet in order of increasing stationing. Grid elevations are to be shown at the left hand side of each cross-section and stationing are to be shown above each cross-section. Provide adequate space between cross-sections to ensure clarity. *(REVISED JUNE 2026)*
- .3 Cross-sections include: *(REVISED JUNE 2026)*
 - (a) Design street cross-section within the right-of-way. *(REVISED JUNE 2026)*
 - (b) Existing ground cross-section extending into the adjacent properties as required.

1.11 LANDSCAPE AND IRRIGATION PLAN PREPARATION

- .1 All landscape related construction drawings and inspections required under this Section must be undertaken by a Landscape Architect registered with the British Columbia Society of Landscape Architects (BCSLA). *(REVISED JUNE 2026)*
- .2 The landscape architect must coordinate the landscape design within the street right-of-way with existing or proposed landscape on private property fronting the road, so as avoid over planting or conflicts with sight distance, existing trees or buildings. *(REVISED JUNE 2026)*
- .3 In addition to Section 1.03 [→], the following information is to be included: *(REVISED JUNE 2026)*
 - (a) Sight distance triangles at intersections.
 - (b) Proposed slopes steeper than 3:1 to be indicated with slope direction arrow and slope ratio, contours and/or top and bottom of slope lines and elevations.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- (c) Proposed tree locations showing trunk center and approximate canopy spread at 15 years age.
 - (d) Location of all shrub, groundcover beds, grass areas and replacement trees required as per the *Management and Protection of Trees Bylaw*.
 - (e) Extent of proposed decorative paving and/or street furnishings.
 - (f) Plant labels and an associated plant list which indicates quantity, scientific name, common name, plant size, condition (e.g. container or B&B), spacing, and comments.
 - (g) Identify any replacement trees required as per the *Management and Protection of Trees Bylaw*.
- .4 A typical right-of-way cross section drawing indicating the relationship of all plantings overhead, above-ground and below-ground utilities, and pavement and other structures are to be referenced and shown on the landscape plan or, if there is insufficient room, on a details and cross-section sheet. *(REVISED JUNE 2026)*
- .5 Typical tree, shrub and groundcover cross section planting details shall be referenced to specific City of Nanaimo standard details in Section 14.0 [\[\]](#), or if alternate details are proposed, these shall be included on the landscape construction drawings. *(REVISED JUNE 2026)*
- .6 Irrigation plans are to be produced, using the same base information, which shows: *(REVISED JUNE 2026)*
- (a) Location of all heads, emitter devices and driplines; lateral and mainline pipe locations and sizes; sleeves, valve sizes and locations; and location of backflow prevention device and water service connection;
 - (b) An irrigation equipment legend, and schedule of hydraulic data in metric to include flow and precipitation rate for each valve zone; and
 - (c) Water service/backflow prevention connection detail, valve and head installation details including all equipment, fittings and related valve boxes, by reference to City standard details in Section 14.0 [\[\]](#) or if an alternative is proposed, by details shown on the landscape construction drawings. *(REVISED JUNE 2026)*

1.11A TREE MANAGEMENT PLAN

- .1 All Tree Management Plan drawings are to be prepared in consultation with a qualified arborist.
- .2 The following information are to be shown on the Tree Management Plan: *(REVISED JUNE 2026)*
- (a) Existing and proposed works and legal property lines, right-of-way, easement and covenant areas.
 - (b) Existing trees (including trees within 5 m of right-of-way and/or property lines.
 - (c) Trees to be protected and trees to be removed.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

DESIGN DRAWING STANDARDS

- (d) Location and details of tree protection fencing as per Section 3.27 [].
- (e) Table itemizing tree removal and replacement requirement as per the *Management and Protection of Trees Bylaw* including size and species.
- (f) Summary of tree removal, tree bylaw replacement requirements, proposed tree replacement sand/or contribution toward tree replacement as per the *Management and Protection of Trees Bylaw*.
- (g) Legend to identify trees to be removed, trees to be retained and the tree replacements.

