NO. 26-004

WORKS AND SERVICES BYLAW

A BYLAW OF THE CITY OF VICTORIA

The purpose of this bylaw is to:

a) regulate and require the provision of works and services required as a condition of the issuance of a building permit or approval of a subdivision; and

b) set out the City's standards for works and services required for development, subdivision, and City capital projects.

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Under its statutory powers, including sections 462 and 506-514 of the *Local Government Act* and sections 8(3), 15, 19, 53-58, 69, 114(4), 154 and Part 8 of the *Community Charter* and the Council of the Corporation of the City of Victoria in an open meeting assembled enacts the following provisions:

PART 1 - GENERAL

Title

1 This bylaw may be cited as the "Works and Services Bylaw".

Definitions and Interpretation

2 In this bylaw:

(a) "**Approving Officer**" means the person designated as the approving officer under the Subdivision Bylaw.

(b) "**building official**" has the meaning ascribed in the Building and Plumbing Regulation Bylaw.

(c) "**City-supplied works**" means standardized street furniture, signage or other materials or supplies provided by the City.

(d) "**cost estimate**" means an estimate of the costs to design, install, prepare, provide and construct the works and services, provided at the owner's expense by a professional engineer, or by a landscaping professional for landscaping, authenticated and in a form and satisfactory to the Director of Engineering or the Director of Parks, as applicable.

(e) "**damage deposit**" means a deposit in the amount specified in Schedule C for repair costs attributable to damage to the pavement or surface of streets or sidewalks, or to boulevards, curbs, gutters, sewers, drains, water lines, irrigation systems, underground conduits or wiring, City trees, shrubs or grass or other City fixtures or improvements caused by the construction or installation of works and services, refundable upon satisfactory final inspection by the City.

(f) "**development**" means the construction or alteration of a building that requires the issuance of a building permit under the Building and Plumbing Regulation Bylaw.

(g) "**Director of Engineering**" means the person employed by the City as the Director of Engineering and Public Works or a successor position in function, or their authorized designate.

(h) "**Director of Parks**" means the person employed by the City as the Director of Parks and Recreation or a successor position in function, or their authorized designate.

(i) "**ESS Manual**" means the Engineering Standards and Specifications Manual at Schedule A.

(j) "**highway**" includes a street, road, lane, bridge, viaduct and any other way open to public use, other than a private right of way on private property.

(k) "**landscaping**" means works that are generally designed by and constructed under the supervision of a landscape professional.

(l) "**landscape professional**" means a member of the British Columbia Society of Landscape Architects or other qualified landscape designer.

(m) "**MMCD**" means the Master Municipal Specifications and Standard Detail Drawings that are set out in the most recent edition of the Master Municipal Construction Documents published by the Master Municipal Construction Documents Association, including the definitions of terms used in the Master Municipal Specifications and Standard Detail Drawings that are set out in the General Conditions and supplemental documents issued from time to time by the Association.

(n) "**owner**" means an owner as defined in the *Community Charter* and includes an authorized representative of the owner.

(o) "**professional engineer**" means a professional engineer who is registered or licenced to practice in British Columbia under the provisions of the *Professional Governance Act*, who is responsible for the design, construction, supervision, authentication, and certification of all works and services on behalf of the owner.

(p) "**qualified professional**" means an architect or applied scientist acting alone or together with a professional engineer, provided that:

i. the individual is in good standing and registered with the appropriate professional organization in British Columbia, acting under that association's code of ethics and may be subject to disciplinary action by that association;

ii. the individual's area of expertise is recognized by the individual's professional organization as one that is acceptable for the purpose of performing a professional service required under this bylaw; and

iii. the individual is acting within the individual's area of expertise.

(q) "**received**" means accepted in a form to the satisfaction of the Approving Officer or the building official in the case of a building permit, and not determined, rejected or withdrawn.

(r) "**right of way**" means land or any interest in land, including a statutory right of way under section 218 of the *Land Title Act* acquired for purposes necessary for the operation and maintenance of the City's undertakings.

(s) "**Servicing Officer**" means the City's servicing officer designated by this bylaw to carry out the duties and functions of sections 513.2 and 513.3 of the *Local Government Act* and is in relation to development.

(t) "**street classification**" means how a street is classified in the Streets and Traffic Bylaw.

(u) "**subdivide**" or "**subdivision**" means a subdivision as defined in the *Land Title Act* and a subdivision under the *Strata Property Act*.

(v) "**works and services**" means:

i. highways, sidewalks, boulevards, boulevard crossings, street lighting, transit bays and underground conduits and wiring;

ii. amenities including benches, bollards, bicycle parking facilities, directional signage, parklets, street lamps, street signs, transit shelters and waste disposal and recycling containers;

iii. transportation infrastructure that supports walking, bicycling, public transit or other alternative forms of transportation including traffic signals, crosswalks, cycle lanes, traffic calming measures, curbs, curb cuts, and curb extensions;

iv. sustainable design features that provide for energy and water conservation, reduction of greenhouse gas emissions and climate resilience including trees and irrigation;

v. a water distribution system, fire hydrant system, sewage collection system, sewage disposal system, drainage collection system, and drainage disposal system;

vi. any other thing prescribed under section 506 of the *Local Government Act*; and

vii. the preparation of the land or highway to install the above works or services, including erosion and sediment control, soil removal or disposal, archaeological management and other types of site preparation.

3 In the event of a conflict between the MMCD and the ESS Manual, the ESS Manual governs to the extent of the conflict.

4 The approval, acceptance or review of any plans, specifications or documents or any inspection made by any City employee pursuant to this bylaw does not in any way relieve an owner from compliance with all enactments applicable to a subdivision or development.

5 The Schedules attached to this bylaw are incorporated into and form part of this bylaw.

6 A reference in this bylaw to a standard, code or rule published by a provincial, national or international body or standards association or enacted as a law in BC or Canada or another jurisdiction is adopted:

(a) in whole, or where specified, in part or with any changes as specified in this bylaw; and

(b) as the standard, code or rule is amended from time to time.

Applicability

7 Subject to sections 8 and 9, this bylaw applies to:

(a) all development within the City; and

(b) all subdivisions within the City, except in respect of a subdivision under the *Strata Property Act*.

8 An owner is not required to provide certain works and services for the circumstances and uses specified in the "Limited Exemptions for Development" table in Schedule B.

9 An owner is not required to provide works and services where, in the opinion of the Director of Engineering, the following circumstances apply:

(a) existing works and services meet the requirements of this bylaw and are determined to be in good condition per the City's most recent asset management study and condition assessment reports if available, and otherwise have no material defects;

(b) the purpose of the development is to reconstruct or replace a building that was damaged or destroyed, provided that the reconstructed or replaced building is used for the same purpose and does not exceed 110% of the gross floor area of the original building; or

(c) in the case of subdivision, the sole purpose of the subdivision is to:

i. create public park land;

ii. create parcels to be used for civic facility use; or

iii. adjust a lot line, provided there is no change to existing servicing or increase in density.

In-Stream Applications

10 If a complete subdivision application and the applicable fee pursuant to the Subdivision Bylaw have been received by the City prior to or on the date of adoption of this bylaw or amendment to this bylaw, then this bylaw or the amendment bylaw has no effect with respect to the subdivision for a period of 12 months after the date this bylaw or the amendment bylaw is adopted unless the owner agrees in writing that the bylaw has effect with respect to the subdivision.

11 Subject to section 12, if a complete building permit application and the applicable fee pursuant to the Building and Plumbing Regulation Bylaw have been received by the City prior to or on the date of adoption of this bylaw or amendment to this bylaw, then the previous bylaw continues to apply with respect to the works and services for the development that is the subject of the building permit application unless the owner agrees in writing that the new bylaw has effect with respect to the development.

12 If a building permit is not issued within 12 months after the date this bylaw or amendment to this bylaw is adopted, this bylaw or amendment bylaw applies to the development.

Variances

13 An owner wishing to vary a requirement or standard of this bylaw must apply for a development permit or development variance permit in accordance with the Land Use Procedures Bylaw.

PART 2 – WORKS AND SERVICES REQUIREMENTS

Conditions for Subdivision Approval

14 As a condition of the approval of a subdivision, the owner must, at their expense, provide works and services directly attributable to the development of land on that portion of highway immediately adjacent to the site being subdivided, up to the centre line of the highway, in accordance with this bylaw.

Conditions for Building Permit Approval

15 As a condition of the approval of a building permit, the owner must, at their expense, provide works and services directly attributable to the development of land in accordance with this bylaw on:

(a) the site being developed; and

(b) that portion of the highway immediately adjacent to the site being developed, up to the centreline of the highway.

Requirement to Provide Land for New Highway or Widening Existing Highway

16 If the Approving Officer requires it, an owner of land being subdivided must provide, prior to final approval of subdivision, a portion of that land for highway use or for constructing and installing sustainable design features and transportation infrastructure pursuant to sections 513 and 513.1, *Local Government Act*.

17 If the Servicing Officer requires it, an owner must provide, prior to the issuance of a building permit, a portion of land for highway use or for constructing and installing sustainable design features and transportation infrastructure pursuant to sections 513.2 and 513.3, *Local Government Act*.

18 The Approving Officer and the Servicing Officer must consider the highway dedication policies at Schedule C in making their determinations under sections 16 or 17.

19 The Approving Officer or the Servicing Officer may require the owner to provide a risk or condition assessment report prepared by a qualified professional to assist in determining whether the conditions in section 5, Schedule C apply and that outlines the risk, conditions and potential mitigation measures.

Timing and Works and Services Agreement

20 All works and services must be constructed and installed prior to final approval of a subdivision or issuance of a building permit provided that works and services installed on a highway or other City-owned land must not be constructed until the owner complies with the requirements in subsections 21(a)-(c).

21 Works and services may be constructed and installed after final approval of a subdivision or issuance of a building permit, as applicable, if the owner:

(a) deposits security with the City in the amount of 120% of the cost estimate of the works and services in a form to the satisfaction of the Director of Engineering;

(b) submits a damage deposit and other applicable fees and deposits specified in Schedule D; and

(c) enters into a works and services agreement with the City substantially in the form prescribed at Schedule E.

22 The requirements in subsections 21 (a)-(c) must be completed prior to the issuance of a building permit or final approval of a subdivision.

23 Works and services must be:

(a) constructed and installed by the date specified in the works and services agreement; and

(b) maintained by the owner for a time period specified in the works and services agreement.

24 The Director of Engineering may grant the owner an extension to the deadline in section 23(a), provided the owner's request is submitted prior to the expiry of the deadline and, in the Director's opinion, the extension is warranted where construction is delayed due to adverse weather, strikes, material or labour shortages, or other similar hardship beyond the owner's control.

25 If the owner fails to construct the works and services by the date specified in the works and services agreement, the security deposit under section 21(a) is forfeited to the City.

Cash in Lieu

26 Where, in the opinion of the Director of Engineering, the installation and construction of part or all off-site works and services required under this bylaw is premature due to the factors in section 27, the requirement to design and construct the works and services may

be deemed as being fulfilled by the owner by payment of a non-refundable cash deposit equal to 120% of the cost estimate in a form to the satisfaction of the Director of Engineering, estimated at the time of final approval of the subdivision or issuance of the building permit.

27 The Director of Engineering must factor in the following in determining whether cash in lieu is appropriate in the circumstances:

(a) the works and services are connected to or adjacent to a City capital project scheduled to begin within five years from the date the Director is making a determination under this section; and

(b) the work in subsection (a) is included in the City's financial plan.

28 The City will deposit the funds received under section 26 into a reserve fund established for the construction, installation or alteration of works and services attributable to development.

Excess or Extended Services

29 The Director of Engineering, may, in accordance with sections 507 and 508, *Local Government Act*, and any applicable Council policies:

(a) require the owner to provide excess or extended services;

(b) determine the proportion of the cost of providing excess or extended services;

(c) determine which part of the excess or extended services will benefit each of the parcels of land that will be served by the excess or extended services;

(d) impose a charge related to the benefit of an owner connecting to or using the excess or extended services; and

(e) enter into and execute a latecomer agreement on terms to the satisfaction of the Director of Engineering and in a form to the satisfaction of the City Solicitor.

30 If a latecomer charge is imposed, interest on the latecomer charge will be calculated annually at the prime rate set by the City's bank, less 1.75%, and is payable in accordance with section 508(4), *Local Government Act*.

31 The Director of Engineering may require the owner to provide, at the owner's cost, a report from a professional engineer to assist in making the determinations under section 29(b) and (c), in a form to the satisfaction of the Director of Engineering.

PART 3 – STANDARDS FOR WORKS AND SERVICES

Standards

32 Works and services must be provided, designed, located, constructed, installed and maintained in accordance with:

(a) this bylaw;

(b) any applicable works and services agreement; and

(c) design drawings and specifications approved in advance by the Director of Engineering, or the Director of Parks for landscaping.

Alternate Works or Service Levels

33 The Director of Engineering may, in respect of works and services except trees and landscaping, accept or reject alternative service levels, specifications or designs for works and services that, in the opinion of the Director, achieve a level of performance that meets or exceeds the level of performance that would be achieved by strict adherence to the service levels, specifications or designs contained in the standards established by this bylaw.

34 The Director of Parks may, in respect of trees and landscaping, accept or reject alternative service levels, specifications or designs for trees and landscaping, that in the opinion of the Director, achieve a level of performance that meets or exceeds the level of performance that would be achieved by strict adherence to the service levels, specifications or designs contained in the standards established by this bylaw.

35 The Director of Engineering may relax a portion of or all of the onsite rainwater management requirements outlined in the ESS Manual where, in the opinion of the Director the following conditions have been satisfied:

(a) the owner has provided a satisfactory report by an appropriate qualified professional confirming that one or more site conditions including archaeological, artesian, contamination, geotechnical or other conditions preclude onsite retention; and

(b) the owner has made reasonable efforts to meet a portion or all of the rainwater management requirements without excavation or infiltration, including for example, by using infrastructure above-ground or as part of the building.

Requirement for Reports, Studies or Plans

36 The Director of Engineering, or the Director of Parks in respect of trees or landscaping, may require the owner, at their expense, provide a report, study, plan or drawing prepared by a professional engineer or qualified professional to assist in determining:

(a) the extent of works and services that are directly attributable to the development of land, including assessment of the impacts of a proposed development on existing public infrastructure, services, mobility, sustainability or other systems or assets;

(b) whether an alternative service, specification or design per sections 33-34 meets or exceeds the requirements of this bylaw;

(c) design, construction or mitigation requirements for installing the works and services; or

(d) whether the proposed design complies with standards specified in the ESS Manual.

City Capital Works and Services

37 All City capital works and services must be designed and constructed by or on behalf of the City in accordance with the standards prescribed in Schedule A.

PART 4 – COMPLETION OF WORKS AND SERVICES

Construction in Highway or Right of Way

38 Where the construction of works and services occurs within or requires occupancy of a highway, the owner must obtain a street occupancy permit and pay the applicable fees in accordance with the Streets and Traffic Bylaw, and abide by the conditions set out in the street occupancy permit during construction of the works and services.

39 All persons who are installing or constructing works and services in a highway or right of way on behalf of an owner must obtain a contractors permit in a form prescribed by the Director of Engineering and pay the contractor permit fee prescribed in Schedule D prior to beginning the work.

Construction by the City

40 The Director of Engineering may determine that certain works and services must be constructed and installed by the City, in which case the owner must:

(a) provide the design drawings issued for construction for the works and services in accordance with Schedule A to the satisfaction of the Director; and

(b) as determined by the Director, pay for the construction and installation of the works and services:

i. at cost in accordance with section 12 of the Sanitary Sewer and Stormwater Utilities Bylaw, or

ii. by submitting a deposit, at the time specified in section 22, per the City's stipulated rates for service if specified in a bylaw, or as estimated in a cost estimate.

City-supplied Works

41 The Director of Engineering may require that the owner install City-supplied works, in which case the owner must:

(a) provide an estimate, prepared by a professional engineer, of the value of the works and services to the satisfaction of the Director;

(b) submit a deposit equal to 10% of the estimated value of the works and services prior to the issuance of a building permit or approval of a subdivision; and

(c) pay the City any costs incurred by the City in providing the City-supplied works over and above the deposit.

42 If the actual cost of the City-supplied works is less than the deposit, the City must refund the owner the difference between the deposit and the total of the City's actual costs.

Completion of Required Works and Services

43 Works and services must be completed and maintained in accordance with this bylaw and the works and services agreement.

44 When the construction of the works and services required under this bylaw is performed, the owner must request a certificate of completion, which is to be issued by the Director of Engineering upon the satisfactory completion of the works and services in accordance with this bylaw and the works and services agreement.

45 Upon satisfactory completion of the warranty period in accordance with the works and services agreement, the Director of Engineering must provide the owner with a certificate of acceptance of the works and services with any remaining deposits.

Inspections

46 The Director of Engineering, the Director of Parks, a City employee authorized by each Director, the Approving Officer, or bylaw officer may enter on to property in accordance with section 16, *Community Charter*, to inspect and determine whether all regulations and requirements of this bylaw are being met.

47 A person must not prevent, obstruct, or attempt to prevent or obstruct an entry authorized under this bylaw.

PART 5 – MISCELLANEOUS

Delegated Authorities

48 The Director of Engineering is delegated the authority to determine the extent of works and services required to be provided by an owner, subject to the limitations in Part 14, Division 11, *Local Government Act*, this bylaw, and section 6 of the Delegation Bylaw.

49 The Director of Parks is delegated the authority to determine the extent of trees and landscaping related works and services required to be provided by an owner, subject to the limitations in Part 14, Division 11, *Local Government Act*, this bylaw, and section 6 of the Delegation Bylaw.

50 The Director of Engineering is authorized to administer, enter into and execute works and services agreements substantially in the form attached at Schedule E.

51 The person employed by the City as the Supervisor – Land Development or successor position in function, is designated as a Servicing Officer with the authority to carry out the powers, duties and functions of a Servicing Officer.

52 If the Supervisor – Land Development is absent or unable to act, the following persons employed by the City may each exercise the powers, duties and functions of the Servicing Officer:

(a) Manager – Transportation Planning; or

(b) Manager – Land Development.

Offences

53 A person commits an offence and is subject to the penalties imposed by this bylaw, the Ticket Bylaw, the Bylaw Notice Adjudication Bylaw, and the *Offence Act* if that person:

(a) contravenes a provision of this bylaw;

(b) consents to, allows, or permits an act or thing to be done contrary to this bylaw;

(c) neglects or refrains from doing anything required by a provision of this bylaw; or

(d) alters, falsifies, or otherwise misrepresents any information required to be provided pursuant to this bylaw.

54 Each day that a contravention of a provision of this bylaw continues is a separate offence.

Penalties

55 A person found guilty of an offence under this bylaw is subject to a fine of not less than $100.00 and not more than $50,000.00 for every instance that an offence occurs or each day that it continues.

Severability

56 If any portion of this bylaw is declared invalid by a court of competent jurisdiction, then the invalid portion must be severed, and the remainder of the bylaw remains valid.

Repeal

57 The Victoria Subdivision and Development Servicing Bylaw is repealed.

Effective Date

58 This bylaw comes into force on adoption.

READ A FIRST TIME the	**15th**	day of	**January**	2026
READ A SECOND TIME the	**15th**	day of	**January**	2026
READ A THIRD TIME the	**15th**	day of	**January**	2026
ADOPTED on the	**23rd**	day of	**January**	2026

"CURT KINGSLEY"
CITY CLERK

"MARIANNE ALTO"
MAYOR

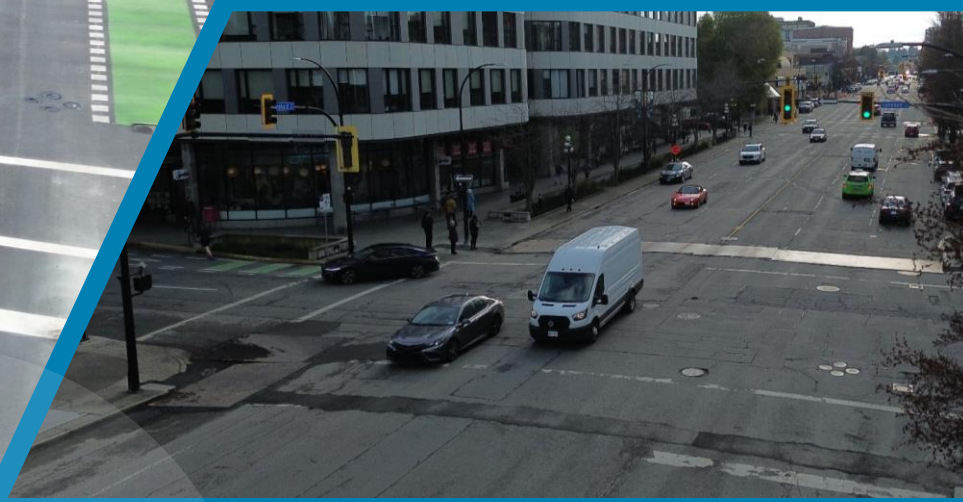
CITY OF VICTORIA
Works and Services Bylaw
Schedule A

Engineering Standards and Specifications (ESS) Manual

January 2026
Version 1.0







CITY OF VICTORIA

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1. Introduction



1.1. Preamble

1.1.1. The purpose of this Engineering Standards and Specifications (ESS) Manual is to set out the City's standards in respect of works and services, consolidate design criteria and supporting references into one place, and provide a bridge between policy and construction standards. It is intended to be used by City staff, professional engineers and qualified professionals supporting City-led projects or undertaking works and services associated with private development or subdivision.

1.1.2. This ESS Manual does not cover all situations, and it is up to the qualified professional to apply design criteria appropriately with sound engineering judgement in consultation with City staff.

1.2. Resources

1.2.1. It is the owner's responsibility to ensure compliance with all enactments applicable to a subdivision or development. Applicable enactments, listed for convenience below and not exhaustive, may include the following:

(a) *Local Government Act*

(b) *Community Charter*

(c) *Official Community Plan*

(d) Zoning bylaws

(e) *Works and Services Bylaw*

(f) *Subdivision Bylaw*

(g) *Blasting (Construction) Operations Bylaw*

(h) *Highway Access Bylaw*

(i) *Waterworks Bylaw*

(j) *Sanitary Sewer and Stormwater Utilities Bylaw*

(k) *Sidewalks, Streets and Boulevards Protection Bylaw*

(l) *Sign Bylaw*

(m) *Streets and Traffic Bylaw*

(n) *Tree Protection Bylaw*

(o) *Capital Regional District (CRD) Bylaw No. 3516 Cross Connection Control Bylaw No.1, 2008* (for backflow devices)

(p) *CRD Bylaw No. 1792 Water Regulations Bylaw No. 1, 1990*

1.2.2. The following resources are also generally used in conjunction with this ESS Manual:

(a) Accessible Design for the Built Environment - CSA/ASC (current edition)

(b) Downtown Public Realm Plan and Streetscape Standards

(c) EGBC Professional Practice Guidelines (i.e. retaining wall design)

(d) MMCD

(e) Standards for Landscape and Irrigation Systems 2018 ed. (Irrigation Industry Association of British Columbia).

(f) Traffic Management Manual for Work on Roadways (Ministry of Transportation and Transit)

1.2.3. Additional resources are also listed within Part 4. Design Criteria for specific subject areas.

1.3. Definitions

1.3.1. Words defined in the *Works and Services Bylaw* have the same meaning in this ESS Manual.

1.3.2. For the purposes of this ESS Manual:

1.3.2.1. The following words have the meaning ascribed in the *Sanitary Sewer and Stormwater Utilities Bylaw*: “bioretention”; “bioswale”; “detention facility”; “discharge”; “ESC facilities”; “ESC monitor”; “ESC plan”; “flow control facility”; “green stormwater infrastructure”; “impervious surface”; “inspection chamber”; “low-density residential”; “manufactured treatment device”; “municipal sewer system”; “municipal storm drain system”; “municipal stormwater system”; “prohibited waste”; “rain garden”; “retention facility”; “service connection”; “sewer”; “Significant Rainfall Event” or “SRE”; “storm drain”; “stormwater”; “stormwater management facility”; “stormwater source control facility”; “waste”; “water”; and “watercourse”.

1.3.2.2. “**landscape wall**” means a non-structural wall less than 1.2 metres in average height.

1.3.2.3. “**off-site retaining wall**” means a wall that is required to support soil, buildings or structures and is located within a highway, right of way or park.

1.3.2.4. "**on-site retaining wall**" means a structure at a height greater than 1.2 metres that is located within the owner's lands and immediately adjacent to a highway, right of way, park or public waterbodies and that is required to retain soil, building or other materials on the owner's lands.

1.3.2.5. "**public utility**" has the same meaning ascribed in the *Subdivision Bylaw*.

1.3.2.6. "**record drawing**" means a clean set of final drawings demonstrating how the works and services were constructed and where they were installed.

1.3.2.7. "**sewage attenuation**" means the lessening of sanitary flows to regulate the amount of the sanitary sewer effluent that is entering a municipal sewer system via a retention tank.

1.3.2.8. "**sidewalk basement**" means that part of a building or structure that extends underground and underneath a highway.

1.3.2.9. "**Supplementary Drawings**" means the City's supplementary detailed drawings in Part 8 of this ESS Manual.

1.3.2.10. "**Supplementary Specifications**" means the City's supplementary specifications in Part 7 of this ESS Manual.

1.3.2.11. "**wall**" means an off-site retaining wall, an on-site retaining wall, and a landscape wall.

2. Process and General Requirements



2.1. Pre-Application / Pre-Submission

2.1.1. A pre-application meeting is optional and offered through Development Services for projects and applications for rezonings or development permits. Preliminary comments may be provided from staff on the preliminary drawings used for the permit application. This step does not provide a fulsome review, nor does it guarantee a first submission approval, however it assists in what to expect during the development permit review and eventual building permit review process. It is a chance for an owner to present a proposal, to obtain comments, understand what reports or submissions may be required and for the applicant to ask questions from staff relative to their project, and on what to expect during the permit review. The owner is encouraged to coordinate with BC Hydro (and other utility providers) prior to the meeting to improve the efficiency of this meeting. This is an optional meeting for guidance, but does not guarantee that future revisions will be required based on the formal review process.

2.1.2. The owner is encouraged to contact the Servicing Officer early on in their development proposal (e.g., rezoning, development permit, or variance considerations) to fully understand the required works and services for their project.

2.2. Rezoning / Development Permit and Subdivision Submissions

2.2.1. Design aspects at this stage are to be at a functional/conceptual design development and must clearly show land dedication requirements (at minimum). Submissions are to provide sufficient detail on how the City's design expectations will be met, showing compliance with design criteria outlined in this document and be provided by the professional engineer and qualified professional. It is essential that existing and proposed grades are considered at this time, as it may correspond to a building height variance request. In particular, grades at property line, back of sidewalk, and vehicle access ramps.

2.2.2. At the discretion of the Director of Engineering, a conceptual plan for frontage works may also be prepared by City staff and shared with the owner to guide design development.

2.2.3. Design for development servicing must include public utilities such as BC Hydro, coordinated with all other works and services to avoid conflict. The design must include service install through underground wires and conduits unless otherwise specified in this ESS Manual.

2.3. Building Permit Submission

2.3.1. Prior to submitting an application for a building permit (except those applications not requiring works and services as outlined in the Table of Exemptions, Schedule B) the owner must arrange to meet with the Servicing Officer, who will issue a set of conditions relative to the required highway dedications and widening.

2.3.2. The drawing submission at the building permit application stage should be nearly complete. The works and services design should align with any direction received in previous steps and now include further refinement, details, and construction notes. Where a previous step has not been undertaken by an owner, all requirements of the previous sections are to be met.

2.3.3. The submission at the time of building permit application should include all requirements of the Servicing Officer and be of the format specified in Part 3 of this ESS Manual.

2.3.4. The owner will be required to work with the review teams and the engaged consultants to provide and gain acceptance of authenticated "Issued for Construction" (IFC) drawings and estimates of the cost of the works and services to be constructed, and enter into a works and services agreement prior to issuance of the building permit. Security for the works and services is required at this time.

2.4. Construction

2.4.1. The approved building permit application may require further coordination with nearby capital works and adjacent development projects.

2.5. Qualified Professionals

2.5.1. The owner must retain, at the owner's expense, a professional engineer registered in British Columbia, who must authenticate the drawings, design and construction documents and estimates that they prepare and deliver in their professional capacity for the works and services required under this bylaw, excluding those works and services undertaken by a landscape professional.

2.5.2. The professional engineer must meet all the engineering supervision and inspection requirements as outlined in this ESS Manual.

2.5.3. A landscape professional must prepare and certify for the acceptance of the Director of Parks the plans for all landscaping works and services as provided for including drawings, design and construction documents and estimates they prepare and deliver in their professional capacity for the works and services required under this bylaw.

2.5.4. Stormwater management facilities must be designed as per Part 4, Section C by a qualified professional and in accordance with the *Sanitary Sewer and Stormwater Utilities Bylaw*.

2.5.5. For all electrical works involving signalized intersections, the modifier of the intersection has responsibility for the interim function of said control system until that system has been accepted for use. An International Municipal Signal Association (IMSA) Level 2 certified professional is to be on-site and responsible for directing all the works of construction.

2.5.6. Erosion and sediment control plans must be prepared as per Section 4.54 by a qualified professional.

2.6. Scope of Work Declarations

2.6.1. The owner must ensure that the professionals engaged on the project provide an authenticated letter (where appropriate) to the City that fully describe the engaged professional engineer and qualified professional's scope of work. This letter is to be provided concurrent with the submission of drawings provided for works and services, including landscaping and storm drain systems. Where the qualified professional scope of work requires coordination with an alternate qualified professional for the project, the letter must include a description that clearly outlines which professional is carrying out what aspects of the project. This may include letters provided for the individual disciplines such as the professional engineer of record (all that are engaged), landscape professional, electrical engineering professional, and erosion and sediment control professional. The Scope of Work Declaration must include and is not limited to:

(a) the extent and items to which the professional has been engaged to provide services to the site;

(b) the schedule of anticipated inspections of the works and services to be undertaken by the professional in accordance with the requirements of this bylaw;

(c) the professional's assurance that the works and services are designed in accordance with the standards established under this bylaw;

(d) an acknowledgement of the requirement to provide a current and authenticated cost estimate for all works and services to be undertaken within their engagement (including landscape, and electrical where appropriate), complete with all components of the civil design. The estimate is to be up-to-date and authenticated with the provision of Issued for Construction drawings;

(e) an acknowledgement that the professional must authenticate (or certify where appropriate) their design and construction drawings for the works and services when submitting such drawings to the City for review;

(f) the professional's assurance that they will:

i. inspect the works and services to a level necessary to authenticate the works and services as constructed as meeting good engineering practice and the requirements of the *Works and Services Bylaw*;

ii. authenticate and submit as-constructed drawings for the works and services as installed; and

iii. coordinate with BC Hydro and other public utilities required for the development.

(g) a statement from the qualified professional that they understand the requirements of the relevant City bylaws that apply to the works and services.

3. Drawing Standards



3.1. General Requirements

3.1.1. All drawings must conform with the standards in this ESS Manual, or with the MMCD where specified.

3.1.2. Drawing specifications apply to sanitary sewers, storm drains, waterworks, roadways, lighting, electrical infrastructure, stormwater management, erosion and sediment control, trees and landscaping and the location of public utilities.

3.1.3. Information received from the City about existing services must be treated as a guide only. The City bears no responsibility for the accuracy of service information provided from plates, drawings or information supplied electronically. The qualified professional should confirm utility locations, and elevations with City utilities and third-party utilities and field survey to determine design accuracy.

3.1.4. Drawings must reference coordinates derived from ties made to either:

(a) at least two existing and validated Integrated Survey Area (ISA) No. 10 integrated survey monuments; or

(b) an active control station within the B.C. Active Control System (BCACS) network.

3.1.5. Each drawing must include the name of the survey control monument or active control station used, its coordinates (N, E, Z), and a ground-to-grid combined scale factor for distance conversion.

3.1.6. All drawings must be created using software which is compatible with AutoCAD (most recent release) and created as a *.dwg format.

3.1.7. Drawings circulated to the City must be digital, in pdf format, and signed and authenticated by the consulting engineer.

3.1.8. The City provides access upon request to digital base plan information from the City's Open Data Portal.

3.1.9. All submissions must be to the most recent version of the City's drawing standards and conventions.

3.1.10. Utilities must be colour-coded in accordance with the following:

(a) curb, sidewalk or other = black (in a manner that clearly differentiates what are new works);

(b) sanitary sewer = magenta;

(c) storm drain and/or stormwater infrastructure = green;

(d) potable water = light blue;

(e) gas = yellow;

(f) electrical, BC Hydro = red;

(g) other third-party utilities = orange.

3.1.11. All drawings must be created and dimensioned using the metric system of measurement and include a scale.

3.1.12. House numbers of existing houses must be shown on detailed design drawings.

3.1.13. In addition to complying with all of the drawing standards in Part 3, drawings must also comply with the standards specific to the subject matters listed in Section 3.6 through Section 3.13.

3.1.14. No works and services are to be undertaken until drawings are authenticated, and submitted and accepted by the City as “Issued for Construction”.

3.2. Sheet Sizes

3.2.1. Drawings must be on A1 metric size.

3.3. Key Plan

3.3.1. A key plan must be included if the location of the works and services cannot be easily deduced from the detailed design plans.

3.3.2. A key plan, when required, must be on the right side of the design drawings and must include the following information:

(a) adjacent streets and existing lots with streets named and legal descriptions of subject and adjacent parcels;

(b) civic address of site being developed and site shown shaded;

(c) north arrow; and

(d) if the site is being developed in stages, each proposed stage must be clearly identified in the order of development stage.

3.4. Rights of Way and Easements

3.4.1. All existing rights of way or easements must be shown lightly shaded within the right of way or easement boundary on the design drawing and labelled with the charge registration number. Supporting documents (title search, terms, legal plan) to verify the right of way or easement must be provided.

3.4.2. All proposed rights of way for new services must be shown as a dashed line. These must be tied to the iron pin (corner) in each lot, together with their intended width, permitted use and the note "proposed". The right of way proposed is to be of a width equal to the service depth or as otherwise specified in this ESS Manual. Rights of ways that are not able to achieve the required width due to natural features, existing systems or existing buildings may propose an alternate width for consideration by the Director of Engineering.

3.5. Plan / Profile Layouts

3.5.1. General

3.5.1.1. Plan view must be shown in the upper half of the sheet, with title block along the bottom edge of the sheet.

3.5.1.2. Profile view must occupy the lower half of the sheet.

3.5.1.3. The use of plan on one sheet and profile on a second sheet is not acceptable.

3.5.1.4. A north arrow, generally oriented towards the top of the sheet must be shown on all drawing submissions.

3.5.1.5. Construction notes must be confined to a separate "note" column wherever possible, with numbered references in a plan and profile.

3.5.2. Scales

3.5.2.1. Drawings must adhere to the scales outlined in Table 1.

TABLE 1: REQUIRED DRAWING SCALES

Drawing Type or Component	Horizontal Scale	Vertical Scale
Normal	1:200	1:20
Details	1:200	1:10
Cross Sections [1]	1:200	1:20
Structural Details	1:20	-
Electrical	-	1:75

[1] Scales may vary from identified for drawing clarity.

3.5.2.2. Where a viewport is provided, the labels must include the scale of the view.

3.5.3. Horizontal Datum

3.5.3.1. All horizontal coordinates must be provided in the NAD83(CSRS) 3.0.0.BC.1.CRD reference datum.

3.5.4. Elevations and Vertical Datum

3.5.4.1. Elevations must be shown in Canadian Geodetic Vertical Datum of 1928 (CGVD28). Elevations below zero metres geodetic must be prefixed with a minus sign.

3.5.4.2. Design drawings must show:

(a) the elevation to the nearest centimetre;

(b) existing basement floors;

(c) where the site is less than 1.0 m above the road level, any proposed basement floor elevations or entrance; and

(d) critical elevations at property lines, i.e., doorways and driveways.

3.5.5. Proposed and Existing Works and Services

3.5.5.1. Proposed construction and improvements must be shown as heavy solid lines. Proposed future construction must be shown as heavy dashed lines. Existing works and services must be shown with very fine lines to create the same effect as screening.

3.5.5.2. Existing mains (water, sanitary sewer and storm drain) including all appurtenances, and ditches, pavement curbs, sidewalks, walls, fences, stairs, railings, underground wiring and conduits, gas, poles, light fixtures, trees and irrigation, service connections and other underground utilities must be indicated in plan and profile where applicable.

3.5.5.3. All services must generally be shown on one plan with curbs, sidewalks, sewers, drawings, water, utilities (gas, buried hydro/tel, both above and below ground), street lighting and conduits, and fibre optics must be clearly identified as MC, NMC, S/W, S, D, G, W, L, FO, H or T respectively. Other services must be clearly designated on the drawing.

3.5.5.4. Road chainage must be tied to a monument or property corner (iron pin) from the start of construction. All chainage must be in positive values with 0+0 located adjacent to the left margin of the drawing sheet. Subsequent chainages must increase from the left margin towards the right border of each drawing sheet. All proposed works and services must be fully dimensioned.

3.5.5.5. Drawings must include detailed information on the following existing features:

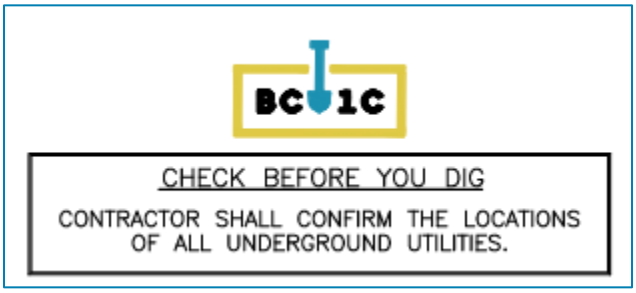
(a) all surface and subsurface infrastructure and natural features within a road allowance or project site; and

(b) all surface and subsurface infrastructure and natural features outside the road allowance and project site that influence or may be impacted by the proposed works and services.

3.5.6. Underground and Overhead Conflicts

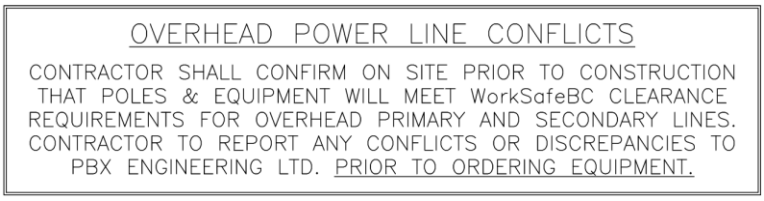
3.5.6.1. The qualified professional is responsible for investigating existing and proposed underground utilities and avoiding or resolving all conflicts to the best of their abilities. The qualified professional, or professional engineer, must add a block note (see Figure 1) to drawings stating that the contractor is responsible for determining the exact locations of utilities on site and contacting BC One Call prior to any construction work. The qualified professional (or professional engineer) is required to clearly show all known underground utilities on drawings with unique line types and to confirm them with GIS data or as-built drawings and CAD files.

FIGURE 1: DRAWING NOTE FOR UNDERGROUND CONFLICTS



3.5.6.2. Proper clearance to overhead powerlines is crucial in providing a safe working environment. The qualified professional is responsible for investigating all clearances between overhead lines and luminaire or signal poles. Existing overhead lines should be surveyed to confirm the exact heights of all conductors. Where new overhead lines are proposed, the qualified professional must coordinate with BC Hydro to verify proposed overhead line heights. The qualified professional must add the note shown in Figure 2 below to all drawings where overhead work is occurring, ensuring the contractor is aware of and responsible for meeting safety requirements.

FIGURE 2: DRAWING NOTE FOR OVERHEAD CONFLICTS



3.6. Streets and Transportation Drawings

3.6.1. Drawings must show:

(a) road width, curb and sidewalk offsets and materials used measured from the property line. A typical cross-section must also be shown on a separate drawing sheet; and

(b) the actual location and dimensions of sidewalk drops on a detailed plan at 1:200.

3.6.2. Road profiles must show the centerline and gutter(s) or edge(s) of pavement elevation at 10 m intervals.

3.6.3. Gutter elevations of cul-de-sacs must be shown on a detailed plan at 1:200, at all beginnings of curves (BCs) and ends of curves (ECs) and at intervals of no more than 5 m along the gutter line. A profile along the gutter line must show how it is graded.

3.6.4. A typical cross-sectional view of road construction must be included where circumstances require special consideration. In all cases the standard drawing section must be referenced on the drawing.

3.6.5. Cross-sections are required for drawings depicting new or rehabilitated roads and sidewalks.

3.6.6. For new road and sidewalk features, a 10 m interval cross-section is required.

3.6.7. For road works, cross section elevations must span the full width of the road allowance. Cross-section elevations must include property lines, back of sidewalk, front of sidewalk, top of curb, gutter ¼ pt of road width or edges of existing road and centerline of road. It must also illustrate changes and elevations of each break in the cross section.

3.6.8. New road works must be shown on each cross-section with bold lines that emphasize the finished surface. Elevations of new road must be shown. Road measurements from centerline of the road allowance must also be illustrated.

3.6.9. The profile must be shown at the true centerline length and provided in as close relationship as possible to the plan.

3.6.10. Locate catch basins by chainage to the centre of the catch basin.

3.6.11. Existing and proposed driveway locations must be shown, as well as a profile of each driveway from the road centerline to the end of the driveway within the property.

3.6.12. Chainage to the BC and EC of horizontal curves must be shown together with the internal angle, tangent length, arc and centerline radius. A table providing curve and curve return data is to be included on the road drawings as shown in Table 2.

TABLE 2: CURVE DATA TABLE (EXAMPLE)

Parameter	Curve				
	A	B	C	D	E
Radius	39.00 m	10.00 m	110 m	6.00 m	6.00 m
Angle	57 d 49 m 33 s	8 d 21 m 00 s	18 d 40 m 59 s	73 d 37 m 15 s	24 d 41 m 54 s
Arc	30.27 m	15.59 m	35.86 m	75.0 m	2.58 m
Tangent	16.52 m	9.92 m	18.09 m	4.32 m	1.31 m
Beginning of Curve (BC)	0+00.00	0+30.28	0+50.38	0+86.25	0+93.75
End of Curve (EC)	0+30.28	0+45.87	0+86.25	0+93.75	0+96.26

3.6.13. The centerline percent grade to two decimal places must be shown on the profile together with the following information on vertical curves:

(a) the chainage and elevations of beginning of vertical curve (BVC), end of vertical curve (EVC), and vertical point of intersection (VPI);

(b) the external value, ‘e’;

(c) the rate of vertical curvature, “K” value;

(d) the length of the vertical curve;

(e) the elevation and chainage of the low points for sag curves;

(f) the gutter(s) elevations at 10 m change stations;

(g) chainage and elevations of proposed gutter(s) BC, EC, BVC, EVC;

(h) horizontal curve radii to be designed to the nearest 1.0 m; and

(i) pavement tapers must be dimensioned with length and ratio of taper.

3.7. Electrical Drawings

3.7.1. Electrical Drawing Package Information

3.7.1.1. The following information must be included in all electrical drawing packages:

(a) elevations must be provided for all proposed equipment (including but not limited to luminaire poles, traffic signal poles, electrical cabinets etc.). Elevations must be provided for all existing signal poles at an intersection even if only one quadrant is impacted;

(b) lighting design criteria tables must be included on drawings for any intersections, roadways, crosswalks, pathways etc. in which calculations were completed to verify lighting levels;

(c) a luminaire product list must be provided listing all luminaires used on the project;

(d) list of materials including quantity take-offs;

(e) indicate wattages, lumen output and distribution type for all proposed lighting fixtures. Only wattages are required for existing fixtures;

(f) single line diagrams and equipment layouts must be provided for all service panels/kiosks/cabinets, including the size, rating, breakers, and number of contactors;

(g) signal wiring at intersections must be shown as follows:

i. signal wiring must be shown between the traffic controller and the main junction box;

ii. signal wiring to be shown between junction box and signal pole;

iii. signal wiring does not need to be shown at all crossings for existing intersections due to the uncertainty of conductor paths; and

iv. signal wiring must be shown at all road crossings for new signals, where new conduits/conductors are installed.

(h) for fibre optic installations: plot all existing and proposed conduits, conduit types and identify fibre optic cable (6C, 12C, 48C.96C). Identify all associated hardware, installation locations and product specific identification.

3.7.1.2. Plot and identify all existing and proposed street lighting and traffic signal operating devices for all quadrants of an intersection or mid-block such as:

(a) underground conduits;

(b) junction boxes (JBs);

(c) all wiring;

(d) all poles;

(e) all lighting fixtures;

(f) signal loops;

(g) counting loops;

(h) traffic control cabinet;

(i) electrical service connections and service breaks; and

(j) other related off-site electrical infrastructure.

3.7.1.3. If the only electrical infrastructure being installed is empty conduits or junction boxes, the infrastructure can be included on a civil drawing set and a separate electrical drawing is not required. If any existing electrical infrastructure such as street lighting or traffic signals is being affected, a dedicated electrical drawing is required.

3.7.1.4. Connection or alterations to electrical conduits and fibre optic lines must clearly show any points of splice or interference.

3.7.2. Drawing Layout for Site Plans

3.7.2.1. Proposed design base layers (typically electrical and civil) must be shown in black and white and set to show above all other base layers.

3.7.2.2. Existing base layers (such as electrical, civil, survey, utility and legal) must be displayed in grey and set to the back of the drawing.

3.7.2.3. Luminaires and other proposed electrical equipment must be referenced with station numbers. If station numbers are not applicable, dimensions must be provided, to property corners (iron pins).

3.7.2.4. Scale bars for all plans and elevations.

3.7.2.5. Match lines with associated reference drawing number, and continuation notes where applicable.

3.7.2.6. Intersections must be contained to a single sheet of a drawing package (i.e., do not use match lines to split an intersection between sheets). All infrastructure related to the intersection must be included on the same sheet as the intersection. All infrastructure related to the intersection must be shown even if only one quadrant is impacted by the project.

3.7.2.7. On larger projects, right-of-way and/or road centerline stationing to metric standards (0+000) and marked at 10 m intervals with labels every 50 m. Stationing must be related geometrically to legal property lines or survey monuments. Stationing must run left to right where possible.

3.7.2.8. The work must be laid out in an orderly sequence.

3.7.2.9. Typical drawing scales used:

(a) site plans - 1:500

(b) site plan enlargements - 1:200

(c) elevations – typically 1:75

(d) Rectangular Rapid Flashing Beacon (RRFB) or pedestrian pushbutton posts 1:50

(e) details - scaled as required

3.8. Structures Drawings

3.8.1. Walls

3.8.1.1. Every wall must be shown on all relevant drawings with elevations at both ends and half-length of the wall.

3.8.1.2. Walls (either existing or proposed) must have a standard cross-section showing offset relative to the property line, maximum height, width, elevation at the cross-section, footing type, material type, tie-backs, soil anchors, wall drainage and any additional information that is determined necessary by the qualified professional in describing the wall and its stability.

3.8.1.3. Trees and other proposed vegetation must be shown on the drawings to clearly demonstrate their location relative to the wall, as well as the distance from the wall.

3.8.1.4. Footings for a wall must be shown on the drawings. No portion of the wall, footing, permanent shoring, timber lagging, sheet piles, footing or drainage may extend on to a highway, right of way or park.

3.8.1.5. Every cut or fill slope greater than 30% must be shown on drawings with the approximate grade and elevations shown at both top and bottom of slopes. Any benching must also be indicated clearly on drawings.

3.8.2. Railings and Fences

3.8.2.1. Existing and proposed railings and fences must be noted on all drawings.

3.8.2.2. The height and material of all railings and fences must be noted on all relevant drawings.

3.8.2.3. Where railings or fences are required along a sidewalk, the required sidewalk width must be free and clear and unimpeded for the width as specified in the ESS manual. When a railing or fence is intended to be mounted to the sidewalk, the overall width of the sidewalk may need to be increased to ensure this is achieved.

3.8.2.4. Where a railing or fence is required, the railing must be shown on the plan and cross-section including footing details.

3.8.3. Stairs

3.8.3.1. Stairs must be shown on all relevant drawings with a typical cross-section, elevation and dimensions, and be shown in relation to the property line adjacent the highway, right of way or park.

3.8.4. Sidewalk Basements

3.8.4.1. Existing sidewalk basements, as well as the entrance hatch to the basement in the sidewalk if one exists, must be shown on all relevant drawings with dimensions, and be shown in relation to the property line adjacent the highway.

3.9. Water, Sanitary Sewer, and Storm Drain Drawings

3.9.1. Sanitary Sewer and Storm Drain

3.9.1.1. The following information must be shown on the profile:

(a) size, type, class of pipe;

(b) percent grades to two decimal places;

(c) invert elevations at both inlet and outlet of manholes;

(d) details of vertical curves; and

(e) existing utilities.

3.9.1.2. The following information must be shown on the plan:

(a) details of horizontal curves;

(b) pipe offsets from property line;

(c) chainage or measurement from the downstream manhole of service connections;

(d) invert elevation at the property line and the grade of service connections from the upper end to the drop of the main, if other than two percent; and

(e) on mains of 150 mm or greater, the profile must be provided at 20 m station increments.

3.9.1.3. The following information must be shown on the appropriate part of the drawing:

(a) stormwater manholes and cleanouts must be identified by a capital "D" followed by a unique number (SMH00XXXX or DMH00XXXX);

(b) sanitary sewer manholes and cleanouts must be identified with a capital "S" followed by a unique number;

(c) structural detail of all manholes not covered by the Supplementary Specifications or Supplementary Drawings or MMCD; and

(d) where a proposed sanitary sewer pipe crosses a watermain or is offset less than 3.0 m from the existing watermain, a protection of pipe must be shown (e.g., joints wrapping or hydraulic barrier) in accordance with Island Health requirements.

3.9.1.4. Connections or alterations to existing water mains, sanitary sewers, and storm drainage must be indicated on the design drawings.

3.9.2. Water

3.9.2.1. Drawings must indicate whether a watermain passes over or under other underground services which it is crossing.

3.9.2.2. The following information must be shown on the profile:

(a) size, type, class of pipe;

(b) for mains 150 mm and larger, profile grades to two decimal places.