1.12 STORMWATER MANAGEMENT

- .1 Refer to Section 1.03 [→] for the general required information.
- .2 Refer to Section 7.01.6(b) [] for the information required on the **Stormwater Management Plans**. (*REVISED JUNE 2026*)

1.13 CERTIFICATION OF WORKS

- .3 A certification of design conforming to Appendix G1 [] authenticated by a **Professional of Record** must be submitted with the design drawings. (*REVISED JUNE 2026*)

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

OTHER GENERAL REQUIREMENTS

OTHER GENERAL REQUIREMENTS

1.14 -NOT USED-

1.15 -NOT USED-

1.16 SURVEY CONTROL MONUMENTS

- .1 Survey control monuments must be installed in accordance with *Specifications for Control Surveys* as prepared by the Province of British Columbia Ministry of Forests. The brass plugs are to be accurately drilled by a registered British Columbia Land Surveyor, by City forces, as development growth requires. (REVISED JUNE 2026)

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

RECORD DRAWING STANDARDS

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1.20 GENERAL REQUIREMENTS

- .1 Drawings include all information as specified elsewhere for the construction drawings, but are to be corrected upon completion of construction to note all works removed or abandoned during construction. *(REVISED JUNE 2026)*
- .2 Removed utilities are removed and not to be shown on the record drawings. Abandoned utilities are to be displayed and labeled as abandoned on the record drawings. *(REVISED JUNE 2026)*
- .3 Line work for all constructed works shown on the drawings retains the thicker line density. Proposed construction for future phases of the project are not shown on the record drawings. *(REVISED JUNE 2026)*
- .4 All dimensions, elevations and inverts shown must reflect the post construction conditions of the site and all references to 'Proposed' are to be removed. The revision table within the title block is to be completed indicating the drawings are the record drawings. *(REVISED JUNE 2026)*
- .5 The record drawing must reflect the true elevation and location of all constructed features in both the plan and profile views. It is not acceptable to only revise the elevation or dimension labels. *(REVISED JUNE 2026)*
- .6 The City administers a Geographic Information System (GIS) to manage location and attribute data related to underground utilities, roadways, pedestrian facilities, traffic signage and street lighting. The GIS data is primarily derived from post construction record drawings. To ensure accuracy and completeness, the following information needs to be clearly labeled or identified on the record drawing: *(REVISED JUNE 2026)*
 - (a) The location and elevation of all existing utilities and services encountered in the construction operation.
 - (b) The location and invert elevation at property line of all individual service connections, and the wye chainage, at the main for all constructed and existing works.
 - (c) A note on each drawing describing the type of trench material (sand, gravel, clay, hard pan etc.) encountered during construction and the location and profile of all rock.
 - (d) A detail for each tie in point to existing utilities and locations where the restrainers are installed.
 - (e) The In-Service Date blocks for all post construction infrastructure are to be included on the record drawings, with In-Service date filled in. Refer to Standard Drawing No. G-4I [1]. *(REVISED JUNE 2026)*

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

RECORD DRAWING STANDARDS

- (f) Sanitary Sewer System Plan includes: *(REVISED JUNE 2026)*
- (i) Length, diameter, material and grade of sanitary mains and service connections *(REVISED JUNE 2026)*
 - (ii) Identification of forcemains
 - (iii) Flow direction arrows
 - (iv) Service lateral inspection chamber locations c/w invert elevation
 - (v) Identification of water tight or locking manhole covers
- Sanitary Sewer System Profile includes: *(REVISED JUNE 2026)*
- (vi) Upstream and downstream manhole rim and invert elevations *(REVISED JUNE 2026)*
 - (vii) Identification of drop manhole structures *(REVISED JUNE 2026)*
- (g) Stormwater System Plan includes: *(REVISED JUNE 2026)*
- (i) Diameter and material of storm mains, service connections, catch basin leads and culverts
 - (ii) Flow direction arrows
 - (iii) Service lateral inspection chamber locations c/w invert elevation
 - (iv) Identification of perforated 'French' drains
 - (v) Identification of catch basin type as per Section 7.0 [Stormwater Management](#) []
 - (vi) Identification of inlet/outlet material and type as per Section 7.0 [Stormwater Management](#) []
- Stormwater System Profile includes: *(REVISED JUNE 2026)*
- (vii) Length, diameter, material and grade of storm mains
 - (viii) Pipe inlet and outlet invert elevations at manholes
 - (ix) Upstream and downstream manhole rim and invert elevations
 - (x) Invert elevations of inlet and outlet structures
- (h) Water Distribution System Plan includes: *(REVISED JUNE 2026)*
- (i) Diameter and material of watermains and service connections
 - (ii) Water meter type
 - (iii) Identification of flushouts as above-ground or below-grade
 - (iv) Identification of firelines
- Water Distribution System Profile includes: *(REVISED JUNE 2026)*
- (v) Diameter and material of watermains
 - (vi) Invert elevations at pipe tie-in and hydrant locations
- (i) Fibre Optic Utility Plan includes: *(REVISED JUNE 2026)*
- (i) Conduct size and type
 - (ii) Access type