3.9.2.3. The following information must be shown on the plan:

(a) the offset of main centerline from the property line;

(b) the proposed elevation of the flange of hydrants

(c) extent of works required of the City in making the connection to the existing watermain;

(d) on mains of 150 mm or greater, the profile is to be provided at 20 m station increments; and

(e) see Section 3.9.1.4.

3.10. Stormwater Management Drawings

3.10.1. Drawing requirements for stormwater management plans can be found in Section 4.43.

3.11. Erosion and Sediment Control Drawings

3.11.1. Drawing requirements for Erosion and Sediment Control plans can be found in Section 4.54.

3.12. Third Party Utilities

3.12.1. The following information must be shown on the civil design drawing submission:

(a) existing utilities;

(b) utility offset from property line or iron pin;

(c) lot connections and other appurtenances offset to the nearest property line;

(d) proposed poles must be dimensioned from the pole's road face to the property line or pin;

(e) indicate how utility vaults will drain to the sanitary sewer system (if necessary) and particulars of install such as the installing party;

(f) underground BC Hydro, telecommunications, cable, etc. infrastructure such as duct bank and vault outlines (including abandoned infrastructure that remains in place); and

(g) dimensions clearing showing the separation from services, trees and existing or proposed infrastructure Any service connection details, including aerial or conduit works, where required, pad-mounted transformer (PMT) location and space needs (where required) including counterpoise necessary to serve the lands.

3.12.2. Where applicable, the following design requirements are to met:

(a) development lands that are served through existing underground conduit or are located in the downtown core as to be served through underground service connection unless otherwise specified below;

(b) development lands must be considered as a single parcel for servicing, and Properties created through the *Strata Property Act* must be considered as a single parcel;

(c) where a development may be served by 400 A service (or higher), The service should avoid aerial road crossings (aerial long-side service);

(d) where that service would require additional poles or infrastructure, the service must be provided underground. Additional pole placement within the right-of-way must be avoided, except those instances where that pole is temporary provided for construction service;

(e) where service can be achieved without an aerial road crossing, the development may be served overhead, provided that additional infrastructure is not required to be located in the road Right-of-way (such as poles or other);

(f) in all instances for a development of multi-family building of a density greater than 4 residential units, or commercial and industrial developments, the owner is required to provide (within the development lands) space for a BC Hydro PMT and associated infrastructure (counterpoise) in accordance with the location and dimension to BC Hydro standards. The PMT space is to be provided unless the development includes an internal electrical Room, which has been provided to include transformation, or until such a time as it can be confirmed by BC Hydro that the area is not necessary, to serve the lands. The qualified professional is required to provide confirmation necessary. The access requirements of BC Hydro is to be considered in the location of the PMT set-aside space; and

(g) acceptance of the installation and connection details as shown, and considered and accepted by that utility is required for an "Issued for Construction" drawing.

3.13. Trees and Landscape Drawings

3.13.1. General

3.13.1.1. The *Tree Protection Bylaw* includes requirements for drawings and reports when undertaking development on both public and private property which requires that bylaw protected private trees, required replacement trees, and public trees be included in the drawings submitted for a development and outlines reports submission requirements. Qualified professionals should familiarize themselves with the *Tree Protection Bylaw*.

3.13.1.2. The Director of Parks may require an owner to provide the following drawings and plans:

(a) landscape plan;

(b) irrigation plan;

(c) grading plan; and

(d) per the *Tree Protection Bylaw* (Schedule B):

i. tree survey; and

ii. tree management plan.

3.13.2. Landscape Assets on Civil Drawings

3.13.2.1. Civil drawings and site service plans will be used as the base drawing for the landscape drawings. Civil drawings must include the following landscape assets to the satisfaction of the Director of Parks:

(a) landscaping (existing and proposed trees, boulevard, rain garden irrigation systems, soil cells, structural soil pits, drainage systems, hard landscaping, etc.);

(b) irrigation system point of connection location, size, meter box, backflow device. vaults and sleeving;

(c) soil cells must be identified in the drawing, showing the location, area, root barriers, geotextiles, underdrain, aeration system, and irrigation sleeving. Both existing and proposed soil cells must include the manufacturer's name, product model, dimensions, soil volume and vehicle loading specifications;

(d) existing and proposed underground utilities (including third party utility locations) must be shown accurately in their alignment and width;

(e) cross section drawings of the street frontage including construction details for the installation of trees, rain gardens, and soil cells with the location of all existing or proposed underground and overhead utilities, hardscape, subgrade, compacted fills and other structures;

(f) in locations where the location, depth and size of existing underground utilities are critical to the landscape design, the utilities must be physically located by utility tracing, ground penetrating radar or excavation, surveyed and added to the civil drawing set; and

(g) tree protection fencing locations as per the requirements of the *Tree Protection Bylaw*, and items as contained in an arborist report and tree management plan where provided.

3.13.3. Landscape Drawings

3.13.3.1. Civil and landscape drawings must meet the requirements under Part 3 to this ESS Manual, including existing and proposed soil cells in plan view and cross section, with construction details showing soil cells installations and all associated infrastructure and sleeving.

3.13.3.2. Landscape construction drawings must be completed by a landscape professional. For larger or more complex projects or projects that include or require the installation of soil cells must engage a landscape architect who is a member of the British Columbia Society of Landscape Architects (BCSLA).

3.13.3.3. The landscape drawings must meet the requirements of this ESS Manual and the *Tree Protection Bylaw*.

3.13.3.4. The most up-to-date civil drawings and architectural drawings must be used as base drawing information for the landscape drawing set.

3.13.3.5. All existing and proposed underground services must be shown on the base layer of the landscape drawings.

3.13.3.6. An 'Issued for Construction' (IFC) landscape drawing set must be submitted by the owner, reviewed and approved by the Director of Parks prior to issuance of a permit for project construction.

3.13.3.7. The design must consider the existing or proposed landscape on private property fronting the road, so as avoid over-planting or conflicts with sightlines, existing trees or infrastructure.

3.13.3.8. The following information must be shown on the landscape drawing:

(a) sight distance triangles at driveways (as per the *Highway Access Bylaw*);

(b) existing or proposed slopes steeper than 5:1 to be indicated with slope direction arrow and slope ratio, contours and/or top and bottom of slope lines and elevations;

(c) changes in grade within the project area - both existing and proposed elevations must be shown in relation to landscape assets and the protected root zones and critical root zones of trees;

(d) existing or proposed encumbrances must be shown on the plan. Location, area and description of the encumbrance must be included on the drawing;

(e) where road dedications are required, the drawings must show both the existing property line and the new property line after the road dedication;

(f) all proposed changes including buildings, trees, landscaping, hardscaping, grade, retaining walls, overhead and underground utilities, and frontage works;

(g) any wall on or along a right of way, City of Victoria owned land and/or park must include a section drawing showing the details as required in Section 3.8.1;

(h) the location, diameter at breast height (DBH), canopy spread, and critical root zone of trees located on the municipal frontage, and any other municipal trees which may be impacted;

(i) the surveyed location, DBH, canopy spread, protected root zone, and species of bylaw-protected trees which may be impacted by the proposed work;

(j) trees to be removed, indicated with a bold X through the survey point. The canopy outline must be indicated with a fine, dotted-line circle and the protected root zone must be indicated with a dashed-line circle;

(k) trees to be retained, indicated at the survey point with a scaled circle to represent the trunk. The canopy outline must be indicated with a fine, dotted-line circle and the protected root zone or critical root zone must be indicated with a bold, solid-line circle;

(l) proposed tree locations showing trunk center and approximate canopy spread at time of planting;

(m) location and estimated soil volumes for both proposed and existing trees to be retained;

(n) location, area, depth and estimated volume of soil cells with a text box providing the proposed manufacturer, type or model, unit dimensions and soil volume;

(o) drainage systems, aeration systems for soil cells;

(p) drainage systems for landscaped rain gardens and poorly drained boulevards;

(q) location of irrigated areas and required sleeving;

(r) location of all trees, shrub, groundcover beds, grass areas and replacement trees required as per *Tree Protection Bylaw*;

(s) extent of proposed decorative paving, paving types and street furnishings;

(t) tree grates and tree guards indicating the manufacturer, dimensions, model, with black painted coating by the manufacturer;

(u) 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;

(v) a planting plan must be included for all proposed planting beds and rain gardens;

(w) scaled section drawings showing a cross section of the street frontage including construction details for the installation of the proposed landscaping, boulevards, raingardens, soil cells, and tree planting with the location of all existing or proposed overhead and underground utilities, awnings and building projections, hardscape and other structures, must be shown on the landscape drawing set;

(x) show and label the extent of underground structures, podiums and parkades;

(y) plans must list all required City of Victoria landscape inspections; and

(z) existing landscape assets.

3.13.3.9. The following existing landscape assets must be shown on the drawings:

(a) boulevards, medians, greens, and linear parks;

(b) street trees, park trees, shared trees and other City owned trees;

(c) landscaping such as turfgrass, ornamental plantings, rain gardens and their associated infrastructure;

(d) natural habitat and populations of rare, endangered or threatened species, and rocky outcroppings;

(e) developments sharing a property line with a park must show the trees and landscape assets back 5 m into the park along the length of a shared property line;

(f) trees which have a protected root zone which extends into the development property must be shown on the drawing even if the trunk is located outside the 5 m distance to the property line;

(g) soil cells and the associated, structural components, geotechnical fabrics, root barriers, underground utilities, materials, growing media, aeration vents, irrigation systems and the surrounding compacted gravels;

(h) irrigated areas must be noted showing the point of connection, back flow device, controller location and all required sleeving;

(i) underground and overhead utilities which service City-owned assets, on boulevards, medians and in parks;

(j) park lighting electrical ducting, and all components of the electrical system, including electrical transformers, electrical services, electrical poles, light poles and junction boxes;

(k) park sidewalks, pathways, parking lots, sports courts and other hard surfaces;

(l) tree grates, tree guards and Parks Division managed furniture and waste containers;

(m) drinking fountains and associated underground infrastructure;

(n) washroom buildings and the associated underground utilities and infrastructure; and

(o) fencing and gates.

3.13.4. Site Plan or Site Service Plan In lieu of Landscape Drawing

3.13.4.1. Projects that do not require a landscape drawing, tree management plan or arborist report, must include the following information on the Civil plan provided (and/or site service plan) to the satisfaction of the Director of Parks:

(a) the surveyed location, DBH, canopy spread, protected root zone, and species of bylaw protected trees which may be impacted by the proposed work;

(b) the location, DBH, canopy spread, and critical root zone of trees located on the municipal frontage, and any other municipal trees which may be impacted;

(c) show all proposed changes including buildings, trees, landscaping, hardscaping, grade, retaining walls, overhead and underground utilities, and frontage works;

(d) show trees to be removed, indicated with a bold X through the survey point. The canopy outline must be indicated with a fine, dotted-line circle and the protected root zone must be indicated with a dashed-line circle;

(e) show trees to be retained, indicated at the survey point with a scaled circle to represent the trunk. The canopy outline must be indicated with a fine, dotted-line circle and the protected root zone must be indicated with a bold, solid-line circle;

(f) existing or proposed restrictive covenants must be shown on the plan. Location, area and description of the covenant type must be included on the drawing;

(g) existing populations of rare, endangered and threatened species must be identified with a dotted black line around the perimeter of the area with a call out note which includes the species;

(h) the proposed location of the required construction access to the property;

(i) the proposed location where tree protection fencing is required with a reference that the fencing must meet the requirement of the *Tree Protection Bylaw*.

3.13.5. Irrigation Drawing

3.13.5.1. An irrigation drawing must be produced using the landscape plan as base information. This plan must be emailed to the City or Victoria Urban Forest Planning Section at treepermits@victoria.ca, 30 days prior to the start of system installation. The irrigation drawing must include the following information:

(a) irrigation system point of connection and sleeving locations consistent with the approved civil drawing;

(b) water service/backflow prevention connection detail, valve and head installation details including all equipment, fittings and related valve boxes, by reference to City of Victoria - Engineering Standards and Specifications or City of Victoria - Approved Irrigation Materials List (Drawing SD PI11). The Director of Parks must approve alternative designs or products if proposed on the landscape construction or irrigation drawings;

(c) 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; and

(d) an irrigation equipment legend, and schedule of hydraulic data in metric to include flow and precipitation rate for each valve zone.

3.13.6. Soil Cells Drawing

3.13.6.1. Soil cell drawings are to be submitted to the City Parks Division for review at least 45 days prior to the start of soil cell installation and include the following:

(a) manufacturer's site-specific soil cell layout in plan and section;

(b) all composite elements of soil cell system;

(c) construction details, material descriptions, finishes, installation specifications and details;

(d) detail soil cell layout requirements around existing and proposed underground utilities and infrastructure;

(e) methods of handling and erection;

(f) grades and dimensions (indicate stepping or sloping conditions to achieve finished grades);

(g) calculated soil volume for each proposed or retained tree;

(h) all details and drawings to be stamped by a professional engineer licensed in the Province of British Columbia; and

(i) warranty the product satisfies AASHTO H-20 Vehicle Loading Specifications.

3.14. Record Drawings

3.14.1. General

3.14.1.1. When construction is complete, the contractor must provide red-line markups to the designer who will then prepare a set of record drawings clearly showing the works as-constructed. Record drawings must note all works installed during construction and must reflect recorded conditions for permanent records.

3.14.1.2. All dimensions and elevations must reflect record conditions and all references to “Proposed” or “Install” must be removed. Material changes must be clearly shown.

3.14.1.3. Record drawings provide the final documentation for the City of what has been installed on a project, and the City may need to rely on record drawings for future uses, including design, construction, and maintenance purposes. The record drawing must be provided to the City within 30 calendar days following the completion of construction. Record drawings must be signed and sealed by a professional engineer. In addition to a signed and sealed PDF, AutoCAD drawing files must also be submitted as part of the record drawing package.

3.14.2. Record Drawing Requirements

3.14.2.1. Record drawings must be:

(a) provided and accepted by the City prior to construction acceptance;

(b) clearly identified as “Record Drawing”;

(c) clearly identify what has been removed, abandoned, or significantly altered;

(d) provided as a single, complete and comprehensive file in digital format with placement of all features geographically correct:

i. as an AutoCAD dwg; and

ii. as a pdf file.

(e) authenticated by the appropriate qualified professional and be free from disclaimers; and

(f) conform and use the following;

i. horizontal coordinate system & projection (EPSG:3157); and

ii. vertical datum (CGVD28).

3.14.2.2. Record drawings (as accepted) become the property of the City of Victoria.

4. Design Requirements and Standards



4.1. General

4.1.1. Per the *Works and Services Bylaw*, all works and services must be designed and constructed in accordance with:

(a) the MMCD.

(b) this ESS Manual.

(c) the works and services agreement applicable to the site, and

(d) design drawings and specifications approved by the Director of Engineering or, in the case of landscaping works, the Director of Parks.

4.2. Downtown Public Realm, Town Centres, and Villages

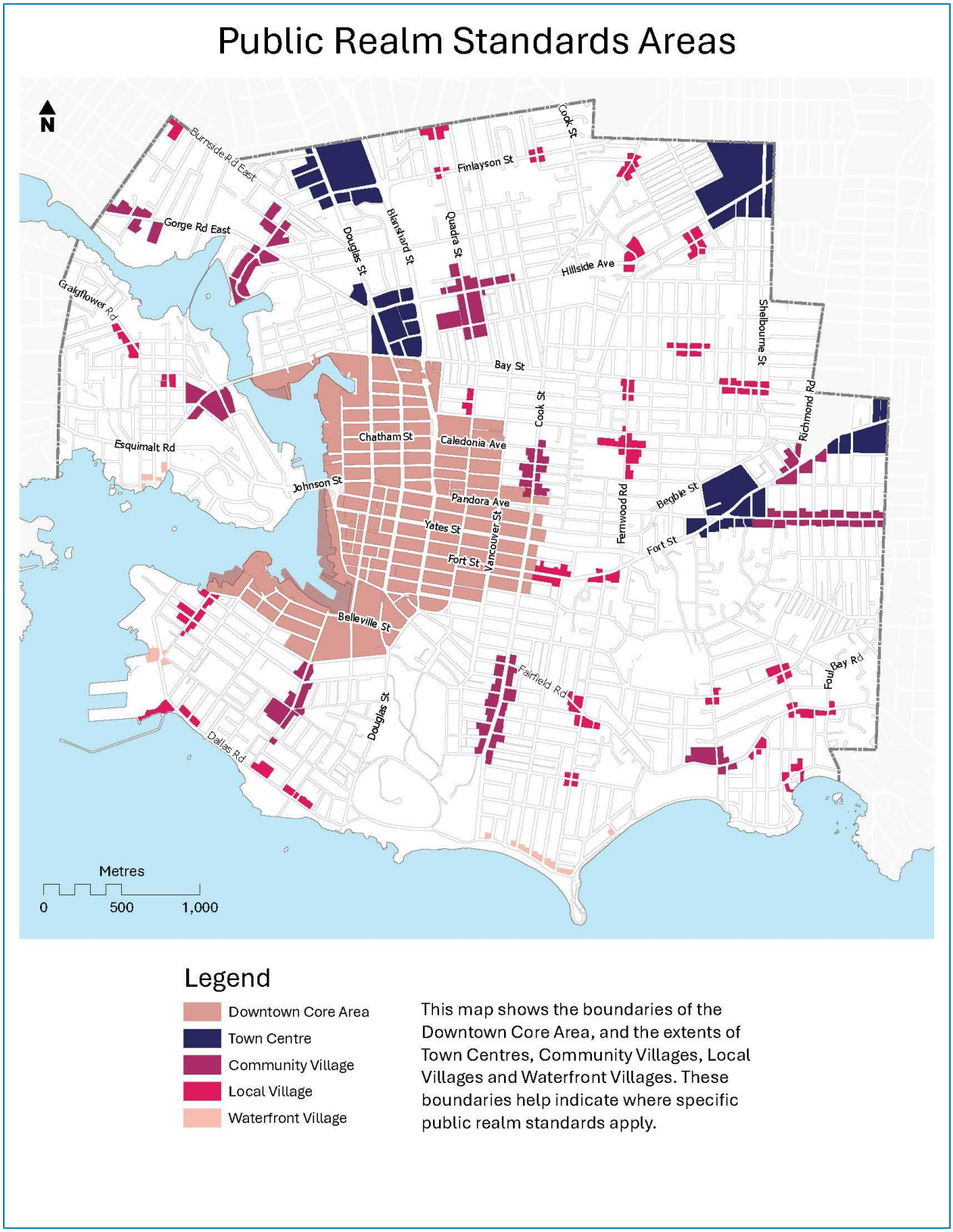
4.2.1. For sites located within areas identified in Table 3 below and shown in Map 1, the owner must comply with the associated public realm or neighbourhood guidelines in respect of furniture, materials and layout design criteria and any other works and services design elements specified in these areas, in addition to all other requirements in this ESS Manual.

TABLE 3: AREAS WITH ADDITIONAL DESIGN CRITERIA

Area	Associated Public Realm Guidelines
Downtown Core	Downtown Public Realm Plan Section 3
Villages (Local and Community)	Public Realm Design Guidelines for Villages and Town Centres
Town Centres	Public Realm Design Guidelines for Villages and Town Centres

4.2.2. Map 1 identifies areas with additional design criteria.

MAP 1: PUBLIC REALM STANDARDS AREAS



4.3. Typical Separation Requirements

4.3.1. The general recommended separation distance between certain types of works and services and other types of infrastructure, existing trees, or location specifics is provided in Table 4.

TABLE 4: TYPICAL SEPARATION REQUIREMENTS

System Particulars	In Relation To...	Recommended Separation Dimension(s)
Water Mains	Sanitary Mains	(a) 3.0 m Horizontal (b) 0.45 m Vertical (water above)
Water Meters	Property Line / Location	(a) At Property Line (b) Not contained within the driveway
Sanitary Inspection Chambers	Property Line / Location	(a) At Property Line (b) May be located within the driveway
Storm Drain Inspection Chambers	Property Line / Location	(a) At Property Line (b) May be located within the driveway
All Municipal Services	Landscape Feature and Tree Critical Root Zone	1.0 m from critical root zone
3rd Party Utility – UG Service	All Municipal Services	(a) 1.0 m Horizontal from Sanitary and Storm drain (b) 1.5 m Horizontal from Watermain (c) 0.3 m Vertical from all
3rd Party Utility - Hydro Boxes / PMT	Access Route / Driveway	Outside the site triangle necessary for the access route / driveway
3rd Party Utility – UG Service and Utility Pole	Driveway	1.2 m Horizontal
3rd Party Utility – Utility Pole	Curb Face	1.5 m Horizontal
	Sidewalk	1.5 m Horizontal
3rd Party Utility	Vegetation	(a) 5.0 m Horizontal (b) 5.0 m Vertical
	Trees	See Table 41

A. Streets and Transportation

4.4. General

4.4.1. Introduction

4.4.1.1. Victoria is a city committed to clean, seamless mobility options for everyone. To realize this vision, the public right of way must be designed to reflect the policies and priorities outlined in the *Official Community Plan* bylaw and Go Victoria. Together, these documents form the foundation for how to design and evolve Victoria's streets to serve the community's needs, today and into the future.

4.4.1.2. Streets are public spaces that support a wide range of movement and experiences. They connect people to homes, jobs, schools, parks, services, and cultural spaces, while also enabling the delivery of goods and emergency services. As such, street design must balance functional demands with the goal of creating high-quality urban spaces.

4.4.1.3. Victoria's street network is largely built out and meeting modal shift targets and policy objectives is not anticipated through the expansion of road space for general purpose traffic. Instead, an incremental reallocation of space, and where necessary, strategic road dedications, will be required to realize the City's mobility vision.

4.4.2. Resources

4.4.2.1. The resources identified in the following sections are listed for convenience, and should be used in conjunction with this ESS Manual and all applicable City bylaws, policies, guidelines and other documents when designing streetscapes.

4.4.2.2. City of Victoria Resources:

(a) Downtown Public Realm Plan and Streetscape Standards;

(b) Public Realm Design Guidelines for Villages and Town Centres;

(c) Go Victoria;

(d) *Highway Access Bylaw*;

(e) Industry, Arts, and Innovation District Action Plan;

(f) *Official Community Plan* bylaw;

(g) *Streets and Traffic Bylaw*;

(h) Sign Code Inventory; and

(i) Transportation Impact Assessment and Management Study Guidelines.

4.4.2.3. Regional District, Provincial Government and BC Transit Resources:

(a) BC Active Transportation Design Guide (BC ATDG);

(b) BC ATDG: Design Guide for Bus Stops Adjacent to Cycling Infrastructure;

(c) *BC Motor Vehicle Act*;

(d) BC Manual of Standard Traffic Signs and Pavement Markings;

(e) BC South Island Transportation Plan;

(f) BC Transit On-Street Infrastructure Design Guideline;

(g) BC Transit Shelter Program Manual;

(h) BC Transit Rapid Bus Implementation Strategy;

(i) BC Transit Victoria Region Transit Future Plan; and

(j) CRD Regional Growth Strategy.

4.4.2.4. Industry Resources:

(a) Transportation Association of Canada (TAC) Geometric Design Guideline for Canadian Roads;

(b) TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada;

(c) TAC Pedestrian Crossing Control Guide;

(d) TAC Guide to Traffic Calming;

(e) TAC Canadian Roundabout Design Guide;

(f) TAC Application Guideline for Speed Display Devices;

(g) Master Municipal Construction Document (MMCD);

(h) National Association of Transportation Officials (NACTO) Design Guidelines;

(i) CROW Design Manual for Bicycle Traffic; and

(j) CSA/ASC B651 Accessible Design for the Built Environment.

4.4.3. Definitions

4.4.3.1. For the purposes of this Streets and Transportation Part 4, Section A, words used in this section will have the same meaning as defined in the BC Active Transportation Design Guide unless otherwise defined in the City's resources listed in Section 4.4.2.2. In the event of a conflict between terms, the order of precedence is as follows:

(a) *Works and Services Bylaw*;

(b) *Streets and Traffic Bylaw*;

(c) *Highway Access Bylaw*;

(d) *Official Community Plan*;

(e) other City documents identified in Section 4.4.2.2; and

(f) BC Active Transportation Design Guide.

4.4.4. General Principles

4.4.4.1. Each street renewal project is an opportunity to implement the City's mobility vision and design professionals are expected to:

(a) prioritize safety through Vision Zero design principles.

(b) incorporate universal design for all ages and abilities.

(c) protect and expand right of way space for walking, cycling, and transit.

(d) ensure emergency and goods movement needs are accommodated, and

(e) advance opportunities for climate action (e.g., street trees, rainwater management) and public realm enhancement.

4.4.5. Transportation Impact Assessment

4.4.5.1. A Transportation Impact Assessment and Management Study (TIAMS) or Transportation Demand Management Plan (TDM) may be requested by the Director of Engineering to assist in determining the extent of works and services attributable to the development. The Transportation Impact Assessment and Management Study Guidelines provide steps and information required for preparing the TIAMS. If required, the study scope is to be discussed with transportation staff prior to undertaking. This ensures the scope is set up to adequately evaluate the impacts of a proposed project on existing transportation infrastructure, as well as required mitigation measures.

4.4.6. Street Classifications

4.4.6.1. A street's classification is informed by road user demand, mobility networks served, and the land use context. Per the *Streets and Traffic Bylaw*, City street classifications are categorized into Arterial, Collector and Local streets, with sub types that reflect anticipated cross section elements (see Section 4.4.8). Major roads (Arterials and Collectors) classified streets provide more width and opportunities for distinct streetscape elements that support mobility, urban forest, public realm, and servicing needs. Street classification objectives are outlined in the *Official Community Plan* and summarized below:

(a) **Arterial streets** support movement of higher traffic volumes, with motor vehicle access points limited and/or restricted, have safe pedestrian crossings and separated sidewalks, may support truck, emergency response, and transit mobility networks, as well as cycling network where facilities are typically protected from motor vehicles, accommodate street trees and rainwater management infrastructure, and may accommodate on-street parking and loading in strategic areas, such as commercial areas;

(b) **Collector streets** support movement with limited motor vehicle access points, have safe pedestrian crossings, separated sidewalks or widened curbside sidewalks, may support truck, emergency response, and transit networks, as well as cycling network where facilities are within a dedicated space, accommodate street trees and rainwater management infrastructure, and may accommodate on-street parking and loading; and

(c) **Local streets** are slower streets primarily used by local traffic, have local motor vehicle access points, and maximize street tree and rainwater management opportunities, emphasizing pedestrian safety, shared road facilities for cyclists, and on-street parking and loading.

4.4.7. Integrated Mobility Networks and Public Realm

4.4.7.1. The City's mobility networks guide the design and operation of streets within Victoria. These network maps are found in the *Official Community Plan*, and inform design decisions with the following aims:

(a) the **Pedestrian Network** aims to prioritize safety, comfort, and accessibility for people walking and rolling;

(b) the **Cycling Network** aims to be continuous, connected, and comfortable for users of all ages and abilities;

(c) the **Transit Priority Network** identifies key corridors for current and future frequent and rapid transit;

(d) the **Truck and Emergency Response Network** identifies key corridors that supports efficient movement of goods and services as well as ensuring emergency response performance; and

(e) the City's **Land Use Planning and Mobility Networks** are tightly integrated with an aim of complete and connected communities. The land use framework can be found in the *Official Community Plan* and Section 4.2 of this ESS Manual provides the public realm documents that guide the furnishing, layout, and materiality within distinct areas of the City—downtown, villages, and town centres.

4.4.8. Street Types and Functional Zones

4.4.8.1. When designing a streetscape, first determine whether the street is on one or several of the mobility networks and/or within a public realm area (see Section 4.2). Once that is determined, the street type and associated cross section can be identified as found in Part 6. Street type cross sections are broken down into functional zones (as shown in Figure 3) to provide design guidance and prioritize right of way allocation, these zones are:

(a) the **Vehicle Zone** accommodates motor vehicle traffic, transit, goods movement, and bicycle travel on local roads. The Vehicle Zone may be shared by multiple users or dedicated to certain vehicles (such as exclusive transit lanes). Medians and refuge areas can also be included within this zone, as well as underground utilities;

(b) the **Ancillary Zone** is adjacent to and supports the Vehicle Zone at key times (e.g., peak hour vehicle lane) and locations (e.g., turn lanes at major intersections). The Ancillary Zone can also support other uses including motor vehicle parking and loading, bicycle parking and facilities, transit stops and shelters, curb extensions, parklets, and patios;

(c) the **Bike and Roll Zone** supports cycling and other micro-mobility devices in a dedicated space that is safe for all ages and abilities. Where the right-of-way is constrained, the active transportation zone may supersede the ancillary zone to prioritize mobility options over curb side uses;

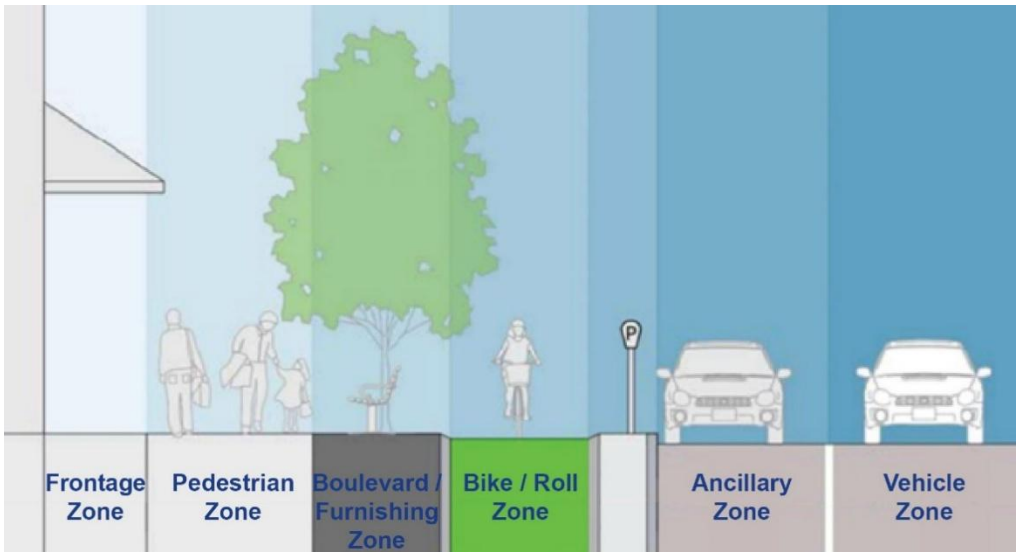
(d) the **Flex Zone** is a flexible space in constrained environments that accommodates uses found in the Boulevard/Furnishing Zone as well as a subset of Ancillary Zone uses. Additional design guidance is provided in Section 4.4.9;

(e) the **Boulevard/Furnishing Zone** is a space between the Pedestrian Zone and roadway and provides space for street trees, rainwater management, transit shelters, street furnishings, lighting, traffic management infrastructure, and utilities. In constrained areas, elements such as street trees and rainwater management may also be in the Flex Zone;

(f) the **Pedestrian Zone** is key part of all streets and provides a barrier free area for pedestrians with widths conditional on land use and pedestrian volumes; and

(g) the **Frontage Zone** supports ground floor uses and is typically on private property – though may form part of the public right-of-way in historical areas. It is intended to accommodate entrances, patios, seating, and signage, with widths dependent on adjacent uses.

FIGURE 3: FUNCTIONAL ZONES. ADAPTED FROM BC ACTIVE TRANSPORTATION DESIGN GUIDE.



4.4.9. Flex Zone Design Criteria

4.4.9.1. Flex zones are typical at the sidewalk elevation and include additional space for street trees and plantings, rainwater management, transit stops and shelters, street furnishings, lighting, traffic management infrastructure, planters, parklets, patios, and utilities. Where flex zones accommodate motor vehicle parking and loading, these spaces are to be accommodated through 'pocket parking' where street trees and planting flank a compact area of a couple parking and loading spaces. If space is available flex zones should be a minimum width of 2.5 m to provide a diverse range of uses.

4.5. Pedestrian Facilities

4.5.1. Introduction

4.5.1.1. Pedestrian infrastructure is essential for accommodating the growing shift towards walkable urban environments and is a key strategy in the City's mobility policies and goals. Pedestrian facilities vary in design approach and are informed by street classifications and type. Generally, the higher the traffic volumes and vehicle speeds (e.g. arterial and collector streets), the greater the need for sidewalks that are buffered from traffic – typically through a planted boulevard but may include another use. Pedestrian facilities on all streets are aimed at providing a comfortable and accessible space for all users, including those with mobility aids, and can come in a continuum of facility types with further guidance below. Additional pedestrian design criteria are provided in other sections of this manual—such as crosswalks (Section 4.9.9).

4.5.2. References and Design Approach

4.5.2.1. Walking is a fundamental part of all trips, and universal design is a key part of welcoming people of all abilities, especially those with disabilities. Safety, comfort, and accessibility for pedestrians are key factors and the City outlines specific criteria for designing facilities to ensure these needs are met. The goal is to prioritize pedestrians, particularly in areas where they encounter vehicles. Measures that contribute to these goals include sidewalk widening, curb bulges, continuous sidewalks, minimizing driveways across sidewalks, normalizing skewed intersections, and pedestrian-focused traffic signal improvements.

4.5.2.2. Pedestrian facilities are to be designed to meet accessibility design guidelines and standards, including the BC Active Transportation Design Guide, TAC Geometric Design Guideline for Canadian Roads, and the CSA/ASC B651 Accessible Design for the Built Environment. Sidewalks should be generous, unobstructed, and accessible.

4.5.2.3. Sidewalks are to be broom-finished concrete unless otherwise specified in the City's public realm standards, including the Downtown Public Realm Plan and Streetscape Standards and the Public Realm Design Guidelines for Villages and Town Centres (see Section 4.2). Construction standards for sidewalks are outlined in the MMCD and the Supplementary Drawings.

4.5.3. Sidewalk Alignment

4.5.3.1. In general, sidewalks separated from the curb by a Boulevard/Furnishing Zone are preferred over curbside sidewalks, as they provide a buffer between pedestrians and motor vehicle traffic and are out of driveway drops which can impact accessibility.

4.5.3.2. In redevelopment, where the existing sidewalk is curbside, consideration to retrofit to a separated sidewalk should be given at intersections and along frontages where the sidewalk length is 30 m or greater. If the remaining Boulevard/Furnishing Zone width separating the sidewalk from the curb is 3 m or greater, a widened curbside sidewalk may be considered as an alternate to a meandering sidewalk. Attention to sidewalk transition areas is to consider wayfinding for those using mobility aids.

4.5.3.3. Care must be taken to avoid obstacles such as wooden utility poles, trees or stone walls while providing a direct path for walking which is predictable and legible.

4.5.4. Private Access Pathways / Boulevards

4.5.4.1. Where pathways cross the public boulevard, they are to meet accessible grades, be broom finished concrete, and constructed to the standards outlined in the Supplementary Drawings. Pathways are to balance sidewalk connectivity with street tree and rainwater management objectives and are typically spaced no less than 8 m apart or to match street tree spacing. Pathways may require consolidation prior to entering the public boulevard and are typically no greater than 1.5 m in width unless warranted.

4.5.4.2. Sidewalks separated from the curb can decrease the need for lengthy private access pathways, thereby increasing opportunities for planting space. Whether curbside or separated sidewalk, adequate space is to be provided to achieve the soil volumes required for street trees—soil cells may be required (see Street Trees Section 4.59).

4.5.5. Sidewalk Widths

4.5.5.1. On local roads, the minimum Pedestrian Zone width is 1.8 m to provide sufficient space for those with mobility aids to pass. In other areas, pedestrian zones are wider to accommodate increased pedestrian activity.

4.5.5.2. The sidewalk widths in Table 5 are based on accommodating frontage zones, barrier free pedestrian through zones, while also supporting a healthy urban forest through the provision of sufficient soil volumes and growing space appropriate to the different street types identified in Map 2 and the *Streets and Traffic Bylaw*. Minimum dimensions for overall widths and for each zone are identified in Table 5. These widths must be achieved where opportunities allow through building siting and, in some cases, curb relocation and with opportunities evaluated and identified on a case-by-case basis.

4.5.6. Application of Table 3

4.5.6.1. Ensure that any street improvements to the public right of way or any private development adjacent to public right of way consider the related Sidewalk Width Criteria described in Table 5 with the Street Type determined as follows:

(a) refer to Map 1 (Section 4.2) to determine if the street falls within the downtown, a village, town centre, or other area;

(b) Downtown areas to refer to Map 2 to determine Street Type used for Table 5;

(c) Village and Town Centre areas to consider the ‘Commercial and Mixed-Use’ Street Type in Table 5; and

(d) other areas to determine the Street Type based on the street classification within the *Streets and Traffic Bylaw* (Schedule A).

4.5.6.2. Recognize that functional requirements, existing street dimensions and physical conditions may constrain achievement of the Sidewalk Width Criteria described in Table 5. Improvements should also support the increase, maintenance of a healthy urban forest. Soil cells (where appropriate), as well as the utilization of Flex Zones for street trees may be required (see Street Trees Section 4.59).

4.5.6.3. Where a cross-section identifies an increase in right of way, additional width is to be provided as road dedication. In instances in the public realm standard areas (Map 1), where Table 5 identifies widths more than typical cross sections, a Statutory Right of Way (SRW) may be considered. The SRW area would be free-and clear above and below except where such an overhang was enabled through Development Permit consideration.

TABLE 5: SIDEWALK WIDTHS

Street Type	Total Width [1]	Frontage Zone [2]	Pedestrian Zone [3]		Boulevard / Furnishing Zone [4]	
		Range	Recommended Minimum	Range	Basic	Enhanced
Typical Street Classifications						
Local Streets	3.45 - 4.5 m	See [5]	1.8 m	1.8 - 2.0 m	1.65 m	2.5 - 3.0 m
Collector Streets	3.8 - 5.5 m		2.0 m	1.8 - 2.3 m	2.0 m	
Arterial Streets	4.0 - 5.5 m		2.3 m	2.0 - 3.0 m		
Lanes and Alleys	Minimum 6 m Mobility Zone		N/A		N/A	
Public Realm Areas						
Pedestrian Priority [6]	4.8 - 9.0 m	1.0 - 2.0 m	3.0 m	2.0 - 4.0 m	1.8 m	3.0 m
Primary Commercial	4.3 - 8.5 m	0.5 - 1.5 m				
Esplanade	3.8 - 7.0 m	N/A	3.0 m	2.0 - 4.0 m	1.8 m	3.0 - 5.0 m
Commercial and Mixed-Use	4.3 - 6.3 m	0.5 - 1.5 m	2.4 m	2.0 - 3.0 m	1.8 m	3.0 m
Flex Street	3.6 - 7.0 m	0.5 m	2.5 m	1.8 - 3.5 m	1.8 m	3.0 m

[1] Additional space is required for transit shelters and waiting bus patrons along transit routes (see BC Transit On-Street Infrastructure Design Guide). Greater offsets between trees and the curb edge reduces conflict with buses pulling into passenger loading/unloading areas; on non-transit routes, reduced offsets may be considered.

[2] The desired Frontage Zone width responds to adjacent land use, available right-of-way, existing and desired street wall (building fronts) condition; 1.2 - 1.5 m provides space for landscaping and retail signage, whereas greater widths can accommodate outdoor patios. A minimum Frontage Zone width of 0.3 m is recommended or sufficient space to ensure door swings and footings do not encroach into the public right-of-way. Where possible, the Frontage Zone is to be on private property.

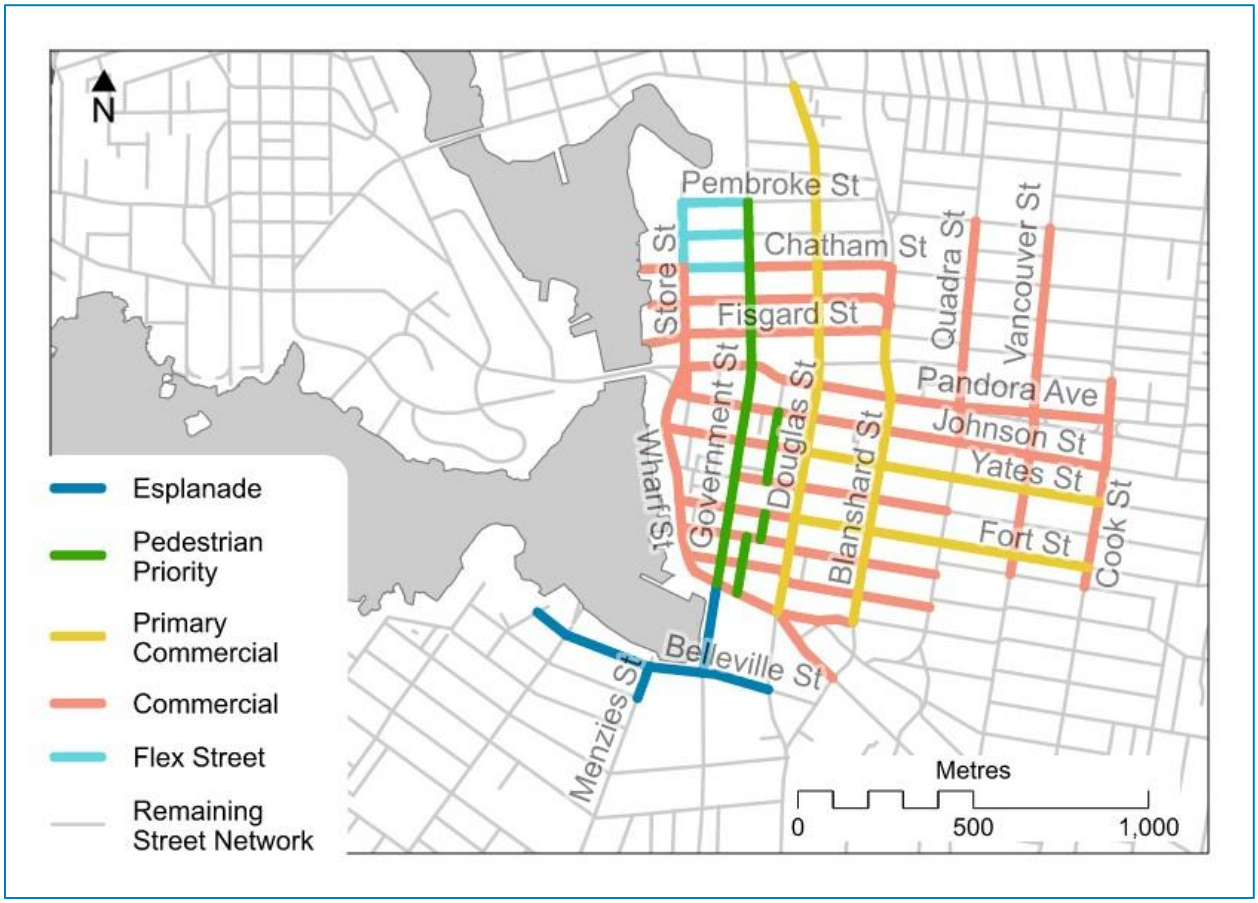
[3] A Pedestrian Zone meeting desired widths is the priority. The next priority is a Boulevard/Furnishing Zone to provide space for street trees, a buffer between pedestrians and motor vehicles, and street furnishings.

[4] If space for the Boulevard/Furnishing Zone is limited due to existing and non-remediable site constraints, a minimum of 0.5 m is to be added to the Pedestrian Zone if it is adjacent to the roadway. A constrained width for the Pedestrian Zone (1.8 m for Multi-family Residential and Local Streets, 2.0 m for Commercial Streets and Major Streets) should only be considered when a Boulevard/Furnishing Zone and Frontage Zone objectives are met.

[5] See City of Victoria zoning bylaws and relevant City General Urban Design Guidelines for building setbacks.

[6] Areas of high pedestrian activity (peak volumes of 400 pedestrians per 15-minute period or greater).

MAP 2: DOWNTOWN SIDEWALK WIDTH TYPOLOGIES



4.5.7. Through-Block Pathways

4.5.7.1. The City has a network of through-block pathways (also known as cut-through pathways)—connections between properties that improve pedestrian access, and in some areas, support biking and rolling. These pathways are strategically located to provide direct routes through long city blocks, enhancing accessibility and encouraging active transportation by increasing connectivity. In the downtown core area, they may align with or complement mid-block crossings (i.e., crosswalks). Priority for new through-block pathways will be given to locations that:

(a) support continuity of greenways and key pedestrian routes;

(b) improve access to major destinations, including:

i. frequent or rapid transit stops and hubs;

ii. community villages and town centres;

iii. parks and recreation facilities; and

iv. schools.

(c) enhance pedestrian permeability through large redevelopment sites;

(d) connect no-through streets; and

(e) provide connections on especially long blocks (i.e., blocks identified in the downtown core area plan and 250 m or greater outside of the downtown core area).

4.5.7.2. A standard right of way width of 4 m, or 3 m where constrained (i.e., constrained by existing buildings or landscape features such as bylaw specified trees) is required for through-block pathways– which is necessary to ensure adequate space for mobility, as well as potential lighting and/or fencing. The city may consider a statutory right of way for through-block pathways.

4.6. Bike and Roll Facilities

4.6.1. General Design Guidance

4.6.1.1. Bike and roll facilities accommodate a growing mode shift for micro-mobility devices and are a key strategy in the City's mobility policies and goals. Bike and roll facilities vary in design approach and are informed by street classifications and type. Generally, the higher the traffic volume and vehicle speed, the greater need for a designated facility with physical protection from traffic and safe accommodations at intersections. Bike and roll facilities are not intended to exclusively accommodate bikes, but to provide a space for other micro-mobility devices as permitted in the *BC Motor Vehicle Act* and come in a continuum of facility types.

4.6.1.2. Bike and roll facility types are informed by vehicle volumes and speeds, with arterial and collector streets on the cycling network often requiring a designated cycling facility, and traffic calmed streets of < 1,000 vehicles per day (vpd) and < 30 km/h, suitable for shared use facility types—such as neighbourhood bikeways. Bicycle facility selection is informed by design guidance in the BC Active Transportation Design Guide, NACTO Design Guidelines, CROW Design Manual for Bicycle Traffic, and the Transportation Association of Canada (TAC) publications. Bike and roll facilities are to be considered based on the cycling network in the *Official Community Plan* and the associated street type cross section in Part 6 of this ESS Manual.

4.6.2. All Ages and Abilities Network

4.6.2.1. The City of Victoria has initiated an All Ages and Abilities (AAA) Network to make biking and rolling an attractive mode choice for all users, improve road user safety, and to provide sustainable and affordable travel options. AAA facilities are defined by their suitability to accommodate persons aged 8 – 80 years of age and attract new users by addressing safety and comfort concerns associated with conventional facilities. New facility types must aim to meet AAA status or include elements that will enable them to be improved over time to provide the safest facility type that can accommodate a broad range of users and devices. AAA facility types are conditional on street classifications and type and include protected bike lanes, multi-use pathways, advisory bike lanes and traffic calmed neighbourhood bikeways.

4.6.3. Bicycle Facility Types

4.6.3.1. **Multi-use Pathways (AAA):** Multi-use pathways are separated from vehicle traffic and are reserved for unique conditions or environments such as constrained locations, and city parks. The City's mobility hierarchy recognizes pedestrians as the top priority, and it is preferred to separate pedestrians from those biking and rolling in high volume areas. Design guidance for multi-use pathways is informed by the BC Active Transportation Design Guide and facility type is to account for user volumes and widths using sound engineering judgement. For high volume pathways, a wider path with separation for different user types may be required.

4.6.3.2. **Neighbourhood Bikeways and Local Road Shared Use Streets (AAA):** Shared use bike and roll facilities are suitable on streets where vehicle volumes and speeds are less than 1,000 vpd and 30 km/h. All local roads in Victoria are posted at 30 km/h and traffic volumes are intended to be 1,000 vpd or less, resulting in many city streets being safe and comfortable for biking and rolling. Interventions to achieve the target vehicle volumes and speeds include traffic calming as outlined in Section 4.8.7. Design guidance for neighbourhood bikeways is informed by the BC Active Transportation Design Guide.

4.6.3.3. **Protected Bike Lanes (AAA):** Bike and roll facilities on high volume arterial and collector roads (> 3,000 vpd) require a designated space that is physically protected from vehicle traffic and include additional design accommodations at junctions – including intersections, driveways and road crossings. Protected facilities can include uni-directional or bi-directional facilities, with bi-directional facilities requiring more design attention at junctions. Protected bike lanes are separated from traffic by either a concrete median curb, bollards, parked vehicles, boulevards or a raised grade. Spatial allocations are informed by design guidance but are context sensitive and require Engineering judgement. Facility selection is conditional on several factors including the number of junctions, conflict points, available space, access to destinations and network connectivity. Dimensions for the different design scenarios are provided in Table 6 with more separation from vehicle traffic where feasible.

4.6.3.4. **Advisory Bike Lanes (AAA):** Collector streets with moderate traffic volumes (1,000 vpd to 2,500 vpd) and low vehicle speeds (<30km/h) may be suitable for advisory bike lanes. This design approach can be supplemented with neighbourhood bikeway design elements. Design elements include a shared two-way yield street for vehicles (3m – 4.5m vehicle lane) that utilize the advisory bike lanes (1.5m – 2.0m) which are indicated by a dashed line and include a buffer when adjacent to curb side parking. Design guidance for advisory bike lanes is evolving and currently informed by NACTO Design Guidelines, BC Active Transportation Design Guide and the CROW Design Manual for Bicycle Traffic and continues to require sound engineering judgment in their use.

4.6.3.5. **Junctions and conflict mitigation (AAA considerations):** To complement AAA bike and roll facilities, design interventions at junctions, such as driveways and intersections are a key design element that require attention to ensure a safe and comfortable facility while balancing the operation needs of other road users. Design interventions include additional paint markings, traffic signal improvements, and signage, and is elaborated on in Section 4.9.

TABLE 6: PROTECTED BIKE LANE WIDTHS

Facility Width [1]		Facility Separation	Additional Information
Recommended Minimum	Range		
Uni-Directional Bike Lane			
2.2 m	1.8 - 2.6 m	Adjacent to concrete median (0.4 - 1.0 m).	Ideal median width of 0.6 m to accommodate signage in the median.
2.2 m	1.8 - 2.4 m	Adjacent to bollards centred in buffer (0.4 - 1.0 m).	Flex bollards with reflective collars spaced at 4 m intervals.
2.0 m	1.8 - 2.4 m	Adjacent to parking (0.7 - 1.0 m buffer).	Parking stalls adjacent to buffer require 2.2 - 2.6 m of space and parking not to impede sightlines or cause doors to open across the cycling facility. To support accessibility, a grade raised facility or wheelchair let downs in the sidewalk are encouraged.
2.0 m	1.8 - 2.4 m	Adjacent to pedestrian refuge islands and landscaped medians that are 2.4 - 3.0 m wide.	Landscaping with street trees and green stormwater infrastructure encouraged whenever possible.
2.0 m	1.8 - 2.4 m	Grade raised bike lanes to be separated from the road by a 0.2 m curb with a beveled curb to be used at driveways.	Encouraged adjacent to narrow sidewalks, at pedestrian crossings, at parking stalls, in constrained right of ways and in the downtown core and urban villages.
Bi-Directional Bike Lane			
3.6 m	3.0 - 4.0 m	Adjacent to concrete median (0.6 - 1.0 m).	Conflict paint and supplemental warning signage encouraged at all driveways and intersections
3.6 m	3.0 - 4.0 m	Adjacent to parking (0.7 - 1.0 m buffer).	Consider accessible parking.
3.6 m	2.6 - 4.0 m	Adjacent to pedestrian refuge islands and landscaped medians that are 2.4 - 3.0 m wide.	Landscaping with street trees and green stormwater infrastructure encouraged whenever possible.
3.4 m	2.6 - 4.0 m	Grade raised bike lanes to be separated from the road by a 0.2 m curb and a beveled curb to be used at driveways.	Encouraged adjacent to narrow sidewalks, at pedestrian crossings, at parking stalls, in constrained right of ways and in the downtown core and urban villages.

[1] Facility width measured from curb face to curb face unless otherwise noted in the table and from centre of paint lines and total dimensional needs to account for facility width and facility separation.

4.6.3.6. **Conventional and Transitional Facilities (not AAA):** In addition to the All Ages and Abilities network, the City has a legacy cycling network which is largely composed of painted bike lanes and buffered bike lanes. These facilities do not offer physical protection and have limited design interventions at junctions, such as intersections and driveways. While AAA bike and roll facilities continue to be the desired outcome of new active transportation investments, incremental improvements in constrained locations are a strategy to consider as part of the transition over time to AAA facilities. Typical facility widths are identified in Table 7 with further guidance in the BC Active Transportation Design Guide.

TABLE 7: CONVENTIONAL AND TRANSITIONAL FACILITY WIDTHS

Facility Type	Facility Width	Facility Separation	Additional Information
Painted Bike Lane	1.5 - 2.0 m	N/A	An absolute minimum dimension of 1.5 m acceptable in unique design situations. Curb side parking is discouraged where bike lane is less than 2.0 m.
Buffered Bike Lane	1.5 - 2.0 m	0.4 - 0.6 m	Design should consider how buffered bike lanes can be upgraded to future protected bike lanes. Curb side parking is discouraged where bike lane is less than 2.0 m.

4.6.3.7. **Bicycle Parking and Bike Share Facilities**: Bicycle parking and end-of-trip facilities support the bike and roll network by providing secure, convenient options for parking bikes or micro-mobility devices. Bike racks are placed throughout the city in Furnishing Zones and bike corrals. End-of-trip facilities, encouraged as part of transportation demand management, may include secure storage, changerooms, and other amenities. On-street racks within rights-of-way must be inverted U style, offering two frame contact points. When installed on sidewalks, racks require at least 0.9 m clearance on all sides (1.2 m preferred for oversized bikes) and from the curb. In bike corrals, racks need a minimum depth of 1.8 m and a 1.2 m offset from adjacent racks, with angled orientation recommended toward the bike lane.

4.7. Transit Facilities

4.7.1. General Design Guidance and Transit Priorities

4.7.1.1. Transit facilities are an integral component of the city transportation network. Street designs on public transit routes are required to make provision for existing bus routes and stops, as well as consider future transit facilities in street renewal and development. Street design on transit routes is to align with the most current design guidelines referenced below. See Section 4.8.5 for vehicle lane widths on transit routes as well as within the documents referenced in Section 4.7.1.2.

4.7.1.2. The Transit Priority Network Map can be found in the *Official Community Plan* and identifies existing and planned frequent and rapid transit corridors. Transit movements are to be prioritized on these corridors and follow the following references:

(a) BC Transit Rapid Bus Implementation Strategy;

(b) BC Transit On-Street Infrastructure Design Guideline;

(c) BC ATDG: Design Guide for Bus Stops Adjacent to Cycling Infrastructure; and

(d) NACTO Design Guidelines.

4.7.1.3. To improve the reliability and travel time of transit, transit priority measures are to be implemented according to Table 8. A road dedication may be required to accommodate the strategies in Table 8.

TABLE 8: TRANSIT PRIORITY MEASURES BY STREET CLASSIFICATION AND TYPE

Street Classification	Transit Priority Measures	Additional Information
Arterial A Streets	Turn Restrictions, Signal Timing and Transit Priority, Bus Queue Jump Lanes, and Dedicated Bus Lanes.	Flex and/or ancillary zones to be utilized for enhanced bus stops.
Arterial B Streets	Turn Restrictions, Signal Timing and Transit Priority, Bus Queue Jump Lanes, and Peak Hour Parking Restrictions. In-lane transit stops may be considered where there remains a general-purpose vehicle travel lane in the same direction (i.e. two or more lanes in the same direction).	
Collector A and Collector B Streets	Introducing changes at major intersections, such as turn lanes and parking restrictions, to better accommodate transit movements and improve road safety and accessibility. In-lane transit stops may be considered.	
Collector C and Local Streets	Collector C and Local Streets are more suited for local and on-demand transit and not included on the Transit Priority Network.	Typically, lower vehicle volume streets.

4.7.2. Bus Stops

4.7.2.1. **Bus Stop Locations**: Locating new bus stops and the rebalancing of existing stops to improve transit access, are to be implemented on the transit priority network, with a focus on improving transit service and accommodating existing and future land use. Locating bus stops near or at major intersections ensures transfers are safe, seamless, while also facilitating transit priority measures. Preferences for bus stop locations are found in the BC Transit On-Street Infrastructure Design Guidelines.

4.7.2.2. **Bus Stop Design**:

(a) bus stops are to be aligned with the following design guidelines:

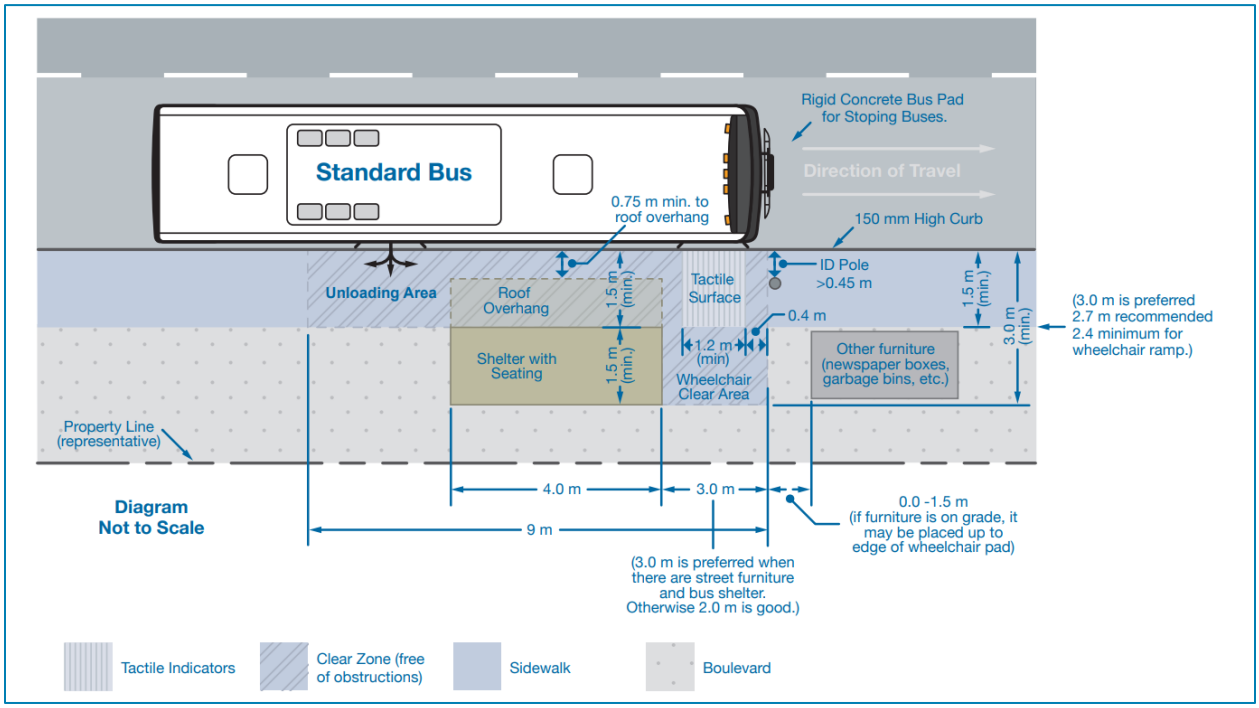
i. BC Transit On-Street Infrastructure Design Guideline;

ii. National Association of Transportation Officials (NACTO) Transit Street Design Guidelines; and

iii. BC ATDG: Design Guide for Bus Stops Adjacent Cycling Infrastructure.

(b) Figure 4 provides a typical bus stop layout. Where the transit priority network overlaps with the cycling network, the following additional design guidelines are to be utilized to ensure best practice is followed for bus stop accessibility and that road safety measures are incorporated for all users into designs.

FIGURE 4: TYPICAL BUS STOP LAYOUT (BC TRANSIT INFRASTRUCTURE DESIGN GUIDE)



4.7.2.3. **Rigid Bus Slabs**: Rigid bus slabs are to be provided on the transit priority network, with a primary focus at stops that accommodate high-capacity buses or see a high frequency of buses, such as on arterial streets and regional routes. Reinforced bus slabs must be designed and installed as per the Supplementary Drawings. Areas with pre-existing or new concrete road bases may be exempted from providing a rigid bus slab.

4.7.2.4. **Bus Shelters and Associated Amenities**:

(a) the provision of high-quality transit shelters and waiting areas are key to ensure transit is both accessible and comfortable year-round. The following criteria are to be followed, with alternative specifications or design considered at the discretion of the Director Engineering per the *Works and Services Bylaw*:

i. the bus shelter type is to be determined by the BC Transit Shelter Program Manual;

ii. alternate bus shelter designs may be considered so long as they meet core criteria such as seating capacity, weather protection, lighting, accessibility, and maintenance;

iii. bus shelter concrete pads are to be installed as per specifications provided by the City or BC Transit;

iv. bus shelters are to be provided at the cost of development on the Transit Priority Network or as provided by the City or BC Transit in other instances; and

v. bus shelters warranted under the BC Transit Shelter Program Manual are to be installed by BC Transit.

4.7.3. Rapid Transit

4.7.3.1. Major investments in public transit for the region are guided by the BC Transit Victoria Region Transit Future Plan, the BC South Island Transportation Plan, and the CRD Regional Growth Strategy. As the region and mobility partners prepare higher orders of transit, space on corridors identified for rapid transit must be protected in street renewal. Interim improvements must be made that support public transit ridership growth and strengthen the case for rapid transit, such as:

(a) higher orders of mass transit, including Light Rail Transit, must be considered in frontage design on Douglas Street when implementing interim street improvements. This includes highway dedication and protection, and mobility enhancements at future station locations; and

(b) transit priority, including dedicated bus lanes at strategic locations as well as queue jump lanes, must be incorporated on Hillside Avenue between Douglas Street and Shelbourne Street in street renewal. This includes highway dedication and protection, and mobility enhancements at major intersections.

4.7.4. Mobility Hubs

4.7.4.1. The provision of mobility hub elements and associated space are to be provided at mobility hub locations identified in the *Official Community Plan* and as outlined in the Rezoning and Development Policy.

4.8. Motor Vehicle Facilities

4.8.1. References and Design Principles

4.8.1.1. Motor vehicle facilities occupy the share of the City's right of way and are essential for transit, goods movement, and emergency response. While the City is not expanding its road network due to built-out conditions, it recognizes that some people and businesses will continue to rely on private vehicles. To support these trips, the City will invest in traffic signal optimization, prioritize accessible and curbside loading zones, and provide parking in key locations—while continuing to encourage more trips by active transportation and transit.

4.8.1.2. The City's street classification (*Streets and Traffic Bylaw*, Schedule A) and corresponding cross sections (Part 6, ESS Manual) informed by vehicle volumes and capacity needs, with a larger allocation of space for vehicles on arterials (> 8,000 vpd) and collector streets (1,000 to 8,000 vpd) and less on local streets (< 1,000 vpd) where vehicle complexity is reduced. Design guidance is informed by cross sections associated with the various street classifications and types. Additional design guidance is provided by the TAC design publications including the TAC Geometric Design Guideline for Canadian Roads, as well as MUTCD, and sound engineering judgment.

4.8.2. Traffic Volumes and Speeds

4.8.2.1. Street design and accommodation for motor vehicle traffic is informed by desirable vehicle speeds and traffic volumes. Street speed limits in the City are either 30 km/h or 40 km/h, with the exception of Douglas and Blanshard Streets north of Caledonia Street. Maximum speed limits of all City streets are provided in the *Streets and Traffic Bylaw*.

4.8.2.2. Street design requirements are designated by street classification and mobility user needs. These street classifications have been in part informed by the volume thresholds identified in Table 9. Volumes, alongside land use and mobility networks inform street type and associated cross section and design considerations.

TABLE 9: VEHICLE VOLUME THRESHOLDS AND MOBILITY NETWORKS

Street Classification	Right of Way Width	Volume Thresholds (Vehicles Per Day)	Additional Information
Arterial A	30 m	> 18,000	Includes high volume vehicles streets, including Rapid Bus connections and streets connecting to provincial highways. Ancillary zones can provide opportunities for right turn lanes and additional laning capacity.
Arterial B	25 m	~ 8,000 - 18,000	Accommodate all mobility networks.
Collector A	23 m	~ 3,000 - 8,000	Collector A Streets accommodate both cycling and transit priority networks, as well as goods and services movement, and emergency response.
Collector B	20 m	~ 3,000 - 8,000	Collector B Streets may accommodate cycling and transit, as well as goods and services movement, and emergency response.
Collector C	20 m	~ 1,000 - 3,000	May accommodate advisory bike and roll facilities at the discretion of the Director of Engineering.
Local A & B	16 - 18 m	< 1,000	Shared travel lane (4.5 - 5.5 m). Local traffic with calming as required to manage vehicle speeds and volumes.
Local C	12.5 - 18 m	< 100	Shared travel lane (4.5 - 5.5 m). Designs to consider accommodating pedestrians through sidewalks or comfort zones in shared streets (as per BC Active Transportation Design Guide).

4.8.3. Design Vehicles and Geometrics

4.8.3.1. Intersection design is heavily informed by corner curb radii which in turn is shaped by the vehicle tracking of various vehicle turning movements, with right turning movements often being more difficult to accommodate than left turns Where possible, tighter corners with reduced curb radii are encouraged to improve pedestrian facilities (e.g., reducing road crossing distances, greater space for pedestrian ramps, and slower vehicle speeds). Finding the right balance between road geometry that accommodates anticipated vehicles such as trucks, buses and emergency vehicles while considering the needs of other road users is to be managed through vehicle tracking analysis and design strategies conditional on the design vehicle and the control vehicle.

4.8.3.2. Qualified professionals use a design vehicle to set characteristics of the roadway. In informing street design, a design vehicle (a routine user for whom the street is designed) is selected based on road users and mobility networks, as well as a control vehicle (one that only occasionally uses the street) which can prevent the overdesign of a facility. Street elements are tailored to ensure the safety of vulnerable road users while accommodating the design and control vehicle. These strategies may include the use of roll over curbs, curb aprons, painted gore areas or mountable medians. Table 10 identifies the design and control vehicle that inform curb radii and intersection geometry, with Fire trucks being the ultimate control vehicle. All streets in Victoria's road network can and will be served by emergency services, including fire, police, and ambulance.

4.8.4. Motor Vehicle Lane Accommodations

4.8.4.1. Motor vehicle lane capacity, or the maximum number of vehicles that can reasonably pass through a point within a given time under prevailing traffic conditions, often informs roadway design including the need for turn lanes. The City's cross sections in Part 6 identify vehicle lane approaches for various street classifications and types and identify where left turn lanes would be applicable and notes when right turn lanes could be applicable. Additional turn lane requirements may be required on approaches to intersections and to support distinct signal phasing strategies. More details are provided in Table 11 and Section 4.9.

4.8.4.2. Vehicle laning supports various design vehicles and turn radii while accommodating traffic volumes and volume needs. Laning is conditional on street classifications and type with typical conditions identified in Table 11, with accommodations potentially required conditional on traffic modelling, signal phasing, and turning movement needs.

TABLE 10: INTERSECTION CLASSIFICATION AND LANE TYPES

Intersection Classification	Design Vehicle	Control Vehicle	Additional Information
Arterial A at Arterial A	Heavy Single Unit Truck (HSU)	Tractor/Semi Trailer with standard 53' trailer (WB-20)	Conditional on intersection geometry and mobility network – Truck routes to accommodate WB-20's and FTN network to support a standard public transit bus – both conditional on road geometry.
Arterial A at Arterial B	Medium Single Unit Truck (MSU)	Heavy Single Unit Truck (HSU)	Conditional on intersection geometry and mobility network – Truck routes to accommodate WB-20's and FTN network to support a standard public transit bus – both conditional on road geometry.
Arterial B at Arterial B	Medium Single Unit Truck (MSU)	Heavy Single Unit Truck (HSU)	Conditional on intersection geometry and mobility network – Truck routes to accommodate WB-20's and FTN network to support a standard public transit bus – both conditional on road geometry.
Collector A & B Roads	Medium Single Unit Truck (MSU)	Heavy Single Unit Truck (HSU)	FTN network to support a standard public transit bus a standard public transit bus.

TABLE 11: INTERSECTION CLASSIFICATION AND LANE TYPES

Intersection Classification	Left Turn Lane	Through Lanes	Right Turn Lane
Arterial A	To be provided at intersections and high-volume driveway entrances. May also require two-way centre left turn lanes.	Typically, 1-3 travel lanes in each direction.	Conditional on traffic volumes, signal phasing, turning movements, and turning volumes.
Arterial B	To be provided at intersections and conditional on traffic volumes and signal phasing. May also require two-way centre left turn lanes.	Typically, 1-2 travel lane in each direction. A minimum of 1 general purpose travel lane in each direction.	Conditional on traffic volumes, signal phasing, turning movements, and ROW capacity.
Collector A, B, and C	Conditional on volume thresholds and engineering judgement.	A minimum of 1 general purpose travel lane in each direction.	Conditional on volume thresholds and engineering judgement.
Local Roads	N/A	Adequate space for two-way vehicle movements and no centre line.	N/A

4.8.5. Lane Widths

4.8.5.1. Vehicle lane width is conditional on street classification and mobility network considerations, including the truck and emergency response network and transit priority network. Given the right of way width constraints within the City's existing street network and competing interests, travel lanes are measured from curb face and lane width may be reduced at the discretion of the Director of Engineering per the *Works and Services Bylaw*. Table 12 outlines lane width minimums in various conditions.

TABLE 12: STREET CLASSIFICATIONS AND LANE WIDTHS

Street Classification	Lane Type	Minimum Width	Additional Information
Arterial A & B	Curb Lane	3.3 m (3.5 m preferable)	Additional width of roadway to be allocated at intersections to support turn lanes on transit routes. Bus Only Lanes to be 3.5 m.
	General Purpose Through Lane	3.0m (3.3 m preferable)	3.3 m minimum through laning pinch points including median islands or median curbs.
	Left or Right Turn Lane	3.0 m	Any reduction in minimum lane width due to unremedial constraints to follow professional engineering recommendation and at the discretion of the Director of Engineering.
	Two-Way Left Turn Lane	3.0 m	
Collector A	General Purpose Through Lane	3.0 m	3.3 m for Truck or Frequent Transit Routes.
Collector B & C	3.0 m	3.0 m	Centreline optional for Collector streets < 4,000vpd or at the discretion of the Director of Engineering.
Local Roads	General Purpose Through Lane	4.0 - 5.0 m	Shared two-way travel lane intended for volumes < 1,000 vpd.
One-Way Local Roads	General Purpose Through Lane	4.0 m	Minimum of 4.0 m clearance to accommodate emergency access – applies to street plazas and street closures.

4.8.6. Parking and Curbside Management

4.8.6.1. **Functional Curb Priorities**: Different curbside uses are implemented to facilitate efficient use of the right of way, support adjacent uses and progress towards City mobility goals. The prioritization of functional curbside uses is defined in Go Victoria, and the applicable facilities and activities for each functional use are shown in Table 13.

TABLE 13: FUNCTIONAL CURB USES

Function	Description	Activities / Facilities
(1) Sustainable Mobility	Space dedicated for the movement of transit, pedestrians, cyclists, and micromobility.	Sidewalks
		Cycling Facilities
		Transit Priority Facilities
		Accessible Passenger Loading
(2) Access for People	Curb designated for transit boarding and alighting, and pick-up and drop-off of passengers.	Transit Stops
		Accessible Parking
(3) Greening and Activation	Space curbside including economic activity, social spaces, landscaping, and the urban forest intended to activate the street.	Street Trees, Planting
		Parklets
		Patios
(4) Delivery and Loading	Curb dedicated to short-term delivery and loading for a variety of vehicle types, along with passenger pick-up and drop-off activities.	Local and Commercial Deliveries and Loading
		Passenger Loading
		Flex Zones
(5) Short-Term and Shared Parking	Space dedicated to vehicle parking that is managed by the City for maximum efficiency and the benefit of users and surrounding land uses.	Carshare Parking
		Metered Parking
		Time-Limited Parking
		Bicycle Parking
		Transit Layover
(6) General Parking	Space dedicated to on-street parking that is intended for longer stays, either with extended or no time limits.	Regulated Parking
		Unregulated Parking

4.8.6.2. **Curbside Regulations and Criteria**: Effective curbside management plays a key role within the functional aspects of urban and transportation planning. By the strategic allocation of curbside regulations, the City optimizes the use of limited space, enhances road safety, reduces traffic, and efficiently accommodate a variety of needs including parking, loading, and accessibility.

4.8.6.3. There are nine basic types of curbside regulations used within the City:

(a) Unrestricted Parking;

(b) Limited Time Parking;

(c) Residential Parking;

(d) Metered Parking;

(e) Transit Zones;

(f) Loading Zones;

(g) Reserved Zones;

(h) Stopping Prohibited; and

(i) Parking Prohibited.

4.8.6.4. Within both capital and development projects, transportation staff must be consulted to determine the appropriate type of curb regulation to be installed on a street. For the installation of parking meters, Parking Services is also consulted. All curbside restrictions must be in accordance with the *Street and Traffic Bylaw* and *Motor Vehicle Act*.

4.8.6.5. Apart from parking meters, all regulatory signage, as well as the design and layout of parking and loading facilities, are to follow the MUTCD, supplemented by the Sign Code Inventory with placement guided by the BC Manual of Traffic Signs and Pavement Markings, with specific criteria identified below and in Table 14:

(a) on-street parking and loading zones are not to encroach within the driveway flares;

(b) Loading and Reserved Zones are to be supplemented with white curb paint to indicate the length;

(c) Transit Zones are to be supplemented with red curb paint;

(d) No Stopping and Parking Prohibited Zones may be marked by the application of yellow curb paint in limited circumstances where the curb length does not warrant regulatory signage; and

(e) for continuous stretches of curbside regulations, the maximum distance between signs must not exceed 40 m.

TABLE 14: CURB REGULATIONS AND DESIGNS

Curb Regulation	Minimum Length	Design Criteria
General Purpose Parking	6.0 m	Stall length may be 5.5 m for first or last stalls.
Passenger Loading	6.0 - 12.0 m	Must include a hardscape connection per MMCD to the adjacent sidewalk for side loading. Where feasible, Passenger Zones should be constructed with side and rear loading in accordance with Accessible Parking Standard Supplementary Drawings.
Commercial Loading	10.0 - 18.0 m	Should include a hardscape connection to the adjacent sidewalk with a pedestrian ramp per Supplementary Drawings for rear loading.
General Loading	6.0 - 12.0 m	Should include a hardscape connection per MMCD to the adjacent sidewalk for side loading and a connection with pedestrian ramp per Supplementary Drawings for rear loading.
Accessible Parking	As per Supplementary Drawings	
Electric Vehicle Charging	6.0 m	To include an EV pavement decal and parallel parking pavement markings.

4.8.7. Traffic Calming

4.8.7.1. Traffic calming refers to measures and street design elements aimed to reduce vehicle volumes and speeds, and to improve safety for all street users. Traffic calming measures and engineered elements can be used as one treatment or in combination with one another to traffic calm a street. The City's traffic calming program is currently focused on school and park zones, local roads with over 1,000 vehicles/day, and local roads with documented operating speeds of 40 km/h or above (85th percentile). Low-volume collector roads without transit service and not designated as an emergency route, are also eligible for traffic calming treatments. Traffic calming treatments city-wide are to be determined and prioritized through a data-driven and equity-based approach.

4.8.7.2. This guidance supplements the following with Victoria-specific considerations:

(a) TAC Geometric Design Guideline for Canadian Roads;

(b) TAC Guide to Traffic Calming;

(c) BC Active Transportation Design Guide;

(d) TAC Application Guideline for Speed Display Devices; and

(e) NACTO Design Guidelines.

4.8.7.3. The traffic calming toolbox includes the measures outlined in Section 4.8.7.4 to Section 4.8.7.9.

4.8.7.4. **Speed Humps**: Speed humps are most suitable for Victoria's local streets classification, with documented operating speeds 40 km/h and above. Speed humps are to be spaced apart 6 0m to 120 m depending on the road segment, offset at least 30 m from stop signs. Speed humps are a form of vertical deflection, designed to slow vehicle speeds to 30 km/h or less. Profile details as found in the Supplementary Drawings. Speed cushions are another form of vertical deflection that can be used on neighbourhood bikeways, and in areas where emergency services request improved access.

4.8.7.5. **Traffic Diverters and Full Closures**: Traffic diverters and closures are to be considered when daily traffic volumes on a local street are > 1,000 vehicles per day. Local streets with significant vehicle directional bias, i.e. documented at greater than 75%, are also eligible for traffic diversion measures. Traffic diverters and full closures are generally to be installed with temporary materials for a trial period and then converted to permanent materials as opportunities allow. Both types of measures introduce opportunities for placemaking, public seating, landscaping and plaza elements.

4.8.7.6. **Curb Extensions, Traffic Circles, and Central Medians**: Curb extensions, traffic circles, and central medians reduce the width of the street right-of-way and act as horizontal deflection to slow down drivers and increase protection for pedestrians. They can be installed through civil concrete works or installation of temporary materials such as pre-cast traffic calming curbs, paint, planters, and/or bollards. They are included in the Supplementary Drawings. Curb extensions and central medians are most suitable for intersection and crosswalks on all road classifications, while traffic circles (not to be confused with roundabouts in the intersections section) are most suitable for local road intersections.

4.8.7.7. **Raised Intersections**: Raised intersections are similar to speed humps and other vertical deflection elements, as they reinforce slow speeds and encourage motorists to yield to pedestrians at the crosswalk. In Victoria, raised intersections are to be considered and prioritized around pedestrian generators, including school and park frontages, and/or village centres. Raised intersections are most suitable for local and collector streets. See Section 4.9.5 for further details on continuous sidewalk treatments.

4.8.7.8. **Pre-Cast Traffic Calming Curbs**: As specified in the Supplementary Drawings, precast curbs can be utilized for a variety of traffic calming treatments, i.e., installation of a temporary curb bulge, median island and so on. These curbs are to include warning and/or regulatory signage.

4.8.7.9. **Speed Reader Boards**: Speed reader boards are dynamic devices that measure the speed of an approaching vehicle and digitally display the speed to the vehicle's driver. These are most suitable on arterial and collector roads and can be mounted on existing City streetlight poles or purpose-built pole installations. They are not to be placed at crosswalks or signalized intersections, to reduce driver distraction. Speed Reader Boards are best suited to roads with one lane of travel per direction; however, they can also be used on multi-lane roads (i.e., 2 travel lanes per direction) if required.

4.8.8. Driveways

4.8.8.1. The number of permitted driveways, as well as their locations, width, and clearances, are to be in accordance with the *Highway Access Bylaw*. Driveways are to be designed and constructed in accordance with the Supplementary Drawings. Certain movements into driveways may be restricted for safety and/or traffic management.

4.8.8.2. Driveways are to maintain a clear line of sight between those using the driveway and road users, especially vulnerable road users including pedestrians and cyclists, as outlined in the *Highway Access Bylaw*.

4.8.8.3. Sidewalks are to remain at a cross slope of 1-3% through driveway crossings where possible. Design options for reducing cross slope through the driveway include increasing the grade of the driveway drop between the sidewalk and gutter when separated sidewalk and/or between the sidewalk and property line, rather than across the sidewalk. Where necessary, the design of driveway crossing flares may be adjusted to achieve accessible sidewalk grades at the discretion of the Director of Engineering per the *Works and Services Bylaw*.

4.8.8.4. Driveways must be designed in a manner that does not contribute stormwater from private lands onto the right-of-way. Stormwater is to be captured and contained within the lands as per the *Sanitary Sewer and Stormwater Utilities Bylaw*.

4.8.8.5. Where bike lanes front a driveway, the bike lane is to be designed in a manner that extends a continuous material, grade, and cross slope through driveway crossings.

4.8.9. Truck and Emergency Response Routes

4.8.9.1. Larger vehicles, such as industrial trucks and fire trucks also necessitate special design accommodations to ensure safe and effective operation. Truck and emergency response network maps are to be consulted for primary routes as well as other sections of Part 4 for design accommodations, including Section 4.8.3 and Section 4.13.

4.8.9.2. Additionally, pavement deterioration should be considered in road paving.

4.9. Intersections

4.9.1. References and Design Principles

4.9.1.1. Intersection design is a critical component to help ensure the safe operation and performance of the City's mobility networks while providing accommodation for all road users. Intersection design must manage the competing demands and constraints of traffic congestion, environmental sensitivity and cost effectiveness. Intersections are also where most collisions occur on the City's street network and become increasingly complex with greater user volumes and require different treatments that reflect the street classifications and type.

4.9.1.2. Intersection design requires additional considerations including traffic signals, regulatory signage and paint markings which is informed by the TAC Manual for Uniform Traffic Control Devices for Canadian Roads, TAC Geometric Design Guideline for Canadian Roads as well as additional TAC publications, MMCD, and sound engineering judgment.

4.9.2. Active Transportation Considerations

4.9.2.1. **Designing Intersections for Pedestrians**:

(a) most trips either are, or stop and end with, a pedestrian trip. Intersection design must carefully consider and prioritize pedestrians to increase pedestrian safety, access and comfort. The potential for pedestrian/vehicle conflicts approaching and within the intersection is of paramount importance to the qualified professional and must consider conflict management, driver visibility of pedestrians, positive guidance and pedestrian favourable intersection control. At all intersections, pedestrian refuge areas and corner letdowns must:

i. align with pedestrian desire lines;

ii. be free of obstructions and provide sufficient width for pedestrian volumes;

iii. minimize road crossing distances;

iv. encourage reduced turning vehicle speeds;

v. ensure adequate vertical clearances to overhead appurtenances;

vi. ensure appropriate catch basin placement; and

vii. assist individuals experiencing physical, sensory, mental, intellectual or cognitive barriers, including but not limited to those with vision loss, hearing loss, and those using mobility aids.

(b) pedestrian refuge areas at signalised intersections must provide easy access to pushbuttons for wheelchair users and pushbutton audible locator tones for low-vision and blind users. Signalised intersections will also provide audible pedestrian signals to indicate when the visible 'walk' signal indication is displayed for low-vision and blind pedestrians. Refer to other sections of this document and Part 4, Section H, for additional signalised intersection design guidance.

4.9.2.2. **Designing Intersections for Cyclists**: On the cycling network, intersection design must carefully consider and prioritize bike lanes and other cycling specific treatments to increase cyclist safety, access and comfort. The potential for bicycle/vehicle conflicts approaching and within the intersection is of paramount importance to the qualified professional and must consider conflict management, driver visibility of cyclists, positive guidance and cyclist favourable intersection control. At signalised intersections, cycling specific treatments and technologies that improve cyclist safety and access should be considered including dedicated bicycle phasing and bicycle detection. Refer to Part 4, the TAC Geometric Design Guideline for Canadian Roads and the Supplementary Drawings for additional signalised intersection design guidance.

4.9.3. Curb Ramps and Tactile Indicators

4.9.3.1. Curb ramps are required at all intersections to facilitate pedestrian crossings and accommodate wheelchair and mobility scooter users, those with strollers and people with limited mobility. Ramps must be installed at all corners and provide pedestrian crossing direction with a dual curb ramp design preferrable. Tactile indicators including tactile warning surface indicators (TWSI's) and tactile directional indicators (TDI's) should be included to provide additional guidance to those with limited vision. In addition to access at intersections, curb ramps also provide improved access at mid-block crosswalks, accessible parking stalls and passenger loading zones, and are context specific requiring guidance from the City's transportation team. Design guidance for curb ramps and tactile indicators is provided in the Supplementary Drawings, BC Active Transportation Design Guide and supplemented by sound engineering judgement.

4.9.4. Curb Bulges and Returns

4.9.4.1. Curb bulges or curb extensions reduce crossing distances for pedestrians, provide traffic calming and can improve sightlines where curbside parking is permitted on approach to an intersection or mid-block crossing. Curb bulges also support transit priority through additional space for boarding and alighting, as well as reducing dwell time for transit. Where space permits, curb extensions can also support rainwater management. Design guidance is provided in MMCD, BC Active Transportation Design Guide, NACTO Design Guidelines, and supplemented by sound engineering judgment to inform curb bulge design.

4.9.4.2. Curb returns or radii are informed by the managed and design vehicle and conditional on intersection geometry. Curb returns must be designed in accordance with the Geometric Design Guideline for Canadian Roads and supplemented by sound engineering judgement. For additional design guidance also see Section 4.8.3.

4.9.5. Continuous Sidewalk at Intersections

4.9.5.1. At intersections where local roads meet higher volume streets such as arterial or collector roads, continuous sidewalk designs are encouraged to enhance accessibility and pedestrian safety by prioritizing pedestrian movements over vehicle movements. Continuous sidewalk designs are to introduce a grade change that reduces vehicle speeds and helps alert motorists to the transition from a higher classification road to a lower classified local road. Design guidance for continuous sidewalks is provided in the Supplementary Drawings.

4.9.6. Intersection Sight Triangles

4.9.6.1. Intersection design must account for drivers' clear view of conflicting vehicles on approach to and across corners at an intersection. Categorized as approach sight triangles and departure sight triangles, intersection sight triangles are key intersection design elements that enhance road user safety. Intersection sight triangles provide drivers with a triangular area at each quadrant of the intersection that is free of obstruction so drivers can see conflicting vehicles in the horizontal and vertical planes to allow for slowing or stopping before colliding in the intersection.

4.9.7. Signalized Intersections

4.9.7.1. Intersections on arterial streets may require a traffic signal where the street intersects with another collector or arterial street and as a result of either vehicle, pedestrian or cycling volumes, conflicts, safety concerns or collision history, as a result of recommendations in a traffic impact assessment (TIA), and sound engineering judgement. Design is guided by TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada, and Part 4, Section H, of this ESS Manual.

4.9.8. Non-Signalized Intersections

4.9.8.1. Lower volume intersections associated with collector and local streets are less likely to require a traffic signal but will require right-of-way traffic control and safe and accessible accommodation for pedestrian facilities, and bike and roll facilities at the intersection. Design guidance for non-signalized intersections is provided by the TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada, TAC Geometric Design Guideline for Canadian Roads and other publications including the TAC Canadian Roundabout Design Guide, and BC Active Transportation Design Guide.

4.9.9. Crosswalks

4.9.9.1. Guidance on pedestrian crossing control are detailed in the following references:

(a) TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada;

(b) Pedestrian Crossing Control Guide; and

(c) BC Active Transportation Design Guide.

4.9.9.2. Victoria-specific design criteria for crosswalks are found in Table 15.

4.9.10. Protected Intersections and Bicycle Conflict Markings

4.9.10.1. Intersection design is elevated on the All Ages and Abilities routes to mitigate a higher risk of user conflict where there is an increase of bike and roll activity. Protected intersection design is a relatively new field of design and is informed by evolving design standards to mitigate conflicts and better accommodate all road users. In addition to addressing intersections safety, conflict points such as driveways, pedestrian and bike crossings and facility transitions are key design considerations to support safety objectives.

4.9.10.2. At intersections, user conflict can be managed by either 'protection through time' which includes strategies such as dedicated signal phases to separate high volume movements of various users, or 'by protection through space' providing horizontal offsets to improve sightlines and approach angles to mitigate conflict. Design guidance is currently provided in the BC Active Transportation Design Guide, NACTO Design Guidelines, the CROW Design Manual for Bicycle Traffic and Transportation Association of Canada (TAC) publications. Given the complexity and design trade-offs, engineering judgement continues to play a large role in design direction.

4.9.10.3. Turn volume thresholds across protected bike lanes must be considered for dedicated signal phasing time needs. Additional design guidance is provided in the BC Active Transportation Design Guide and Part 4, Section H.

4.9.10.4. In addition to protection through time and space strategies, signage and paint markings such as cross-rides (also known as elephant's feet and described in the BC Active Transportation Design Guide) and regulatory signage can support safety objectives with the design strategies in Table 16 encouraged.

TABLE 15: CROSSWALK TREATMENTS

Street Classification	Volume Thresholds	Road Configuration	Crosswalk Treatment
Arterial and Collector Roads	> 5,000 vpd	1 travel lane per direction	(a) Rectangular Rapid Flashing Beacon, including required pole and base, RA-4 L/R signs, accessible curb ramps, accessible pushbutton, and tactile mats. (b) Can include overhead RA-4 signage for higher volume roads and in Downtown context.
Arterial and Collector Roads	> 5,000 vpd	2 travel lanes or more in each direction	Pedestrian Signals or Full Signals (refer to signals section).
Collector Roads	1,000 - 5,000 vpd	1 travel lane per direction	(a) Marked Crosswalk, including standard RA-4 L/R signs, accessible curb ramps, tactile mats and vertical post reflectors. (b) Raised crosswalks, as per the City's standard detail, can also be considered in this context. (c) Crosswalk designs to incorporate where possible, future proofing for Rectangular Rapid Flashing Beacons, including poles and bases, junction boxes and/or conduit/power source.
Local roads	<1000 vpd	Shared travel lanes	(a) Marked Crosswalk, including standard RA-4 L/R signage, accessible curb ramps, tactile mats, vertical post reflectors. (b) Marked crosswalks on local streets to be prioritized around schools, parks, and community centres and other pedestrian generators.

TABLE 16: PROTECTED BIKE LANE TYPES AND CONFLICT MITIGATION

Facility Type	Conflict Location	Design Strategy
Two-way protected bike lane	Signalized Intersection	Review need for dedicated signal phasing, including cross rides (MMA and elephants feet paint markings), and regulatory signage of no right on red or motorists yield to bikes conditional on signal phasing.
Two-way protected bike lane	Driveway entrance/exit	Include cross rides (MMA and elephants feet paint markings) and consider bike crossing warning signs for higher volume driveways.
One-way protected bike lane	Signalized Intersection	Review need for dedicated signal phasing, including cross rides (MMA and elephants feet paint markings), and regulatory signage of no right on red or motorists yield to bikes conditional on signal phasing.
One-way protected bike lane	Driveway entrance/exit	Include cross rides at high volume driveways – low volume driveways (single family residential) can omit green MMA in replacement of a bike stencil.
Shared use bike lane	Driveway entrance/exit	Include cross rides at high volume driveways – low volume driveways (single family residential) can omit green MMA in replacement of a bike stencil.

4.9.11. Roundabouts

4.9.11.1. Roundabouts are circular intersections (not to be confused with traffic circles in the traffic calming section) designed to improve traffic flow and safety. They require vehicles to slow down, as they approach the intersection, yielding to traffic already in the roundabout and pedestrian and bikes at designated crossings. Design guidance is provided by the TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada, Transportation Association of Canada (TAC) publications including the Canadian Roundabout Design Guide and the TAC Geometric Design Guidelines for Canadian Roads.

4.9.12. Curbs, Medians, and Bollards

4.9.12.1. Civil design elements including curbs, gutters and medians are heavily informed by MMCD and supplemented by the City's standard drawings for custom applications. Table 17 shares the median and curb applications.

4.9.12.2. Bollards are applied in a variety of contexts and include the following applications in Table 18—details are provided in the Supplementary Drawings.

TABLE 17: CURB AND MEDIAN TYPES

Design Setting	Curb Type [1]	Additional Information
Roadway Curb and Gutter	C4 Barrier Curb and Gutter as per MMCD Specifications	C4 roll over curb on local roads in select design contexts for local B and local C low volume and narrow streets.
Barrier Free Access	Inverted Gutter	Applicable at mid-block crossings, parking bays, and grade raised applications.
Centre Landscaped Median with Plantings	Landscape Median Type 1	Landscape median to provide additional space to buffer plantings from traffic and provide space for Maintenance staff.
Centre Landscaped Median with Turf	Landscape Median Type 2	This narrow landscape median is for landscaped medians with turf where less maintenance.
Protected Bike Lane	Bike Median Type 1	The most common bike median ranging in size from 0.3 - 1.0 m.
Protected Bike Lane	Bike Median Type 2	A mountable bike median to support large turning movements, emergency service needs, and constrained conditions.
Grade Raised Bike Lane	Custom Raised Bike Lane Curb Type 1	A bevel curb to provide a vertical offset between a grade raised bike lane and sidewalk to better delineate the two areas and address accessibility needs.
Quick Build Protected Bike Lane	Temporary Median Curb	Pre-cast barrier curbs are used for either quick build or interim facilities.

[1] See Supplementary Drawings for corresponding drawings.

TABLE 18: APPROPRIATE BOLLARD USE

Design Setting	Bollard Type	Additional Information
Protected Bike Lane Adjacent to Travel Lane or Parking Stall	City Bollard (850 mm black bollard)	Installed at 4 m intervals adjacent to vehicle lane and at 6 m intervals adjacent to parking stalls. Bollards to include parking decals and U-ring when adjacent to parking stall and include reflective collars.
Low Impact Locations	Knock Down Bollard	Bollards with replaceable sign face and commonly used as hazard marking on bike medians.
Quick Build Retrofits	Flex Bollard (1000 m)	Applications include quick build traffic calming and pedestrian improvement projects.
Removable Bollards	Threaded City Bollard	Threaded bollards to support different roadway conditions e.g., time-of-day pedestrian closures.
Downtown Public Realm Plan (DTPR)	Various Bollard Types as Specified in DTPR	Various fixed bollards to align with design characteristics of different districts as detailed in the downtown public realm plan.

4.10. Roadway Markings and Traffic Signals

4.10.1. Roadway markings are informed by the TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada, Transportation Association of Canada (TAC) design publications including the TAC Geometric Design Guideline for Canadian Roads, and MMCD. Roadway markings are to correspond with street classification design speeds and any deviations from design guidance is at the discretion of the Director of Engineering (see *Works and Services Bylaw*). No centreline is required on local roads and may be optional on collector streets at the discretion of the Director of Engineering (see *Works and Services Bylaw*).

4.10.2. Traffic signage is informed by TAC Manual of Uniform Traffic Control Devices (MUTCD) for Canada, Transportation Association of Canada (TAC) design publications including the Geometric Design Guideline for Canadian Roads, and MMCD. A preference for reduced signage is desired. Supplementary signage and applicability can be found in the Sign Code Inventory.

4.11. Pavement Design

4.11.1. Given the built-out nature of Victoria, new road construction is rare and pavement renewal and restoration is more common practice. Pavement design is required to comply with MMCD. Road base conditions are variable and documented in the City's online mapping system.

4.11.2. Concrete road base may be maintained when the cost to remove and install a MMCD compliant base is greater than the cost to repair and retain the concrete road base.

4.12. Lanes, Alleyways, and Undeveloped Local C Streets

4.12.1. In lower density residential areas of the City, there are a limited number of lanes, traditionally providing rear access for vehicle parking. Many of these lanes are underdeveloped and do not meet servicing standards, such as width and loading requirements for fire access or garbage and recycling pick-up. A minimum right of way width of 6m is desired for lanes, with road dedication sought through development where necessary to meet this.

4.12.2. In areas where a lane is undeveloped and lacks curb and gutter, the existing condition is encouraged to remain in the interim with vehicle access de-emphasized, until a time that a street renewal project can take place along the entirety of the lane. Lane conditions, such as limited paved areas with grass verges are encouraged to promote rainwater management, as well as treatments that prioritize pedestrians.

4.12.3. In areas where a Local C street has been undeveloped for vehicle access, a more naturalized condition is encouraged to remain with vehicle access de-emphasized. Local street conditions that retain and expand urban forestry as well as improve pedestrian access and comfort are encouraged. Subdivision that relies on an undeveloped Local C street is discouraged.

4.13. On-Site Access Widths

4.13.1. Access widths must be no less than 4.5 m and must be increased to 6.0 m (or greater) where that access route is necessary for emergency services (Fire).

4.13.2. Where that access route minimum is determined to be 6.0 m (or greater), it is to be designed to accommodate the appropriate design vehicle and have sufficient bearing to support the design vehicle.

4.13.3. The sufficiency of the access route must also:

(a) consider the location of the nearest available fire hydrant along the route for which emergency services may travels; and

(b) consider the turning radii of the design vehicle gaining access.

4.13.4. Access routes widths must be no less than the minimum dimensions as provided for in *Highway Access Bylaw*, or as determined necessary by the Approving Officer in the case of subdivision.

4.13.5. Lane(s) are not considered suitable access unless that lane is designed to meet the requirements as outlined in Section 4.12. The following may be required:

(a) widening as a condition of development or subdivision; and

(b) road dedication to establish suitable width.

B. Electrical

4.14. General

4.14.1. Introduction

4.14.1.1. In 2019, the City of Victoria created the GoVictoria Sustainable Mobility Strategy to address significant advancements in mobility and transportation. The GoVictoria guiding policies establish the importance of pedestrian safety and the need to better accommodate all modes of transportation within the City and roadway lighting and traffic signals are critical pieces of infrastructure that support these key guiding policies. Roadway lighting is important for reducing collisions, improving safety, and improving perception of personal security by heightening visibility. Traffic Signals and other traffic control devices provide a system of conveying messages to road users so that they can be advised of traffic regulations, be aware of road characteristics and conditions, and have the necessary information for route selection. Communication networks are implemented throughout the City to provide connectivity and allow data exchange between various devices and systems.

4.14.1.2. The following are included in this Part 4, Section A:

(a) General Design and Analysis;

(b) Design of Electrical Infrastructure;

(c) Electrical Services and Power Distribution;

(d) Street Lighting Design and Analysis;

(e) Traffic Signal Design and Analysis;

(f) Design of Rectangular Rapid Flashing Beacons; and

(g) Communication Systems.

4.14.2. Resources

4.14.2.1. In addition to the *Works and Services Bylaw*, including this ESS Manual, the documents outlined in this section provide background information relevant to street lighting and traffic signal design and should be referenced as required.

4.14.2.2. Codes and Regulations:

(a) CAN / CSA C22.1 – Canadian Electrical Code (CEC) and relevant information bulletins issued by Technical Safety BC;

(b) CAN / CSA S6 Canadian Highway Bridge Design Code;

(c) *Motor Vehicle Act*;

(d) *Motor Vehicle Act Regulations Division 23 – Traffic Control Devices*; and

(e) WorkSafeBC regulations.

4.14.2.3. Standards and Guidelines:

(a) ANSI / IES RP-8 Recommended Practice: Roadway Lighting;

(b) BC Hydro standards and guidelines – Including but not limited to the following:

i. BC Hydro Requirements for Secondary Voltage Revenue Metering (750V and Less);

ii. BC Hydro Distribution Standards – ES43 Overhead Electrical;

iii. BC Hydro Distribution Standards – ES53 Underground Electrical; and

iv. BC Hydro Distribution Standards – ES54 Underground Civil.

(c) BC MoTT – Pedestrian Crossing Control Manual for British Columbia;

(d) CAN / CSA Standards;

(e) Fortis BC Standards;

(f) IES LM-79 – Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products;

(g) IES LM-80 – Approved Method: Measuring Luminous Flux and Colour Maintenance of LED Packages, Arrays and Modules;

(h) IES TM-15 – Luminaire Classification System for Outdoor Luminaires and Addendum A: Backlight, Uplight, and Glare (BUG) Ratings;

(i) IES TM-21 Projecting Long Term Lumen Maintenance of LED Light Sources;

(j) IES RP-43-22 – Recommended Practice: Lighting Exterior Applications;

(k) ITE and IMSA Traffic Signal Maintenance Handbook;

(l) MMCD;

(m) MMCD Design Guidelines;

(n) TAC Accessible Pedestrian Signals Guidelines;

(o) TAC Bikeway Traffic Control Guidelines for Canada;

(p) TAC Guide for the Design of Roadway Lighting;

(q) TAC Manual of Uniform Traffic Control Devices;

(r) TAC Pedestrian Crossing Control Guide; and

(s) Telus Standards.

4.14.2.4. City Documents:

(a) Supplementary Specifications and Drawings;

(b) Approved Products List;

(c) CAD Standards;

(d) Guidelines for Villages and Town Centres; and

(e) Design Guidelines for Downtown Core Area Plan.

4.14.3. Permits

4.14.3.1. The following permits are generally required for electrical works:

(a) right of way and utility crossing permits for crossing electrical transmission lines, highways, and regional/provincial/federally regulated pipelines; and

(b) Technical Safety BC Electrical permits. Permits to be submitted through City of Victoria Permits and Inspections.

4.15. Design of Electrical Infrastructure

4.15.1. Introduction

4.15.1.1. This section provides an overview of the electrical infrastructure that comprise street lighting and traffic signal systems. Key infrastructure includes underground civil-electrical components, poles, luminaires, signal components, and wiring.