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

RECORD DRAWING STANDARDS

- (j) Streets, Street Lighting, Traffic Signs and Markings Plan includes: (REVISED JUNE 2026)
 - (i) Street classification as per Section 8.0 Transportation []. (REVISED JUNE 2026)
 - (ii) Sidewalk material and width
 - (iii) Crosswalk design type
 - (iv) Street Light Table as per Standard Drawing G-7 [] that shall include wattage, lamp type, pole height, pole type, luminaire type, luminaire make.
 - (v) Traffic Sign Table as per Standard Drawing G-7 [] that shall include UTCD number as per the Transportation Association of Canada's *Manual of Uniform Traffic Control Devices for Canada*.
 - (vi) Street marking material and MUTCD number as per the Transportation Association of Canada's *Manual of Uniform Traffic Control Devices for Canada*
 - (vii) Pole type
 - (viii) Junction Boxes – specify the type. Street lighting junction boxes are to be further differentiated as box, cabinet, or pole fitting. (REVISED JUNE 2026)
- (k) Landscape and Irrigation Plan includes: (REVISED JUNE 2026)
 - (i) Diameter and material of irrigation main, valve locations and all lateral and sprinkler heads
 - (ii) Manufacturer's name, the model name and the catalogue number for all controllers
 - (iii) The as-planted location, species and size of all trees
 - (iv) The as-planted location, species, size and quantity of shrubs and ground cover shown in a plant list

1.21 RECORD DRAWING SUBMISSION

- .1 The record drawings must be authenticated by the Professional of Record. The submission includes: (REVISED JUNE 2026)
 - (a) A pdf version of both the drawing set and individual sheets. (REVISED JUNE 2026)
 - (b) A 3 mil mylar print of the drawing set. (REVISED JUNE 2026)
 - (c) A digital copy of the completed record drawing, as per Section 1.22 [→]. (REVISED JUNE 2026)
- .2 The following documents are to be submitted with the record drawing submission: (REVISED JUNE 2026)
 - (a) Appendix E, Substantial Completion Statistics Record [].
 - (b) A completed City Service Sheet, in accordance with Appendix F1 [] or Appendix F2 [], are to be submitted for each lot showing the as constructed location of all service connections. (REVISED JUNE 2026)
 - (c) Approved and registered statutory right-of-way drawings, if required.
 - (d) All required testing results including an interpretation and summary of the results by a Professional of Record. (REVISED JUNE 2026)