4.15.1.2. The contractor must be responsible for all new infrastructure during the construction phase of a project. Where new equipment is found to be faulty or inoperable at the time of completion, the contractor is responsible for replacing the equipment in a timely manner at no extra cost to the owner.

4.15.2. Civil-Electrical Infrastructure

4.15.2.1. Civil-Electrical infrastructure refers to components of the electrical system that are typically installed underground and require close coordination with civil works. Due to the age of the City's electrical infrastructure, there will be existing installations that no longer meet CEC requirements. Addressing any non-compliant issues is a requirement of all modifications to existing infrastructure. The following subsections outline design requirements for conduits, concrete bases and junction boxes or vaults which make up the underground infrastructure required to support traffic signal and street lighting systems.

4.15.2.2. General requirements for street lighting and traffic signal conduits include the following:

(a) all existing and proposed street lighting and traffic signal conduits must be shown on the electrical drawings;

(b) conduits are typically installed in a trench and must be Rigid Polyvinyl Chloride (RPVC; unplasticized);

(c) conduit stubs must be provided from the last luminaire or junction box to the edge of the project extents to allow for the possibility of future expansion;

(d) empty conduits must have a 6 mm nylon pull string;

(e) empty conduits must have capped ends installed;

(f) bell ends with an inner curved surface must be installed on all conduits prior to pulling wire;

(g) conduits must be installed to meet standard clearance requirements from utilities; and

(h) conduits must not be installed within soil cells or tree wells.

4.15.2.3. Underground conduits and associated electrical infrastructure must be installed and/or modified at any time that the highway lands are disturbed and excavated in such a manner that a property frontage, portion (or entirety) of City block, is altered for the purpose of linear works and services such as when a sidewalk is installed or widened. Coordinate requirements with the City as required.

4.15.2.4. Specific requirements for street lighting conduit and traffic signal conduit are outlined in Section 4.15.3 and Section 4.15.4, respectively.

4.15.3. Street Lighting Conduit

4.15.3.1. Conduit design requirements for roadway lighting are as follows:

(a) conduit for roadway lighting must typically be 2 x 53 mm to each pole base and installed underground, connecting the lighting panel to the luminaires; and

(b) typically, conduits must be installed under the sidewalk and should be aligned in a manner that avoids tree roots, soil cells, tree-root wells, and tree protection zones as outlined by the landscape architect.

4.15.4. Traffic Signal Conduit

4.15.4.1. The minimum traffic signal conduits at signalized intersections must be as follows:

(a) typically, 6 x 53 mm RPVC for new road crossings. All conduit crossings at an intersection must include an equal number of conduits;

(b) 2 x 53 mm RPVC for road crossings to support RRFB installations;

(c) 5 x 53 mm + 1 x 27 mm to the traffic controller;

(d) 2 x 53 mm conduits to each signal pole. Conduits must exit on the same side of the base;

(e) conduit to other devices must be determined based on wiring requirements; and

(f) signals must be designed with at least one empty conduit for future signal upgrades.

4.15.5. Concrete Bases

4.15.5.1. The base design for poles typically depends on the base reaction forces of the fully loaded pole as well as the condition of the soils around the base. It is the qualified professional's responsibility to confirm the suitability of standard concrete base designs for each area and situation. The qualified professional is responsible for fully investigating utilities to determine if the base will fit in the proposed area.

4.15.5.2. Concrete bases must typically be pre-cast. Various base styles and typical luminaire poles used are listed in the City of Victoria MMCD Supplementary Electrical Detail Drawings and in the MMCD. All concrete bases must include 2 x 53 mm RPVC conduits, unless noted otherwise. If a concrete base needs to be customized to accommodate utilities, it must be designed by a structural engineer registered with EGBC. Concrete bases may also be cast into retaining walls, bridge parapets, and other structures with the approval of the structural engineer designing the structure. Proper backfill and compaction of the soil around the base are critical to ensure the pole remains plumb over time.

4.15.5.3. Bases must be installed as close to finished grade as possible, while maintaining sufficient elevation to allow the V-groove to drain. Typically, the top of the base must be set 10 mm to 50 mm above finished grade, with the bottom of the V-groove installed at minimum flush with grade with grade to prevent water from pooling in the base. Where pushbuttons are installed on poles, hardscape must be provided around the pole to allow access to pushbuttons.

4.15.5.4. New concrete bases should be installed 1m or more from existing concrete bases. The backfill around concrete bases must meet the requirements noted in MMCD Standard Detail CE1.25 – Pole Base installation. Where backfill requirements cannot be met, or new excavation encroaches within the required backfill zone of existing bases, the City must be notified, and the contractor must implement measures to ensure the structural integrity of the existing pole and base are not compromised.

4.15.5.5. Examples of an unacceptable concrete base installation (i.e., top of base installed > 50 mm above grade) and an acceptable concrete base installation (i.e., base installed < 50 mm above grade) are shown in Figure 5 (a) and Figure 5 (b), respectively.

FIGURE 5: EXAMPLES OF (A) UNACCEPTABLE AND (B) ACCEPTABLE CONCRETE BASE INSTALLATIONS

a)



b)



4.15.6. Junction Boxes and Vaults

4.15.6.1. Junction boxes must be shown on the drawings and must be used to connect multiple conduits that converge, or to terminate conduit runs. In-ground junction boxes are typically plastic, concrete, or fiber-reinforced concrete. They should be placed outside of driving surfaces, driveways, wheelchair ramp areas, sidewalks, and cycle paths. Junction boxes must be placed in accessible locations with enough workspace surrounding them.

4.15.6.2. Junction boxes must be provided where required to connect conduits, where conduits split in multiple directions, or to terminate conduit runs. They are typically installed in association with luminaire poles and traffic signals.

4.15.7. Junction Boxes and Luminaire Poles

4.15.7.1. Where luminaires are installed continuously along a corridor, junction boxes should be placed at every luminaire pole. The maximum run from a junction box to a device (e.g., luminaire pole, receptacle, etc.) can be up to 5 m. Pull boxes are required every 75 m for ease of cable pulling.

4.15.8. Junction Boxes and Traffic Signals

4.15.8.1. Junction boxes are typically installed at all four quadrants of an intersection where a traffic signal is installed. Each junction box provides a point of connection for a road crossing, and allows a close tie-in point for signal poles. An additional junction box may be required near the traffic controller depending on the proximity between the controller and the main junction box in the same quadrant.

4.15.8.2. The approved junction boxes and corresponding standard details are listed in the City of Victoria Supplementary MMCD Electrical Detail Drawings and are as follows:

(a) street lighting junction boxes: Up to 8 x 53 mm conduits;

(b) traffic signal junction box: Up to 16 x 53 mm conduits;

(c) large Concrete Junction Box (MMCD E2.3 and E2.4;)

(d) concrete vault (MMCD E2.5); and

(e) Type 10 Junction Box (Provincial Ministry of Transportation): Only used for fibre splicing where a vault cannot be accommodated. Communication junction box lids should be labelled with "COV COMM."

4.15.8.3. Installation must be in accordance with MMCD standards.

4.15.8.4. Junction box size varies with the number of conduits installed.

4.15.8.5. Examples of an unacceptable junction box installation and an acceptable junction box installation (i.e., bell ends installed, empty conduits, and complete with end caps) are shown in Figure 6 (a) and Figure 6 (b), respectively.

FIGURE 6: EXAMPLES OF (A) UNACCEPTABLE AND (B) ACCEPTABLE JUNCTION BOX INSTALLATIONS

a)



b)



4.16. Lighting, Pedestrian, and Decorative Poles

4.16.1. General

4.16.1.1. Pedestrian or Decorative lighting may be required by the City. Refer to Public Realm Guidelines for specific types of poles to use in these areas.

4.16.1.2. Unless decorative poles are required by the City, luminaire poles must be davit style in accordance with the Supplementary Drawings - SD 4.1a. The standard pole height is 9.14 m. If a non-standard pole height is required to meet specific design requirements, the qualified professional must request approval from the City.

4.16.1.3. All steel poles must be hot dipped galvanized. Refer to Public Realm Guidelines for specific RAL numbers where powder coating is required. The qualified professional must coordinate with the City to confirm.

4.16.1.4. In addition to standard davit poles, the City may request decorative lights in specific areas. Refer to SD E4.22a and SD E4.22b of the Supplementary Drawings for details. If non-standard decorative poles are used the qualified professional must provide the following to the City for coordination:

(a) shop drawings of the proposed poles, complete with pole design criteria and specifications;

(b) specifications of the proposed luminaires; and

(c) drawings detailing the assembled pole and luminaire heads.

4.16.1.5. A typical streetlight is made of three main components, the luminaire fixture, the luminaire pole, and the concrete base. The standard pole height is 9.14 m. If a non-standard pole height is required to meet specific design requirements, the qualified professional must request approval from the City.

4.16.2. Pole Placement

4.16.2.1. Along with providing a lighting design that indicates the required lighting, the qualified professional must ensure that the supporting structures are designed and placed in a manner that will minimize conflict with the travelling public. When possible, signal poles should be designed to accommodate luminaire arms to reduce clutter and costs.

4.16.2.2. When placing poles, the qualified professional must consider possible issues such as:

(a) obstructing the view of surrounding signs or making them less legible due to luminaire brightness;

(b) height restrictions due to surrounding overhead power lines, or bylaws;

(c) maintenance and clearance from roadway if placing lighting poles in medians; and

(d) potential safety risks on maintenance personnel servicing and maintaining lighting equipment.

4.16.2.3. Luminaire pole bases must be installed parallel to the curb and must stay clear of driveways and wheelchair ramps. The qualified professional must refer to BC Hydro ES43 Overhead Electrical standards for minimum clearances to overhead powerlines, and to BC Hydro ES54 Underground Civil for minimum clearances to underground infrastructure.

4.16.2.4. The qualified professional should place the pole base 0.6 m from curb face to face of pole. If a pole base must be placed further than 1.0 m, alignment must be confirmed with the City. Qualified professional to ensure coordination with public realm and accessibility requirements.

4.16.3. Luminaries

4.16.3.1. All proposed luminaires must match products defined in the City's Approved Products List.

4.16.3.2. Typical roadway luminaires are generally controlled in groups via relays (contactors) or controlled individually with photocells mounted on the luminaires.

4.16.3.3. The qualified professional may propose products that are not on the Approved Products List; however, as the style, colour, and shape of LED luminaires varies greatly, alternate products must be reviewed and approved by the City before the design is finalized. The qualified professional is responsible for ensuring that any products that are not on the Approved Products List meet or exceed all requirements and lighting levels required.

4.16.3.4. All new luminaires installed must be dark sky compliant and must be specified in accordance with the City of Victoria Approved Products List. The correlated colour temperature (CCT) of luminaires must be 3000 K in the downtown core, 4000 K at signalized intersections, RRFB crossings, and mid-block crosswalks (outside of the downtown core), and 3000 K everywhere else.

4.17. Traffic Signal Poles and Pole Mounted Devices

4.17.1. General

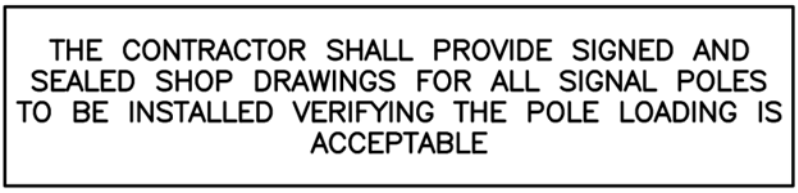
4.17.1.1. Standard signal poles are defined in the City of Victoria Supplementary Drawings. Traffic signal poles must be designed to accommodate the weight and length of signal arms, pole mounted devices, wind loading and ice loading. Pole loading calculations must be verified using one of the following two methods:

(a) during the design stage, the designer must prepare preliminary pole loading calculations (for example, by using the Ministry of Transportation and Transit Pole Capacity Program) to ensure designed poles are likely to achieve acceptable loading when calculated; or

(b) a structural engineer working as part of the design team completes pole loading calculations to ensure all poles pass loading requirements.

4.17.1.2. The qualified professional, or professional engineer engaged assigns responsibility to the contractor to ensure all signal and sign poles (excluding streetlight poles) pass loading requirements with the pole manufacturers prior to ordering the poles.
Figure 7 is to be added to all drawings.

FIGURE 7: DRAWING BLOCK TO VERIFY POLE LOADING



4.17.1.3. All pole changes or relocations that occur during construction must be verified by the qualified professional that the new pole loading remains within acceptable limits. To accommodate potential pole shifts during construction, qualified professionals must consider leaving additional capacity on new signal poles during the design stage.

4.17.2. Pole Placement

4.17.2.1. Refer to the City of Victoria MMCD Supplementary Electrical Detail Drawings SD E5.14a to SD E5.14c for standard pole configurations at intersection corners, typical pole offsets, and standard design notes. To ensure compliance with accessible pedestrian signal (APS) requirements and to facilitate access for pedestrians of all abilities, poles should be positioned at the outer edges behind the curb and gutter or along the edge of the sidewalk.

4.17.2.2. The preferred placement for signal poles is 0.6 m from the center of pole to face of curb. If a greater offset than 1.0 m is required confirm with the City. Pole placement must be determined based on the specified geometry of each intersection, accounting for property corners and pedestrian walkways, and must avoid locations adjacent to driveways and wheelchair ramps. Standard offsets for different poles are as follows:

(a) pedestrian pushbuttons should be located 300 mm from the edge of the crosswalk where possible, with a maximum allowable offset of 1000 mm;

(b) where drop curbs are installed between pedestrian surfaces areas and pushbuttons, pushbuttons must be located a maximum of 300 mm from the face of the drop curb (at the crosswalk); and

(c) cyclist pushbutton poles should be located offset a maximum of 600 mm from the pole center to the face of the curb (or drop curb) and must be a maximum of 1000 mm from the stop bar. Where possible, stop signs must be mounted on the same pole that cyclist pushbuttons are installed on.

4.17.2.3. If utility conflicts are present during design, or are discovered during construction, the qualified professional must ensure pole placement meets the minimum requirements for accessibility. Any deviations from the approved design must be confirmed with the City.

4.17.2.4. For intersections, a signal pole and a signal post or luminaire with signal heads should be situated at the curb return. Pole arms should ideally be oriented at a 90° angle to the road's centerline, unless the intersection is skewed, in which case, they should be parallel to the pedestrian crosswalks to prevent obstructing the view of the signal heads for other approaches. In some cases, a custom flange may be required. The qualified professional must identify where custom flanges are required and must confirm details with the City.

4.17.2.5. Key factors influencing pole placement include:

(a) ensuring easy access to pushbuttons for all pedestrians;

(b) maintaining wheelchair accessibility around poles and from pushbuttons to wheelchair ramps;

(c) avoiding damage from vehicle turning radii;

(d) managing conflicts with underground and overhead utilities;

(e) guaranteeing visibility of vehicle and pedestrian heads;

(f) enabling access to cyclist pushbuttons without requiring cyclists to dismount their bicycles; and

(g) aesthetics – Poles should be placed in coordination with landscape design or other infrastructure in the public realm.

4.17.2.6. A minimum clearance of 1.8 m of walking space must be maintained on all sidewalks for accessibility. Where a clearance of 1.8 m cannot be maintained, consult with the City or the project civil qualified professional.

4.17.3. Signal Heads

4.17.3.1. Ensuring proper signal head placement is crucial as signal heads must be visible to pedestrians, cyclists and motorists. Each signal movement must have at least one primary head and one secondary head for each direction. Key factors influencing signal head visibility include the road's geometry, design speed, vehicle spacing, and both the horizontal and vertical positioning of the signal heads. All signal displays must be LED, and tunnel visors must be installed on all signal heads.

4.17.3.2. The need for pedestrian, bicycle and tertiary signals is unique to each intersection and must be determined by the qualified professional. Signal head locations are generally follows:

(a) primary signal heads: Positioned over the roadway where a vehicle is aligned to enter (refer to Table 19 below for additional details);

(b) secondary signal heads: Installed on the left and/or right sides of the roadway where a vehicle is intended to enter;

(c) auxiliary signal heads: Placed to the right of the primary head or at other strategic locations to enhance visibility. Contact the City for specific requirements;

(d) pedestrian signal heads: Mounted on the far side of the intersection, aligned with the marked crosswalk; and

(e) bicycle signal heads: Affixed on both the near and far sides of the intersection, corresponding to the points where cyclists enter and exit the intersection. Contact the City for specific requirements.

4.17.3.3. All primary and secondary signal heads must be oriented in the field to ensure optimal visibility for drivers. All primary signal heads must be equipped with yellow backboards. Secondary and auxiliary signal heads may be equipped with yellow backboards where site conditions require. The need for yellow backboards on secondary and auxiliary signals must be confirmed with the City. All traffic signal backboards must include 75 mm, micro prismatic, retro-reflective tape around the perimeter. Housing for side mount brackets must be powder coated green to match the signal housing. Protected/permissive left turn indications must be bimodal LED type, displaying both yellow and green arrow. Table 19 provides typical mounting and lens requirements for signal heads.

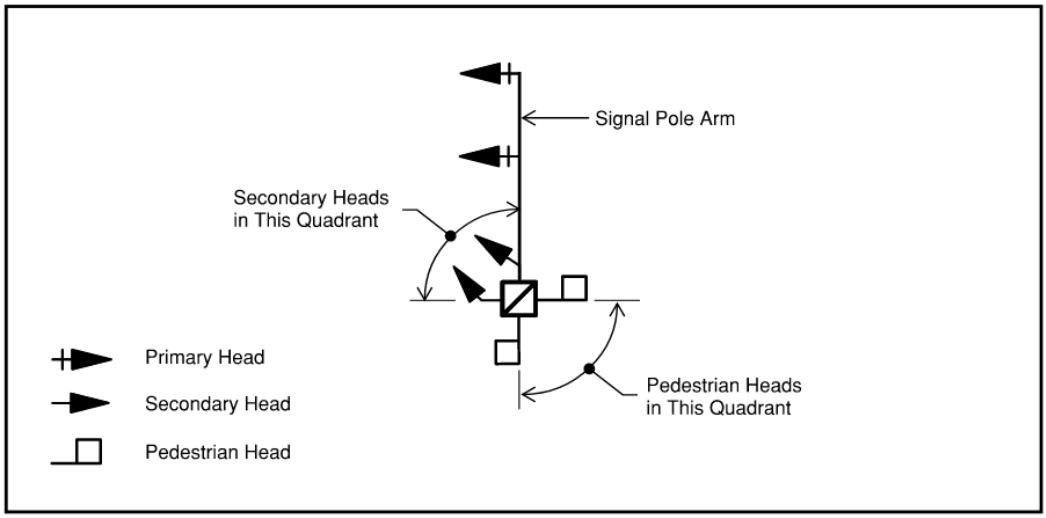
TABLE 19: SIGNAL HEAD MOUNTING AND LENS REQUIREMENTS

Signal Head Type	Lens	Mounting Height
Primary	300 mm diameter round LED lenses for all signal indications.	Mounted with adjustable bracket on signal arm, typically not less than 5.0 m clearance over roadway. Where necessary, a minimum 4.75 m clearance is acceptable.
Secondary	200 mm diameter round LED lenses for all signal indications except arrow indications which must have 300 mm diameter round lenses.	Mounted on signal pole shaft or on signal post 3.5 m from bottom of head to roadway.
Auxiliary	200 mm diameter round LED lenses for all signal indications.	Mounted on a signal pole 4.8 m from bottom of backboard to roadway.
Pedestrian	Single 406 mm x 457 mm LED lens displaying the “walk” and “don’t walk” symbols incorporated into a bi-modal display, which displays both symbols at separate times. A countdown timer must display at the same time as the ‘don’t walk’ symbol.	Mounted on pole shaft 2.5 m from bottom of head to roadway.
Bicycle	200 mm diameter (near side of intersection) and 300 mm diameter (far side of intersection) round LED lenses for bicycle indications.	Mounted on pole shaft 3.0 m from bottom of head to roadway.

4.17.3.4. For primary signal heads, four section heads must be mounted with the middle of the yellow signal centered on the mast arm, and three section heads must be centered between the yellow and red signal heads. Refer to the Supplementary Drawings for typical signal pole elevations and standard mounting heights of all pole mounted equipment.

4.17.3.5. Secondary and pedestrian signal heads should generally be oriented on the signal pole as seen in Figure 8. Confirm with City for preferred signal head locations.

FIGURE 8: SIGNAL HEAD ORIENTATION



4.17.3.6. For straight through movements, primary signal heads must be located on the far side of the intersection and mounted per Table 20.

TABLE 20: STRAIGHT THROUGH MOVEMENT SIGNAL HEAD PLACEMENT

Number of Lanes	Number of Primary Heads	Placement of Primary Heads
One	One	Centered over through lane.
Two	Two	Centered over each through lane.
Three	Two	Centered over lane lines.

4.17.3.7. Primary signal heads must be installed in accordance with Table 21 for all left turn movements.

TABLE 21: LEFT TURN MOVEMENT SIGNAL HEAD PLACEMENT

Type of Left Turn	Signal Head Type	Placement of Primary Heads
Protected/Permissive	4 sections with flashing green arrow and steady yellow arrow	Centered over left-most through lane
Protected – Single Turn Lane	3 sections with steady green arrow	Centered on the left turn lane, either post mounted in the median 2.5m above roadway or mast-arm mounted.
Protected – Two Left Turn Lanes	3 sections with steady green arrow	Centered on the lane line between left turn lanes, either post mounted in median or mast-arm mounted.

4.17.3.8. Refer to SD E12.7 in the Supplementary Drawings for signal head alignment details for various lane configurations.

4.17.3.9. It is important that signal heads are visible to drivers to ensure safe driving conditions. Several factors contribute to signal visibility including the signal head position (vertical, horizontal and longitudinal), the height of the drivers' eyes, and the windshield area.

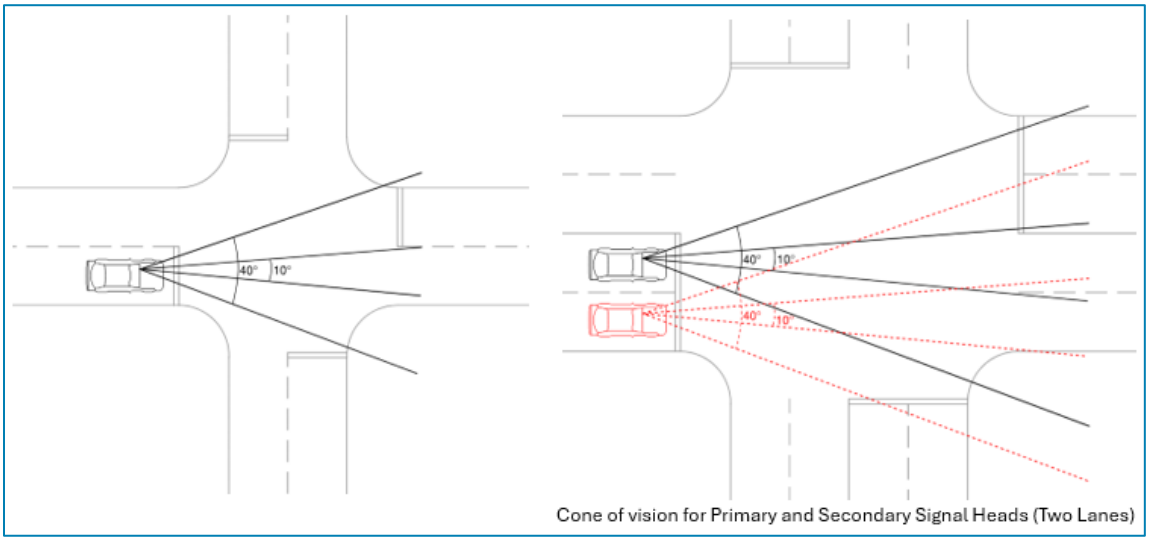
4.17.3.10. In accordance with the MUTCD Section B3.4.1, the horizontal position of signal heads must be as follows (see Figure 9 for details):

(a) all primary heads must be located within a 10° cone of vision for each approach lane;

(b) all secondary heads must be located within a 40° cone of vision for each approach lane; and

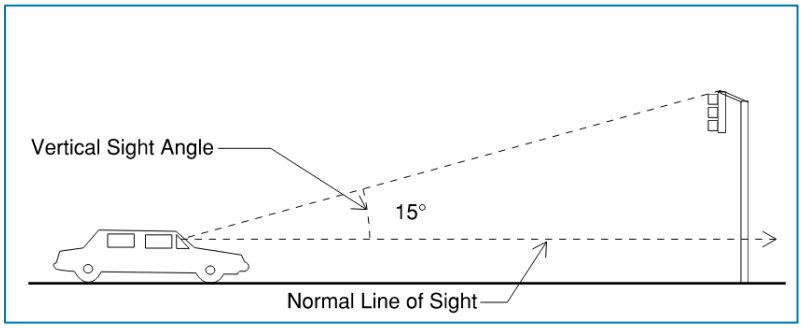
(c) if the 40° cone of vision cannot be met, an additional right side mounted auxiliary head is required.

FIGURE 9: CONE OF VISION FOR PRIMARY AND SECONDARY SIGNAL HEADS (SINGLE LANE)



4.17.3.11. Overhead signals should be located no less than 15 m, and no more than 45 m beyond the stop line. In accordance with MUTCDC Section B3.2.1, overhead signals should be placed within a 15° vertical sight line as shown in Figure 10.

FIGURE 10: VERTICAL LINE OF SIGHT TO OVERHEAD SIGNALS



4.17.3.12. Secondary heads must be located on the far-left side of the intersection adjacent and clear of the roadway. The horizontal positioning of secondary heads must conform to the following guidelines:

(a) single primary head - the secondary head position must be within a 40° horizontal cone of vision;

(b) multiple primary heads - the secondary head position should be placed as close as practical to within the horizontal 40° cone of vision but should not exceed a 60° cone of vision; and

(c) where the 40° cone of vision cannot be met for far-left side secondary heads and there is only one primary head or where there are protected left turn signals, an additional right side mounted auxiliary head will be required.

4.17.3.13. All marked crosswalks at fully actuated signalized intersections must have pedestrian heads and pedestrian pushbuttons except for those crossing free right turn lanes. Intersections in the downtown core are often pre-timed, in which case pushbuttons are not required (APS may still be required – confirm with City). The preferred location for pedestrian signal heads is to be on each side of the crosswalk, in a visible location and in line with crossing bars. Pedestrian signal head locations must be coordinated with the City.

4.17.3.14. The maximum visibility distance of a traffic signal must equal or exceed the minimum stopping distance. If not, the installation of an advance warning sign should be considered. Table 22 below provides visibility distance guidelines based on MUTCD Section B3.4. Note that all speed limits in Victoria are 50 km/h or less. Where visibility requirements cannot be met, coordinate with the City.

TABLE 22: SIGNAL VISIBILITY DISTANCE GUIDELINES

85th Percentile Speed (km/h)	Minimum Visibility (m)	Desired Visibility (m)	Add for % Downgrade (m)		Subtract for % Upgrade (m)	
			5%	10%	5%	10%
40	65	100	3	6	3	5
50	85	125	5	9	3	6

4.17.3.15. The qualified professional must verify that signal poles will not be installed in conflict with street trees or where required must coordinate to have trees trimmed to ensure the visibility of primary and secondary signal heads.

4.17.4. Pedestrian and Cyclist Pushbuttons

4.17.4.1. Where pushbuttons are required to activate the walk signal they must be fully accessible to pedestrians. Qualified professionals must locate the pushbutton on the quadrant of the pole most accessible to pedestrians, see Supplementary Drawings SD 5.14 for typical standard clearances. Qualified professionals must place pushbuttons in appropriate locations for easy pedestrian and wheelchair access left, right, and bi-directional arrows must be indicated to suit.

4.17.4.2. Cyclist pushbuttons must be provided at actuated traffic signals and should be installed on a pole located at the end of the curb radius or where a cyclist would not have to dismount to push the button. Cyclist pushbuttons must be located no more than 0.6 m from the edge of the bicycle crossing path. At half signals, stop signs must be mounted on the same pole that cyclist pushbuttons are installed on. Detection systems such as video or radar must be installed at intersections with a heavy volume of cyclists or where a cyclist pushbutton cannot be placed in an accessible location. Any actuated signals must be able to detect all modes of traffic, including but not limited to pedestrians, cyclists and vehicles.

4.17.4.3. Pedestrian and cyclist pushbuttons must be mounted at 1000 mm to the bottom of the pole.

4.17.5. Audible Pedestrian Signals

4.17.5.1. Audible signal indication is required at every new signal and RRFB crossing in the City. For APS pushbuttons at intersections, audible tones must be chirp and cuckoo, where a cuckoo sound indicates north-south crossings, and a chirp indicates east-west crossings. APS pushbuttons at RRFB crossings require a custom audible message. Qualified professionals to confirm the message with the City prior to installation.

4.17.5.2. Existing audible pedestrian signals mounted to the pedestrian head may remain in place if existing signals are being modified and APS pushbuttons are not suitable. Drawings SD E5.3a of the Supplementary Drawings provides mounting requirements for existing/retrofit situations.

4.17.6. Pedestrian / Cyclist Crossing Control

4.17.6.1. Signalized crossing control can be achieved using various methods, including pedestrian traffic signals, rapid rectangular flashing beacons, or special crosswalks. Qualified professionals should coordinate with the City to determine the need for pedestrian and cyclist crossings, and to confirm the appropriate type of crossing for a given location.

4.17.6.2. **Cyclist/Pedestrian Traffic Signals**: Pedestrian traffic signals, also referred to as cyclist signals, ped/bike signals, or as half signals in TAC, are traffic signals with signal heads only installed on the main street, while the minor street is controlled by stop signs. The traffic signal rests in flashing green until the pedestrian or cyclist push button is pressed. Once the push button is pressed, the main street will turn amber and red and allow the pedestrians and/or cyclists to safely cross or turn, before turning back to flashing green operation.

4.17.6.3. **Rapid Rectangular Flashing Beacons (RRFB)**: Rapid rectangular flashing beacons are discussed in more detail below in this manual.

4.17.6.4. **Special Crosswalks**: Special crosswalks are typically installed at mid-block locations and include the use of overhead signs and flashing lights to warn motorists of the presence of pedestrians at the crossing. Special crosswalks are not typically used within the City, and any proposed use should be discussed with the City only after other options are reviewed.

4.17.7. Signs

4.17.7.1. Signs mounted on poles that are related to intersection control must be shown on traffic signal pole elevations in the design drawings. It is the responsibility of the qualified professional to confirm the required signage by the City, and to cross reference with other disciplines to ensure signage is coordinated across a design package. Required signs are defined in the *Motor Vehicle Act* and the MUTCD, including turn-restriction signs, lane-use signs, one-way road signs, transit signal signs or cyclist signal signs. All signs must be installed with consideration for good driver visibility. Regulatory signs should be located directly beside signal heads.

4.17.7.2. Signs mounted on signal arms must be securely fastened to the signal arm with at least two safety cables, and signs mounted onto pole shafts must be banded to the shaft. Signs mounted on signal arms must be included in pole loading calculations, even if no other infrastructure is installed on the pole. Sign poles must be calculated using the 50-year wind pressure return period in accordance with the MoTT Electrical and Traffic Engineering Manual – Appendix 500.1.

4.17.8. Overhead Devices

4.17.8.1. The requirement for pan-tilt-zoom (PTZ) cameras, above ground detection devices, and communication systems should be confirmed with the City during the design stage as they may be required to be installed or replaced at certain intersections. When mounting devices, the qualified professional should consider the following:

(a) ensure the required view is achievable with the proposed detection mounting equipment;

(b) proximity to overhead utility lines or other overhead conflicts; and

(c) line of sight to the next device is for antennas or radios as required.

4.18. Traffic Signal Infrastructure

4.18.1. General

4.18.1.1. Traffic signal supporting infrastructure refers to signal components that are not covered in Section 4.17 and covers all signal infrastructure that is not physically located on the signal poles. Components include the traffic controller, universal power supplies, and vehicle detection and data collection systems.

4.18.2. Traffic Controllers

4.18.2.1. Traffic controller assemblies include all equipment that makes up the control system for a signalized intersection, including the controller, cabinet, detector cards, flashers and MMU's. All traffic controllers and cabinets are supplied, installed, set-up, tested, and commissioned by the City's electrical crews. The qualified professional must coordinate with the City to verify any location specific requirements.

4.18.2.2. The traffic controller power conductors between the service panel and the traffic controller must be run direct with no splices. A dedicated bond wire must be provided for the traffic controller.

4.18.2.3. Controllers are to be placed in the intersection quadrant which provides the best view of signal operation, is least susceptible to damage, provides a safe and convenient area for maintenance staff, and is located as close as possible to the service panel. Traffic controllers are not permitted to be placed on traffic islands.

4.18.3. Universal Power Supplies

4.18.3.1. The requirement for an Uninterruptable Power Supply (UPS) must be confirmed with the City. The UPS battery must be located between the controller cabinet and the concrete base. UPS are supplied, installed, set-up, tested, and commissioned by the City's electrical crews.

4.18.4. Vehicle Detection and Data Collection

4.18.4.1. The qualified professional must contact the City to confirm the preferred detection type for each intersection. Detection is typically accomplished using above ground traffic detection or induction loops, and pucks or infrared detectors may be used as alternative detection methods where required.

4.18.4.2. **Detector Loops**: Typical detector loop installation details can be found in the Supplementary Drawings, SD E8.1a and SD E8.7a. Regardless of the preferred detection type for an intersection, conduits and junction boxes must be provided at all intersections to accommodate future traffic loops. A minimum of 1-27 mm RPVC stub must be provided per lane for each set of loops, and one additional loop stub must be provided as a spare. Spare stubs must extend past the curb and must be installed at a depth of 75 mm below the roadway. The loop inductance must be greater than the shielded cable inductance (2:1 ratio minimum is required). Details on the detector loop conductor colour coding is provided in Table 23.

TABLE 23: DETECTOR LOOP - CONDUCTOR COLOUR CODING

Lane [1]	Loop Set	
	Stop	Queue
Lane 1	Blue	Yellow
Lane 2	Yellow	Red
Lane 3	Red	Brown
Lane 4	Brown	Orange
Lane 5	Orange	Blue

[1] Lane one is the curb (or slow) lane, including when tails are from the median.

4.18.4.3. **Above Ground Detection**: Above ground detection devices must typically be installed as far out on the signal arm as practical to provide the best field of view. The final mounting of the detection devices must be coordinated with the City prior to installation. Video detection cameras must be labelled by phase, and colour coded in accordance with SD E8.1a of the Supplementary Drawings.

4.19. Wiring

4.19.1. General

4.19.1.1. This section covers typical requirements for wiring luminaires and traffic signal systems, including conductor types and sizes, protective devices, bonding requirements and standard installation methods.

4.19.2. Luminaire Wiring

4.19.2.1. All lighting is typically fed by a BC Hydro electrical service (refer to Part 4 of this ESS Manual). Where existing infrastructure is being relocated or rehabilitated, a condition assessment of the state of the existing electrical system must be performed and the equipment must be removed and replaced where needed.

4.19.2.2. Wiring for street lighting can be installed overhead but should generally be installed underground, as overhead wiring is typically reserved for temporary conditions. The typical method for wiring street lighting is daisy-chained parallel branch circuits using the pole hand-holes and junction boxes as splice points. All electrical wiring design must meet the CAN/CSA Canadian Electrical Code criteria. Conductors must be stranded copper with suitable insulation ratings. Where conductors enter existing thin-walled irrigation-style conduit, RWU must be used. The qualified professional is responsible for conducting voltage drop calculations to determine the proper wire sizes needed. All wiring must be protected with overcurrent devices such as breakers or fuses. Each luminaire must also be protected with an inline fuse (typically 5A) installed in the pole handhole or at the BC Hydro secondary connection.

4.19.2.3. All metallic equipment installed in each lighting system must be connected to a common bonding conductor, which ties into the service panel ground.

4.19.2.4. Minimum wire sizes are shown in Table 24, refer to SD E8.1a in the Supplementary Drawings for additional street lighting conductor notes. All conductors must be stranded.

TABLE 24: MINIMUM WIRE SIZES FOR STREETLIGHTS

Location	Conductor Size
Feeders	#6
JB to Pole	#10

4.19.3. Signal Wiring

4.19.3.1. Signal cables used for signal wiring must run from the controller, through junction boxes, to each signal pole handhole. Signal cables may only be spliced in the traffic controller and in signal pole handholes. Cables must run continuous between traffic controller and signal poles, or between signal poles. Signal cables must be spliced in the handholes to single conductor cables which are run to individual signal heads. Splicing of signal cables is not permitted in junction boxes. Signal cables must be IMSA Traffic Signal cable, Table 25 indicates the size and number of conductors required for each type of signal display.

TABLE 25: SIGNAL WIRING - REQUIRED CONDUCTORS AND SIZING

Signal Type	Number of Conductors	Conductor Size (AWG)
Vehicle	5	14
Left Turn Signal	4	14
Pedestrian	4	14
Bicycle	5	14
Shielded Loops	2	16
Pedestrian Pushbuttons	2	16
Pedestrian Inhibit (Legacy)	2	16
Pre-Emption (120 V)	3	14
Pre-Emption (Low Voltage)	3	20

4.19.3.2. All wiring must be clearly labelled in the junction boxes/hand holes and tested to ensure all conductors are connected to the correct devices/terminals. Bonding conductors must be sized in accordance with the Canadian Electrical Code.

4.20. Planning for Future Expansion

4.20.1. The qualified professional must take appropriate measures to future proof all new infrastructure. Measures may include but are not limited to:

(a) sizing junction boxes appropriately where future conduits may be expected;

(b) providing conduit stubs to the edge of project extents; and

(c) providing spare conduits to accommodate future circuits.

4.20.2. Coordinate with the City to confirm if additional future-proofing measures are required.

4.21. Electrical Services and Power Distribution

4.21.1. General

4.21.1.1. Qualified professionals must confirm the location of suitable power sources for proposed lighting and traffic signal systems, including whether an existing service can be re-used or if a new service must be installed. Power is typically supplied by BC Hydro for street lighting and traffic signal services. The qualified professional must contact the City's Electrical Design Team for final confirmation of any proposed service locations. It is the responsibility of the designer to contact BC Hydro to confirm any new service locations (in writing). All new services are to be 120/240 V or 120/208 V. It is the responsibility of the City to upgrade the BC Hydro accounts (SLIM and/or metered).

4.21.2. Existing Electrical Services

4.21.2.1. The qualified professional is responsible for reviewing record drawings or other available documentation to identify existing services that may be utilized in the area. When tying into an existing service, a site inspection is required to confirm the following information:

(a) single vs. three phase service;

(b) service voltage (i.e. 120/240 V, or 120/208 V);

(c) verify the service meets the Canadian Electrical Code, and bulletins issued by Technical Safety BC (requirements may include, but are not limited to, verifying voltage drop, as well as verifying service loading); and

(d) meter bases are required when services are upgraded. Confirm with the City for the design parameters.

4.21.2.2. If the system does not meet requirements, the system must be modified so all requirements are met. The City must be advised of any existing non-conforming services, and any recommended corrections must be discussed with the City.

4.21.2.3. Where new electrical equipment is being installed in the downtown core, power must be obtained from an existing power kiosk. Power for new infrastructure installed downtown must be confirmed with the City.

4.21.3. New Electrical Services

4.21.3.1. Where existing services are not available, or if existing services are at capacity and it is not feasible to upgrade, then a new service panel and meter must be installed.

4.21.3.2. The following summarizes some general requirements for new electrical services:

(a) new electrical services for street lighting and traffic signals are typically either 120/240 V, or 120/208 V signal phase;

(b) new service panels (or cabinets and/or kiosks where applicable) must contain panel boards, breakers, lighting contactors, a surge protection device, and a hand-off-auto switch;

(c) all lighting must be controlled by a single photocell located on a luminaire or pole;

(d) electrical drawings must show general wiring diagrams and equipment layouts, as well as the size, rating, breakers, and number of contactors; and

(e) all electrical service connections must be completed or arranged by the City. The contractor must provide a photo of the ground plate installation to the City's Electrical Inspector to satisfy requirements.

4.21.3.3. All new installations must include a meter socket, even if a meter is not required. Where a meter is not required for the service, meter jumpers and a voltage rated meter cover must be included. All new meter bases and service panels require two snow shields to prevent the buildup of snow and ice around the service equipment. BC Hydro may require a metered service if tree lights, pole receptacles, EV Charging Stations, irrigation systems, or special crosswalk equipment is involved. The requirement for metering a new service should be coordinated with the City and BC Hydro.

4.21.4. Locating New Services

4.21.4.1. New street lighting services are typically fed overhead to a City-owned pole. The preference is for service panels to be fed overhead and installed on a Type 2 shaft located outside of pedestrian access. Service panels may also be fed overhead and installed on standard davit poles, or signal poles where required. It is the responsibility of the qualified professional to select a suitable service location based on the project location, and to confirm the service with BC Hydro during design. Streetlight service bases are not typically used, and the qualified professional must confirm with the City for approval.

4.21.4.2. The qualified professional must consider the following when deciding on the location of a new service panel:

(a) proximity to the power pole;

(b) panel orientation – The panel should be located on the downstream side of the pole;

(c) ease of access for maintenance – Best if located at the same corner as the traffic controller. Snow accumulation should be taken into consideration;

(d) maintenance pad – Ensure concrete maintenance pad can be constructed level and will not slump off down a slope;

(e) obstruction to the public. For example, panels should not be installed in sidewalk areas, or where pedestrian flow will be impeded by maintenance workers;

(f) safety of maintenance staff and the public; and

(g) service panels must typically not be installed on the same pole as a pushbutton; however, where this is unavoidable, the service panel location must be located relative to the pedestrian pushbutton to minimize conflict.

4.21.4.3. Where there is not sufficient space for pole mounted service equipment, the service panel may be installed in a service base below the pole. Coordinate with the City of Victoria as required for these circumstances.

4.22. Power Distribution

4.22.1. Electrical infrastructure making up the power distribution system, including all equipment on the customer side of the service panel, must be designed and installed in accordance with the following:

(a) wiring must typically be installed in minimum 53 mm RPVC conduits with the exception of traffic controller power, which must be installed in 27 mm RPVC;

(b) a maximum voltage drop of 3% for branch circuits;

(c) circuit loading must not to exceed 80% of feeder breaker rating; and

(d) colour-coded power wiring as per the CAN/CSA Canadian Electrical Code with bulletins issued by Electrical Safety Branch of the Province of British Columbia and the City.

4.23. Arc Flash

4.23.1. Arc flash requirements to be discussed with the City during the design stage.

4.24. Street Lighting Design and Analysis

4.24.1. General

4.24.1.1. Street lighting is implemented throughout the City to provide safer night-time conditions for pedestrians, cyclists and motorists. The street lighting system extends to streets, sidewalks, crosswalks, intersections, roundabouts and multi-use areas in the City. This section outlines design criteria and general street lighting design requirements to ensure consistency throughout the City.

4.24.2. Requirements

4.24.2.1. Lighting designs must comply with all applicable Illuminating Engineering Society (IES) standards, with the TAC Guide for the Design of Roadway Lighting serving as a supplementary reference except as noted in this document. The information herein is based on IESNA, TAC, and MMCD lighting standards. Qualified professionals should have a thorough understanding of all applicable sections of the TAC and IESNA lighting standards. Qualified professionals must collaborate with the City to confirm specific design requirements.

4.24.2.2. Lighting is mandatory on all streets, intersections, roundabouts, and certain railway crossings. Pedestrian or decorative lighting may also be required by the City. Refer to Public Realm Guidelines for details and confirm with the City. All products used in a street lighting system must conform with the City of Victoria Approved Products List.

4.24.3. Key Terms

4.24.3.1. As defined by IES RP-8, **luminance** describes the intensity of light reflected toward an observer per unit area of a surface and is measured in candela per square meter (cd/m^2). Luminance can more accurately describe the perceived intensity of roadway conditions to a driver compared to illuminance (defined in Section 4.24.3.2) and therefore the luminance method is recommended for calculating roadway lighting levels. ¬The luminance calculation is valid for consistent luminaire spacing on a relatively straight roadway.

4.24.3.2. **Illuminance** is a measure of the density of light incident on a surface per unit area of the surface. The unit of illuminance is lux (lx), where one lux is equal to one lumen per square meter. In accordance with ANSI/IES RP-8, the illuminance calculation method must be used for calculating lighting levels of sidewalks, walkways, bikeways, crosswalks, intersections, roundabouts, and curved or steep roadways.

4.24.3.3. **Uniformity** describes how uniform or even light is distributed over a given area or surface. Uniformity is typically expressed as the ratio of average to minimum levels of luminance or illuminance, or sometimes maximum to minimum levels.

4.24.3.4. **Veiling luminance**, also known as disability glare, describes the effect produced by bright sources in the visual field resulting in decreased visibility. Veiling luminance compares the luminance of individual luminaires on the roadway, to the average luminance of the surrounding area. When there is higher contrast between a luminaire and the surrounding area, visibility is decreased. A good roadway lighting design will minimize the veiling luminance. IES RP-8 provides limits on veiling luminance to ensure the glare to drivers is at an acceptable level.

4.25. Lighting Design and Criteria

4.25.1. General

4.25.1.1. Lighting designs must use the lowest practical luminaire wattage and appropriate pole spacing necessary to provide the desired lighting levels. Designs that over-light a roadway due to high luminaire wattages or close pole spacing will not be accepted. The optimal pole spacing must be determined using photometric analysis software. The final pole spacing must be adjusted as required to suit intersections, property configurations (such as property lines), driveways, or other obstructions. Additional considerations as follows:

(a) streetlighting should be installed on City metal poles when possible (new and/or upgrades); and

(b) if it is not practical to install a City pole, streetlights can be mounted on BC Hydro poles. The designer is required to get permission (in writing) for the pole they which to have the light installed on. For streetlights installed on BC Hydro poles:

i. streetlights mounted on wood poles are to be at 90 degrees from the road – 45 degree angles are not permitted;

ii. the City completes all streetlight installations on BC Hydro poles. The City may allow BC Hydro Certified contractors to complete their works on wood poles; and

iii. the City is required to upgrade the BC Hydro SLIM account for all streetlights on BC Hydro Poles.

4.25.1.2. Luminaires should be installed on signal poles at intersections to meet desired lighting levels and limit the number of poles at the intersection. Luminaire locations at intersections will be determined by the signal pole locations and if desired levels cannot be achieved, additional luminaire poles should be installed.

4.25.1.3. Where an existing lighting system is being upgraded to LED's, luminaires must be chosen to surpass the minimum desired lighting criteria. If desired lighting levels cannot be achieved with new luminaires, luminaires must be chosen to meet or exceed the existing lighting levels. The existing lighting installation must be modelled to determine existing conditions. The qualified professional must provide PDF printouts of all lighting calculations to the City for review.

4.25.1.4. Lighting designs require the use of photometric analysis software such as AGI32 or equivalent. IES files must be obtained from the manufacturer, and the file used in the calculation must match the specified product.

4.25.1.5. Light loss factors (LLF) must be incorporated in the design to account for changes in the luminaire output over its lifespan. In accordance with IES RP-8, the following factors must be considered:

(a) Lamp Lumen Depreciation (LLD);

(b) Luminaire Dirt Depreciation (LDD); and

(c) Equipment Factors (EF).

4.25.1.6. Typical LLFs of different types of luminaires are shown in Table 26. These values should be used unless a higher LLF can be verified using each of the factors described in Section 4.25.1.5.

TABLE 26: TYPICAL LIGHT LOSS FACTORS

Luminaire Type	Light Loss Factor
Led	0.82 (Unless higher LLD can be proven)
High Pressure Sodium	0.72

4.25.1.7. Desired lighting levels for streets, sidewalks, intersections and roundabouts are dependent on two main factors, road classification and pedestrian activity levels. Roads are classified as either Arterial Collector, or Local. Road classifications throughout Victoria have been defined in the *Streets and Traffic Bylaw* and for reference can also be found in the City's ArcGIS map system. The qualified professional must use these definitions for all calculations unless directed otherwise. A description of each roadway type is provided in Section 4.4.6.

4.25.1.8. For the purpose of lighting calculations, the level of pedestrian activity in an area can be defined in one of three categories (in units of pedestrians per hour):

(a) **low**: 10 or fewer pedestrians;

(b) **medium**: between 11 and 99 pedestrians; or

(c) **high**: more than 100 pedestrians and/or for areas located in the downtown core (contact the City to confirm the extent and specificity for this area).

4.25.1.9. The qualified professional must confirm with the City to determine which category a street or intersection falls into.

4.25.2. Light Trespass

4.25.2.1. Qualified professionals must be mindful of light trespass onto private property and environmentally sensitive areas. Refer to Section 4.3 of IES-RP-8 for design suggestions on reducing light trespass, as well as standardly accepted levels of light trespass. Some methods to reduce light trespass included specifying shields (either City's or manufacturer shields), specifying a lower wattage luminaire, or lowering the mounting height of the luminaire.

4.25.3. Streets

4.25.3.1. Lighting levels for various streets based on the classification and pedestrian activity level are defined in Table 27. The table is based on recommended values provided in IES RP-8, Table 11-1.

TABLE 27: LIGHTING DESIGN CRITERIA FOR VARIOUS ROADWAYS

Street Classification	Pedestrian Activity Classification	Average Luminance L_{avg} (Cd/M^2)	Average Uniformity Ratio L_{avg}/L_{min}	Maximum Uniformity Ratio L_{max}/L_{min}	Maximum Veiling Luminance Ratio $L_{v,max}/L_{avg}$
Arterial	High	≥ 1.2	≤ 3.0	≤ 5.0	≤ 0.3
	Medium	≥ 0.9	≤ 3.0	≤ 5.0	≤ 0.3
	Low	≥ 0.6	≤ 3.5	≤ 6.0	≤ 0.3
Collector	High	≥ 0.8	≤ 3.0	≤ 5.0	≤ 0.4
	Medium	≥ 0.6	≤ 3.5	≤ 6.0	≤ 0.4
	Low	≥ 0.4	≤ 4.0	≤ 8.0	≤ 0.4
Local	High	≥ 0.6	≤ 6.0	≤ 10.0	≤ 0.4
	Medium	≥ 0.5	≤ 6.0	≤ 10.0	≤ 0.4
	Low	≥ 0.3	≤ 6.0	≤ 10.0	≤ 0.4

4.25.3.2. Lighting calculations for roadways must be in accordance with IES RP-8. The maximum lane width used for calculations must be 3.6 m, measured from the center of the roadway. If a marked bicycle lane is present, the adjacent lane must be extended to include the bicycle lane. In this case, it is acceptable for a lane to be wider than 3.6 m. Bicycle lanes separated from roadways (via barriers or curbs) must be designed to meet values for multi-use pathways specified in the section below.

4.25.3.3. For any existing or proposed part-time parking lanes, lighting levels must be designed as if they are full-time general-purpose lanes. Full-time on-street parking (angled or parallel), where there is no chance of the parking lane being used as a travel lane, does not need to be included in calculations.

4.25.3.4. Luminance calculations must be made for each direction of travel, and all lanes in a roadway require a separate calculation grid. The worst-case luminance, uniformity and veiling luminance will take precedence. Typically, the side of the roadway opposite of the luminaire poles will be the worst case and the qualified professional must ensure these values meet design requirements.

4.25.3.5. Refer to IES RP-8, Section 3 for requirements in determining calculation grides for various roadway and pole and pole configurations.

4.25.3.6. If a design requires tie in to, or modification of an existing lighting system, the qualified professional must ensure all existing lighting remains operational during hours of darkness. If this is not possible, the qualified professional must provide a design for temporary roadway lighting to meet or exceed existing conditions.

4.25.3.7. The illuminance calculation method must be used on curved and graded roadways as defined as follows:

(a) Curved Roadways: Roads with less than 600m radius; and

(b) Steep or Variable Grade Roadways: Roadways with 6% or greater grade.

4.25.4. Sidewalks and Multi-Use Pathways

4.25.4.1. If walkways and bike lanes run adjacent to the street, light overflow from the street luminaires might help illuminate these areas. However, the street lighting alone may not sufficiently illuminate the pathways for pedestrians or cyclists, and the installation of supplementary lighting may be required. The qualified professional must confirm with the City if dedicated pedestrian lighting is necessary. Where required, the sidewalk or multi-use path must be designed to meet values specified in ANSI/IES RP-8 and summarized in Table 28. A dedicated calculation grid, separate from the roadway lighting grid, is required for the sidewalk or multi-use path. Table 28 outlines the design criteria for sidewalks and multi-use paths adjacent to roadways.

TABLE 28: DESIGN CRITERIA FOR SIDEWALKS AND MULTI-USE PATHWAYS ADJACENT TO ROADWAYS

Condition	E_{avg} Lux [1]	$E_{v,avg}$ Lux [2]	E_{avg}/E_{min} [3, 4]
High Pedestrian Activity	≥ 10	≥ 5	≤ 5.0
Medium Pedestrian Activity	≥ 5	≥ 2	≤ 5.0
Low Pedestrian Activity	≥ 2	≥ 1	≤ 10.0

[1] E_{avg} is the average horizontal illuminance at the pavement level.

[2] $E_{v,avg}$ is the average vertical illuminance measured at 1.5 m above the pavement. Measurements taken in both directions and parallel to the main pedestrian flow.

[3] E_{min} is the minimum horizontal illuminance at the pavement level.

[4] Horizontal only.

4.25.4.2. Walkways, bicycle paths or multi-use pathways that are not adjacent to a roadway provide unique challenges, as cyclists and pedestrians are travelling at different speeds and different patterns. Lighting needs to support the identification of users, as well as help users navigate the pathway, recognize hazards, and identify areas of conflict. Refer to IES RP-43-22 – Lighting Exterior Applications and TAC – Guide for Design of Roadway Lighting for additional criteria and recommendations.

4.25.4.3. Where project specific lighting is required for Crime Prevention Through Environmental Design, lighting levels should be determined in consultation with the City.

4.25.5. Intersections

4.25.5.1. Intersection lighting levels are dependent on the classification of roadways intersecting, as well as the pedestrian activity level at the intersection. Table 29 (based on IES RP-8-21 Table 12-1) defines lighting levels required for each type of intersection. Lighting levels are based on recommendations provided in ANSI/IES RP-8.

TABLE 29: PAVEMENT ILLUMINANCE CRITERIA FOR FULL INTERSECTION LIGHTING (LUX)

Street Classification	Average Maintained Horizontal Illuminance (Lux) At Different Pedestrian Activity Level Classifications			Average to Minimum Uniformity Ratio E_{avg}/E_{min}
	High	Medium	Low	
Arterial/Arterial	≥ 34	≥ 26	≥ 18	≤ 3.0
Arterial/Collector	≥ 29	≥ 22	≥ 15	≤ 3.0
Arterial/Local	≥ 26	≥ 20	≥ 13	≤ 3.0
Collector/Collector	≥ 24	≥ 18	≥ 12	≤ 4.0
Collector/Local	≥ 21	≥ 16	≥ 10	≤ 4.0
Local/Local	≥ 18	≥ 14	≥ 8	≤ 6.0

4.25.6. Crosswalks

4.25.6.1. Crosswalks occurring at intersections must be handled differently than crosswalks occurring mid-block because drivers are less likely to expect pedestrians crossing roadways at locations other than intersections.

4.25.6.2. Vertical illumination for midblock crosswalks is based on the recommendations provided in ANSI/IES RP-8 and listed in Table 30.

TABLE 30: VERTICAL ILLUMINATION FOR MIDBLOCK CROSSWALKS

Roadway	Crosswalk Maintained Average Light Level (Lux)
Unlit Roadway	≥ 20
Continuously Lit Roadway	≥ 20

4.25.6.3. The horizontal illuminance of crosswalks at intersections must meet or exceed the horizontal illuminance of the intersection. The need for vertical illuminance at an intersection crosswalk must be coordinated with the City's Electrical Design Team. If desired, vertical illuminance must meet or exceed the maintained average horizontal design levels for the intersection. For example, if the required horizontal illuminance of an intersection is 18 lux, the vertical illuminance of the crosswalk must be 18 lux or greater.

4.25.6.4. The vertical illuminance must be calculated at 1.5 m above the roadway in accordance with IES RP-8, with the calculation grid facing the approach. Poles are typically placed in advance of crosswalks on the approach side to improve vertical illuminance and to create a positive contrast between the pedestrian or cyclist and the background area for enhanced safety.

4.25.7. Roundabouts

4.25.7.1. Roundabouts have distinct challenges to consider for lighting compared to intersections or roadways. The effectiveness of vehicle headlights is limited in a roundabout due to the constrained curve radius, so a good lighting design is imperative for pedestrian and driver safety. Lighting levels in roundabouts must meet or exceed the levels in Table 31 (based on IES RP-8-21 Table 12-4).

TABLE 31: RECOMMENDED PAVEMENT ILLUMINANCE FOR ROUNDABOUTS, BASED ON PEDESTRIAN ACTIVITY

Street Classification	Average Maintained Horizontal Illuminance (Lux) At Different Pedestrian Activity Level Classifications			Average to Minimum Uniformity Ratio E_{avg}/E_{min}
	High	Medium	Low	
Arterial/Arterial	≥ 34	≥ 26	≥ 18	≤ 3.0
Arterial/Collector	≥ 29	≥ 22	≥ 15	≤ 3.0
Arterial/Local	≥ 26	≥ 20	≥ 13	≤ 3.0
Collector/Collector	≥ 24	≥ 18	≥ 12	≤ 4.0
Collector/Local	≥ 21	≥ 16	≥ 10	≤ 4.0
Local/Local	≥ 18	≥ 14	≥ 8	≤ 6.0

4.25.7.2. It is important that the approach lighting provides good perception of the presence of the roundabout. If continuous roadway lighting is not present, transition lighting should be provided for driver adaptation and should extend for approximately 80 m or greater from the roundabout on each approach.

4.25.7.3. For crosswalks at roundabouts, the average vertical illumination must be equal to the required horizontal illuminance and uniformity of the roundabout. Refer to IES RP-8, and Section 4.16.2 of this document for additional information on pole placement and calculation grids for crosswalks.

4.25.8. Parks and Public Realm

4.25.8.1. Lighting of outdoor areas such as parks, plazas and other outdoor gathering areas is site specific, but generally it is important to only provide the minimum amount of light necessary. Pedestrians need a lighting system capable of supporting tasks after dark such as navigation and feeling comfortable in public spaces.

4.25.8.2. The IES and International Dark-Sky Association (IDA), adopted five principles for responsible outdoor lighting:

(a) Useful – All lighting should have a clear purpose;

(b) Targeted – Light should be directed only where it is needed;

(c) Low Light Levels – Light should be no brighter than necessary;

(d) Controlled – Lighting should only be used when it is useful; and

(e) Colour – Warmer lighting should be used when possible (the City uses 3000 K fixtures).

4.25.8.3. The qualified professional should refer to recommendations made in ANSI/IES RP-43-22 – Lighting Exterior Applications, and ANSI/IES LP-2-20 – Designing Quality Lighting for People in Outdoor Environments, for common practices and considerations to be made for specific public areas. A lighting plan should be coordinated with the City, and the qualified professional should provide a summary supporting their lighting choices and why the design is suitable for a given site.

4.26. Street Trees

4.26.1. Trees, either existing or proposed, can cause significant challenges in a lighting system as they block light and may reduce lighting below required levels. It is important for the qualified professional to understand and consider the effect of existing and proposed trees when completing the lighting design. As trees vary in foliage, shape and size, it is not practical to include trees directly in a lighting calculation. There are several design considerations that may be considered to reduce the impact of street trees on a lighting design.

4.26.2. Lighting qualified professionals should be in coordination with the landscape architect to better understand the fully matured size and expected canopy of existing or proposed trees. The lighting should be designed and integrated into the landscape design, as tree spacing is likely to change as design progresses. Where soil cells are used, junction boxes must be placed in the sidewalk.

4.26.3. The City standard is to mount luminaire fixtures at 9.1 m (30’). Lower luminaires may be considered where street trees do not allow standard mounting heights. Fixtures must be installed no lower than 5.5 m. Pole spacing and luminaire wattage must be reduced accordingly.

4.26.4. Luminaire poles may be installed at varied spacing to minimize conflict with trees. The design should be reconsidered if two or more consecutive locations have spacing that varies more than 10% of the average spacing.

4.26.5. Additional luminaires may be required to adequately light sidewalks or adjacent pathways.

4.26.6. Refer to ANSI / IES RP-8 for additional considerations where street trees may impact lighting design.

4.27. Traffic Signal Design and Analysis

4.27.1. General

4.27.1.1. The City maintains and operates a network of traffic signals throughout the City. Each traffic signal has unique requirements that must be coordinated with the City during design, including specific communication and system requirements. The following section is intended to provide detailed design requirements for both new and upgraded traffic signals to ensure consistency throughout the City.

4.27.1.2. Traffic signal designs must meet the applicable standards listed in this document. Street lighting is required at all signalized intersections and lighting levels must meet the requirements outlined in this document.

4.27.2. Requirements

4.27.2.1. Prior to starting design, the qualified professional must coordinate with the City's Electrical Design Team to confirm any requirements specific to the project location. An intersection may require a new signal design, modifications to an existing signal to match roadwork, or removal and replacement of an existing signal. As each intersection provides unique circumstances, coordination with the City is important to determine the best approach.

4.27.2.2. If existing signals are being modified, it is preferred that the signal remains in operation with zero or minimal downtime. If site activities require de-energization of the traffic signal equipment, appropriate traffic control is required. The shutdown must be coordinated in advance with the City Technical Services Department.

4.27.3. Signal Phasing

4.27.3.1. **Phasing, Timing, and Coordination Plans**: The City prepares all signal timing and coordination plans. The qualified professional must coordinate with the City throughout the design stage to confirm phasing requirements for all intersections.

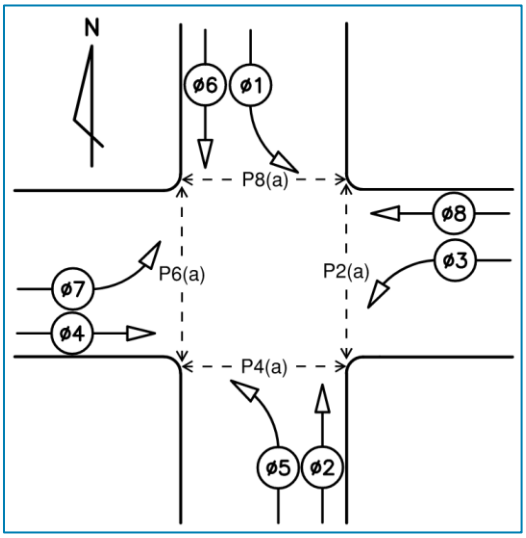
4.27.3.2. **Phase Naming**: The City uses NEMA phase designations for intersections. If intersections are skewed or complex and phase naming is unclear, the qualified professional must confirm phase designations with the City. Table 32 provides typical phase names and associated cardinal direction and movement type.

TABLE 32: TYPICAL SIGNAL PHASE NAMING

Phase Number	Cardinal Direction	Movement
Ø1	South	Left Turn
Ø2	North	Through
Ø3	West	Left Turn
Ø4	East	Through
Ø5	North	Left Turn
Ø6	South	Through
Ø7	East	Left Turn
Ø8	West	Through

4.27.3.3. Figure 11 shows the typical phase operation for an intersection, indicating applicable straight through, left turn, and pedestrian movements.

FIGURE 11: TYPICAL PHASE OPERATION - NORTH-SOUTH MAJOR ROADWAY



4.27.4. Left Turn Phasing

4.27.4.1. There are three types of left turn options that may be used at intersections:

(a) **Protected** left turns have a dedicated turning arrow that assigns the right-of-way to drivers during their left turn movement. No conflicting movements occur at the same time;

(b) **Protected/permissive** left turns use a flashing green arrow to allow protected left turn for a limited time. After the green arrow has timed out, left turns are still permitted while yielding to conflicting traffic; and

(c) **Permissive** left turns have no dedicated turn arrow, and left turns are permitted while the driver yields to conflicting traffic.

4.27.4.2. The qualified professional must confirm the appropriate left turn phasing at all intersections with the City.

4.27.5. Signal Pre-emption

4.27.5.1. Pre-emption serves to temporarily grant exclusive right-of-way to specific vehicle movements instead of following the standard sequence of phases. Common types of pre-emption include emergency vehicle and railway pre-emption. The traffic qualified professional must confirm with the City to determine where pre-emption is required.

4.27.6. Design of Rectangular Rapid Flashing Beacons

4.27.6.1. Rectangular Rapid Flashing Beacons (RRFBs) are intended for use at special pedestrian crosswalks to increase the likelihood that motorists will yield at an occupied crosswalk. RRFBs must be installed at crosswalks identified by the City. An RRFB must only be installed to function as a supplement for pedestrian-actuated conspicuity. The RRFB must have an asymmetric wig-wag plus simultaneous flash pattern that follows the MUTCD flash requirement of 70 – 80 periods of flashing per minute.

4.27.6.2. Where RRFBs are identified as being required at a crosswalk, a minimum of two crossing warning signs (each with an RRFB unit) must be installed at the crosswalk, one on the right-hand side of the roadway and one on the left-hand side of the roadway. Pedestrian pushbuttons must be Accessible Pedestrian Signal (APS), and the audible message must be confirmed with the City.

4.27.6.3. Meters are required to be installed at all services (new and existing locations) providing power to RRFBs. Refer to Section 4.21 of this document for complete electrical service requirements. Where 120 V power is not readily available, the use of solar powered RRFB flashers should be considered and discussed with the City. The qualified professional must request the RRFB manufacturer to provide a solar study completed for the desired location to ensure batteries are sized appropriately and the flashers operate year-round.

4.28. Communication Systems

4.28.1. General Concepts

4.28.1.1. Fibre optic and wireless communication systems are implemented throughout the City to provide connectivity and allow data exchange between various devices and systems.

4.28.2. New Fibre Optic Infrastructure

4.28.2.1. The qualified professional is responsible for coordinating with the City of Victoria Design Team for all communication system requirements. Requirements may differ on a project-by-project basis.

4.28.2.2. If fibre communications are required, fibre optic cables must be run to each traffic controller cabinet and terminated in a splice enclosure. CAT 6 cable must be used to connect all equipment (e.g., cameras, radio, antennas, etc.) to the splice enclosure. Wiring must be clearly labelled in the junction boxes, and must be tested to ensure all conductors are connected to the correct devices/terminals. Fibre cables must be sleeved when running through an electrical junction box.

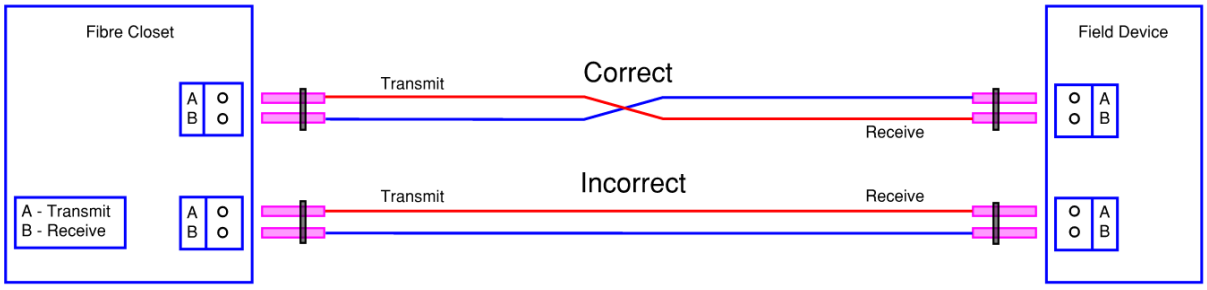
4.28.2.3. Fibre optic splice enclosures can be installed in service vaults, MoTT Type 10 junction boxes, or large concrete junction boxes where required at intersections. Service vaults are preferred for new installations, while Type 10 junction boxes and large concrete junction boxes may be used for fibre repairs, or when space is limited. In cases where fibre optic cables must be run in the same conduit as power conductors, a split loom must be used, and the armour must be bonded at all termination points.

4.28.2.4. When installing new fibre optic cables, or installing conduits for future, a minimum of 1 x 78 mm RPVC conduits must be run. Conduits are typically run in a shared trench with street lighting and/or traffic signal system conduits. The qualified professional must coordinate with the City to ensure the conduit system is sized appropriately for both immediate and future communication needs.

4.28.3. Rolled Fibre Connections

4.28.3.1. In situations where fibre is installed directly from a fibre closet or patch panel to a field device, the City of Victoria requires the fibre cables to be ‘rolled,’ also referred to as twisting the fibre. See Figure 12 for reference.

FIGURE 12: ROLLED FIBRE CONNECTION – CORRECT VS. INCORRECT INSTALLATIONS



4.28.3.2. Each pair of fibre cables must be rolled at the field device side only. The qualified professional must include a note for installers to label both ends accordingly, and test to ensure cables are connected to the appropriate terminals.

4.28.4. Damage to Existing Fibre Cables

4.28.4.1. If damages occur to existing fibre conduit as the result of a project, the qualified professional is responsible for repairing the fibre. Refer to the Supplemental Drawings SD E11.2 for typical fibre repair information.

4.28.4.2. All costs associated with repair and downtime of damage fibre conduits are the responsibility of the project and must meet the following requirements:

(a) Corporate Fibre and IoT Fibre – Must be back in operation within 20 business/working days from the date of known damage unless otherwise approved by the City;

(b) City approved contractor must complete the fibre optic connections;

(c) repair method must be accordance with the SD E11.2 or otherwise approved by the City; and

(d) the City will require a specific damage deposit for all frontage works where known fibre cables are present as contained in Schedule C of this bylaw. Typically, this will be micro-trenched and identified in existing sidewalks.

4.29. Wireless Cellular Infrastructure

4.29.1. Some projects may require the use of wireless or cellular communication devices, including radios and antennas where it is not feasible to connect infrastructure via fibre optic. The qualified professional must coordinate requirements with the City.

C. Structures (Retaining Walls, Railings, and Bridges)

4.30. Introduction

4.30.1. This section pertains to the requirements for walls, railings and fences, stairs, sidewalk basements, bridges, and slopes.

4.31. Walls

4.31.1. Off-Site Retaining Walls

4.31.1.1. No portion of an off-site retaining wall, including any footing or associated drainage, is permitted to extend across property boundaries, such as a boundary between two lots, or between an owner's lot and a highway, right of way or park.

4.31.1.2. Off-site retaining walls must not drain onto private property.

4.31.1.3. New or replacement off-site retaining wall designs must:

(a) be carried out by a qualified professional if the wall is equal to or greater than 1.2 m at any point along the wall;

(b) be in adherence to EGBC's Retaining Wall Design Guidelines;

(c) include the intent and scope of all geotechnical works on the highway, right of way or park, and adjacent lands as necessary;

(d) clearly demonstrate how stormwater and wall drainage is being managed;

(e) be accompanied by a letter of engagement from the qualified professional if associated with a development;

(f) indicate the percentage of slope, if any, behind the wall; and

(g) include a railing as determined by criteria in the Hazard Warrant Table in Part 8 of this ESS Manual.

4.31.1.4. If a wall fronting a new development is pre-existing and is located in a highway, right of way or park (or is to be obtained by the City due to a highway dedication requirement at the time of development or subdivision), the owner must, prior to the City accepting the existing wall, provide at the owner's cost, a condition assessment of the wall structure by a qualified professional which is to contain recommendations for the rehabilitation of the wall where necessary. The owner must carry out those recommendations at the owner's cost. If the wall is recommended to be replaced by the qualified professional, the owner must fully remove the existing wall and install a new off-site retaining wall as per these specifications.

4.31.1.5. Materials for off-site retaining walls should consider the following:

(a) walls over 1.2 m in height must be constructed of concrete;

(b) stacked boulder walls (dry stacked or concrete in-filled) or non-masoned rock walls are not permitted on a highway, right of way or park except where the wall is adjacent to the City's waterbodies with an appropriate report by a qualified professional;

(c) lock block walls (appropriately front faced to help protect against graffiti) may be considered based on location, and with an appropriate report provided by a qualified professional; and

(d) off-site mortared rock walls are permitted but must be under 1.2 m in height as per SD STR 11 in Part 8 of this ESS Manual.

4.31.2. On-Site Retaining Walls

4.31.2.1. No portion of an on-site retaining wall, including any footing or associated drainage, is permitted to extend across property boundaries, such as a boundary between two lots, or between an owner's lot and a highway, right of way or park.

4.31.2.2. On-site retaining walls must not drain onto adjacent property. Lateral drains for private property walls must be tied into the existing City storm drain system or be contained within the private property. New or replacement on-site retaining wall designs must:

(a) be designed by a qualified professional;

(b) indicate that all drainage is contained within the owner's lands and with drainage catchment and overland flow routes clearly depicted to ensure that adjacent lands or the highway, right of way, park or waterbody are not negatively affected;

(c) be shown on civil drawing submissions in plan view and with elevation drawings that clearly depict the property line in relation to the wall and the adjacent highway, right of way, park or waterbody;

(d) include the intent and scope of all geotechnical works on the lands, and adjacent highway, right of way, park or waterbody if necessary;

(e) clearly show that that the on-site retaining wall is situated entirely on the owner's lands, including its footings;

(f) be accompanied by a letter of engagement from the qualified professional;

(g) be in accordance with the materials as previously noted;

(h) include a railing or fence as determined by the criteria in the Hazard Warrant Table on SD STR 9 in Part 8 of this ESS manual;

(i) in the case of on-site retaining wall located adjacent to the City's waterbodies, be designed by a qualified professional, and the design must include consideration and planning for sea level rise and climate change, and be designed to current structural, seismic and safety codes in effect at the time of construction; and

(j) ensure that new or replacement trees are within an acceptable distance from the structure as outlined in Table 41, or as specified by the professional engineer.

4.31.2.3. The owner's qualified professional for an on-site retaining wall must apprise the Director of Engineering of any changes, alterations, or unforeseen circumstances relating to the construction of the on-site retaining wall. Where works create, or include, an existing on-site retaining wall:

(a) the Director may require a condition assessment be provided by a qualified professional;

(b) the qualified professional may be required to make recommendations to rectify any deficiencies in the on-site retaining wall, which may form part of the conditions for which the lands may be developed;

(c) based on that assessment or as determined necessary by the Director of Engineering, the Director may require the on-site retaining wall to be removed if unsafe for the public, and the owner to return the area to a suitable landscape surface;

(d) the on-site retaining wall may require a railing or fence to be constructed to protect the public against any potential fall hazards; and

(e) the qualified professional must provide a record drawing of a new on-site retaining wall and any part that is determined to form part of that wall (such as geotechnical tie-back or filter cloths) constructed directly adjacent a highway, right of way, park or waterbody.

4.31.2.4. A statutory right of way may be required, on terms and in a form to the satisfaction of the Director of Engineering and City Solicitor, for inspection, maintenance and repair of the on-site retaining wall when any such wall is directly adjacent to a highway, right of way, park or waterbody and is determined necessary for the operation and maintenance of that highway, right of way, park or waterbody.

4.31.2.5. On-site retaining walls located within statutory rights of way remain the property of the owner. The owner must:

(a) rectify any present deficiencies that have been identified by the qualified professional; and

(b) maintain the wall in good repair.

4.31.3. Landscape Walls

4.31.3.1. Where an owner erects a landscape wall on lands immediately adjacent to a highway, right of way or park, the owner must notify the Director of Engineering. The landscape wall must be constructed in such a way as to be safe for the users of the adjacent highway, right of way or park.

4.32. Railings and Fences

4.32.1. All new or replacement railings and fences proposed on a highway, right of way or park must be approved by the Director of Engineering prior to installation.

4.32.2. Railings and fence types must adhere to the Supplementary Drawings found in Part 8 of this ESS Manual.

4.32.3. New or replacement railings must be installed as per the most recent edition of the BC Building Code and as determined by the criteria in the Hazard Warrant Table on SD STR 9 in Part 8 of this ESS manual.

4.32.4. Where railings or fences are required along a sidewalk, the required sidewalk width must be free and clear and unimpeded for the width as specified in the ESS manual. When a railing or fence is intended to be mounted to the sidewalk, the overall width of the sidewalk may need to be increased to ensure this is achieved.

4.32.5. New stairs are not permitted on a highway, right of way or park except only where an alternate, fully accessible route is not possible.

4.32.6. New stair or replacement stairs must be installed as per the most recent edition of the BC Building Code.

4.32.7. Where existing stairs are being replaced, or in instances as outlined above, the replacement stairs must be constructed to a 50-year design life.

4.32.8. New or replacement stairs on a highway, right of way or park must not be constructed of wood.

4.32.9. New stairs serving private lands must not encroach onto a highway, right of way or park.

4.33. Sidewalk Basements

4.33.1. General

4.33.1.1. There must be no new sidewalk basements created by development. Refer to the City bylaw pertaining to requirements associated with sidewalk basements.

4.33.1.2. Where a sidewalk basement exists, the City will require the owner to obtain a building permit to provide the following documentation regarding the sidewalk basement, at the time of application for building permit:

(a) a structural review by a professional engineer of the sidewalk basement must be submitted with the application package;

(b) if it was previously filled in and no longer in use, the owner must provide evidence that it has been filled in and that the foundation wall opening has been closed to approved structural engineering standards; and

(c) the owner must provide satisfactory evidence that there is no abandoned oil tank buried in this basement area.

4.33.1.3. If the sidewalk basement forms part of a development, the owner is to indicate the sidewalk basement on the civil plans and architectural plans and provide an elevation drawing that indicates the sidewalk basement and the property line. The owner is to also indicate the entrance hatch to the sidewalk basement if one exists in the sidewalk.

4.33.2. Glass Prisms

4.33.2.1. Where glass prisms for the sidewalk basement exist in the sidewalk, they must be removed and replaced, refurbished or newly manufactured, depending on the condition, for the purpose of replacement in the sidewalk along the project frontage.

4.33.2.2. The prisms must be supported in frames (to replicate the existing condition), and where new frames are required, they must be fabricated and installed as part of the sidewalk prism replacement.

4.33.2.3. The exact locations of prism replacement in the sidewalk are to be determined at the time of building permit.

4.33.2.4. Under prism lighting may be required and must be connected to the City's electrical system.

4.34. Bridges

4.34.1. All bridge designs must follow the most recent edition of Canadian Highway Bridge Design Code.

4.35. Slopes

4.35.1. All slopes on a highway, right of way or park or on lands directly adjacent to a highway, right of way or park that are equal to or greater than 30% must be authenticated as being stable by a qualified professional.

D. Stormwater Management

4.36. Introduction

4.36.1. The City's stormwater system includes conventional storm drain infrastructure and green stormwater infrastructure (GSI), both designed to convey and manage surface runoff. This system is engineered exclusively for stormwater conveyance.

4.36.2. Stormwater infrastructure, including GSI elements such as rain gardens, permeable surfaces, and bioswales, plays a key role in the City's climate adaptation strategy. These systems are designed to mimic natural hydrological processes, reduce peak flows, and improve water quality.

4.37. General

4.37.1. All drainage systems must be designed with consideration for water quality and quantity, public safety, regulatory requirements, maintenance, economic benefits, climate resilience, and sustainability.

4.37.2. The following sections encompass requirements and specifications that may be applicable to works on either private properties or public rights of way.

4.38. Existing Information and Infrastructure

4.38.1. The presence of an existing drainage system does not mean, or imply, that the system has adequate capacity to receive the proposed design flows. Upgrades may be required to support the future land use planning including the proposed development. Existing facilities which are undersized or inadequate to accept projected flows under the future land use and climate conditions adjacent to the development site must be upgraded at the owner's expense. Prior to any planning or design, the design engineer must consult with the City to confirm site-specific requirements and to determine what existing information and studies are available from the City. Alternative drainage proposals may be considered, subject to the Director of Engineering's approval.

4.39. Design Criteria

4.39.1. Service Connection Requirements

4.39.1.1. Developments must be provided with a storm drain connection in compliance with the *Sanitary Sewer and Stormwater Utilities Bylaw*, unless specifically exempted under that bylaw.

4.39.1.2. Sites with existing or proposed stormwater connections can refer to Section 4.40 and Section 0 for conveyance and rainwater management requirements, respectively.

4.39.2. Onsite Stormwater Management Systems without Service Connections

4.39.2.1. For sites with no stormwater connection, and where onsite stormwater management is allowable under the *Sanitary Sewer and Stormwater Utilities Bylaw*, onsite systems should be sized according to the storm events outlined in Table 33.

TABLE 33: DESIGN STORMS FOR ONSITE STORMWATER MANAGEMENT SYSTEMS WITHOUT SERVICE CONNECTIONS

System	Design Storm
Overland Conveyance to Adjacent Road	100-year peak flow
Storage	25-year, 24-hour event

4.40. Storm Drainage Conveyance

4.40.1. Flood risk management can be achieved by management of stormwater conveyance in the urban development areas. The City's stormwater conveyance system consists of both minor and major systems as described in Section 4.40.2 and Section 4.40.3, respectively.

4.40.2. Minor systems: consists of storm sewers, gutters, onsite and offsite stormwater management facilities (e.g., rain gardens), catch basins, pipes with diameters less than 600 mm, driveway and local road culverts, and flow control facilities designed and used to capture, convey, treat, or modify flows from minor storm events. Minor systems should be sized to convey a 10-year storm event without surcharge, to prevent flooding and property damage and minimize public inconvenience from minor events.

4.40.3. Major systems: consists of surface flood paths and City-owned assets including drainage outlets, roadways, watercourses, and flow control facilities designed and used to capture, convey, treat, or modify flows from rare and intense storm events. Major systems should be sized to convey a100-year storm event to protect the public and prevent significant damage to property and the environment.

4.41. Onsite Requirement for Volume Reduction and Water Quality Treatment

4.41.1. Rainwater Management Requirement

4.41.1.1. The City's rainwater management target is to capture and treat 90% of the rainfall in a typical year at the source (i.e., from all impervious areas). For the City, this equates to 72% of a 2-year, 24-hour event (see Section 4.44.2 for the City's rainfall data). This target provides a runoff volume reduction to the City's drainage system during frequent storm events and provides water quality treatment when combined with source control measures, such as green stormwater infrastructure (GSI) and manufactured treatment devices. Details on stormwater source control facilities are provided in Section 4.45.

4.41.1.2. The rainwater management target is not required for low-density residential as defined in the *Sanitary Sewer and Stormwater Utilities Bylaw*, unless the owner is applying to the Rainwater Rewards Program.

4.41.1.3. This rainwater management target applies to all other developments and redevelopments on private properties with existing or proposed storm connections.

4.41.1.4. Runoff from all impervious surfaces must be discharged to the onsite and offsite stormwater management facilities for capture and treatment. See Section 4.42 for details on offsite stormwater management facilities. Perimeter drains must bypass stormwater management facilities and directly discharge to the municipal storm drain.

4.41.2. Approaches to Achieving the Rainwater Management Requirement

4.41.2.1. Achieving the City's rainwater management target of fully capturing 72% of a 2-year, 24-hour event across all site impervious areas should prioritize the use of retention facilities or GSI that infiltrate, evaporate, transpire, or reuse it whenever possible.

4.41.2.2. When onsite retention is not possible, onsite detention facilities must be provided to achieve the rainwater management target. Site conditions that could result in onsite retention not being possible include (but are not limited to):

(a) archaeological;

(b) artesian conditions;

(c) contamination; or

(d) geotechnical limitations.

4.41.2.3. Preliminary plans for onsite stormwater management facilities (as per Section 4.43) must be reviewed the stormwater management analyst working with the City's Underground Utility team, to verify if onsite retention is in fact not possible, and if the rainwater management target can be met with a detention facility.

4.41.3. Relaxation to the Rainwater Management Requirement

4.41.3.1. When an owner ascertains that site conditions preclude excavation or infiltration, the owner must provide a report prepared by a third-party qualified professional (who is qualified to assess the applicable site condition) to the Director of Engineering, who may relax a portion of or all of the rainwater management requirements of this section in accordance with the *Works and Services Bylaw*. Examples of documentation to demonstrate the presence of certain site conditions precluding excavation or infiltration are provided in Table 34.

TABLE 34: EXAMPLES OF DOCUMENTATION TO VERIFY SITE CONDITIONS

Site Condition Precluding Excavation or Infiltration	Examples of Documentation Provided by the Owner Regarding a relaxation to Rainwater Management Requirements
Archaeological resources	Archaeological Impact Assessment, prepared in conformance with the Heritage Conservation Act.
Artesian conditions	Hydrogeological or geotechnical engineering report.
Contamination	Notification of Likely or Actual Migration, prepared in conformance with the Contaminated Sites Regulation.
Geotechnical limitations	Geotechnical engineering report.

4.41.4. Maximum Release Rate to City Storm Drain

4.41.4.1. All onsite retention facilities and detention facilities must have an overflow to the City's storm drain.

4.41.4.2. For onsite retention facilities, flows exceeding the design capacity of the system should directly discharge to the City's storm drain without flow restriction.

4.41.4.3. For onsite detention facilities, the maximum release rate must be based on 2-year, 24-hour pre-development flows. Flows exceeding the design capacity of the detention facility must discharge to the City's storm drain via an emergency overflow as per Section 4.46.4.

4.41.5. Site and Lot Grading

4.41.5.1. As per MMCD Design Guidelines section 4.5 Site and Lot Grading.

4.42. Green Stormwater Infrastructure in Development-Led City Rights of Way Projects

4.42.1. General

4.42.1.1. Green stormwater infrastructure (GSI) in City rights of way (ROW) is an approach that can be used to achieve objectives for rainwater management, urban forest, and placemaking.

4.42.1.2. GSI may be required to be incorporated into development-led ROW improvement projects which will be determined by the Director of Engineering and required only to the extent that GSI is attributable to the development and the direct portion of frontage involved. The criteria to determine the priority, suitability, and typology of GSI to be incorporated into ROW includes, but is not limited to the following:

(a) where the development is located in a catchment that contributes to a known waterway, both subsurface and surface, including Bowker Creek, Cecelia Creek and Rock Bay Creek;

(b) capacity and condition of existing downstream infrastructure; and

(c) infrastructure offsets requirements as per Table 4.

4.42.2. Sizing

4.42.2.1. GSI incorporated into ROWs should be sized according to the rainwater management requirements, as per Section 0, unless otherwise specified by the Director of Engineering.

4.42.2.2. For ROW projects located on streets without existing or planned storm mains, the Stormwater Management Analyst working with the City's Underground Utility team will determine an appropriate design storm to guide system sizing and performance criteria.

4.43. Site Specific Rainwater Management Plans (RWMP)

4.43.1. General

4.43.1.1. Site specific Rainwater Management Plans (RWMPs) are not required for properties identified as low-density residential as defined in the *Sanitary Sewer and Stormwater Utilities Bylaw*, unless the owner is applying to the Rainwater Rewards Program.

4.43.1.2. A low-density residential development may be required to submit the detailed design (as per Section 4.43.3) component of the RWMP in support of an application to the Rainwater Rewards Program.

4.43.1.3. For all other new developments and re-developments, a site-specific RWMP must be prepared by a qualified professional and submitted for the Director of Engineering's approval. The RWMP should be developed in two phases:

(a) Preliminary RWMP: Completed during the development application process to outline initial rainwater management strategies; and

(b) Detailed RWMP: Prepared as a condition for the issuance of a building permit, including detailed design information and accompanying drawings.

4.43.2. Preliminary RWMP

4.43.2.1. The preliminary RWMP, required as per Section 2.2, should outline the proposed rainwater management design concept onsite and offsite (if applicable) relevant to the proposed development, demonstrating that the site design will meet the bylaw requirements at building permit. The submission should include a draft technical RWMP report that contains the following:

(a) development characteristics;

(b) design criteria (as per Section 4.39) and assumptions used to develop the RWMP;

(c) proposed stormwater and rainwater management facilities and preliminary design and sizing details for the proposed works; and

(d) supporting information, such as the results from any preliminary site investigations (e.g., geotechnical investigation, hydrogeological investigation, and environmental assessments).

4.43.2.2. The RWMP should also include a site plan containing the following details:

(a) conceptual lot grading;

(b) development plan;

(c) locations of proposed onsite rainwater management facilities;

(d) impervious areas (i.e., roofs and other hardscape);

(e) areas draining to the proposed onsite facilities;

(f) landscaped areas; and

(g) setback requirements.

4.43.3. Detailed Design

4.43.3.1. A detailed design RWMP must be submitted prior to the issuance of a building permit in accordance with this section.

4.43.3.2. At the detailed design stage, the preliminary RWMP must be updated to also include the following additional detailed design information:

(a) detailed design calculations, product specifications (e.g., type of permeable pavers), and supporting information (e.g., percolation testing) for all stormwater management facilities;

(b) final locations, sizes, design flows/volumes, and capacities of all proposed works;

(c) capacity assessment of downstream works, or confirmation on adequate capacity from Underground Engineering staff (not required for residential developments with less than 4 units); and

(d) operation and maintenance plan and performance monitoring plan (if applicable) for the proposed onsite stormwater management facilities.

4.43.3.3. Detailed design drawings must be prepared and attached to the RWMP that must include the following:

(a) final grading plan;

(b) final locations, sizes, configuration, and design of onsite rainwater management facilities.

(c) section(s) providing details on onsite rainwater management facilities;

(d) how runoff is being collected onsite and directed to the onsite rainwater management facilities;

(e) flow controlled outlet(s) discharging to the City's drainage system, if applicable (as per Section 4.46);

(f) emergency overflow systems (as per Section 4.46.4).

(g) overland flow paths being directed to major systems (as per Section 4.40.3).

(h) layouts, pipe sizes, pipe inverts, and slopes of existing and proposed onsite and offsite drainage works.

(i) existing or proposed service connection location(s) (as per Section 4.47.4); and

(j) location(s) of the stormwater source control and manufactured treatment devices, if applicable (as per Section 4.45).

4.43.4. RWMP Requirements for Properties without Service Connections

4.43.4.1. Service connections to the City's drainage system should be provided in accordance with the *Sanitary Sewer and Stormwater Utilities Bylaw* and Section 4.39.1.

4.43.4.2. For sites with no stormwater connection, and where onsite stormwater management is allowable under the *Sanitary Sewer and Stormwater Utilities Bylaw*, the property owner must submit a comprehensive onsite RWMP, prepared by a professional engineer, that includes the following:

(a) a site assessment;

(b) soil characteristics and rock outcrops;

(c) percolation testing;

(d) detailed calculation sheet that demonstrates the system will manage the runoff generated from the site (sized as per Section 4.39.2);

(e) a letter of assurance that certifies the design; and

(f) a maintenance plan for the owners to follow.

4.43.4.3. The RWMP must include a site plan containing the following details:

(a) elevation of the seasonal high water table;

(b) site grading;

(c) impervious areas and runoff flow directions;

(d) location of other onsite utilities;

(e) any relevant information from completed arborist report (if applicable);

(f) the location of the rainwater management system; and

(g) section details of the rainwater management system.

4.43.4.4. The installation of the system must be supervised by a qualified professional.

4.44. Runoff Analysis

4.44.1. Analysis Method

4.44.1.1. City Infrastructure: Contact the City to confirm pipe sizing and the analysis method to be used for sizing.

4.44.1.2. Stormwater Conveyance: The Rational Method (see Section 4.44.3) can typically be used for sizing onsite stormwater conveyance systems due to the small parcel sizes throughout the City. For larger parcels (greater than 10 hectares), alternative analysis methods may be considered as per Section 4.44.6.

4.44.2. Rainfall Data

4.44.2.1. Rainfall intensity must be determined from the Intensity-Duration-Frequency (IDF) curve presented in Table 35 which incorporates future climate change scenarios to the year 2070.

TABLE 35: CITY OF VICTORIA IDF CURVE

Rainfall Intensity (mm/hr)						
Storm Duration	Return Period					
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr
5 min	25.8	36.9	44.3	53.3	60.0	66.7
10 min	18.3	25.7	30.7	36.7	41.2	45.6
15 min	15.1	20.5	24.2	28.6	31.9	35.1
30 min	11.0	13.9	16.0	18.5	20.3	22.0
60 min	8.4	10.4	11.9	13.6	14.8	16.1
2 hrs	6.5	8.3	9.6	11.1	12.2	13.3
6 hrs	4.4	5.7	6.6	7.7	8.5	9.4
12 hrs	3.3	4.4	5.2	6.1	6.8	7.4
24 hrs	2.2	3.0	3.6	4.4	4.9	5.4

4.44.3. Rational Method

4.44.3.1. The peak flow, Q, is calculated using the Rational Method, which is defined as:

$Q = (CIA)/360$

Where:

Q = Peak Flow (m^3/s)

C = Runoff Coefficient as per Section 4.44.4.

I = Rainfall Intensity (mm/hr) as per Section 4.44.2.

A = Drainage Catchment Area (ha)

4.44.4. Runoff Coefficients

4.44.4.1. The runoff coefficients provided in Table 36 must be used for the Rational Method. It is up to the qualified professional to select an appropriate runoff coefficient that is representative of the site.

TABLE 36: RUNOFF COEFFICIENTS BASED ON LAND USE

Land Use	5- and 10-Year Runoff Coefficient	100 Year Runoff Coefficient
Park	0.2	0.3
Road Right-of-Way	0.8	0.85
TIER A: Low-density residential (4 units or less)	0.65	0.7
TIER B: Muli-family residential	0.8	0.85
TIER C: Civic and institutional	0.75	0.8
TIER D: Commercial and industrial	0.85	0.95
Mixed-Use	0.8	0.85

4.44.5. Time of Concentration

4.44.5.1. The time of concentration is the time required for runoff to flow from the farthest part of the area under consideration to the design node. The time of concentration based on land use is outlined in Table 37.

TABLE 37: TIME OF CONCENTRATION BASED ON LAND USE

Land Use	Time of Concentration (min)
TIER A: Low-density residential (4 units or less)	10
TIER B: Muli-family residential	8
TIER C: Civic and institutional	8
TIER D: Commercial and industrial	5
Mixed-Use	5

4.44.6. Alternative Methods

4.44.6.1. Other runoff analysis methods (e.g., hydrograph programs) may be considered if their uses are deemed necessary (e.g., for parcels larger than 10 hectares) as indicated by City staff.

4.45. Stormwater Source Control Facilities

4.45.1. General

4.45.1.1. Stormwater source control facilities must be designed to protect the municipal stormwater system and watercourses from frequent flows and contaminant inputs. Typically occurring frequent runoff volumes must be returned to natural pathways, through infiltration, evaporation, and transpiration to approximate natural forested watershed conditions. Runoff reduction and water quality improvements can be obtained by capturing and retaining rainfall onsite. Whenever possible, this should be achieved with GSI. GSI includes techniques such as rain gardens, bioswales, infiltration chambers, permeable paving with a reservoir, green roofs, and rainwater harvesting.

4.45.1.2. Other design approaches and techniques to support runoff reduction and water quality improvements include the following:

(a) preserving or enhancing undisturbed natural areas;

(b) reducing road/driveway/parking widths;

(c) limiting surface parking;

(d) reducing building footprints;

(e) using increased depths of absorbent soil layers in landscaping areas; and

(f) providing enhanced landscaping using native vegetation to evapotranspire rainfall.

4.45.1.3. Under certain site conditions (e.g., during excavation and construction), and land uses (e.g., parking lots), additional onsite stormwater treatment may be required ahead of discharging to the City's storm drain. More information on these requirements can be found in Section 4.45.8.

4.45.1.4. All systems must meet the performance targets outlined in the *Sanitary Sewer and Stormwater Utilities Bylaw*.

4.45.2. Infiltration Rate for Green Stormwater Infrastructure

4.45.2.1. Unless otherwise verified via onsite percolation testing, an infiltration rate of 2 mm/hr should be assumed for sizing subsurface infiltration facilities. This infiltration rate assumes the site is underlain by Victoria clay. If it is believed that site conditions differ from this assumed value, percolation testing may be performed on the site. In this case, the testing must be documented, including the conditions under which it was performed, the location(s) of test pit(s), and the results included in the Rainwater Management Plan (as per Section 4.43).

4.45.3. Bioretention Facilities

4.45.3.1. Bioretention facilities, such as rain gardens and bioswales, are engineered landscapes that manage stormwater by reducing runoff volumes and improving water quality. These systems use specialized soil media, vegetation, and drainage components to treat and infiltrate stormwater.

4.45.3.2. Bioretention facilities may include subsurface reservoirs to increase volume capture and infiltration capacity. Without reservoirs, runoff storage and treatment occur primarily in the soil layer, with surface ponding providing additional storage, particularly in rain gardens.

4.45.4. Permeable Surface Treatments

4.45.4.1. Permeable Surface Treatments behave similar to landscaped areas, where they can manage the rain that falls directly on it and promote infiltration. Unless a reservoir is incorporated beneath the permeable surface treatment, this area cannot manage runoff from any other site impervious areas.

4.45.5. Infiltration Chamber

4.45.5.1. Infiltration chambers manage runoff by temporarily storing and infiltrating the water into the subsurface. Two common types of infiltration chamber systems include:

(a) **Rock-Filled Infiltration Chamber**: Uses coarse aggregate to create voids for runoff storage; and

(b) **Open Infiltration Chamber**: Modular, manufactured systems designed to create large void spaces for storage.

4.45.5.2. Both systems exfiltrate runoff into the subsurface.

4.45.6. Detention Facilities

4.45.6.1. When onsite retention is not possible, onsite detention may be provided to meet the rainwater management target (as per Section 4.41.1). Detention facilities, such as detention tanks and rainwater harvesting techniques (e.g., via a cistern), provide runoff reduction but do not provide water quality treatment on their own. Detention facilities should be combined with manufactured treatment devices (as outlined in Section 4.45.7) to improve runoff quality ahead of discharging to the City's storm drain. The outlet from detention facilities must have a flow control device to meet the allowable peak flow discharge rate to the City's storm drain (as per Section 4.41.4).

4.45.6.2. **Detention Tanks**:

(a) the design of rooftop or underground detention tanks should be done by a qualified professional. For rooftop systems, a structural engineer must confirm the roof supports are adequate to support the maximum (filled) weight of the detention tank; and

(b) the detention tank "minimum active storage capacity" excludes the volume below the orifice and above the emergency overflow. The overflow must bypass the outlet flow control mechanism as per Section 4.46.4. The orifice flow control should have appropriate debris protection to prevent blockages. The detention tank should be inspected and cleaned regularly following the manufacturer's instructions.

4.45.6.3. **Rainwater Harvesting**:

(a) rainwater can be collected and reused through systems such as cisterns, supporting both irrigation and non-potable indoor uses (e.g., toilet flushing).

(b) refer to the latest version of the BC Surface Water Treatment Objectives, BC Building Code, BC Plumbing Code, and the CSA B805/ICC 805 Rainwater Harvesting Systems for the design, materials, installation, and operation of rainwater harvesting systems for potable and non-potable applications.

4.45.7. Manufactured Treatment Device

4.45.7.1. When onsite retention is not possible (as per Section 4.41.2), manufactured treatment device should be incorporated into onsite detention systems to provide treatment of runoff ahead of discharging to the City's storm drain.

4.45.7.2. The choice of manufactured treatment device should be based on the contaminant inputs and ensure that discharges from onsite stormwater and rainwater management systems to the City's storm drain are compliant with the *Sanitary Sewer and Stormwater Utilities Bylaw*.

4.45.7.3. All manufactured treatment devices must be appropriately sized, designed, and maintained to ensure they meet performance standards and operate effectively under expected flow conditions.

4.45.8. Stormwater Codes of Practice

4.45.8.1. Under certain site conditions and land uses, additional onsite stormwater treatment may be required to comply with the *Sanitary Sewer and Stormwater Utilities Bylaw*, Part 4 – Discharges to Sewers and Watercourses, Section 24, Codes of Practice. All treatment requirements outlined in the Code of Practice must be provided ahead of discharging to the City's storm drain.

4.45.8.2. Business type, land uses, and site conditions regulated under the Code of Practice includes (but is not limited to) the following:

(a) Construction and Development

(b) Automotive and Parking Lot Operations

(c) Recreation Facilities

(d) Outdoor Storage Operations

(e) Recycling Operations

4.45.8.3. For more information and details, refer to the City's *Sanitary Sewer and Stormwater Utilities Bylaw*.

4.46. Flow Control Facilities

4.46.1. General

4.46.1.1. Flow control facilities must be designed according to requirements for either minor or major systems (as per Section 4.40).