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

RECORD DRAWING STANDARDS

- (e) A copy of the final inspection deficiency list.
- (f) Certification of the works that includes the following: *(REVISED JUNE 2026)*
 - (i) A Certification of Installed Works conforming to Appendix G2 [] and authenticated by a **Professional of Record** *(REVISED JUNE 2026)*
 - (ii) A Certification of Street Light Installation conforming to Appendix G3 [] and authenticated by a **Professional of Record** - a Professional Electrical Engineer. *(REVISED JUNE 2026)*
 - (iii) A Province of British Columbia Electrical Inspectors certification of the street lighting
 - (iv) A Certification of Landscape Installation conforming to Appendix G4 [] and signed and sealed by the Landscape Architect.
- (g) A Water Meter Information Sheet in accordance with Appendix F3 [] for all developer installed water meters and detector check valves.
- (h) Revised storm drainage calculations, if required, to reflect changes during the storm sewer construction.
- (i) Revised sanitary sewer calculations, if required, to reflect changes during the sanitary sewer construction.
- (j) Revised street light calculations, if required, to reflect changes during the street light installation.
- (k) Operating and maintenance manuals and product information, if required, for sanitary sewer pump stations, water booster pumps, pressure reducing stations, traffic signal controllers, irrigation controllers and other products.

1.22 DIGITAL SUBMISSION OF RECORD DRAWINGS

- .1 A copy of the record drawing data, as per Section 1.20 General Requirements [→], is submitted in the most current version of AutoCAD or Civil 3D (C3D). Refer to Section 1.40.6 [→]. No formats prior to 2013 are accepted. *(REVISED JUNE 2026)*
- .2 All as constructed features are to be surveyed and survey points imported into the digital drawing. *(REVISED JUNE 2026)*
- .3 The digital drawing contains all works removed or abandoned during construction. The following layers are used: *(REVISED JUNE 2026)*
 - (a) V-UTIL-NGAS-A Gas Infrastructure *(REVISED JUNE 2026)*
 - (b) V-SSWR-A Sanitary Infrastructure *(REVISED JUNE 2026)*
 - (c) V-STRM-A Storm Infrastructure *(REVISED JUNE 2026)*
 - (d) V-WATR-A Water Infrastructure *(REVISED JUNE 2026)*
 - (e) C-ROAD-CURB-D Curbs *(REVISED JUNE 2026)*
 - (f) C-ROAD-ASPH-D Edges of Pavement *(REVISED JUNE 2026)*
 - (g) C-ROAD-MRKG-D Paintlines *(REVISED JUNE 2026)*
 - (h) C-SSWR-D Sanitary Infrastructure *(REVISED JUNE 2026)*
 - (i) C-ROAD-SIGN-D Signs *(REVISED JUNE 2026)*

SECTION 1 – GENERAL DRAFTING REQUIREMENTS RECORD DRAWING STANDARDS

- (j) C-STRM-D Storm Infrastructure (*REVISED JUNE 2026*)
 - (k) C-ROAD-SWLK-D Sidewalks (*REVISED JUNE 2026*)
 - (l) C-WATR-D Water Infrastructure (*REVISED JUNE 2026*)
- .4 Refer to the MoESS CAD Standards and Section 1.40 Computer Aided Drafting Standards Overview [\[→\]](#) for direction.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS

CAD STANDARDS

1.40 COMPUTER AIDED DRAFTING STANDARDS OVERVIEW (REVISED JUNE 2026)

- .1 All infrastructure and land development engineering drawings for projects completed in the City must use the City CAD standard. (REVISED JUNE 2026)
- .2 The use of a consistent standard is required for the following reasons:
 - (a) Consistency in the appearance of engineering drawing to facilitate design reviews and construction.
 - (b) Consistency in the internal drawing structure to facilitate data hand off and usability.
 - (c) Consistency in the appearance and internal drawing structure to facilitate post construction record drawing submissions.
 - (d) Consistency in the digital format for automated data collection and import into the City GIS.
- .3 Standards were developed for use in C3D. All City standard files and drawings are based on the 2018 version or newer of AutoDesk software. The CAD standard incorporates both AutoCAD standardized elements and C3D standardized elements. C3D is the model based design tool adopted by the City. (REVISED JUNE 2026)
- .4 For the most current City Drawing Template version, refer to the City website or contact the Engineering Projects Division. (REVISED JUNE 2026)
- .5 The City considers C3D as the industry standard software application for the design of civil infrastructure projects and the production of engineering drawings. C3D pipe networks allow designers to input physical properties for sanitary, storm, and watermain models.
- .6 The City encourages the submission of C3D files. The object based program includes design components such as points, surfaces, alignments, profiles, corridors, pipe networks and sections that are drawing objects with "intelligence". With software such as FME, these objects can be converted with attributes intact and imported to the City GIS. At some point in the future, the City may require all submissions to be C3D files to take advantage of the attribute opportunities within the C3D and automate the CAD to GIS conversion.