4.46.1.2. All onsite source control facilities must have an overflow that discharges to the City's storm drain. For retention facilities, the overflow is unrestricted. Detention facilities must have a restricted outlet sized to achieve the maximum release rate outlined in Section 4.41.4.

4.46.1.3. A qualified professional must also verify that downstream infrastructure can adequately convey runoff from the subject site. Existing facilities which are undersized or inadequate to accept additional drainage must be upgraded by the owner.

4.46.2. Weirs

4.46.2.1. Weir equation as per MMCD Design Guidelines section 4.16.2 Flow Control Structure.

4.46.3. Orifice Sizing

4.46.3.1. Flow control orifices should be sized to discharge to pre-development peak flows (as per Section 4.41.4) using the orifice equation as follows:

$Q = CA(2gh)^{0.5}$

Where:

Q = the pre-development release rate as per Section 4.41.4.

C = orifice coefficient (0.62 for sharp or square edge)

A = area of orifice (m^2)

g = gravitational acceleration (9.81 m/s^2)

h = net head on orifice (m)

4.46.3.2. The orifice flow control should have appropriate debris protection to prevent blockages.

4.46.3.3. Flow control manholes must be a minimum of 1200 mm diameter to provide for access and maintenance.

4.46.4. Emergency Overflow

4.46.4.1. All onsite rainwater management systems must include an emergency overflow to prevent flooding during extreme storm events or system blockages. Emergency overflows must be designed as follows:

(a) for onsite detention systems, the emergency overflow must bypass the primary outlet flow control mechanism to ensure unrestricted discharge during overflow conditions;

(b) the emergency overflow must discharge directly to the City's storm drain; and

(c) the overflow must be sized to accommodate flows exceeding the system's design capacity, as determined by a qualified professional.

4.47. Storm Drain Requirements

4.47.1. General

4.47.1.1. General must be as per MMCD Design Guidelines section 4.11.1 General.

4.47.1.2. Pipe capacity must be as per MMCD Design Guidelines section 4.11.2 Pipe Capacity.

4.47.1.3. Flow velocities must be as per MMCD Design Guidelines section 4.11.3 Flow Velocities.

4.47.1.4. Outlets to open channels must be as per MMCD Design Guidelines section 4.11.4 Outlets to Open Channels.

4.47.1.5. Ditch inlets must be as per MMCD Design Guidelines section 4.11.5 Ditch Inlets.

4.47.1.6. System alignments must be as per MMCD Design Guidelines section 4.11.6 Alignment.

4.47.1.7. Minimum pipe diameter must be as per MMCD Design Guidelines section 4.11.7 Minimum Pipe Diameter.

4.47.1.8. Pipe grade must be as per MMCD Design Guidelines section 4.11.8 Pipe Grades.

4.47.1.9. Curved sewers must be as per MMCD Design Guidelines section 4.11.9 Curved Sewers.

4.47.1.10. Sewer depth must be as per MMCD Design Guidelines section 4.11.10 Sewer Depth.

4.47.1.11. Pipe joints must be watertight (gasket) joints.

4.47.1.12. Manholes must be as per MMCD Design Guidelines section 4.11.12 Manholes.

4.47.1.13. Minimum Building Elevation (MBE) must be as per MMCD Design Guidelines section 4.6 Minimum Building Elevation (MBE).

4.47.1.14. Locations and corridors must be as per MMCD Design Guidelines section 4.11.15 Locations and Corridors.

4.47.1.15. Surcharged pipes must be as per MMCD Design Guidelines section 4.11.16 Surcharged Pipes.

4.47.2. Catch Basins

4.47.2.1. Catch basins must be as per MMCD Design Guidelines section 4.11.13 Catch Basins and the Supplementary Drawings.

4.47.2.2. Catch basin grates should be designed as per the Supplementary Drawing SD S11a.

4.47.3. Lawn Drains

4.47.3.1. Lawn drains may be required within boulevards and landscaped areas to prevent flooding or ponding.

4.47.3.2. Lawn drains should be designed as per the Supplementary Drawing SD S12.

4.47.4. Service Connection Specifications

4.47.4.1. Service connection locations must align with the Supplementary Drawings and avoid conflicts with other utilities, structures, and trees.

4.47.4.2. Sizing of service connections must meet the following requirements:

(a) minimum service connection size: 100 mm diameter;

(b) for larger lots or sites with high runoff volume (e.g., significant impervious areas), the qualified professional must determine the required service connection size based on expected flow rates and site-specific conditions;

(c) existing service connection sizes must be verified before design and construction; and

(d) materials must conform to CSA Standards and MMCD Design Guidelines.

4.47.4.3. The pipe invert at the property line must be sufficient to provide gravity drainage to the storm main. See Supplementary Drawing SD S8 for the minimum grade from the property line to the storm main.

4.47.4.4. See Supplementary Drawing SD S8 for tie-in requirements for service connections to the main.

4.47.5. Inspection Chambers

4.47.5.1. Inspection chambers are mandatory on all new storm drain service connections. Chambers must be installed at the property line in accordance with the Supplementary Drawing SD S10. Access to inspection chambers must remain clear and unobstructed at all times.

4.47.6. Trenchless Technologies

4.47.6.1. The use of trenchless technologies in the City as a means of installing or rehabilitating underground sewer infrastructure must be approved by the Underground Utilities Group prior to construction. The qualified professional and contractor must be experienced in the proposed trenchless method.

4.47.7. Surface Flow Routing

4.47.7.1. Surface flow routing is considered as part of the major stormwater conveyance system that is to convey flows along roadways and/or designated flood conveyance right-of-ways. It is for flows in excess of the capacity of the minor system and cannot be conveyed via the major storm sewers and/or natural watercourses.

4.47.7.2. Surface flow routing must be as per MMCD Design Guidelines section 5.1 Surface Flow Routing.

4.47.7.3. Surface flow capacity must be as per MMCD Design Guidelines section 5.2 Surface Flow Capacity.

4.47.8. Specialized Structures

4.47.8.1. Inlet and outlet controls must be as per MMCD Design Guidelines section 4.16.1 Inlet and Outlet Controls.

4.47.8.2. Ditch enclosures must be as per MMCD Design Guidelines section 4.16.3 Ditch Enclosure.

4.47.8.3. Safety provisions must be as per MMCD Design Guidelines section 4.16.4 Safety Provision.

4.47.8.4. Outfall aesthetics must be as per MMCD Design Guidelines section 4.16.5 Outfall Aesthetics.

E. Sanitary Sewer

4.48. Introduction

4.48.1. The City sanitary sewer system is a network of pipes, pump stations, and individual connections that convey wastewater. Wastewater is directed to the CRD for treatment, governed by the Core Area Liquid Waste Management Plan. The City supports in managing wastewater discharge to ensure that the integrity of the system is not compromised. As the City system continues to age and develop, ensuring a robust well-managed system is important, considering effluent quantity and quality and removing non sanitary inflow sources. Climate resiliency remains a priority in maintaining and operating this core service.

4.49. General

4.49.1. An owner may be required to provide, on the site being developed, a sanitary distribution system that must be designed and constructed in accordance with the standards established under *Sanitary Sewer and Stormwater Utilities Bylaw* and as per the specifications in this ESS Manual.

4.49.2. Developments may be required to attenuate their sanitary sewer flows should they determine that sufficient capacity of the municipal sanitary system is not available.

4.49.3. Developments that are subject to sanitary sewer attenuation must:

(a) provide a report which outlines system requirements and design for consideration and acceptance by the Director of Engineering as required in this ESS Manual;

(b) design a system to which considers Annual Daily Demand (ADD) per capita flow rates in their calculations;

(c) design the system to discharge at off-peak times for the system being contributed to;

(d) enter into a sanitary attenuation maintenance agreement on terms and in a form to the satisfaction of the Director of Engineering and City Solicitor that provides drawings and an operation and maintenance explanation as provided by the design professional, that requires for on-going inspection and cleaning of the sanitary attenuation system as prescribed by the Professional Engineer; and

(e) maintain records of maintenance and make available to the City upon request.

4.49.4. Sanitary sewer systems and services are to be designed and authenticated by a professional engineer.

4.49.5. Sanitary sewer infrastructure is to be designed and installed to meet the Supplementary Specifications, Supplementary Drawings, and MMCD.

4.49.6. Typical servicing recommendations for separation and offsets to municipal services, utilities, poles, and landscape features can be found in the Table 4.

F. Water

4.50. Introduction

4.50.1. The City supplies potable water to the City of Victoria and Township of Esquimalt through a distribution system using a network of watermains, pressure reducing valves, and pump stations. Providing clean and dependable water supply for the purposes of domestic, business, and recreation usage is a vital service. The water distribution system is to ensure that it is adequate for consumption and fire protection, to be maintained and operated in a reliable manner. Climate resiliency of the overall distribution system is also considered.

4.51. General

4.51.1. Water supply and fire flow demand must be in accordance with the "Water Supply for Public Fire Protection", by the Fire Underwriters Survey (FUS) (Current Edition) for the existing or anticipated land use.

4.51.2. System upgrades may be required to meet FUS.

4.51.3. The FUS report must be completed and authenticated by a professional engineer and provided to the City concurrent with an application for building permit.

4.51.4. Water supply systems and services, and all associated calculations, are to be designed and authenticated by a professional engineer.

4.51.5. Typical servicing recommendations for separation and offsets to municipal services, utilities, poles, and landscape features can be found in the Table 4.

4.51.6. The FUS report submission to the City must clearly demonstrate on a map the exposure distances to adjacent lands and structures and:

(a) occupancy considerations are to be explained, and separated by use as necessary; and

(b) residual pressure at the flow rate must not be less than 138kPa (20PSI) anywhere in the water network.

4.51.7. Where water system improvements are required to facilitate a development to meet FUS supply needs, the cost of delivering the upgrade must be borne by the development.

G. Erosion and Sediment Control

4.52. Introduction

4.52.1. Erosion and sediment control (ESC) is required for construction and development activities to protect the municipal stormwater system and downstream watercourses. The following section outlines required practices to ensure compliance with the City's *Sanitary Sewer and Stormwater Utilities Bylaw*.

4.53. Erosion and Sediment Control (ESC) Requirements

4.53.1. General

4.53.1.1. An owner must submit an ESC plan and install ESC facilities for each development in accordance with this ESS Manual, except as specified in the *Works and Services Bylaw*. The ESC plan must demonstrate how ESC Facilities will be installed prior to commencing works and how they will be maintained in good working order during all phases of development activities.

4.53.2. Prohibited Discharges

4.53.2.1. All persons must comply with the conditions for discharge of stormwater into the municipal stormwater system or watercourse as per the *Sanitary Sewer and Stormwater Utilities Bylaw*. The ESC facilities of this ESS Manual focus on preventing or minimizing the erosion of sediment, earth or soil from development activities and the resulting discharge into the municipal stormwater system.

4.53.3. ESC Requirements for Low-Density Residential Properties

4.53.3.1. Prior to any development of low-density residential properties (4 units or less), a completed and signed Stormwater Codes of Practice Registration Form (in accordance with the *Sanitary Sewer and Stormwater Utilities Bylaw*) must be submitted to the City.

4.53.3.2. The Director of Engineering may require an owner of a low-density residential property to comply with one or more of the requirements in Section 4.53.4 where the Director considers this necessary for the protection of the municipal stormwater system or a watercourse.

4.53.4. ESC Requirements for All Other Properties

4.53.4.1. Prior to any developments of property types other than that identified in Section 4.53.3, the following requirements must be met:

(a) submit a completed and signed Stormwater Codes of Practice Registration Form in accordance with the *Sanitary Sewer and Stormwater Utilities Bylaw*;

(b) submit a site-specific ESC plan prepared by a qualified professional and signed by the appointed ESC monitor. The plan must address all water flows to be managed, including but not limited to surface flows, stormwater, and groundwater; and

(c) submit an Assurance Statement signed by the qualified professional who commits to accept responsibility for the management of the ESC plan.

4.53.5. ESC Implementation, Monitoring, and Maintenance Requirements

4.53.5.1. Where the requirements of Section 4.53.4 apply, the ESC plan must specify the following:

(a) how compliance with the *Sanitary Sewer and Stormwater Utilities Bylaw* will be achieved for the duration of development activities, including ensuring all ESC facilities are constructed, installed, operated and maintained in accordance with the approved ESC plan;

(b) appointment of an ESC monitor who is a qualified professional trained in implementing ESC Plans;

(c) the role of the ESC monitor in implementing the approved ESC Plan;

(d) the ESC monitor's procedures for inspection, monitoring, maintenance, operation and reporting of the installed ESC facilities during all phases of development activities; and

(e) the process for notifying the City if the ESC Monitor's services are terminated or withdrawn, and for providing contact information for the newly appointed ESC Monitor.

4.54. Erosion and Sediment Control Plan

4.54.1. ESC Plan Content

4.54.1.1. The ESC plan must set out works and measures required during development activities to prevent the discharge of prohibited waste to the municipal stormwater system or a watercourse.

4.54.1.2. An ESC plan submitted to the City must:

(a) be designed, signed and sealed by a qualified professional;

(b) be reviewed and signed by the appointed ESC monitor; and

(c) conform to the City's drawing standards outlined in Part 3 of this ESS Manual.

4.54.1.3. The ESC plan must show all measures for erosion and sediment control during each applicable stage of development including:

(a) demolition;

(b) excavation and soils mobilization;

(c) civil construction;

(d) final grading and landscaping; and

(e) ESC decommissioning.

4.54.1.4. The ESC plan must include a schedule for the installation, maintenance and final decommissioning of ESC facilities, treatment works, and source controls for each applicable stage of development.

4.54.2. ESC Facilities and Locations

4.54.2.1. ESC plans must show details and locations of existing and proposed features including:

(a) existing and proposed underground services and connections to existing services as per Section 3.5.5;

(b) existing catch basins and drainage infrastructure likely to be affected by the development work, as defined by the qualified professional, and proposed protection measures;

(c) existing and proposed buildings, ancillary buildings, or structures;

(d) existing and proposed contours, drainage flows, and relevant spot elevations;

(e) proposed limits of disturbance for each phase of development;

(f) all proposed ESC facilities to be implemented on site including site-specific settling and filtration works;

(g) anticipated soil type in areas to be disturbed and at all depths to be excavated;

(h) proposed site access location(s) and protection measures to prevent sediment from being tracked off-site;

(i) location and management of stockpile areas;

(j) location of tree protection barriers and setbacks, when applicable, in coordination with the arborist's tree management plan. Ensure that all components of the ESC plan are located outside of tree protection zones and setbacks;

(k) location(s) of water quality monitoring site(s);

(l) location of stormwater outlet/discharge point; and

(m) Gonzales rain gauge to be monitored for Significant Rainfall Events (SRE).

4.54.3. ESC Facility Design Criteria

4.54.3.1. ESC plans must include the design basis for ESC facilities, supporting calculations, and detailed specifications, including:

(a) anticipated soil types in all areas to be disturbed and at all excavation depths;

(b) design calculations, installation specifications, and maintenance requirements for each ESC facility;

(c) return period and duration of the selected design storm event using current rainfall data and considering the timing of construction activities; and

(d) the anticipated groundwater volumes to be managed on-site, including measures to ensure groundwater meets water quality criteria set out in the *Sanitary Sewer and Stormwater Utilities Bylaw* and any other applicable provincial and federal legislation before being discharged.

4.54.4. Design Details and Specifications

4.54.4.1. ESC plans must describe design details including:

(a) proposed measures to ensure that any existing ground cover is maintained as long as practicably possible, that work is staged to prevent erosion whenever possible, and that exposed soils are placed under non-erosive cover as soon as possible;

(b) erosion and sediment control measures for perimeter protection, traffic area stabilization, sediment retention, surface water control, and dust control, with source controls as the primary method;

(c) for plans using water treatment systems, specifications for treatment location, deployment and discharge;

(d) redundances, contingencies, and mitigation measures to prevent adverse impacts to downstream infrastructure, receiving environments, private property, or public safety if the design storm event is exceeded, considering all managed flows including stormwater and groundwater;

(e) pollution control and spill response; and

(f) all other development-related details describing how ESC facilities, methods or best management practices will convey, control and treat stormwater, surface water and groundwater flows.

4.54.5. ESC Plan Monitoring, Inspection, and Reporting Information

4.54.5.1. ESC plans must provide the following information regarding performance monitoring:

(a) contact information and 24-hour emergency contact phone number for the ESC monitor responsible for the site;

(b) the proposed monitoring, inspection, and reporting schedule during development activities in accordance with the scheduled monitoring and reporting frequencies outlined in Section 4.55.3; and

(c) an operation and maintenance program for installed ESC facilities including maintenance schedule, methodology, and assigned maintainer.

4.55. ESC Facility Inspection, Monitoring, and Reporting

4.55.1. General

4.55.1.1. Daily and ongoing inspections of ESC facilities are crucial to compliance with the requirements in the *Sanitary Sewer and Stormwater Utilities Bylaw*. To ensure the installed ESC facilities remain effective, The ESC plan must describe the approach for regular inspections and maintenance of ESC facilities through all phases of development activities by the ESC monitor or a qualified designate.

4.55.2. ESC Monitor Responsibilities

4.55.2.1. The ESC monitor is responsible for ensuring the ESC facilities are installed, operated and maintained in accordance with the approved ESC plan and that the ESC facilities are in compliance with the requirements in this ESS Manual throughout all development activities. The ESC plan must describe the responsibilities of the ESC monitor, including:

(a) assisting the qualified professional in preparing the ESC plan;

(b) reviewing and signing the ESC plan;

(c) completing the inspection, monitoring, and reporting of the installed ESC facilities in accordance with Section 4.55 to ensure ESC facilities are in compliance with the requirements of this ESS Manual and are implemented according to the approved ESC plan, through all phases of development;

(d) sampling and analyzing the water being discharged from the site. Water quality must not exceed the standards outlined in the *Sanitary Sewer and Stormwater Utilities Bylaw*;

(e) advising the qualified professional and owner of any deficiencies in the ESC plan, water quality exceedances or corrective actions required to adapt to changing site conditions or unforeseen problems that arise;

(f) procedures for notifying the City, and appropriate federal or provincial agencies, if any prohibited waste is released directly or indirectly into the municipal stormwater system, or otherwise impedes the municipal stormwater system.

(g) coordinating the removal of ESC facilities with site decommissioning;

(h) maintaining a record of all site inspections and monitoring reports and making the reports available to the City upon request;

(i) delivering written notice to the City to request water treatment system removal; and

(j) delivering written notice to the City when all development activities are completed and the site no longer poses a threat to the municipal stormwater system or watercourse and the ESC Facilities have been removed.

4.55.2.2. The ESC monitor may delegate site inspections to a suitably qualified subordinate. In such cases, the ESC monitor remains responsible for directing the work and must review and sign any data, reports and correspondence submitted to the City.

4.55.3. Scheduled ESC Facility Monitoring and Reporting

4.55.3.1. The ESC plan must outline the proposed schedule for monitoring and reporting, including:

(a) pre-construction inspection of ESC facilities installation to ensure accordance with the approved ESC plan;

(b) schedule for periodic inspections and assessments of the condition and performance of installed ESC facilities and water quality monitoring of site discharge, which must align with the minimum frequencies noted in Table 38;

(c) proposed procedures for evaluating ESC facility performance during forecasted Significant Rainfall Events, when the likelihood of deficiencies is more prevalent and how inspections will be conducted within 24 hours of a Significant Rainfall Event;

(d) describe procedures for identifying installation deficiencies or maintenance issues that could impair ESC facility performance, including the process for notifying the owner and remedying deficiencies;

(e) post-construction inspection of the ESC facilities decommissioning and removal;

(f) monitoring report format and content and demonstrate that reporting will occur at the minimum frequency noted in Table 38. The report template must include, at minimum:

i. weather conditions at time of inspection,

ii. amount of rainfall in the 24 hrs prior to inspection,

iii. description of current construction and development activities,

iv. review of the implemented ESC facilities and their conditions,

v. deficiencies observed,

vi. corrective actions to address identified deficiencies,

vii. maintenance undertaken,

viii. recommendation of adaptive measures to ensure compliance with ESC plan,

ix. water quality sampling results, and time and date-stamped photos.

4.55.3.2. The ESC plan must acknowledge that the City may request inspections at varying times and weather conditions to demonstrate compliance with the requirements in this ESS Manual.

TABLE 38: ESC FACILITY SCHEDULED MONITORING AND REPORTING FREQUENCIES

Event or Season	Minimum Monitoring Frequency	Minimum Reporting Frequency	Reporting To
Wet Weather Months (October – April)	Weekly	Bi-weekly	Owner; Qualified Professional
Dry Weather Months (May – September)	Bi-weekly	Monthly	Owner; Qualified Professional
Significant Rainfall Events	During the event; and, within 24 hours of event	Within 7 days of event	Owner; Qualified Professional

4.55.4. Water Quality Monitoring and Reporting

4.55.4.1. The ESC plan must include a water quality monitoring program describing how potential pollutants in water discharged from the development site will be measured prior to release into the municipal stormwater system. Allowing a prohibited discharge to enter the City's drainage system is a significant environmental concern, and a violation of the *Sanitary Sewer and Stormwater Utilities Bylaw*. Requirements for approval to discharge must be included in the ESC plan and must describe the minimum monitoring parameters in alignment with the water quality parameters described in Table 39 and the monitoring and reporting frequencies described in Table 38 and Section 4.55.3.

4.55.4.2. All discharges must comply with limits outlined in the *Sanitary Sewer and Stormwater Utilities Bylaw* and the most stringent requirements applicable to the receiving environment, as confirmed by the Qualified Professional.

4.55.4.3. The ESC Plan must describe procedures for notification if any discharge of water exceeding the limits for the parameters outlined in Section 4.55.5 is released directly or indirectly into the municipal stormwater system.

4.55.4.4. All sample collection and testing must be in accordance with water quality sampling and testing standard practice.

4.55.5. Water Quality Monitoring Parameters

4.55.5.1. The minimum water quality monitoring parameters are listed in Table 39.

TABLE 39: WATER QUALITY MONITORING PARAMETERS

Monitoring Parameter	Prior to First Discharge	Scheduled Monitoring
pH	X	X
Turbidity (NTU)	X	X
Total Oil and Grease	X	
E. coli	X	
Phosphorus	X	
Chloride	X	
BTEX	X	
PAH	X	
Total Metals	X	

4.55.6. Water Quality Monitoring Milestones

4.55.6.1. The ESC plan must describe the water quality monitoring program required to obtain and maintain City approval for discharge to the municipal stormwater system. The program must demonstrate how monitoring and reporting will be carried out at the following milestones:

(a) Prior to first discharge: at minimum, all parameters in Table 39 are to be sampled prior to first discharge, with results submitted to the City in support of a request to discharge;

(b) Treatment adjusted: where initial sampling results exceed allowable limits and changes are made to the treatment system, additional sampling for all parameters must be carried out and reported to the City in support of a request for discharge;

(c) Scheduled monitoring: at minimum, pH and turbidity must be monitored and reported at the frequencies outlined in Table 38. The City may also request additional samples at varying times and weather conditions to confirm compliance with this ESS manual; and

(d) Final decommissioning: submission of written justification requesting City approval to remove on-site treatment works.

H. Trees and Landscaping

4.56. Introduction

4.56.1. The City works to retain existing trees, and landscape areas and improve them over time and with development. This section informs about landscaping, street trees and associated infrastructure installed or constructed on the right-of-way, City owned land or SRW granted for such purpose. Works are to meet MMCD Standards, as well as the supplemental standards as contained in Part 7 and Part 8 of this ESS Manual.

4.56.2. All installation and construction work must be directed, supervised and inspected by the qualified professionals working on the project. Field changes and change orders which deviate from the approved drawings, specifications and materials must be approved in writing by the Director of Engineering and the Director of Parks prior to installation.

4.57. Minimum Landscape Area Dimensions

4.57.1. Boulevard placement and widths are to be designed and installed in consideration of the City's cross sections (Part 6 of this ESS Manual). The minimum widths are as follows:

(a) boulevard width (which may include a boulevard tree) must be 1.65 m measured from the face of curb to the edge of the sidewalk;

(b) width for a shrub or ground cover bed must be 1.0 m;

(c) the width for grass median must be 2 m from curb face to curb face; and

(d) the width for a planted landscaped median must be 2.7 m from curb face to curb face. This will allow for curb/splash apron widths of 0.5 m on each side and a 1.7 m wide planting bed.

4.58. Grading Requirements

4.58.1. All grading within landscaped areas located in a right-of-way must adhere to the requirements outlined in Section 4.58.2 to Section 4.58.8.

4.58.2. Subgrade elevations must be contoured to ensure consistent depth of growing medium, appropriate for the intended landscape type, and to meet the minimum required soil volumes for tree planting.

4.58.3. Proposed changes in grade, slope or elevation within the critical root zone of retained trees must be reviewed by the arborist professional and modified as necessary to avoid disturbance to roots and ensure tree protection.

4.58.4. Landscaped boulevards situated between the sidewalk and the street must have a finished slope of 2% to 8% directed towards the street

4.58.5. Offset areas located between the back of sidewalk and the property line—or between the curb and property line where no sidewalk exists—must maintain a finished slope of 2% to 8% towards the street, unless an alternative slope is approved by the Director of Parks.

4.58.6. Where stormwater treatment features (e.g., rain gardens, bioswales) are proposed or existing, slope gradients may be adjusted as required to direct, retain, and treat runoff to the satisfaction of both the Director of Engineering and the Director of Parks.

4.58.7. The preservation or alteration of natural slopes and rock outcroppings within the public right-of-way is subject to approval by both the Director of Engineering and the Director of Parks.

4.58.8. An arborist professional must directly supervise all excavation work and ground disturbance activities within the critical root zones of municipal trees and bylaw-protected trees.

4.59. Street Trees

4.59.1. General Requirements

4.59.1.1. This specification governs the design and location of boulevard street trees within the City. Street trees must be planted in the boulevard/furnishing, flex, ancillary, median zones on both sides of a highway being created by a subdivision or development, and of an existing highway immediately adjacent to the site being subdivided, developed and where a civil construction project is taking place. Tree planting locations and zone widths must be consistent with the Cross Sections (Part 6 of this ESS Manual). With the approval of the Director of Parks, street trees may also be planted in a right-of-way registered in favour of the City for that purpose. Boulevard trees will not be required under the following conditions:

(a) where healthy boulevard street trees identified for retention are growing at not less than the density or spacing requirements of this specification;

(b) where there are rock barriers or soil conditions which will not sustain a healthy tree; or

(c) where due to the size of the boulevard area fronting the lot and the presence of driveways or other required site services, there is insufficient room to plant a tree, and design changes, a required road dedication and/or statutory right-of-way will not allow sufficient space to plant a tree or trees.

4.59.1.2. The civil and landscape design for a street frontage must maximize soil volumes and clearances for each tree planting location to provide sufficient soil volumes to support medium to large canopy trees in each tree planting location along the frontage.

4.59.1.3. Tree planting drawing details are provided in Part 8 of this ESS Manual, Tree and Landscape Supplementary Drawings.

4.59.1.4. Street trees must meet the spacing requirements in Table 40.

TABLE 40: TREE SPACING REQUIREMENTS

Mature Tree Size	Tree Spacing (m)
Small	6.0 - 8.0
Medium	8.0 - 11.0
Large	11.0 - 14

4.59.1.5. The design of the off-site works and services and third-party utilities must provide required clearances and soil volumes for medium to large tree species. See Table 41 for details.

4.59.1.6. Street tree placement must be in a manner not to pose significant impacts to underground and overhead servicing. Table 41 lists minimum required clearances measured horizontally from the center of the tree to the closest edge of the utility or infrastructure. In locations where street trees are required and the minimum distances cannot be achieved, trees must be planted with mitigation measures to protect services, or infrastructure subject to the approval of the Director of Engineering and Director of Parks.

4.59.1.7. Small tree species must be approved by the Director of Parks and will only be considered in locations where no suitable landscape or civil design will allow required clearances and soil volumes for a medium or large tree species.

4.59.1.8. Proposed tree planting locations must consider future impacts to, and soil volume requirements for, existing trees being protected and retained.

TABLE 41: PLANTING SETBACKS FROM UTILITIES AND INFRASTRUCTURE

Utilities and Infrastructure	Minimum Setback Distances from Trees [1]
Underground Streetlight Conduit	0.6 m
Streetlight Service Boxes	1.5 m
Lamp Standards	5.0 m
Cluster Lamps	4.0 m
BC Hydro Wooden Utility Poles	5.0 m
Telus Wooden Utility Poles (No Streetlight)	3.0 m
Gas Service	1.0 m
Utility Service Vaults and Boxes	1.5 m
Driveways [2]	2.5 m
Water Service Lateral	2.0 m
Sewer or Storm Drain Lateral	3.0 m
Catch Basins	2.0 m
Manholes	3.0 m
Fire Hydrants	2.0 m
Road Intersection	7.0 m
Curb Face	0.75 m
Sidewalk	0.75 m
Buildings – regular crown small species	3.0 m
Buildings – regular crown medium species	4.0 m
Buildings – regular crown large species	5.0 m
Awning	1.5 m

[1] All Distances measured horizontally from the centre of the tree.

[2] Measured diagonally from the outside edge at the center of the driveway flare.

4.59.1.9. Where existing trees do not meet the required soil volume, additional soil volumes must be provided to meet the required soil volume for the mature tree size.

4.59.1.10. In locations where trees are planted 1.0 m or less from newly installed curbs or sidewalks, 300 mm deep root barriers must be installed. A 4 m long continuous length of Deeproot UB 12-2 must be installed directly against the edge of the sidewalk and/or curb. The position of the required root barrier is shown in the tree planting details in Part 8 of this ESS Manual.

4.59.1.11. Root barriers must be installed to meet the requirements of all City of Victoria and third-party underground utilities and infrastructure.

4.59.1.12. Street trees are to be planted in flexible zones in the downtown core, or other unique village locations in the City, as well as local streets in Boulevard and Flex Zones (see Part 6 of this ESS Manual).

4.59.1.13. An appropriate tree species will be selected by City staff for each location to maximize future tree canopy coverage utilizing the approved soil volume while considering the physical and environmental conditions at each tree planting location.

4.59.1.14. Tree planting locations must meet required soil volumes in Table 42.

TABLE 42: TREE SOIL VOLUME REQUIREMENTS

Mature Tree Size	Minimum Soil Volume (m^3)	Shared or Irrigated Soil Volume (m^3)
Small	8.0	6.0
Medium	20.0	15.0
Large	35.0	30.0

4.59.1.15. Where there is insufficient right of way to plant trees within an existing road right-of-way, road dedication or a SRW may be provided to meet the requirements of the Director of Parks, to the satisfaction of the Director of Engineering and City Solicitor to allow space for medium to large tree species.

4.59.1.16. Proposed or existing utility infrastructure locations, alignment, depth or height must be considered early in the design process to avoid conflict with required tree planting locations, existing tree critical root zones and required soil volumes.

4.59.1.17. The required minimum setbacks from underground utilities and infrastructure are as per Table 4 and Table 41 (Table 41 governs where discrepancies exist).

4.59.1.18. A building decorative awning must not encroach within 1.5 m of a tree planting location, measured horizontally as a radius, from a vertical line drawn from the center of a tree well or tree planting location. See Supplementary Drawing Detail SD PT10.

4.59.1.19. Underground structures, building plazas and foundations must be set back from the property line to achieve required soil volumes and reduce the likelihood of tree removals impacts from root disturbance during future building plaza membrane replacement.

4.59.1.20. Setbacks to buildings, balconies, and other appendages from buildings must be designed to allow sufficient clearance and setbacks for medium to large street tree species, as per Table 41.

4.59.1.21. Irrigation must be provided as per Part 7 and Part 8 of this ESS Manual for newly planted street trees where required by the Director of Parks.

4.59.1.22. Tree grates and tree guards must be installed to City of Victoria standards in planting locations in hardscape areas to the satisfaction of the Director of Parks.

4.59.2. Street Tree Specifications

4.59.2.1. All trees planted in a right of way must adhere to the following requirements:

(a) trees to be nursery grown stock and comply with the Canadian Landscape Standard – Canadian Nursery Stock Standard and Part 7 and Part 8 of this ESS Manual;

(b) deciduous and broadleaf evergreen trees planted in soft landscaping such as boulevards and shrub beds are to be standard form trees with a caliper between 50 mm and 70 mm measured at 150 mm from ground level and a minimum root ball diameter of 700 mm;

(c) deciduous and broadleaf evergreen trees planted within hardscaped areas and those areas identified within the downtown core area, town centres, and community villages identified in Map 1, planted in soft landscaping such as boulevards, shrub beds, rain gardens are to be standard form trees with a caliper between 70 mm and 80 mm measured at 150 mm from ground level and a minimum root ball diameter of 800 mm.

(d) coniferous trees must be between 2 m and 2.5 m in height measured from ground level. The root ball is to be a minimum of 700 mm in diameter.

4.59.3. Street Tree Spacing and Planting Setback

4.59.3.1. Trees must be provided in the road right-of-way spaced according to Table 40. Alternative spacing must be approved by the Director of Parks.

4.59.3.2. Proposed street tree locations must be placed in a manner to maximize available soil volumes and aerial growing space while not imposing significant impacts to underground and overhead servicing. Table 41 outlines the minimum planting setbacks from utilities and infrastructure. In locations where street trees are required and the minimum distances cannot be achieved, trees must be planted with mitigation measures to protect said services, subject to the approval of the Director of Engineering and Director of Parks.

4.59.4. Street Tree Soil Volumes

4.59.4.1. Planning and design work for tree planting locations to achieve required soil volumes for trees must be considered early in the project design process.

4.59.4.2. Tree planting drawing details are provided in Part 8 of this ESS Manual, Tree and Landscape Supplementary Drawings.

4.59.4.3. Soil volumes for all proposed trees must meet or exceed the requirements in Table 42.

4.59.4.4. When existing trees are retained the existing and required future soil volume must be calculated, additional soil volumes must be added to meet the requirements listed in Table 42.

4.59.4.5. Soil volume calculations must only include soils uninterrupted by root barriers, bedrock, utility vaults, curbs, pathways, sidewalks, driveways, underground structures and other impediments to root growth.

4.59.4.6. Soil cells are to be considered firstly to provide required soil volumes for trees planted in hardscape covered areas including plazas, sidewalks, medians and other hardscaped areas

4.59.4.7. Where additional soil volume is required, soil cells, structural soil or a combination of both, must be installed under the adjacent hardscape surfaces to achieve the required soil volumes. See Section 4.60, Soil Cell Standards, for more details.

4.59.4.8. Where underground utilities will not allow for required soil volumes for medium to large trees, alternative utility locations must be explored and the design revised to the satisfaction of the Director of Engineering and Director of Parks.

4.59.4.9. Where soil cells cannot be installed due to site conditions, infrastructure or utilities which cannot be relocated, the owner may be required to provide a written memo by the professional engineer describing why the site will not allow soil cell installation, to the satisfaction of the Director of Engineering and Director or Parks and Recreation.

4.59.4.10. The minimum required soil depth for trees must be 800 mm.

4.59.4.11. Soil volumes must be calculated using the following methods:

(a) in ground:

i. surface area (length x width) of connected pervious area x 1 unless the depth of soil is known to be less, in this case the actual soil depth is used when calculating the soil volume.

(b) on structure or planting in hardscaped surfaces:

i. open planters: Volume of soil (length x width x depth);

ii. soil cells: Volume of soil cell installation (length x width x depth) x 0.92; or

iii. structural soil: Volume of structural soil (length x width x depth) x 0.2.

4.60. Soil Cells Standards

4.60.1. Introduction

4.60.1.1. Soil Cells are modular structural systems that are designed and manufactured for installation under hardscaped areas to provide soil volumes for tree root growth, stormwater filtration, retention and detention, while bearing the weight of the surface infrastructure such as sidewalks, plazas, parking lanes, bike lanes and the loads they carry.

4.60.2. General

4.60.2.1. This section refers to those portions of the work that are unique to soil cells for the planting of trees and landscaping in pedestrian and vehicular areas. This section must be referenced and interpreted simultaneously with MMCD and *Works and Services Bylaw* sections pertinent to the works described herein in conjunction with the soil cell manufacturer's specifications.

4.60.2.2. City Parks Division supplemental drawings for soil cells, aeration and irrigation systems are included in Part 8, 'Parks Division Supplementary Drawings'.

4.60.2.3. Selection of the soil cell type and manufacturer are to the satisfaction of the Director of Parks, subject to City approval.

4.60.2.4. Soil cell design may be required to incorporate stormwater treatment as per Section 4.42 of this ESS.

4.60.2.5. Soil Cell Document Submissions are as follows:

(a) Soil Cell Manufacturer's Instructions: printed product literature and data sheets for all composite elements of the structural soil cell system that includes safe handling requirements, product characteristics, materials, performance criteria, physical size, finish, limitations;

(b) Manufacturer's Product Data: For each type of product associated with the Soil Cell installation, submit manufacturer's product literature with technical data sufficient to demonstrate that the product meets the requirements of the Soil Cell Manufacturer's specifications for installation;

(c) Soil Cell Manufacturer's Warranty Information document published by the manufacturer which provides the warranty information specific to the soil cell product;

(d) Soil Cell Manufacturer's Operations and Maintenance Manual document which provides maintenance requirements and frequencies to preserve the function and longevity of the soil cell system and associated infrastructure;

(e) Soil Cell Manufacturer's Letter of Review and Approval confirming the proposed soil cell product model specifications, installation drawings and specifications, addenda, clarifications, modifications and details, will meet or exceed the required surface loading, conform to the soil cell product use, installation specifications and warranty requirements; and

(f) Soil Cell Installation Confirmation Letter is to be provided to City Parks Division prior to the inspection for substantial completion which provides confirmation from the engaged professional engineer and landscape professional that the completed installation of the soil cells and all associated infrastructure meet the soil cell manufacturer's installation requirements and that the warranty is approved by the manufacturer.

4.60.2.6. The following Soil Cell Product Requirements are required to be met:

(a) the Structural Soil Cell system must have the flexibly to be assembled around existing structures, utilities and in tight constraints, specific to the site requirements and achieve the required soil and/or stormwater volume. The system must be easily disassembled and reassembled to allow for utility repair within and below the system;

(b) soil cells units must be manufactured with fiberglass reinforced polypropylene, recycled plastic, polypropylene, recycled polypropylene, and or recycled ABS. Soil Cells must be designed to be filled with growing medium for tree roots, stormwater, filtration and detention and tested to meet or exceed AASHTO H-20 Vehicle Loading Specifications when installed to the manufacturer specifications;

(c) the structural design of each soil cell unit must facilitate the movement of roots and water between each cell and between the edges of the cell system and the surrounding soils. The design must facilitate the installation, compaction, and in-situ soil compaction testing; installation of utilities within and under the soil cells; the movement and expansion of roots and the lateral capillary movement of water;

(d) the soil cell manufacturer must have not less than 100 soil cell systems of the same model in place and in use for over 5-years; and

(e) the soil cell manufacturer must warranty the soil cell lifespan and product for 20-years.

4.60.2.7. Critical to the soil cell design is that each soil cell or stack of soil cells must be structurally independent of all adjacent soil cell stacks such that a single stack or group of stacks can be removed after the completion of installation to facilitate future utility and subsurface infrastructure installation and repair. If laterally connected, the connections must have the capacity to break during emergency or planned access. It is also critical that the removed soil cells can be reinstated or replaced following access, to maintain the continuity and pre-access properties of the soil cell system and surface loading requirements.

4.60.2.8. The structural soil cell system must meet the manufacturer's specifications including, but not limited to, the following components:

(a) non-woven filter cloth and other geotextiles;

(b) tensile geogrid;

(c) root barrier, structural cells, and decking;

(d) air and watering system; and

(e) hardware and other required fastening products such as anchor pins and plastic cable ties.

4.60.2.9. Selection of the soil cell type and manufacturer must be subject to Director of Parks approval.

4.60.3. Design Considerations

4.60.3.1. Soil Cells must be installed to provide soil volumes for trees planted in hardscape areas such as plazas, sidewalks, and pathways.

4.60.3.2. Soil Cells may be installed under, sidewalks, bike lanes and parking lanes to provide required soil volumes for trees planted in hardscaped areas, or within adjacent soft landscaping such as boulevards, medians, shrub beds or rain gardens where additional soil volume is required. Refer to Part 8, 'Parks Supplementary Drawings' for details.

4.60.3.3. Soil cell systems must be designed and installed to meet or exceed AASHTO - H-20 Vehicle Loading Specifications to the satisfaction of the Director of Engineering.

4.60.3.4. The design must consider the compacted fills required to support to streetlights, utility poles, signal poles, utility vaults and other infrastructure.

4.60.3.5. The professional engineer must contact the City Engineering Department to discuss the location of existing and proposed city underground infrastructure within the project area to determine the required utility locations and setbacks from the soil cell system.

4.60.3.6. The required clearance from soil cells to BC Hydro and third-party infrastructure and ducting may change over time, the professional engineer must contact the applicable utility owner to confirm that required clearances are maintained.

4.60.3.7. Existing or new utilities proposed below, through soil cells and/or within 1000 mm of the soil cell perimeter must be reviewed and approved in writing by the utility owner.

4.60.3.8. In locations where the location, depth and size of existing underground utilities are critical to the soil cell design, the utilities must be physically located by utility tracing, ground penetrating radar or by excavation, surveyed and added to the civil drawing set.

4.60.3.9. The soil cell systems must be designed to be filled with growing medium meeting the soil properties specified in Table 44 and must be installed and compacted following the manufacturers installation procedures, MMCD standards for limitations of soil delivery, storage, and handling, and requirements to compact and in-situ test soil compaction to the ranges specified by the manufacturer.

4.60.3.10. Where possible the soil cells must be designed in a continuous trench to provide shared soil volumes to multiple trees

4.60.3.11. Calculated soil volumes for trees must meet or exceed the requirements stated in Table 42. Estimated soil volumes for each proposed and retained tree must be shown on the landscape drawings.

4.60.3.12. Soil cell systems that provide stormwater treatment functions must be reviewed by a qualified professional.

4.60.3.13. Soil cells systems must be provided with an underdrain drainage system connected to the City stormwater system. Riser pipes and cleanouts must be provided at the end of each stormwater underdrain line, and at a maximum 30 m spacing along its length, to allow cleaning and inspection of all portions of the system to the city storm main connection. Where soil cells are used for stormwater treatment the position, design and sizing of the underdrain must be reviewed by a qualified professional.

4.60.3.14. Soil cell systems that provide stormwater treatment must have a horizonal perforated pipe system to distribute stormwater across the entire area of soil cells protected by a sump to settle out particulate matter entering the water distribution pipes. Cleanouts must be provided at the ends of each distribution pipe, and at a maximum 30 m spacing along its length, to allow cleaning and inspection within the system and to the stormwater source inlet. The selection, design and sizing and design of soil cell systems that include stormwater treatment must be reviewed and approved by a qualified professional.

4.60.3.15. An inspection riser must be installed to check the water level within the soil cell system. The riser must be 100 mm diameter Schedule 40 non-perforated PVC pipe with four 3 mm wide slots bottom of pipe that extend to soil cell deck to allow access for inspection. Fittings and caps to be compatible with specified pipe and by same manufacturer. Cap to be solid threaded cleanout or removable inlet grate designed to fit inspection riser and be compatible with pedestrian traffic and to vehicle rated specifications where the inlet grate must be installed in a bike lane. and operational practice.

4.60.3.16. The proposed civil drawings and landscape drawings, design, materials, layout, installation and construction details and notes must be reviewed and approved in writing by the soil cell product manufacturer. The owner must provide a Soil Cell Manufacture's Letter of Review and Approval stating the proposed soil cell product model specifications, installation drawings and details, will meet or exceed required surface loading, conform to the soil cell product use, installation specifications and warranty requirements.

4.60.3.17. Each Soil cell system must include an aeration system to manufacturers specifications.

4.60.3.18. Irrigation systems installed for trees in soil cells must meet the requirements of this bylaw (see Section 4.67, 'Irrigation Installation Standards') and must be designed with a drip irrigation zone to distribute water across the entire area of soil cells and a separate zone to provide water through drip rings in the tree well for initial tree establishment. See Supplementary Drawing SD PI4, SD PI5 and SD PI10.

4.60.3.19. The irrigation system soil cell zones must be designed to vary water delivery to tree planting locations with different tree species, exposures and water requirements.

4.60.4. Installer Qualifications and Experience

4.60.4.1. Soil cells and related products must be installed by a qualified installer whose work has resulted in successful installations of 25 soil cell projects by the same manufacturer within the past 5 years that included soil cell layout and assembly, installation of growing medium, aeration systems, stormwater distribution piping, drainage systems, irrigation systems, geotextile fabrics, geogrid and root barriers.

4.60.4.2. The installer's field supervisor must be an experienced full-time supervisor employed by the installer with not less than 5 years of successful experience, similar to that of the installer, who must be present at the site when the work is in progress. The installer must use the same field supervisor throughout the project.

4.60.4.3. The installers, field supervisor and key personnel involved in the soil cell installation are required to complete a training session provided by the soil cell manufacturer.

4.60.5. Soil Cell Installation, Inspections, and Quality Control

4.60.5.1. The owner must engage the project professional engineer, landscape professional and qualified installer to ensure that the soil cells are installed in accordance with the construction documents. All approved civil, landscape, irrigation and soil cell shop drawing must be onsite and available for review.

4.60.5.2. The owner must submit to the engineering professional, landscape professional and City Parks Division a copy of the growing medium analysis, as per Section 4.62, 10 days prior to soil placement.

4.60.5.3. The professional engineer and landscape professional must review all installation activities undertaken by the installer including but not limited to the following: excavation of the area, subgrade preparation, compaction and elevation, underdrain installation, granular sub-base and geotextile fabric, installation and compaction, granular base course and geotextiles as required, assembly and installation of the soil cell units, placement of geogrids, root barriers, backfill placement and compaction, installation of passive irrigation (stormwater) and inspection risers, placement, compaction testing of growing medium, irrigation installation, cell capping and placement of top geotextiles, installation and compaction of gravels.

4.60.5.4. Inspections and testing must be scheduled or undertaken by the professional engineer and landscape professional to confirm the installation and compaction of the growing media as specified in the drawings and required by the soil cell manufacturer. Results of all compaction testing required by the specifications and the compaction testing log of penetrometer and moisture meter readings reviewed by the qualified professionals and a memo submitted to the City Parks Division prior to capping the soil cells.

4.60.5.5. The owner must ensure that the Park Division Soil Cell Installation Inspections are scheduled and documented. Please note: the second inspection is a 'mock up' of the first 15 m^2 of soil cell installation. Installation must be undertaken as per the approved drawings and specifications and the cells filled with growing media (no caps) with installed required materials, aeration system, passive stormwater distribution system (where approved), irrigation sleeving, root barriers and required systems. Tree well locations must be staked to ensure soil cell alignment. If approved this installation may be accepted and retained as part of the works.

4.60.5.6. Photographs of the stages of soil cell installation must be taken and provided to the soil cell manufacturer for warranty review purposes.

4.60.5.7. Schedule the soil cell installation after the area is no longer required for use by other trades for access or construction activities to protect the installed soil cells from potential damage during and after installation.

4.60.5.8. The owner must ensure that installed soil cells are protected from damage. Construction fencing is recommended around the completed soil cells. Prevent all non-installation related construction traffic over the completed soil cell installation must be prevented.

4.60.6. Pre-Installation Meeting

4.60.6.1. Prior to soil cell installation, the owner must arrange an onsite meeting with the professional engineer, landscape professional, civil contractor, qualified soil cell installer, installer's field supervisor, City Parks Division staff, and soil cell manufacturer's technical representative, the owner at the owner's discretion and other entities concerned with the soil cell installation.

4.60.6.2. The following are required for the pre-installation meeting:

(a) provide at least 72 hours advance notice to participants prior to convening preinstallation meeting;

(b) introduce and provide a list of individuals in attendance with contact information;

(c) the preinstallation meeting agenda will include, but not limited to the review of:

i. required submittals both completed and yet to be completed;

ii. the sequence of installation, construction schedule, and coordination with other trades;

iii. details materials, methods, and installation;

iv. review requirements for substrate conditions, special details, as required, installation procedures;

v. location of existing and proposed utilities;

vi. installation layout, procedures, means, and methods;

vii. required testing and inspections; and

viii. mock-up requirements.

(d) Sequencing and Scheduling;

i. general: Prior to beginning work of this section, prepare a detailed schedule of the of the work involved for coordination with other trades;

ii. schedule utility installations prior to beginning work in this section; and

iii. where possible, schedule the installation of the soil cells after the area is no longer required for use by other trades and work.

(e) if the proposed soil cell area is not yet excavated the owner must arrange for a BC 1 Call, utility locator and in field utility marking prior to the meeting; and

(f) the installer's field supervisor must be identified during the pre-installation meeting and provided with appropriate Parks Division contact information.

4.60.7. Required City Inspections

4.60.7.1. The owner must ensure that the following Parks Division inspections associated with soil cells are undertaken and documented as follows:

(a) Irrigation Inspections as per Table 48;

(b) Tree Planting Inspections as per Table 50; and

(c) Soil Cell Inspections as per Table 51.

4.60.8. Warranty

4.60.8.1. The owner must warranty soil cell installation work, the associated infrastructure and works for a period of one year after substantial completion.

4.60.8.2. Defects noted during the warranty period must be corrected by the owner prior to final Inspection for total performance.

4.60.8.3. The owner must ensure that the soil cell manufacturer's warranty is transferred to the City of Victoria.

4.61. Structural Soil Standards

4.61.1. Structural soil specifies a growing medium that combines the structural capacity of the soil with the nutrient and organic compounds necessary for tree root development in environments that do not readily meet the growth needs of a tree.

4.61.2. Parks Supplementary Drawings SD PT1 and SD PT4 include details on structural soil installation.

4.61.3. Structural soil composite must be composed of growing medium and clear crush granular components in accordance with the following recommended base ratio of materials. Ensure sufficient moisture (25% to 75% of field capacity) to provide a homogeneous mixture with consistent properties throughout the composite soil. Peat moss must not be used in the preparation of structural soil.

4.61.4. Growing medium properties for use as a component in structural soil must conform to Topsoil and Grading (32 91 21 MMCD 2019 Supplemental) and as outlined in Table 43.

TABLE 43: STRUCTURAL SOIL COMPOSITION

Soil Component	Proportion by Weight
Growing Medium	15% to 20% dry weight
Clear Crush (25 mm to 75 mm clear crush)	80% to 85% dry weight
Hydrogel/Stabilizer [1]	0.01% to 0.02%

[1] Hydrogel/Stabilizer is applied as a soil tackifier to ensure even distribution and blending of the component materials. Refer to manufacturer specifications for appropriate mixing proportions.

4.61.5. Clear crush gravel properties for use as a component in structural soil must conform to Aggregates and Granular Materials (31 05 17 MMCD 2019) specifications. Gravel graduation must consist of 25 mm to 75 mm clear crush washed rock free of any foreign elements or materials.

4.61.6. Structural soil installation must conform to Excavating, Trenching and Backfilling (31 23 01 MMCD 2019) specifications.

4.62. Growing Mediums and Mulch

4.62.1. Growing Medium and Topsoil must meet the requirements of the MMCD and Supplementary Specifications found in Part 7 and Part 8 of this ESS Manual.

4.62.2. The contractor must submit to the landscape professional, contract administrator and City's Parks Division a copy of each growing medium analysis from an approved laboratory. The analysis must be of samples collected from the growing medium source not more than 30 days prior to the scheduled placement of soil on the project site. The results of these tests must be reviewed by the landscape professional and contract administrator, and a memo sent to the City 10 days prior to soil placement confirming that the proposed growing medium falls within the chemical and physical properties required for each required landscape type.

4.62.3. Properties of growing medium for different landscape applications are provided in Table 44.

4.63. Bioretention and Rain Garden Growing Medium

4.63.1. Growing medium used in Bioretention and Rain Gardens must meet the specifications outlined in Table 45.

4.63.2. Install growing medium in 200 mm lifts and compact with lawn roller. Do not over-compact or this will decrease ability to infiltrate water.

4.63.3. Growing media analysis is required as per Section 4.62.

TABLE 44: PROPERTIES OF GROWING MEDIUM FOR DIFFERENT LANDSCAPE APPLICATIONS

Soil Property	Units	Soil Type	Particle Size [1]	Low Traffic Lawn Areas, Trees, and Large Shrubs	High Traffic Lawn Areas and Soil Cells	Planting Areas, Planters, Shrub and Groundcover Areas
Texture	Percent of Dry Weight of Total Growing Medium (%)	Coarse Gravel	> 19 mm < 40 mm	0 - 1	0 - 1	0 - 1
		All Gravel	> 2 mm < 75 mm	0 - 5	0 - 5	0 - 5
	Percent of Dry Weight of Growing Medium Excluding Gravel (%)	Sand	> 0.05 mm < 2 mm	50 - 80	70 - 90	40 - 80
		Silt	> 0.002 mm < 0.05 mm	10 - 25	0 - 15	10 - 25
		Clay	< 0.002 mm	0 - 25	0 - 15	0 - 25
		Clay and Silt Combined	-	35 (maximum)	15 (maximum)	35 (maximum)
Acidity (pH)	Unitless	Entire Growing Medium	-	6.0 - 7.0	6.0 - 7.0	4.5 - 6.5
Drainage	Minimum saturated hydraulic conductivity (cm/hr)		-	2.0	7.0	2.0
Organic Content	Percent of Dry Weight (%)		-	3 - 10	3 - 5	10 - 20

[1] Particle size classes by Canadian System of Soil Classification.

TABLE 45: BIORETENTION GROWING MEDIUM SPECIFICATIONS

Soil Type	Particle Size	Percent Dry Weight of Mineral Fraction (%)
Coarse Gravel	> 19 mm and < 40 mm	0 to 1%
All Gravel	> 2 mm and < 75 mm	10 to 25%
Sand [1]	> 0.05 mm and < 2 mm	60 to 70% [2]
Combined Silts and Clays	< 0.05 mm	10 to 20% [2]
Organics	< 2 mm	15 to 20% [2]

[1] Growing medium to be manufactured with '2 mm minus' sand to reduce gravel content in the soil. 2 mm minus sand is available from most local quarries upon request.

[2] Sand, silt, clay, and organic components measured from remaining non gravel portion of sample (% dry weight).

4.64. Mulch Samples

4.64.1. Physical samples of bark mulch and other proposed mulch products must be delivered to the City Parks Division for review and approval 10 days prior to delivery to the project site. A 2-litre sample of each mulch type must be labelled with the project location, permit number, project contact, mulch type and supplier. Samples may be shipped to the Park Division Yard at 100 Cook Street, Victoria BC V8V 0B9 or delivered in person during regular business hours Monday to Friday 8:00 a.m. until 3:30 p.m.

4.65. Shrubs and Ground Cover Planting

4.65.1. Shrubs and ground covers must be planted to MMCD Standards as modified by the supplementary planting details included in Part 8 of this ESS Manual.

4.65.2. Plant material and planting installation works are subject to City Parks Division landscape inspections as per Table 49 (Landscape Plantings – Shrub Beds and Rain Gardens).

4.65.3. Shrub and ground cover plantings must meet the conditions for total performance as per MMCD standards at substantial completion.

4.66. Turf Boulevard Construction and Repair

4.66.1. Boulevard Construction

4.66.1.1. Required growing medium depths will vary based on MMCD Standards for the landscape application and soil type.

4.66.1.2. Growing media must be tested and the analysis provided for review and approval as per Section 4.62 and the properties in Table 44.

4.66.1.3. Required soil volumes for street trees must be provided throughout a boulevard at a minimum depth of 800 mm.

4.66.1.4. Growing medium must be placed in 76 mm lifts and firmly packed to reduce future settlement.

4.66.1.5. Boulevards and lawn areas must be sodded to MMCD Standards using sod without netting or mesh.

4.66.1.6. Only repairs to boulevards or lawn areas that measure under 2 square metres may be seeded or sodded.

4.66.1.7. Nutrien/Evergro Canada No. 1 Lawn seed mixture per the ratios specified in Table 46 must be used except where an alternative is approved in writing by the by the Director of Parks.

TABLE 46: NUTRIEN / EVERGRO CANADA NO. 1 LAWN SEED MIXTURE

Lawn Seed Type	Percentage of Lawn Seed Mixture
sr4650 Perennial Ryegrass	35%
Mightier Perennial Ryegrass	35%
SR5130 Chewings Fescue	20%
SR2100 Kent Bluegrass	10%

4.66.2. Sodded Boulevard and Turf Areas

4.66.2.1. Should any damage or compaction occur to turfgrass on a boulevard, median or in park and remediation is required, the following applies:

(a) the contractor must arrange for a BC OneCall to locate all underground utilities;

(b) ensure supervision by an arborist professional where work is within the critical root zone of a tree;

(c) all landscape work must be directly supervised and/or undertaken by a certified landscaper;

(d) installation must meet MMCD as amended by the Parks Division Supplementary Drawing SD PH1;

(e) remove damaged grass and compacted soil to a minimum depth of 150 mm and/or to a greater depth required to remove all compacted soils;

(f) scarify approved subgrade to 150 mm depth;

(g) growing medium and placement must meet MMCD Standards for ‘topsoil and finished grading’;

(h) turf repairs shall be subject to inspections as per Table 52. Boulevard installation and repair works are subject to City Parks Division Landscape Inspections. The contractor must coordinate, schedule, and document the required inspections as per Table 50, Table 51, Table 52, and Table 53; and

(i) turf repairs must meet the conditions for total performance as per MMCD Standards at substantial completion.

4.67. Irrigation Installation Standards

4.67.1. General

4.67.1.1. Where required by the Director of Parks for the maintenance of trees, grass or landscaping located on a right-of-way or City of Victoria owned land, an underground automatic irrigation system is required. The system is to be from a separate City source. All costs associated with the source and irrigation system are the responsibility of the owner.

4.67.1.2. Where there is a discrepancy between the industry standards as set by the Irrigation Industry Association of British Columbia (IIABC) and the City of Victoria standards, the City of Victoria standards will prevail.

4.67.1.3. Parks irrigation drawings must be reviewed prior to system design and are included in Part 8, Tree and Landscape Supplementary Drawings, in this ESS Manual.

4.67.1.4. References:

(a) Standards for Landscape Irrigation Systems 2018 - Irrigation Industry Association of British Columbia (IIABC); and

(b) Master Municipal Construction Document 2019 Edition 2019 – Master Municipal Construction Document Association.

4.67.2. Quality Assurance

4.67.2.1. All irrigation designs and installations must meet the minimum standards of the Irrigation Industry Association of B.C. (IIABC) for landscape, unless otherwise specified. Refer to published Standards for Landscape Irrigation Systems (IIABC).

4.67.2.2. All irrigation systems must be installed in accordance to all applicable CRD and British Columbia plumbing code regulations.

4.67.2.3. It is required that the contractor have trained and competent personnel adequate for the scope of work. It is required to utilize personnel certified by the IIABC in such disciplines as Certified Irrigation Technician (Level 1 or 2), Certified Qualified professional (Commercial or Residential), Certified Irrigation Auditor, etc. Irrigation Contractor must be in good standing with the IIABC.

4.67.2.4. A manufacturer’s warranty is required for all irrigation equipment outlined in the specifications and on the irrigation drawings.

4.67.2.5. A one-year warranty will apply for materials and workmanship.

4.67.3. Detailed Design Specifications

4.67.3.1. All irrigation systems must be isolated from the City water main by an R&W Valve Brass 206 Series approved gate valve installed downstream, outside of the City water meter box and be accessible to City personnel. Refer to Approved Irrigation Materials List, Parks Supplementary Drawing Detail SD PI11.

4.67.3.2. A Watts 007 Double Check Valve assembly or a Watts Pressure Zone Assembly to City Cross Control Connection Standards must be used, with the Backflow Test Certificate submitted to the Parks Division. The Backflow Preventer Assembly Test Report is to have the City of Victoria as the registered owners with a copy provided to the CRD.

4.67.3.3. Backflow Prevention devices must be installed using brass fittings and a minimum of 300 mm of brass or copper downstream of the device. All metal pipe and fittings must be Lead Free.

4.67.3.4. Install immediately downstream of backflow prevention device a Rainbird Number 5- RC quick coupler for winterizing, for which there shall be no substitutions. Refer to Parks Supplementary Drawing SD PI2, 'Quick Coupler' and SDPI11 'Approved Irrigation Materials List in Part 8 of this ESS Manual.

4.67.3.5. Mainline must be installed a minimum of 400 mm to a maximum of 600 mm depth below finished grade and laterals a minimum of 300 mm to a maximum of 400 mm below finished grade. All piping must have a good bed, 75 mm below and 150 mm above, of rock free soil and free of unsuitable materials which could damage the pipe and create unusual settling problems. Backfill in lifts of 200 mm, to a degree of compaction equal to that of the undisturbed areas. Pit Run Sand (31 05 17 MMCD 2019) and Growing Medium (32 91 21 MMCD 2019) are accepted backfill materials.

4.67.3.6. All sprinkler zones must have head-to-head coverage, spacing 50% of diameter of throw of sprinkler. Sprinklers with different precipitation rates must be zoned separately. Plant material with different water requirements must be zoned separately. Lawns must be watered separate from shrub plantings.

4.67.3.7. Flow rates through piping must not exceed 1.5 m per second on all zones. Flow rates through meters, backflow prevention devices and valves must not exceed manufacturer specifications.

4.67.4. Materials

4.67.4.1. All pressurized lines must be brass, copper or C.S.A. approved Schedule 40 Polyvinyl- Chloride (PVC). Lateral lines must be SDR 21 PVC (Class 200). Unless otherwise specified at irrigation system plan review. All PVC pipes must be continuously and permanently marked with identification of the manufacturer, type, class or schedule and size.

4.67.4.2. Pop-up spray-heads to be Rainbird 1800 Series. Rotors to be enclosed gear driven Rainbird models to fit requirements of installation. Unless otherwise specified at irrigation system plan review.

4.67.4.3. All PVC fittings, other than special PVC nipples on swing joints and isolation valves, must be full size Schedule 40 PVC. Threaded connections of PVC to metal must have exterior threads on the PVC and interior threads on the metal.

4.67.4.4. C.S.A. approved primer and cement to be used when gluing pipe, as per pipe manufacturer's specifications. Preferred primer is Weld-on P-70 purple and preferred cement is Weld-on 705 and Weld-on 711. Teflon tape is to be used on all threaded joints.

4.67.4.5. Solenoid valves are to be Rainbird PGA Series, controlled by Rainbird Bluetooth Battery Controllers (TBOS-BT or ESP-BAT-BT), unless otherwise specified. Valves must be installed horizontally and centered. All valves and timers must be installed in an approved valve box (as per Section 4.67.4.6).

4.67.4.6. All plastic valve boxes in softscape to be Carson Industries, NDS or pre-approved commercial grade equal.

4.67.4.7. Valve box lids must be green in colour. Boxes must not be altered as to lose their integrity.

4.67.4.8. Standard concrete bricks must be installed under the corners of the valve box to provide firm support. Valve box must have an underlay of landscape fabric as per Parks supplementary irrigation drawings in Part 8, Supplementary Drawings.

4.67.4.9. Valve box must be sized and noted on plans to allow minimum 100 mm between valve and inside of valve box. Valve boxes must be sized to allow minimum 50 mm between bottom of box and bottom of valves.

4.67.4.10. Minimum valve box size recommendations using Carson Industries are provided in Table 47.

TABLE 47: MINIMUM VALVE BOX SIZE RECOMMENDATIONS

Valve Box Size	Number of Valves
910	One 38 mm or two 25 mm Valves
1419	Two 38 mm or three 25 mm Valves
1220	Three 38 mm or four 25 mm Valves

4.67.4.11. Valve boxes in hardscape are to be DFW heavy duty polymer rectangular box with heavy duty lid and grey in colour. The box size parameters must meet the same requirements as noted previously.

4.67.4.12. Sleeving material must be a minimum 100 mm Schedule 40 PVC, for straight line installations.

4.67.4.13. For irrigation sleeves that have bends 100 mm SDR 28 pipe, with 100 mm x 45-degree long bend sweeps (Sewer SDR28 GXS).

4.67.4.14. If the contractor wishes to deviate from the specified products only pre-approved commercial grade products will be considered at the discretion of the Director of Parks.

4.67.5. Installation

4.67.5.1. All sprinklers must be installed on swing joints using PVC 90-degree street elbows and PVC Schedule 80 nipples. Prefab swing assembly's must be pre-approved before installation.

4.67.5.2. All piping installed must be flushed prior to installation of backflow device, solenoid valves, sprinkler nozzles, or turf valves.

4.67.5.3. Sprinklers must be installed a minimum 25 mm and maximum of 50 mm away from any retaining wall, sidewalk or solid boundary. Final height of sprinkler to be flush with finished grade.

5. Testing and Inspections



5.1. General

5.1.1. This section is specific to trees, landscaping, and irrigation.

5.1.2. The applicant must ensure that all required testing and inspections are conducted and reviewed by qualified professionals, applicable government regulatory staff (e.g., DFO, Ministry of the Environment and Parks), and City of Victoria staff. This includes all testing and inspections necessary to confirm compliance with the requirements of this bylaw, regulatory requirements for the project, *Tree Protection Bylaw*, MMCD, and this ESS Manual.

5.1.3. The applicant is responsible for scheduling, coordinating, completing, documenting and distributing in writing all required testing and inspections.

5.1.4. Written documentation of testing and inspections must be submitted to the appropriate City of Victoria department for review and approval.

5.1.5. When required testing and inspections are not completed or written documentation is not provided, the applicant may be required to remove, and reconstruct the works with all required testing, inspections and documentation.

5.1.6. Inspections by City staff are to ensure general compliance with the requirements of this bylaw, the *Tree Protection Bylaw*, and other documents and guidelines, these inspections are required and are not a substitute for the documented inspections and testing required by the professional engineer, landscape professional, arborist professional, registered professional biologist, or other professionals inspecting impacts to landscape assets and/or the construction of works and services.

5.1.7. The owner must ensure that all identified deficiencies are corrected immediately after each test or inspections. All landscape deficiencies must be corrected to the satisfaction of the Director of Parks prior to total performance.

5.1.8. Inspections for substantial completion must be for all landscaping associated with the project at the same time. Parks will not accept portions of the landscape. The owner is responsible to maintain the installed landscape works to MMCD specifications until acceptance.

5.2. Growing Media Testing

5.2.1. A soil analysis for growing medium and compost, for each landscape application, must be submitted to the City Parks Division treepermits@victoria.ca as per the requirements of Section 4.62.

5.2.2. The soil must meet the MMCD Standards as modified by or replaced by Part 7 and Part 8 of this ESS Manual.

5.3. Landscape and Irrigation Inspections

5.3.1. General

5.3.1.1. Please provide 72 hours notice to arrange the required Parks Division Inspections. Please email treepermits@victoria.ca to schedule an inspection.

5.3.1.2. In the event a staff member is away, City administration staff will pass along the request to other available staff. If there are issues contacting staff, please call the City's Parks Office at 250-361-0600.

5.3.2. Irrigation System Inspections

5.3.2.1. The irrigation inspections outlined in Table 48 are required by the City's Parks Division.

TABLE 48: IRRIGATION INSPECTION REQUIREMENTS

Required Parks Inspections	Installation Stage
1st Inspection	Sleeving prior to backfilling
2nd Inspection	Open trench Main Line & Pressure Test
3rd Inspection	Open trench Lateral Line, Zone lines and Soil Cell Zones prior to soil cell capping.
4th Inspection	Irrigation system, Controller, Coverage test, Backflow Preventer Assembly Test Report required, Backflow Assembly is to have inspection tag completed and attached at total performance.
Final Inspection	Inspection at the end of the one-year warranty period for final acceptance.

5.3.3. Landscape Plantings: Shrub Beds and Rain Gardens

5.3.3.1. The landscape planting inspections outlined in Table 49 are required by the City's Parks Division.

TABLE 49: LANDSCAPE PLANTING: SHRUB BED AND RAIN GARDEN INSPECTION

Required Parks Inspections	Installation Stage
1st Inspection	Excavated planting area with prepared subgrade prior to growing media installation.
2nd Inspection	Installed and prepared growing media prior to planting.
3rd Inspection	Plant material onsite prior to planting (staff may attend local nurseries for inspections prior to delivery). Plants located outside of Greater Victoria may be reviewed using photographs.
4th Inspection	Planted landscape prior to mulch application.
Final Inspection	Planted and mulched landscaping meeting the conditions for total performance as required by MMCD.

5.3.4. Tree Planting Inspections

5.3.4.1. The tree planting inspections outlined in Table 50 are required by the City's Parks Staff.

TABLE 50: TREE PLANTING INSPECTIONS

Required Parks Inspections	Installation Stage
1st Inspection	Excavated tree pit and installed root barriers (as required by supplementary drawing details)
2nd Inspection	Trees onsite prior to planting (staff may attend local nurseries for inspections prior to delivery). Trees located outside of Greater Victoria may be reviewed using photographs.
3rd Inspection	Planted tree prior to mulch application and/or installation of pea gravel, grates and tree guard.
4th Inspection	Planted tree meeting the conditions for total performance as required by MMCD and this bylaw.
Final Inspection	Inspection at the end of the one-year warranty period for final acceptance.

5.3.5. Soil Cell Installation Inspections

5.3.5.1. The required inspections for the installation of soil cells are outlined in Table 51.

TABLE 51: SOIL CELL INSTALLATION INSPECTIONS

Required Parks Inspections	Installation Stage
1st Inspection	Excavated soil cell area with compacted subgrade, compacted base material and installed underdrain.
2nd Inspection	First 15 m^2 area of soil cells placed, filled with growing media (no caps) with installed required materials, aeration system, passive stormwater distribution system (where approved), irrigation sleeving, root barriers and required systems. Tree well locations must be staked to ensure soil cell alignment.
3rd Inspection	Soil cells filled with compacted growing media, complete with associated materials and systems prior to capping and covering. The location of the tree wells must be staked. (This inspection stage will also require inspection of the installed irrigation sleeving and drip zone lines)
4th Inspection	Capped soil cells prior to covering.
Final Inspection	Finished hardscape to MMCD specifications with formed tree well including a metal tree grate frame ready for tree planting.

5.3.6. Sod Boulevard and Lawn Areas Inspections

5.3.6.1. The required inspections for sod installation for turf boulevards and lawn installation and repair are outlined in Table 52. Minimum soil volumes required for trees must be provided during the construction of turf grass boulevards.

TABLE 52: SOD BOULEVARDS AND LAWN AREAS INSPECTIONS

Required Parks Inspections	Installation Stage
1st Inspection	Excavated and scarified subgrade prior to backfilling.
2nd Inspection	Installed, rolled and prepared growing media prior to sodding.
3rd Inspection	After the installed sod has been maintained for at least 30 days and meets the conditions for total performance as required by MMCD Standards.
Final Inspection	Inspection at the end of the one-year warranty period for final acceptance.

5.3.7. Seeded Boulevard and Lawn Areas Inspections

5.3.7.1. The seeded boulevards and lawn areas inspections outlined in Table 53 are required by the City's Parks Division.

TABLE 53: SEEDED BOULEVARDS AND LAWN AREAS INSPECTIONS

Required Parks Inspections	Installation Stage
1st Inspection	Excavated and scarified subgrade prior to backfilling.
2nd Inspection	Installed, rolled and prepared growing media prior to seeding.
3rd Inspection	After the establishment maintenance period when the grass is established and meets the conditions for total performance as required by MMCD Standards.
Final Inspection	Inspection at the end of the one-year warranty period for final acceptance.

5.3.8. Structural Soil Installation Inspections

5.3.8.1. The inspections for the installation of structural soil outlined in Table 54 are required by the City's Parks Division.

TABLE 54: STRUCTURAL SOIL INSPECTIONS

Required Parks Inspections	Installation Stage
1st Inspection	Excavated structural soil pit with compacted subgrade and installed underdrain where required.
2nd Inspection	Completed installation of the compacted structural soil. The surface must be protected from rainfall until installation of the hardscape. (This inspection stage will also require inspection of the installed irrigation sleeving and drip zone lines.)
3rd Inspection	Finished hardscape surface with formed tree well with metal tree grate frame prior to tree planting.

6. Cross Sections

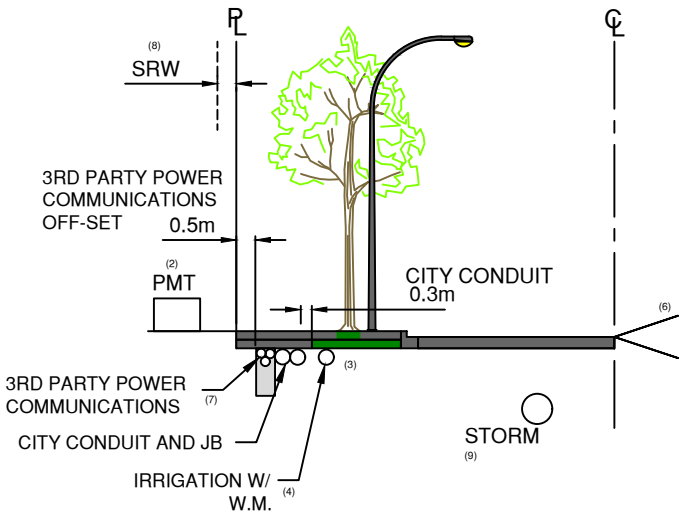


The following 2019 MMCD Standard Detail Drawings are to be used or replaced as indicated below:

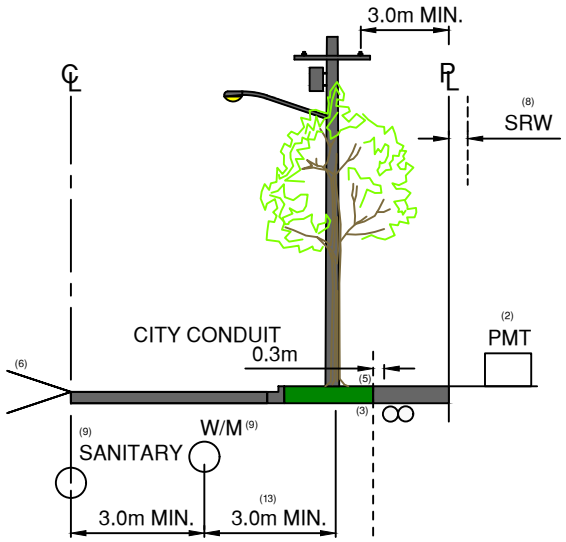
STREET CROSS SECTION INDEX	
COV ADD	TITLE
SD XS 1	Spacing and Setbacks
SD XS 2	Arterial A: Type 1 & Type 2
SD XS 3	Arterial A: Type 3 & Type 4
SD XS 4	Arterial B: Type 1 & Type 2
SD XS 5	Arterial B: Type 3 & Type 4
SD XS 6	Arterial B: Type 5 & Type 6
SD XS 7	Collector A: Type 1 & Type 2
SD XS 8	Collector B: Type 1 & Type 2
SD XS 9	Collector C: Type 1 & Type 2
SD XS 10	Local A, Local B, Local C

STREET TYPES & CROSS SECTIONS

DOWNTOWN CORE AREA & URBAN VILLAGES



OTHER AREAS



NOTES:

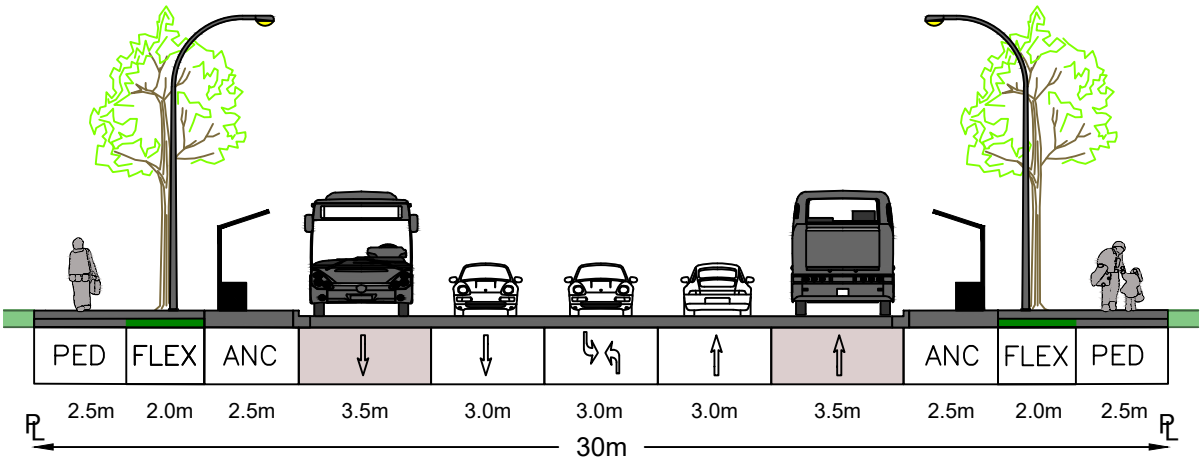
1. THIS DRAWING SHOWS INFORMATION TO SUPPLEMENT THE TYPICAL STREET CROSS SECTIONS THAT FOLLOW AND ARE GENERALLY APPLICABLE.
2. PMT WHERE REQUIRED TO SERVE PRIVATE LANDS IS TO BE LOCATED WITHIN THE LANDS BEING SERVED, INCLUDING COUNTERPOISE AND ANY ADDITIONAL COUNTERPOISE AS DETERMINED NECESSARY BY HYDRO.
3. SOIL CELLS AND GREEN STORMWATER INFRASTRUCTURE UTILIZED WHERE NECESSARY TO MEET REQUIRED SOIL VOLUMES AND RAINWATER MANAGEMENT TARGETS. TREE PLANTING AND GSI AREAS MAY EXTEND UNDER PEDESTRIAN, CYCLING, AND ANCILLARY AREAS WHERE DEEMED FEASIBLE.
4. IRRIGATION SLEEVE AND WATER METER PLACED IN LOCATION ACCEPTABLE TO DIRECTOR OF PARKS.
5. LANDSCAPED BOULEVARD TO ACCOMMODATE ADDITIONAL GREEN STORMWATER INFRASTRUCTURE AND IRRIGATION IF REQUIRED
6. SEE ESS FOR GRADE REQUIREMENTS.
7. POWER DETAILS TO BE CONFIRMED BY BC HYDRO.
8. SRW MAY BE REQUIRED IN ADDITION TO TYPICAL RIGHT OF WAY WIDTHS TO ACHIEVE DOWNTOWN CORE AREA PLAN SIDEWALK WIDTHS AND MOBILITY HUB OBJECTIVES.
9. TYPICAL STORM, SANITARY, AND WATER MAIN PLACEMENTS RELATIVE TO ROAD CENTERLINE SHOWN FOR ILLUSTRATIVE PURPOSES, APPLICABLE TO ALL CITY AREAS.
10. GAS IS NOT IDENTIFIED IN THE RIGHT-OF-WAY, AND WHERE IT EXISTS, MAY USE THE SAME CORRIDOR AS EXISTING FOR WORKS AND SERVICES.
11. BUILDING FOOTING, PERMANENT SHORING, PILES, SHOTCRETE, AND ANY PERIMETER DRAINS MUST NOT ENCROACH ON RIGHT-OF-WAY.
12. WHERE RETAINING WALLS ARE NECCESSARY TO RETAIN PRIVATE LANDS, THE WALL SHOULD BE ENTIRELY LOCATED WITHIN THE LANDS THEY SERVE, INCLUDING THE WALL FOOTING AND WALL DRAINAGE. PROTECTIVE FENCING/RAILING MAY BE REQUIRED.
13. WATERMAIN MUST AVOID CRZ WITH LOCATION ACCEPTABLE TO DIRECTOR OF PARKS.
14. WHERE EXISTING CONDITIONS OR AREAS OF CONSTRAINTS (DUE TO TREES, PROPERTY LINES, OTHER EXISTING INFRASTRUCTURE) DO NOT ALLOW TYPICAL SEPARATION REQUIREMENTS TO BE MET, WORKS AND SERVICES MAY BE CONSIDERED IN ALTERNATE LOCATIONS AS DETERMINED APPROPRIATE.
15. DEPENDING ON TOPOGRAPHY, SPACE FOR A RETAINING WALL (AND ACCOMPANYING RAILING) MAY BE REQUIRED. SEE APPLICABLE ESS DRAWINGS.

NOT TO SCALE

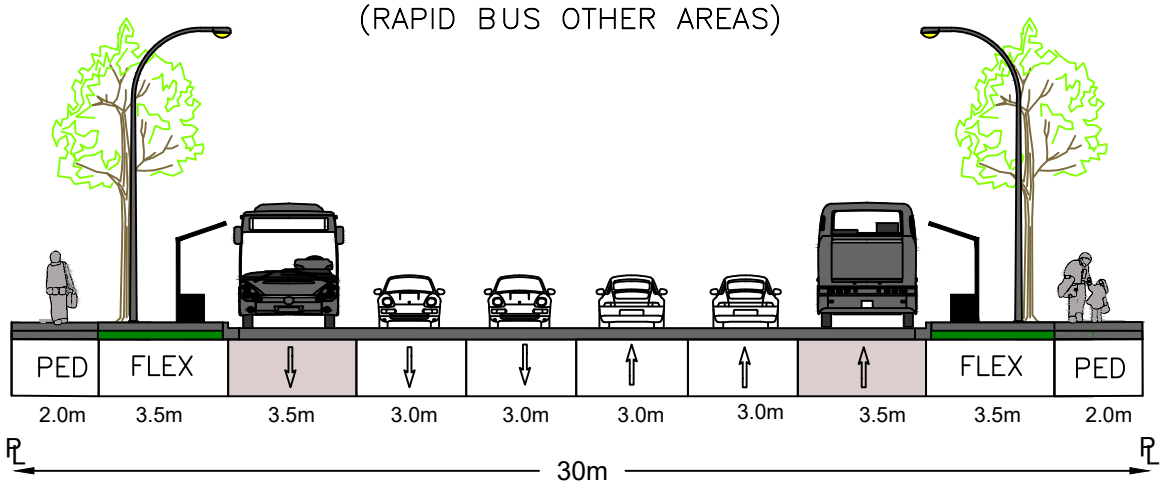
SPACING AND SETBACKS

Revision Date	Drawing Number
OCT 2025	SD XS 1

ARTERIAL A: TYPE 1
(RAPID BUS DOWNTOWN)



ARTERIAL A: TYPE 2
(RAPID BUS OTHER AREAS)



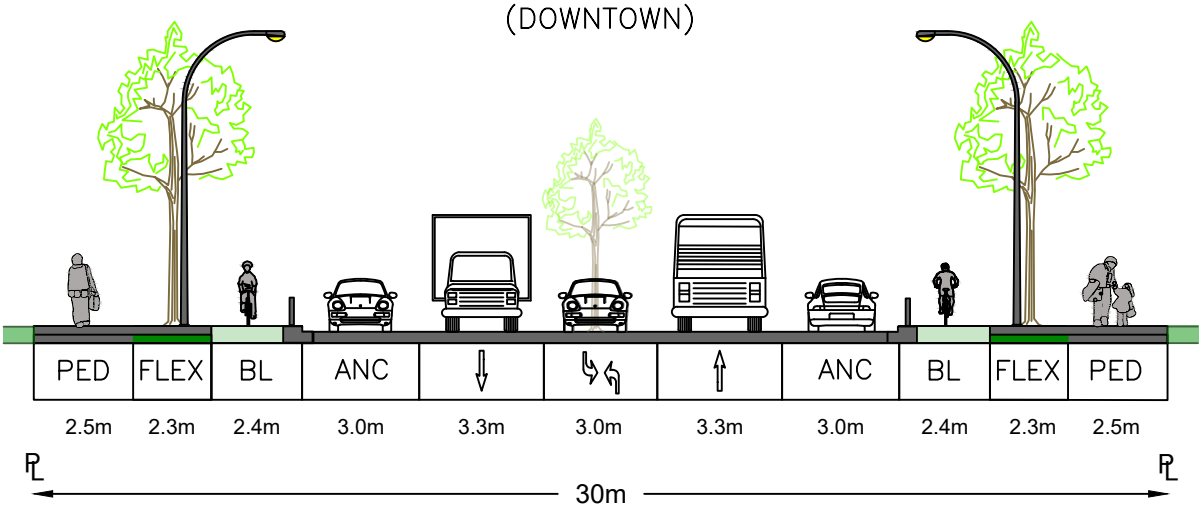
NOTES:

1. TWO-WAY LEFT TURN TO PROVIDE DEDICATED LEFT TURN AT INTERSECTIONS WHERE REQUIRED, SUPPORT REFUGE ISLANDS FOR PEDESTRIAN CROSSINGS, AND SUPPORT LANDSCAPING AND GSI WHERE FEASIBLE.
2. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
3. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED.
4. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED FOR FUTURE LIGHT RAIL TRANSIT AND AT MOBILITY HUBS TO SUPPORT RAPID TRANSIT, INCLUDING ENHANCED TRANSIT SHELTERS AND ASSOCIATED INFRASTRUCTURE.
5. UTILITY AND TREE PLACEMENT TO CONSIDER HIGHER ORDERS OF REGIONAL MASS TRANSIT, BEYOND RAPID BUS.
6. BUS SHELTERS PROVIDED AS WARRANTED BY BC TRANSIT. SEE ESS FOR FURTHER GUIDANCE.

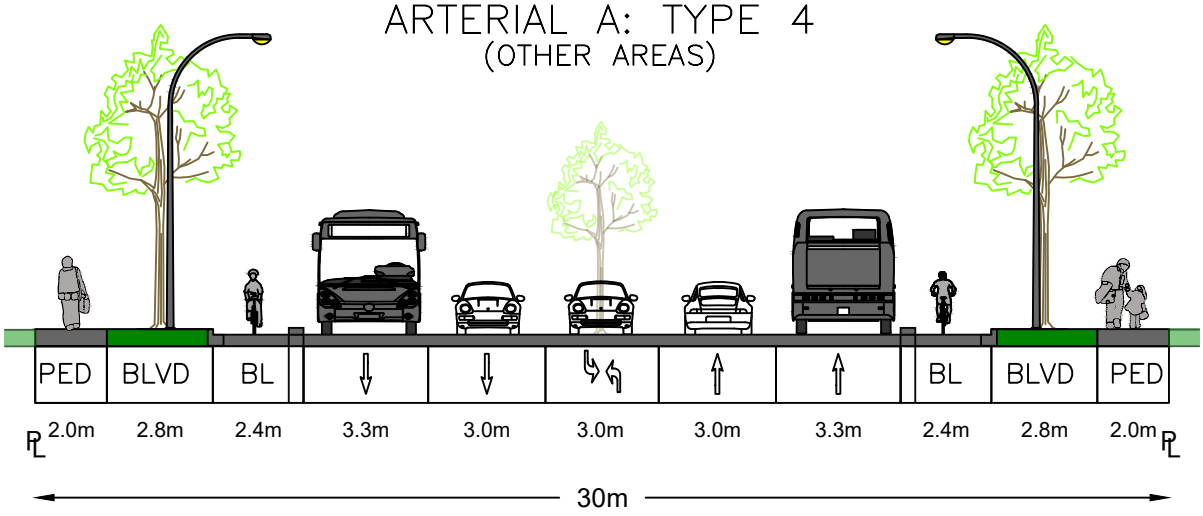
NOT TO SCALE

ARTERIAL A: TYPE 1 & TYPE 2	Revision Date	Drawing Number
	SEP 2025	SD XS 2

ARTERIAL A: TYPE 3
(DOWNTOWN)



ARTERIAL A: TYPE 4
(OTHER AREAS)



NOTES:

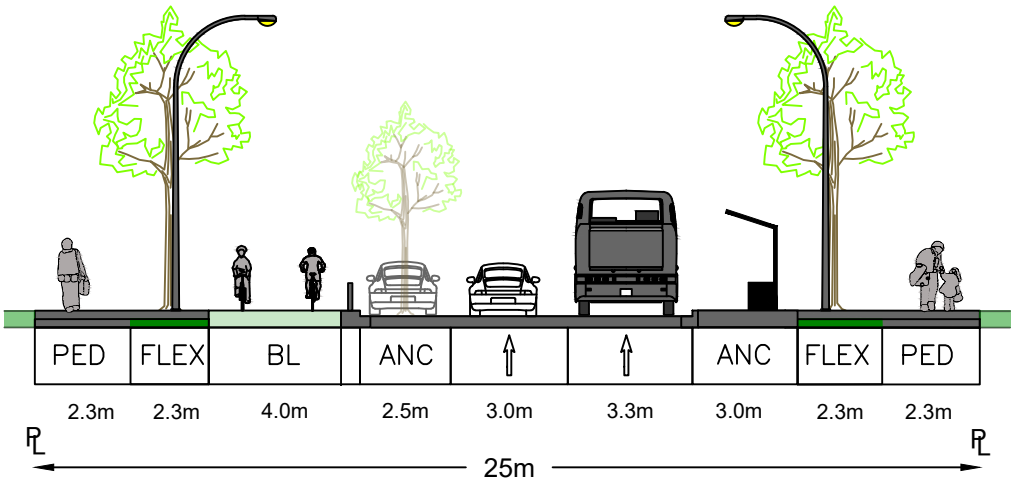
1. TWO-WAY LEFT TURN TO PROVIDE DEDICATED LEFT TURN AT INTERSECTIONS WHERE REQUIRED, SUPPORT REFUGE ISLANDS FOR PEDESTRIAN CROSSINGS, AND SUPPORT LANDSCAPING AND GSI WHERE FEASIBLE.
2. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
3. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED.
4. STREET BUFFER ZONE TO BE PROVIDED BETWEEN BIKE LANE AND ANY ON-STREET PARKING WITHIN ANCILLARY ZONE (ESS FOR DETAILS).

NOT TO SCALE

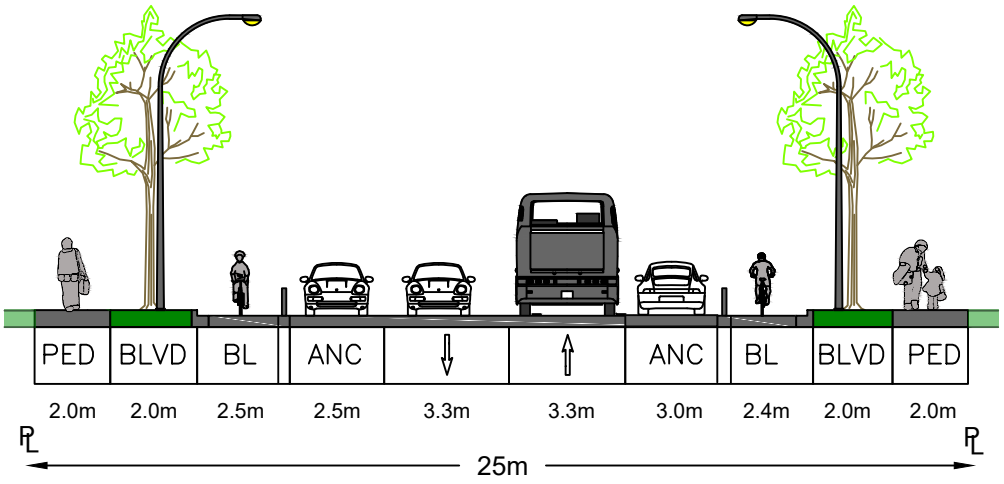
ARTERIAL A: TYPE 3 & TYPE 4

Revision Date	Drawing Number
SEP 2025	SD XS 3

ARTERIAL B: TYPE 1
(ONE–WAY MULTI–MODAL)



ARTERIAL B: TYPE 2
(MULTI–MODAL NO CENTRE LEFT)



NOTES:

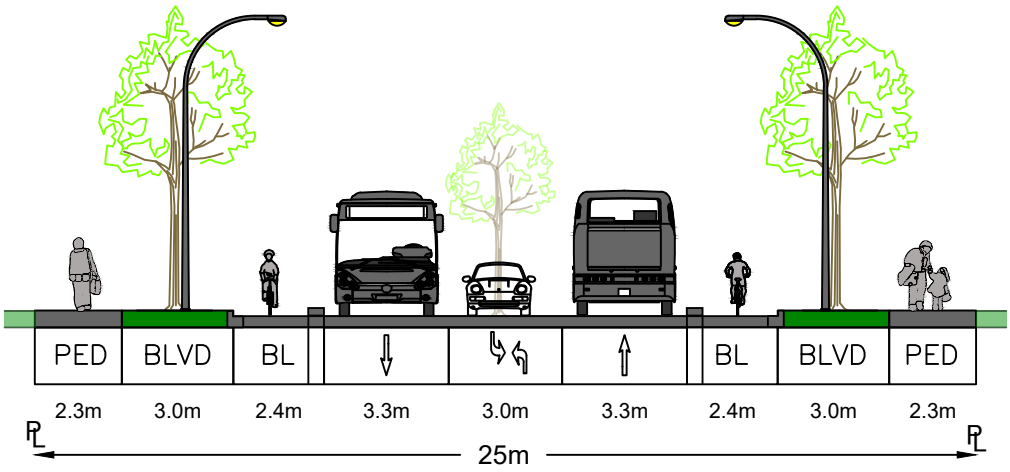
1. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
2. SEE TREE SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED.
3. ANCILLARY ZONE MAY BE EXPANDED AT INTERSECTIONS TO SUPPORT TURNING LANES AND/OR TRANSIT PRIORITY MEASURES.
4. STREET BUFFER ZONE TO BE PROVIDED BETWEEN BIKE LANE AND ANY ON-STREET PARKING WITHIN ANCILLARY ZONE (ESS FOR DETAILS).
5. SEE ESS FOR ADDITIONAL TRANSIT STOP DESIGN

NOT TO SCALE

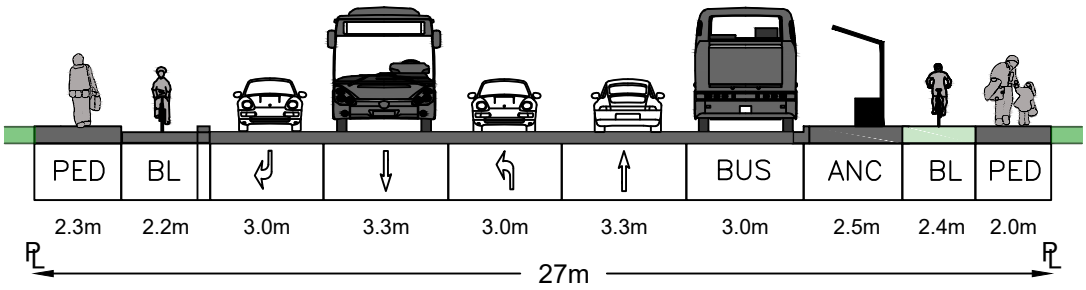
ARTERIAL B : TYPE 1 & TYPE 2

Revision Date	Drawing Number
SEP 2025	SD XS 4

ARTERIAL B: TYPE 3
(MULTI-MODAL WITH CENTRE LEFT)



ARTERIAL B: TYPE 4
(FAR-SIDE INTERSECTION TRANSIT STOP)



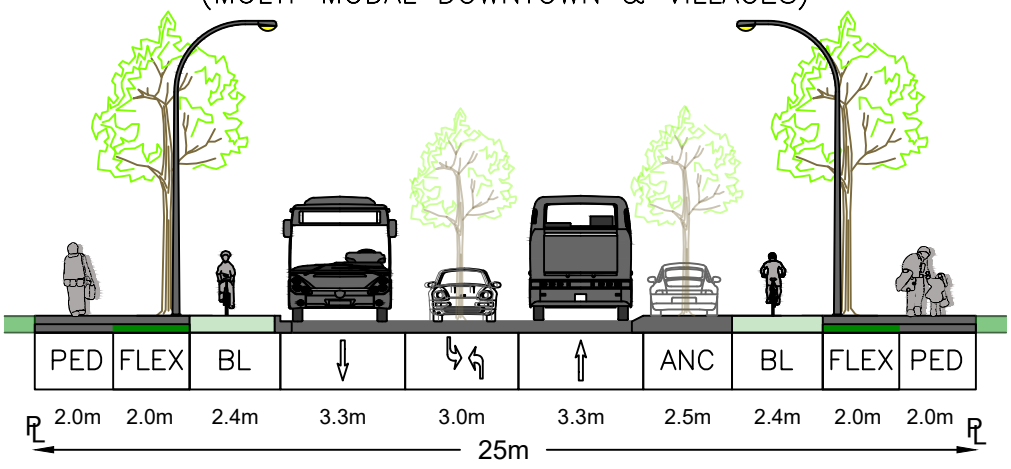
NOTES:

1. TWO-WAY LEFT TURN TO PROVIDE DEDICATED LEFT TURN AT INTERSECTIONS WHERE REQUIRED, SUPPORT REFUGE ISLANDS FOR PEDESTRIAN CROSSINGS, AND SUPPORT LANDSCAPING AND GSI WHERE FEASIBLE.
2. RIGHT-OF-WAY WIDTH TO BE INCREASED TO 27m WITHIN 45m OF ARTERIAL INTERSECTIONS ON BOTH THE TRANSIT PRIORITY AND CYCLING NETWORKS TO PROVIDE SPACE FOR TRANSIT AND CYCLING FACILITIES, INCLUDING TURN LANES AND QUEUE JUMPERS, PASSENGER BOARDING ISLANDS, INBOUND BIKE AND ROLL LANES, AND ANY ASSOCIATED INFRASTRUCTURE.
3. TYPICAL FAR-SIDE TRANSIT STOP CONFIGURATION SHOWN AT ARTERIAL INTERSECTION. SEE ESS FOR ADDITIONAL TRANSIT STOP DESIGN GUIDANCE.

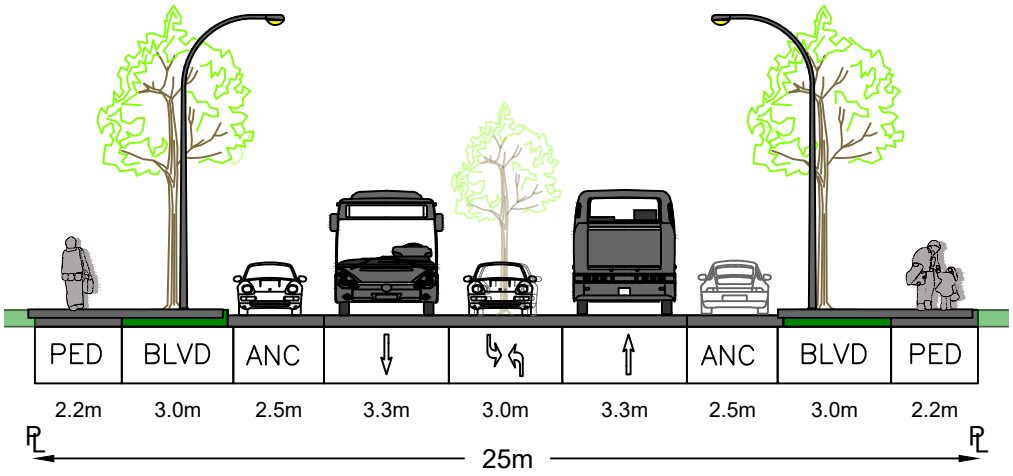
NOT TO SCALE

ARTERIAL B : TYPE 3 & TYPE 4	Revision Date	Drawing Number
	SEP 2025	SD XS 5

ARTERIAL B: TYPE 5
(MULTI–MODAL DOWNTOWN & VILLAGES)



ARTERIAL B: TYPE 6
(DOWNTOWN & VILLAGES)



NOTES:

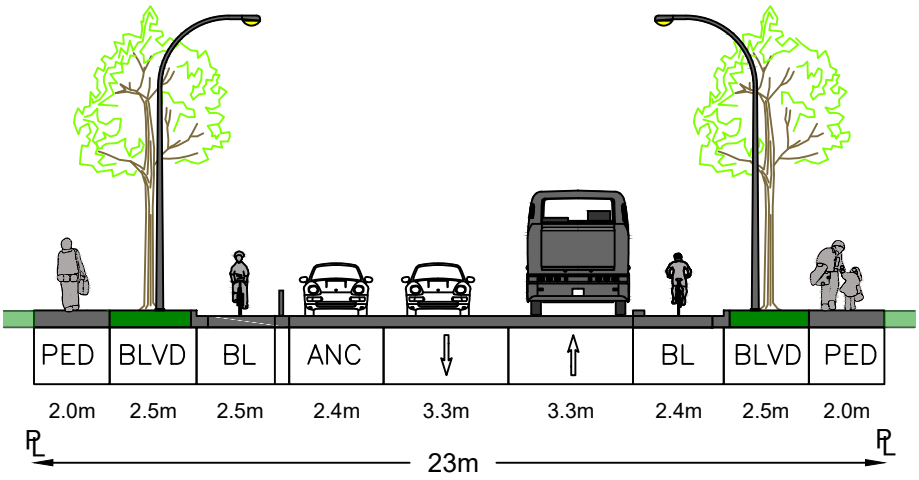
1. TWO-WAY LEFT TURN TO PROVIDE DEDICATED LEFT TURN AT INTERSECTIONS WHERE REQUIRED, SUPPORT REFUGE ISLANDS FOR PEDESTRIAN CROSSINGS, AND SUPPORT LANDSCAPING AND GSI WHERE FEASIBLE.
2. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
3. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED.
4. STREET BUFFER ZONE TO BE PROVIDED BETWEEN BIKE LANE AND ANY ON-STREET PARKING WITHIN ANCILLARY ZONE (ESS FOR DETAILS).