1.41 TEMPLATE DRAWINGS

- .1 City drawing template, (AutoCAD file extension. dwt) is available to engineering and survey consultants for the creation of survey and design drawings. In addition to the drawing template, a pipe catalog is available which adheres to the common pipe materials and sizes approved by the City. This catalog may be utilized with the City template through the "SetNetworkCatalog" command within the C3D software. (REVISED JUNE 2026)
 - (a) C3D Template.
 - (b) C3D Pipe Catalog.

SECTION 1 – GENERAL DRAFTING REQUIREMENTS CAD STANDARDS

- .2 Template drawings contain standard layer definitions and scale-dependent paper space layout definitions with standard title blocks, text styles and dimension styles.
- 1.42 COORDINATE SYSTEM *(REVISED JUNE 2026)*
- .1 All drawings must be based on a ground coordinate system that is related to the Universal Transverse Mercator (UTM) Projection that is tied to the City's integrated survey monument network. To convert the published North American Datum 1983 NAD83 (Zone 10) grid coordinates of City monuments to the required ground coordinate system suitable for topographic ground surveys, and eventual record drawings, grid coordinates are multiplied by the city wide calculated combined scale factor of 1.00035012254, about coordinate base (0,0). All digital drawing files submitted to the City must use this common ground coordinate system within the borders of Nanaimo. *(REVISED JUNE 2026)*
- .2 The cadastral and other digital files from the City's GIS, are provided in NAD83 (Zone 10) grid coordinates. To shift to the above mentioned ground coordinate system in CAD, all horizontal features must be scaled by 1.00035012254, about coordinate base (0,0). *(REVISED JUNE 2026)*
- .3 The vertical datum is the Canadian Vertical Datum of CVD28BC. The integrated survey monument and published elevation used plus the approximate location of the monument (i.e. street intersection or address location) is to be indicated on each record sheet.
- .4 All drawings submitted to the City must use ground level coordinates. To convert to UTM NAD83 (CSRS) coordinates, multiply by combined scale factor of 0.99965.
- 1.43 LAYER NAMING CONVENTIONS
- .1 In the event that new layers are required, create the layer name using the standard City layer naming convention and notify the City. *(REVISED JUNE 2026)*
- .2 The City incorporates the National CAD Standards V6 for layer naming conventions. All new layers created are to comply with these standards. *(REVISED JUNE 2026)*
- (a) Dd-MAJR-MINR-minr-S *(REVISED JUNE 2026)*
- (i) D – Discipline Designator Level 1 *(REVISED JUNE 2026)*
- (ii) d – Discipline Designator Level 2 (Optional) *(REVISED JUNE 2026)*
- (iii) MAJR – Major group *(REVISED JUNE 2026)*
- (iv) MINR – Minor group *(REVISED JUNE 2026)*
- (v) Minr – Secondary minor group (optional) *(REVISED JUNE 2026)*
- (vi) S – Status (optional) *(REVISED JUNE 2026)*
- .3 Refer to Standard Drawings G-1 to G1B [] for the list of standard layer names and properties, (linetypes, colours, pen weights) used in the City design drawings.
- 1.44 STANDARD SYMBOLS AND ABBREVIATIONS

SECTION 1 – GENERAL DRAFTING REQUIREMENTS CAD STANDARDS

- .1 Applicants or developers must use the **City** approved standard symbols and abbreviations for the preparation of the design drawings. *(REVISED JUNE 2026)*
- .2 The standard abbreviations for both existing and proposed conditions are shown on Standard Drawing G-2 .
- .3 The standard symbols for both existing and proposed conditions are shown in Standard Drawings G-4A to G-4I .
- .4 Standard materials and their representative AutoCAD hatch patterns are shown in Drawing G-3 .