NOT TO SCALE

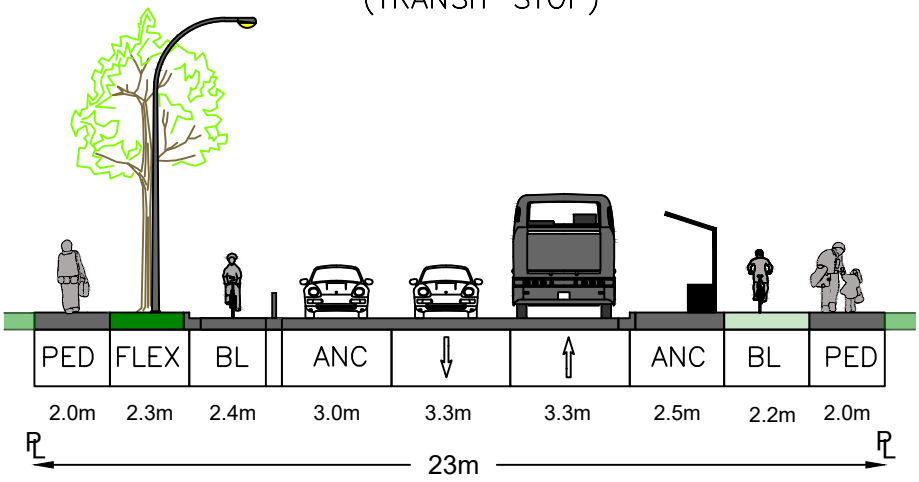
ARTERIAL B : TYPE 5 AND TYPE 6

Revision Date	Drawing Number
SEP 2025	SD XS 6

COLLECTOR A : TYPE 1
(MULTI–MODAL)



COLLECTOR A: TYPE 2
(TRANSIT STOP)



NOTES:

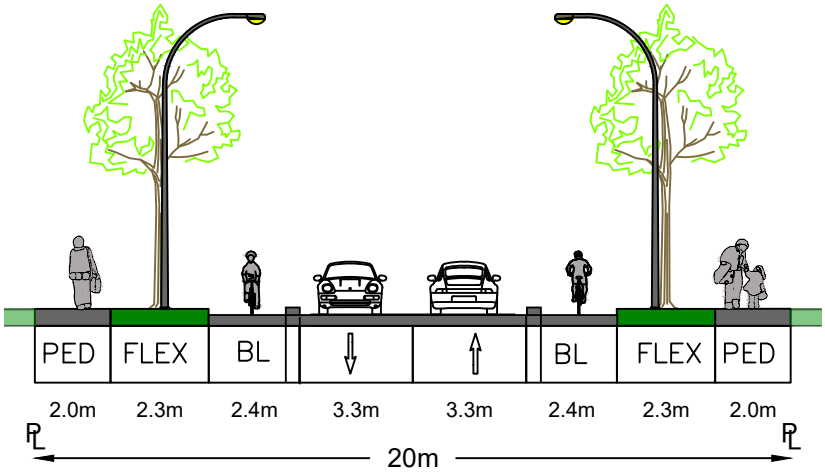
1. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
2. SEE ESS FOR ADDITIONAL GUIDANCE FOR BUS STOPS ADJACENT TO CYCLING INFRASTRUCTURE.
3. ANCILLARY ZONE TO PROVIDE DEDICATED TURN LANE CAPACITY AT INTERSECTIONS WHERE REQUIRED, SUPPORT TRANSIT OPERATIONS INCLUDING PRIORITY MEASURES, AND SUPPORT LANDSCAPING WHERE FEASIBLE.
4. IN CASES WHERE ON-STREET PARKING / LOADING REQUIRED ON OPPOSITE SIDE OF STREET FROM ANCILLARY ZONE, BOULEVARD AND SIDEWALK MODIFICATIONS MAY BE CONSIDERED AT STAFF DISCRETION. SEE ESS FOR FURTHER DIRECTION.
5. STREET BUFFER ZONE TO BE PROVIDED BETWEEN BIKE LANE AND ANY ON-STREET PARKING WITHIN ANCILLARY ZONE (ESS FOR DETAILS).

NOT TO SCALE

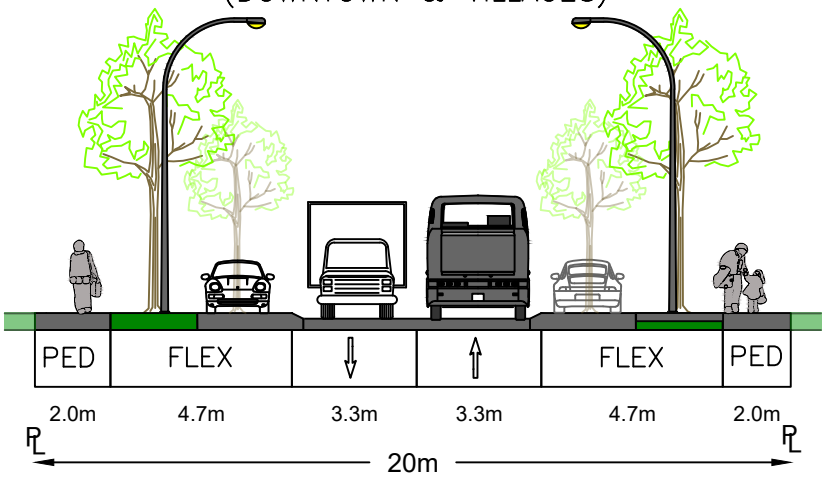
COLLECTOR A : TYPE 1 & TYPE 2

Revision Date	Drawing Number
SEP 2025	SD XS 7

COLLECTOR B: TYPE 1
(MULTI–MODAL)



COLLECTOR B: TYPE 2
(DOWNTOWN & VILLAGES)



NOTES:

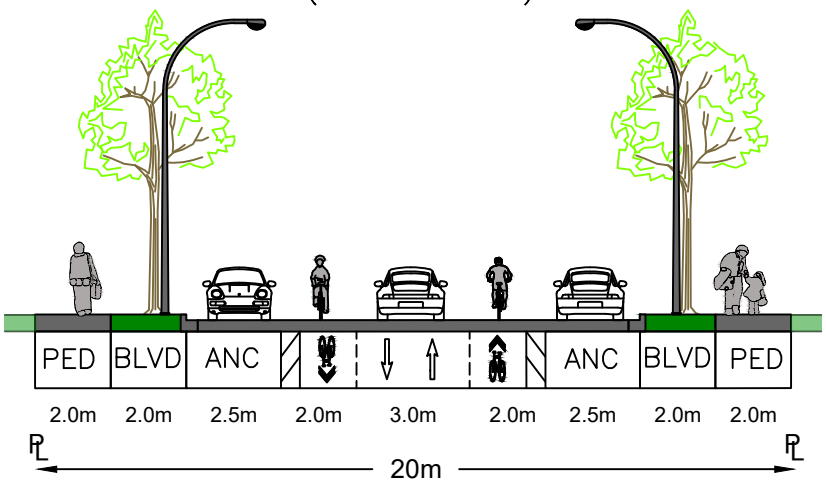
1. ON DESIGNATED TRUCK AND EMERGENCY RESPONSE ROUTES, VEHICLES LANES TO BE 3.3m WIDE AND TREE / FURNISHING ZONES TO BE 2.3m WIDE.
2. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
3. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED IN URBAN AREAS WHERE PEDESTRIAN ZONE WIDENED.
4. SEE CYCLING NETWORK MAP TO DETERMINE APPROPRIATE COLLECTOR CROSS SECTION. IN CASES WHERE CYCLING AND TRANSIT NETWORKS OVERLAP, SEE ESS FOR ADDITIONAL GUIDANCE FOR BUS STOPS ADJACENT TO CYCLING INFRASTRUCTURE.
5. SEE ESS FOR FURTHER GUIDANCE ON APPLICATION OF FLEX SPACE AND MINIMUM DIMENSIONS FOR INDIVIDUAL COMPONENTS. EXAMPLES OF POTENTIAL USES FOR COLLECTOR ROADWAYS INCLUDE BOULEVARD WITH STREET TREES AND STORMWATER MANAGEMENT, BUS STOPS, PARKING, TURN LANES, OR TRANSIT PRIORITY MEASURES AT INTERSECTIONS WITH ARTERIALS.

NOT TO SCALE

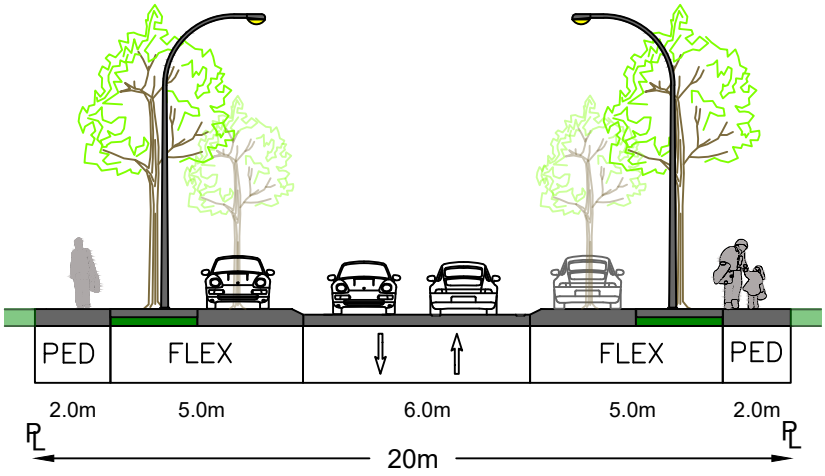
COLLECTOR B : TYPE 1 & TYPE 2

Revision Date	Drawing Number
SEP 2025	SD XS 8

COLLECTOR C: TYPE 1
(MULTI–MODAL)



COLLECTOR C: TYPE 2
(DOWNTOWN & VILLAGES)



NOTES:

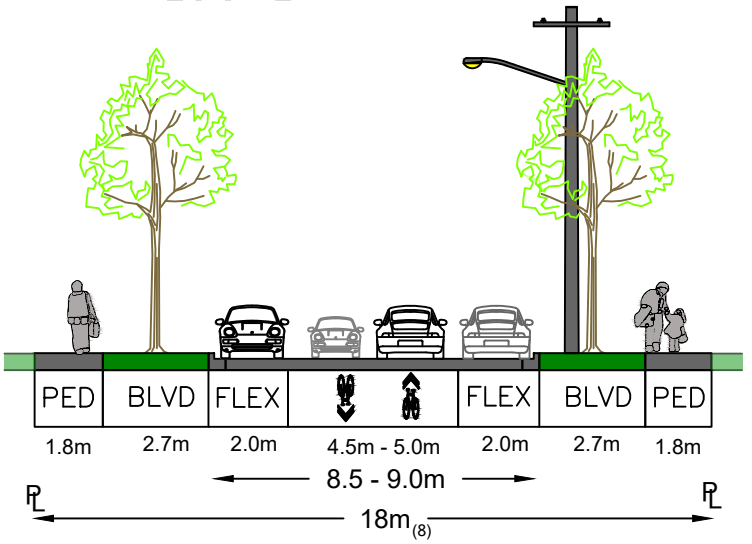
1. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
2. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED IN URBAN AREAS WHERE PEDESTRIAN ZONE WIDENED.
3. SEE CYCLING NETWORK MAP TO DETERMINE APPROPRIATE COLLECTOR CROSS SECTION. IN CASES WHERE CYCLING AND TRANSIT NETWORKS OVERLAP, SEE ESS FOR ADDITIONAL GUIDANCE FOR BUS STOPS ADJACENT TO CYCLING INFRASTRUCTURE.
4. SEE ESS FOR FURTHER GUIDANCE ON APPLICATION OF FLEX SPACE AND MINIMUM DIMENSIONS FOR INDIVIDUAL COMPONENTS. EXAMPLES OF POTENTIAL USES FOR COLLECTOR ROADWAYS INCLUDE BOULEVARD WITH STREET TREES AND STORMWATER MANAGEMENT, BUS STOPS, PARKING, TURN LANES, OR TRANSIT PRIORITY MEASURES AT INTERSECTIONS WITH ARTERIALS.

NOT TO SCALE

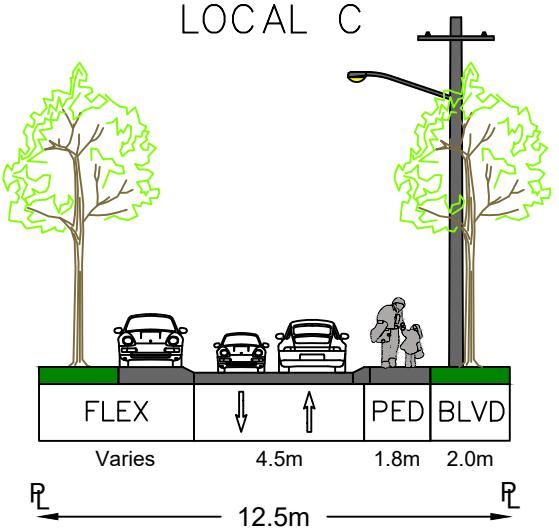
COLLECTOR C : TYPE 1 & TYPE 2	Revision Date	Drawing Number
	SEP 2025	SD XS 9

STREET TYPES & CROSS SECTIONS

LOCAL A & LOCAL B



LOCAL C



NOTES:

1. SEE PUBLIC REALM SECTION FOR DESIGN GUIDANCE IN DOWNTOWN AND URBAN VILLAGE AREAS. ADDITIONAL SPACE FOR PEDESTRIAN CLEAR ZONE, AS WELL AS TREE / FURNISHING ZONE MAY BE REQUIRED. FRONTAGE ZONE TO BE LOCATED ON PRIVATE PROPERTY.
2. SEE TREE AND GSI SECTIONS FOR PLANTING AND RAINWATER MANAGEMENT REQUIREMENTS. SOIL CELLS MAY BE REQUIRED.
3. WHERE WIDER CURB TO CURB THRESHOLD IS WARRANTED, ADDITIONAL WIDTH TO BE TAKEN FROM BOULEVARD.
4. WHERE PRESENT IN FLEX ZONE, ON-STREET PARKING TO BE ALLOCATED 2.5m SPACE.
5. EXISTING CURB-TO-CURB WIDTH TO MAINTAINED IF 8.5m TO 9.0m. SEE ESS FOR FURTHER GUIDANCE ON LOCAL STREET LANE WIDTHS.
6. SEE ESS FOR FURTHER GUIDANCE ON APPLICATION OF FLEX SPACE AND MINIMUM DIMENSIONS FOR INDIVIDUAL COMPONENTS. EXAMPLES OF POTENTIAL USES FOR LOCAL ROADWAYS INCLUDE BOULEVARD WITH STREET TREES AND STORMWATER MANAGEMENT, PARKING, STREET FURNISHINGS, OR UTILITIES.
7. SIDEWALK LOCATION CAN VARY BASED ON SITE VARIABLES AND EXISTING CONSTRAINTS. MAINTAIN MINIMUM 1.8m PEDESTRIAN ZONE WHILE MAINTAINING OR ENHANCING PLANTING AREAS.
8. FOR LOCAL B, BOULEVARD TO BE REDUCED TO 1.7m OR COMBINED WITH FLEX FOR AN OVERALL WIDTH OF 16m.

NOT TO SCALE

LOCAL A, LOCAL B, & LOCAL C

Revision Date	Drawing Number
OCT 2025	SD XS 10

7. Supplementary Specifications



This section includes the **Supplementary Specifications** to the **"Master Municipal Construction Documents – General Conditions, Specifications, and Standard Detail Drawings"**.

The Supplementary Specifications follow the same format and numbering system as the Master Municipal Specifications but are differentiated from it by having the letter "S" placed after the section number. New sections added to the Master Municipal Specifications are differentiated by having the letter "SS" after the section number.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
ADD	ADD	**THE CITY OF VICTORIA APPROVED PRODUCT LIST:** Add the City of Victoria Approved Product List (attached).
01 53 01 TEMPORARY FACILITIES	1.6 HOARDING	**REPLACE CLAUSE 1.6.1 WITH THE FOLLOWING:** Provide hoarding as required to protect public and private property from injury or damage. Provide lockable gates within the hoarding for access to the site by workers and vehicles.
01 55 00 TRAFFIC CONTROL, VEHICLE, AND ACCESS PARKING	1.4 TRAFFIC MANAGEMENT	**ADD CLAUSE 1.4.15 AS FOLLOWS:** Traffic Management for projects within City of Victoria to be in accordance with this bylaw and the *Streets and Traffic Bylaw*.
		ADD CLAUSE 1.4.16 AS FOLLOWS: All excavations shall be paved as per MMCD or covered with steel traffic plates suitable for vehicular traffic (minimum H20 traffic loading) at the end of every day. Temporary steel road plates must be secured using cold-mix asphalt, bolts, and/or shims to prevent plate movement or the generation of excessive noise during off-hours. The Contractor must have staff available on-call for 24 hours per day to repair road plates should movement occur.
01 57 01 ENVIRONMENTAL PROTECTION	1.0 GENERAL	**ADD CLAUSE 1.0.3 AS FOLLOWS:** The Operator is to follow all requirements contained within the City of Victoria *Sanitary Sewer and Stormwater Utilities Bylaw*.
	1.2 TEMPORARY EROSION AND SEDIMENT CONTROLS	**DELETE CLAUSE 1.2.1 AND REPLACE WITH:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Protect the site and municipal storm drain system to which it drains, directly or indirectly, against erosion and sedimentation in accordance with an Erosion and Sediment Control Plan under the Schedule A of the City of Victoria *Works and Services Bylaw* during all construction and development activities. Ensure no silt, silt-laden water, gravel, debris or prohibited waste discharges into the municipal stormwater system or watercourse or adjacent property. Construction and development activities and all discharges from the site must be compliant with the City of Victoria *Sanitary Sewer and Stormwater Utilities Bylaw* and applicable Provincial and Federal requirements. If this is not possible the Operator shall apply to the Capital Regional District to discharge to the sanitary system or liquid waste shall be transported off-site by a hauler to a proper disposal or treatment facility.
	1.4 ENVIRONMENTAL PROTECTION	**DELETE AND REPLACE CLAUSE 1.4.3.1 WITH:** The operator must prepare a spill prevention and response plan suitable for the site in accordance with Schedule "G" Code of Practice for Construction and Development Activities under the City of Victoria *Sanitary Sewer and Stormwater Utilities Bylaw*.
		DELETE AND REPLACE CLAUSE 1.4.3.4 WITH: Ensure spill response equipment and supplies identified in the spill response plan are always well-stocked and readily available
		ADD CLAUSE 1.4.3.5 AS FOLLOWS: Immediately contain and clean up any leaks or spills of prohibited materials at the site.
		ADD CLAUSE 1.4.3.6 AS FOLLOWS: All spills must be immediately reported to the City of Victoria Public Works 24hr phone line. Any spill of reportable quantities must be immediately reported to the Provincial Emergency Coordination Centre reporting line.
		ADD CLAUSE 1.4.4 DISPOSAL OF WASTE: Do not bury rubbish and waste materials on site. Dispose of waste materials off-property, and in accordance with applicable provincial and/or federal regulations.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Removal and disposal of Asbestos Cement pipe shall comply with current WorkSafe BC requirements.
		ADD CLAUSE 1.4.5 CONCRETE, ASPHALT, AND PLASTIC CUTTING AND PLACING: Control and collect all wet or dry residue from saw cutting, drilling, coring, grinding, and milling operations by means of a vacuum device or street sweeper to prevent the release of dust and plastic contaminants Minimize the volume of wastewater produced by cutting tools by recycling and reusing wastewater whenever possible. Do not allow concrete washout into streets, driveways, gutters, storm drains, ditches or water courses. Set up and operate portable mixers on tarps or heavy drop cloths to contain spillage When breaking up and milling pavement, continually remove broken pavement and sweep the area clean. When cutting or drilling any plastic poly-compound materials use a vacuum attachment on equipment when possible and place a tarp under tools or equipment to minimize the release of micro plastic particles
		ADD CLAUSE 1.4.6 DUST CONTROL: The Operator shall employ construction methods that prevent and minimize nuisance caused by dust. The Operator shall always maintain adequate dust control, including weekends and statutory holidays. Minimum requirements for dust control are at the sole discretion of the Contract Administrator.
26 56 01S ROADWAY LIGHTING	1.3 SHOP DRAWINGS	**ADD CLAUSE 1.3.5 AS FOLLOWS:** Contractor shall provide order details for all items not listed on the City of Victoria approved products list with all equipment types and quantities to be supplied. All equipment shall be per the City of Victoria approved product list unless noted otherwise. Non approved products shall not be ordered prior to approval by Contract Administrator. Products identified as MMCD (e.g. Type 1 poles) and specific products identified on the drawings (e.g. JB type – DFW 1730C4-18-4DP), do not require pre-approval before ordering.
	1.4 ELECTRICAL ENERGY SUPPLY	**DELETE CLAUSE 1.4.3 AND REPLACE WITH:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		All connections and disconnections are to be made by the City of Victoria including all modifications to street lights located on utility poles.
	1.9 MEASUREMENT AND PAYMENT	**ADD CLAUSE 1.9.4 AS FOLLOWS:** All existing wiring, conduit and bases shall be removed and disposed of offsite by the contractor.
		ADD CLAUSE 1.9.5 AS FOLLOWS: All existing street lighting equipment that is to be returned to the City shall be confirmed by the electrical supervisor or the technical services supervisor. All returned City equipment or infrastructure shall be torn down.
	2.1 GENERAL	**DELETE CLAUSE 2.1.2 AND REPLACE WITH:** All products, material and fittings supplied shall be new, in accordance with Contract Documents. Products are to meet or exceed Canadian Electrical Code requirements and CSA Standards or special certifications acceptable to the Chief Electrical Inspector. Unapproved items shall be removed and replaced at the contractor's expense.
		DELETE CLAUSE 2.1.3 AND REPLACE WITH: All roadway lighting products shall conform to BCMOT/SSHC V2, City of Victoria supplementary drawings detailed in the City of Victoria sub-division and development service bylaws, and the City of Victoria approved products list, except where noted in the Contract Documents.
	2.2 CONDUIT	**ADD CLAUSE 2.2.6 AS FOLLOWS:** All conduits shall be RPVC unless noted otherwise.
	2.4 PLASTIC JUNCTION BOXES	**DELETE CLAUSE 2.4.1 AND REPLACE WITH:** Junction Boxes types as per City of Victoria specifications
	2.4 PLASTIC JUNCTION BOXES	**ADD CLAUSE 2.4.2 AS FOLLOWS:** All conduits shall be RPVC unless noted otherwise.
		ADD CLAUSE 2.4.3 AS FOLLOWS: Junction boxes lids shall be supplied with the manufacturers bolt down hardware.
	2.6 CONCRETE BASES	**DELETE CLAUSE 2.6.1 AND REPLACE WITH:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Concrete bases per the MMCD, Contract Drawings, and City of Victoria supplementary detail drawings.
	2.7 POLES AND ACNHOR BOLTS	**DELETE CLAUSE 2.7.3:** Steel service bases typically not used by the City of Victoria
		DELETE CLAUSE 2.7.5: Concrete poles not used by the City of Victoria
	2.8 CONDUCTORS AND CABLES	**ADD CLAUSE 2.8.5 AS FOLLOWS:** Street lighting feeders shall be size 6 AWG. Street light conductors from the junction box to pole shall be size 10 AWG. Street lighting conductors inside pole shall be size 12 AWG.
		ADD CLAUSE 2.8.6 AS FOLLOWS: Where conductors are to be installed in existing black pipe not meeting CEC requirements, the wire shall be rated RWU90.
	2.10 CONDUCTOR CONNECTORS	**DELETE CLAUSE 2.10.1 AND REPLACE WITH:** Street lighting conductors shall be spliced and terminated using an approved method for the location. Street lighting conductors that are terminated within underground junction boxes shall be done using the appropriate rated split bolts or silicone wire nuts that are twisted tight and secured-in-place with black vinyl tape. Split bolt taping shall be black vinyl tape, vulcanized rubber, then black vinyl tape. Street lighting conductors within handholes are to be connected with silicone wire nuts and black vinyl tape. Conductors shall extend a minimum of 200mm outside of the pole.
	2.14 LUMINAIRES	**ADD CLAUSE 2.14.4 AS FOLLOWS:** LED luminaires shall have a color temperature of 3000k. LED luminaires located outside the downtown core, at traffic signals and at marked crosswalks shall have a color temperature of 4000k.
	2.16 COLD GALVANIZING COMPOUND	**ADD CLAUSE 2.16.2 AS FOLLOWS:** All redundant holes in poles shall be treated with galvacon paint and plugged using a City of Victoria approved suitable plug or cover plate. Plugged holes shall be painted to match the pole RAL colour.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	2.17 EXTRUDED ALUMINUM SIGNS	**ADD CLAUSE 2.17.3 AS FOLLOWS:** Street name signs shall be supplied by the City of Victoria and installed by contractor.
	2.19 SERVICE PANELS	**ADD CLAUSE 2.19.1 AS FOLLOWS:** Pole mount service/distribution panel per standard details drawings and City of Victoria supplement detail drawings Panels shall conform to Section 635 Service Panel Distribution and Disconnect Panels, BCMOT/SSHC V2.
		ADD CLAUSE 2.19.2 AS FOLLOWS: New 120/240V 60A and 100A Service panels shall be equipped with clear meter covers and suitable jumper bars.
		ADD CLAUSE 2.19.3 AS FOLLOWS: Service panels shall be equipped with a 600 x 600mm step pad if service is not located in hardscape area.
		ADD CLAUSE 2.19.4 AS FOLLOWS: Contactors: 60A-2P (120/240V) normally open, electrically held, definite purpose type.
	2.20 PHOTO CONTROLS	**ADD CLAUSE 2.20.1 AS FOLLOWS:** Refer to Contract drawings for photocell requirements. Where the luminaire is powered from a service with a contactor the luminaire shall be supplied with a shorting cap. When a contactor is added to the lighting system the contractor shall ensure that shorting caps are installed on all luminaires controlled by contactor.
	3.1 GENERAL	**ADD CLAUSE 3.1.5 AS FOLLOWS:** Contractor shall ensure clearances from overhead and underground utilities lines meet utility and work safe BC regulations prior to concrete base installations. Contact the contract administrator in the event of a conflict.
		ADD CLAUSE 3.1.6 AS FOLLOWS: The contractor shall ensure there is no interruption of existing lighting during darkness hours unless approved by the City of Victoria. No more than two luminaires in a row shall be off, without approval from the City of Victoria.
		ADD CLAUSE 3.1.7 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Notification to work on City electrical infrastructure must be given a minimum of 2 days in advance to the City of Victoria electrical supervisor.
		ADD CLAUSE 3.1.8 AS FOLLOWS: The contractor shall submit a work plan for electrical work to the contract administrator for approval. For any scheduled activities that deviate from the above work plan, a notification of changes shall be provided to both the contract administrator and the City electrical department for approval at least 1 week prior to starting work.
	3.2 EXCAVATING, TRENCHING AND BACKFILLING	**ADD CLAUSE 3.2.2 AS FOLLOWS:** When working within 1 meter from existing pole bases the contractor shall notify the City of Victoria electrical supervisor and exercise caution to not compromise the structural integrity of the existing pole or pole base. The contractor shall support the pole and review the base condition to ensure that the pole is adequately supported. If the pole is to be secured/supported for more than one shift, the contractor is responsible for all costs associated with having a structural engineer review and approve the securing method.
		ADD CLAUSE 3.2.3 AS FOLLOWS: Use extreme caution when working near utilities and lighting ductwork; duct may contain fibre optic cables. Existing conduit may be installed very shallow.
	3.3 CONCRETE BASES	**ADD THE FOLLOWING TO CLAUSE 3.3.1:** Or poured in place concrete bases per City of Victoria supplementary detail drawings..
		ADD CLAUSE 3.3.7 AS FOLLOWS: All concrete bases shall have 2-53mm RPVC conduits to the adjacent junction box, unless noted otherwise on Contract Drawings. The 2-53mm RPVC conduits shall be on the same side of the base located under the V-Groove drain. No corner of the pole base shall be left more than 53mm proud of final grade wihtout prior City approval.
		ADD CLAUSE 3.3.8 AS FOLLOWS: Concrete bases placed in areas requiring lawn mowing require a 150-300mm wide by 200mm thick concrete band completely surrounding the base.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.4 JUNCTION BOXES AND VAULTS	**ADD THE FOLLOWING TO CLAUSE 3.4.1:** All new conduit terminations in all junction boxes and vaults shall be vertical. Refer to City of Victoria supplemental detail drawings.
		ADD CLAUSE 3.4.5 AS FOLLOWS: Junction boxes placed in areas requiring lawn mowing require a 150-300mm wide by 200mm thick concrete band surrounding.
		ADD CLAUSE 3.4.6 AS FOLLOWS: All existing junction boxes (ring and lid style) cast into sidewalks shall be replaced as required if sidewalk is removed or impacted.
	3.5 UNDERGROUND CONDUIT	**ADD THE FOLLOWING TO CLAUSE 3.5.1:** Conduit terminations in all junction boxes shall be vertical. Refer to City of Victoria supplemental detail drawings.
		DELETE CLAUSE 3.5.5 AND REPLACE WITH: All empty conduits shall have a pull string and shall be capped. Pull string shall be polypropylene with a minimum tensile strength of 1.1kN. All 53mm and 76mm conduits with conductors must have bell ends installed before conductors are pulled.
		ADD CLAUSE 3.5.6 AS FOLLOWS: All conduits shall be verified and cleaned using the following procedure: To verify integrity of conduit, pull through each duct, a hard rubber mandrel not less than 300mm long and of a diameter of 6mm less than internal diameter of duct, preceded by a swab of suitable diameter to remove sand, earth and other foreign matter. Notify project Contract Administrator in the event of a conduit failure. Clean ducts before laying. Cap ends of ducts during construction and after installation to prevent entrance of foreign materials. Conduits terminated in junction boxes shall be extended between 50mm and 150mm above the bottom of the junction box. Remove all foreign debris and ensure all bolt holes are clean.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		ADD CLAUSE 3.5.7 AS FOLLOWS: All luminaire pole concrete bases shall have 2-53mm RPVC conduits.
		ADD CLAUSE 3.5.8 AS FOLLOWS: Spare conduits in concrete bases shall be capped at both ends.
		ADD CLAUSE 3.5.10 AS FOLLOWS: Existing lighting conduit installed before the year 2000 will typically be very shallow depth and may be located directly in or under the sidewalk. Contractor shall advise contract administrator if encountered. All conduits exposed during construction must be made to conform to current CEC and MMCD specifications and be connected to the new conduit system. Contractor shall identify on the as-builts.
		ADD CLAUSE 3.5.11 AS FOLLOWS: Contractor shall ensure there is a minimum of 75mm of fine sand around all conduits in all newly installed conduits.
	3.7 ELECTRICAL	**DELETE CLAUSE 3.7.2 AND REPLACE WITH:** Mount electrical service panels on poles as shown in supplementary detail drawings. Ensure minimum clearances above roadways comply with BC Hydro standards.
	3.8 WIRING	**ADD CLAUSE 3.8.12 AS FOLLOWS:** The contractor shall alternate luminaire circuits to ensure load is properly balanced.
	3.10 LUMINAIRES AND PHOTOCELLS	**DELETE CLAUSE 3.10.3 AND REPLACE WITH:** Aim photocells North where applicable.
	3.11 GROUNDING AND BONDING	**ADD CLAUSE 3.11.5 AS FOLLOWS:** The contractor shall photograph installed ground plates and provide a copy to the City of Victoria along with the new electrical service permit number.
	3.12 COLD GALVANIZING AND COMPOUND APPLICATION	**ADD CLAUSE 3.12.6 AS FOLLOWS:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		All redundant holes in poles shall be treated with galvacon paint and plugged using a City of Victoria approved suitable plug or cover plate. Plugged holes shall be painted to match the pole RAL colour.
	3.13 POLE FINISH APPLICATION	**DELETE CLAUSE 3.13.1 AND REPLACE WITH:** All steel pole finishes shall be hot dip galvanized. Pole in the downtown core will also be powder coated. For aluminium poles, confirm with City of Victoria whether raw or powder coat finish. Refer to Contract Drawings for RAL colours.
31 11 41S SHRUB AND TREE PRESERVATION	2.1 MATERIALS	**DELETE CLAUSE 2.1.9.**
	3.1 EXISTING TREES	**ADD CLAUSE 3.1.1.1 AS FOLLOWS:** Tree Protection Fencing (referred to as 'barricade' in 3.1.1) is to be constructed and installed to *Works and Services Bylaw*, Part 8, Parks Division Supplementary Drawing SD PT13.1 'Tree Protection Fencing' and Drawing SD PT13.2 'Tree Protection Area Sign'. Protection Fencing is to be constructed and inspected by the Contract Administrator prior to project commencing.
		ADD CLAUSE 3.1.1.2: When working around trees please refer to Arborist Report, Tree Management Plan and/or the contract drawings and documents for tree protection requirements. All tree protection conditions and recommendations shall be undertaken as requirement of the contract.
	3.3 LOWERING THE GRADE AROUND EXISTING TREES	**DELETE CLAUSE 3.3.2 AND REPLACE WITH:** If excavation through the Protected Root Zone of a tree the Project Arborist shall be contacted and be onsite to supervise the excavation work. The method of excavation recommended by the Project Arborist may include by hand, Airspade or Hydro-vac (at low pressure as not to remove bark from roots). Unless otherwise directed by the Project Arborist roots less than 50mm in diameter are to be clean cut with loppers or saw. When roots encountered are greater than 50 mm shall be protected and retained without approval of the Project Arborist that they may be cut. The Contractor is to contact Contract Administrator or designate (i.e.: Project Arborist).

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.4 PRUNING	**DELETE CLAUSE 3.4.1 AND REPLACE WITH:** Pruning of City trees is to done by an ISA Certified Arborist, with the permission of the Contract Administrator.
31 22 01S SITE GRADING	3.2 GRADING	**ADD CLAUSE 3.2.4.1 AS FOLLOWS:** Remove and dispose to approved off-site disposal area of perennial weeds and invasive plants. Examples of such plants, but not limited to, are Equisetum spp. (Horsetail), Convolvulus spp.(Morning Glory), Agropyin repens (Couch Grass), Fallopia spp. (Knotweed), Rubus discolor (Himalayan blackberry), Hedera helix (English Ivy), and all other noxious weeds or invasive plants that are known to the site. Refer to Province of BC Weed Management Guidelines, Fact Sheets and best management practices for removal and disposal of debris and infested soils.
31 23 01 EXCAVATING, TRENCHING AND BACKFILLING	1.10 MEASUREMENT AND PAYMENT	**ADD THE FOLLOWING TO CLAUSE 1.10.3:** Where over-excavation is authorized, the imported backfill material shall be Granular Subbase to Section 31 05 17, or approved alternate.
		ADD CLAUSE 1.10.9 AS FOLLOWS: Payment for removal and disposal of abandoned streetcar tracks encountered during the work shall be paid on a lineal meter basis, irrespective of the number of rails, and shall include all rail, ties and concrete base integral with and below the ties.
	3.1 SITE PREPARATION	**ADD CLAUSE 3.1.5 AS FOLLOWS:** One (1) week prior to commencing work, the Contractor shall obtain an underground utility check.
	3.3 EXCAVATION	**ADD CLAUSE 3.3.1.6.1 AS FOLLOWS:** Comply with Section 33 11 41 Shrub and Tree Preservation and Supplements.
	3.5 BACKFILL AND COMPACTION	**ADD CLAUSE 3.5.4.4 AS FOLLOWS:** Compacted lift thickness shall not exceed 300 mm.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.6 SURFACE RESTORATION	**ADD THE FOLLOWING TO CLAUSE 3.6.2 (3):** The contractor to verify the quality of topsoil or bulk mulch and submit supplier and mix information to the Contract Administrator for approval before delivery to the site. **ADD THE FOLLOWING TO CLAUSE 3.6.2 (4):** The contractor to receive approval of topsoil from the Contract Administrator before placement. **REPLACE CLAUSE 3.6.7 (5) WITH THE FOLLOWING:** Restore pavement as detailed on Supplementary Standard Detail Drawings G5.01/.02.
31 23 17 ROCK REMOVAL	1.5 BLASTING OPERATION PROPOSAL	**DELETE CLAUSE 1.5.1 AND REPLACE WITH:** Contractor to comply with the City of Victoria *Blasting (Construction) Operations Bylaw*. Contractor to submit a blasting permit application to the City of Victoria and receive approval prior to blasting.
		ADD CLAUSE 1.5.4 AS FOLLOWS: When working in other Municipalities, approvals and/or permits will need to be obtained from the appropriate Municipality prior to blasting.
31 24 13 ROADWAY EXCAVATION, EMBANKMENT, AND COMPACTION	1.8 MEASUREMENT AND PAYMENT	**DELETE CLAUSE 1.8.5 AND REPLACE WITH THE FOLLOWING:** Payment for common excavation includes: saw cutting of asphalt and concrete surfaces; removal of existing pavements, concrete road base, curbs, curbs and gutters, sidewalks, utilities strips, and driveways which are removed as part of the operation for common excavation. Measurement for common excavation: (6) Removal of existing irrigation systems and appurtenances will be made as a lump sum and include salvage and delivery of parts to the City Parks yard.
		ADD CLAUSE 1.8.14 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Payment for miscellaneous removal includes all labour, material, and equipment required to remove and dispose of signage, parking meter posts, bases, etc. as necessary to complete the Works shown in Contract Drawings. The payment includes full restoration of a sidewalk or any other base surface to its original condition or better. The payment includes grinding of post sleeves to finished grade and filling post holes with grout. All meters and posts are to be delivered to the City's store or as directed by the Contract Administrator.
32 01 11 PAVEMENT SURFACE CLEANING AND REMOVAL OF PAVEMENT MARKING	1.2 MEASUREMENT AND PAYMENT	**DELETE CLAUSE 1.2.1 AND REPLACE IT WITH THE FOLLOWING:** Payment for cleaning pavement surfaces and concrete sidewalks includes cleaning all protruding sealing compounds, dust, contaminants, loose and foreign materials, oil and grease or as directed by Contract Administrator shall be incidental to payment for Work described in other Sections.
32 01 16.7 COLD MILLING	1.5 MEASUREMENT AND PAYMENT	**ADD THE FOLLOWING TO CLAUSE 1.5.1:** Payment will be made at the respective unit prices bid and will include mobilization, demobilization, street sweeping, off-site disposal, clean up around existing utility manholes and valve covers, milling of pavement and underlying granular materials to desired depth as shown on the Contract Drawings and all other incidental work.
32 12 16 HOT-MIX ASPHALT CONCRETE PAVING	3.10 FINISHED TOLERANCES	**REPLACE CLAUSE 3.10.4 WITH THE FOLLOWING:** Finished asphalt surface to be higher than adjacent concrete gutters by at least 5 mm and not more than 10 mm."
32 17 23 PAINTED PAVEMENT MARKINGS	1.5 MEASUREMENT AND PAYMENT	**REPLACE CLAUSE 1.5.3 WITH THE FOLLOWING:** The lump sum payment for permanent thermoplastic pavement markings covers the supply of all materials and completing all the permanent thermoplastic pavement markings shown on the Contract Drawings. Payment for the installation and removal of temporary pavement markings including taped, Davidson, and painted pavement markings, as necessary to provide safe traffic operations, shall be incidental to Work.
	3.3 APPLICATION	**ADD CLAUSE 3.3.4 AS FOLLOWS:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		All temporary markings are to be removed immediately following the installation of permanent markings. The Contractor shall be responsible for a field survey before construction for existing markings, field layout after paving, and re-instating / installing the pavement markings. Temporary pavement marking shall conform to City of Victoria Temporary Pavement Markings, Supplemental to BC MoTI Manual of Standard Traffic Signs & Pavement Markings.
32 31 13 CHAIN LINK FENCES AND GATES	1.0 GENERAL	**REPLACE CLAUSE 1.1 WITH THE FOLLOWING:** Section 32 31 13 refers to those portions of the work that are unique to the supply and installation of chain link fences and gates, bike racks, and bollards. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.
	1.2 REFERENCES	**ADD 1.2.2, 1.2.3 AND 1.2.4 AS FOLLOWS:** Supplemental Detail Drawings City of Victoria Public Realm Guidelines City of Victoria Supplemental Specifications and Standard Drawings
	1.5 MEASUREMENT AND PAYMENT	**ADD THE FOLLOWING TO CLAUSE 1.5.5:** Payment for the installation of the bollards (except for impact-resistant type bollards) and bike racks includes pick-up from the City store, all labour, equipment, and material required to install as shown on the Contract Drawings. Bollards and bike racks shall be measured as each complete item for each type installed. Payment for impact-resistant type bollards includes supply, all labour, equipment, and material required to install as shown on the Contract Drawings.
	2.1 MATERIALS	**REPLACE 2.1.1 WITH THE FOLLOWING:** Materials Supplied by the City: Except for impact-resistant type bollards, all other bollards shall be supplied by the City. The Contractor shall be responsible for arranging a pick-up from the City's store and installing it at locations shown in Contract Drawings. The impact-resistant type bollards are to be supplied and installed by the Contractor. The Contractor shall be responsible for the supply and installation of the labour, material, and equipment necessary to install bollards including anchors as specified in clause 2.1.14.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		DELETE CLAUSE 2.1.4.1 AND REPLACE IT WITH THE FOLLOWING: Top and brace rails: as per City of Victoria Supplementary Standard Detail Drawing SD STR 1.
		DELETE CLAUSE 2.1.4.2 AND REPLACE IT WITH THE FOLLOWING: End and corner posts: Top and brace rails: as per City of Victoria Supplementary Standard Detail Drawing SD STR 1.
		DELETE CLAUSE 2.1.4.3 AND REPLACE IT WITH THE FOLLOWING: Line posts: as per Top and brace rails: as per City of Victoria Supplementary Standard Detail Drawing SD STR 1.
		DELETE CLAUSE 2.1.4.4 AND REPLACE IT WITH THE FOLLOWING: Gate posts: 50mm minimum nominal outside diameter or as specified.
		DELETE CLAUSE 2.1.7 AND REPLACE IT WITH THE FOLLOWING: Tension bar: as per City of Victoria Standard Detail Drawing SD STR 1
		DELETE CLAUSE 2.1.10 AND REPLACE IT WITH THE FOLLOWING: Fittings and hardware: cast aluminum alloy, galvanized steel or malleable or ductile iron. Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail. Turnbuckles to be drop forged.
		DELETE CLAUSE 2.1.12 AND REPLACE IT WITH THE FOLLOWING: Barbed wire not permitted on City of Victoria property.
		ADD THE FOLLOWING TO CLAUSE 2.1.14: Bollards shall be secured using 0.5” (inch) Drop-In Anchors (National Concrete Accessories Part # IPA 1258) in concrete and 0.5” x 4” Titen HD Heavy Duty Screw Anchors (National Concrete Accessories Model THD50400H – cut excess threaded portion of anchor to suit following install) in asphalt or equivalents approved by the City.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.0 EXECUTION	**DELETE CLAUSE 3.2.2 AND REPLACE IT WITH THE FOLLOWING:** Excavate post holes to dimensions shown Top and brace rails: as per City of Victoria Supplementary Standard Detail Drawing SD STR 1.
		DELETE CLAUSE 3.2.3 AND REPLACE IT WITH THE FOLLOWING: Space line posts equally or to Contract Drawings to a maximum 3m apart, measured parallel to ground surface.
		DELETE CLAUSE 3.2.8 AND REPLACE IT WITH THE FOLLOWING: Brace to hold posts in plumb position and true to alignment and elevation to depths shown on City of Victoria Supplementary Standard Detail Drawing SD STR 1. Pour concrete around posts and finish concrete to 100mm below grade. Retain braces until concrete has set.
		DELETE CLAUSE 3.2.13.
		RE-NUMBER 3.2.14 TO 3.2.13.
		RE-NUMBER 3.2.15 TO 3.2.14.
		ADD CLAUSE 3.2.15 AS FOLLOWS: Install bottom tension wire, loop tension wire around end, corner, gate and straining posts and fasten with cable clamp. Align bottom wire above second knuckle from bottom of fabric. Wire is to be threaded through knuckles. Wire is then to be looped around terminal post and stretched back in direction of originating post. Cable clamp to be attached and tightened, excess wire cut allowing a 150mm pigtail to be bent 180 degrees towards terminal post.
		DELETE CLAUSE 3.2.16.
32 91 21S TOPSOIL FINISH GRADING	1.4 MEASUREMENT AND PAYMENT	See *Works and Services Bylaw* and the Contract Drawings and Documents for additional City of Victoria requirements.
		DELETE CLAUSE 1.4.1 AND REPLACE WITH THE FOLLOWING:

<table>
<tr><th>MMCD SECTION NUMBER & NAME</th><th>CLAUSE REFERENCE</th><th>SUPPLEMENTARY SPECIFICATION</th></tr>
<tr><td></td><td></td><td>Payment for growing medium and imported topsoil will be made separately for each type of growing medium and imported topsoil specified, and includes supply of materials, on-site handling, placement to thickness specified, application of fertilizers and finish grading. Payment for growing medium will be by actual area provided and payment for topsoil will be by actual area provided based on Parks Division Supplemental Drawings, rather than loose truck box volume.</td></tr>
<tr><td></td><td>2.10 GROWING MEDIUM</td><td>DELETE TABLE 2 PAGE 6 OF 10 AND REPLACE WITH THE FOLLOWING:
<table>
<tr><th>Soil Property</th><th>Units</th><th>Soil Type</th><th>Particle Size [1]</th><th>Low Traffic Lawn Areas, Trees, and Large Shrubs</th><th>High Traffic Lawn Areas and Soil Cells</th><th>Planting Areas, Planters, Shrub and Groundcover Areas</th></tr>
<tr><td rowspan="6">Texture</td><td rowspan="2">Percent of Dry Weight of Total Growing Medium (%)</td><td>Coarse Gravel</td><td>> 19 mm
< 40 mm</td><td>0 - 1</td><td>0 - 1</td><td>0 - 1</td></tr>
<tr><td>All Gravel</td><td>> 2 mm
< 75 mm</td><td>0 - 5</td><td>0 - 5</td><td>0 - 5</td></tr>
<tr><td rowspan="4">Percent of Dry Weight of Growing Medium Excluding Gravel (%)</td><td>Sand</td><td>> 0.05 mm
< 2 mm</td><td>50 - 80</td><td>70 - 90</td><td>40 - 80</td></tr>
<tr><td>Silt</td><td>> 0.002 mm
< 0.05 mm</td><td>10 - 25</td><td>0 - 15</td><td>10 - 25</td></tr>
<tr><td>Clay</td><td>< 0.002 mm</td><td>0 - 25</td><td>0 - 15</td><td>0 - 25</td></tr>
<tr><td>Clay and Silt Combined</td><td>-</td><td>35 (maximum)</td><td>15 (maximum)</td><td>35 (maximum)</td></tr>
<tr><td>Acidity (pH)</td><td>Unitless</td><td rowspan="3">Entire Growing Medium</td><td>-</td><td>6.0 - 7.0</td><td>6.0 - 7.0</td><td>4.5 - 6.5</td></tr>
<tr><td>Drainage</td><td>Minimum saturated hydraulic conductivity (cm/hr)</td><td>-</td><td>2.0</td><td>7.0</td><td>2.0</td></tr>
<tr><td>Organic Content</td><td>Percent of Dry Weight (%)</td><td>-</td><td>3 - 10</td><td>3 - 5</td><td>10 - 20</td></tr>
</table></td></tr>
<tr><td>32 92 20S SEEDING</td><td>1.0 GENERAL</td><td>ADD CLAUSE 1.0.3 AS FOLLOWS:

Seeding of boulevard shall be restricted to boulevard repairs of less than 2 m2 unless noted in the contract drawings and documents</td></tr>
<tr><td></td><td>3.1 FINISH GARDE PREPARATION</td><td>ADD CLAUSE 3.1.2.1 AS FOLLOWS:

For finish grade refer to contract drawings and documents. Parks Division Supplemental Drawing SD PH1.</td></tr>
<tr><td></td><td>3.6 GRASS MAINTENANCE</td><td>ADD CLAUSE 3.6.3 AS FOLLOWS:

No pesticides to be used. Refer to City of Victoria Pesticide Use Reduction Bylaw 07-094.</td></tr>
<tr><td></td><td>3.8 GUARANTEE / MAINTENANCE</td><td>DELETE CLAUSE 3.8.1 AND REPLACE WITH THE FOLLOWING:</td></tr>
</table>

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Thirty-day guarantee period will apply as standard for sod. Contractor to guarantee all materials and workmanship for a period of thirty days from date of Total Performance, unless specified otherwise in Contract Documents.
		DELETE CLAUSE 3.8.2 AND REPLACE WITH THE FOLLOWING: Guarantee includes reseeding all areas determined by Contract Administrator to be dead or failing at end of guarantee period. Reseeding to be made within ten days upon notification to Contractor by Contract Administrator, and conditions of guarantee will apply to all reseeding for thirty days.
32 92 23S SODDING	2.1 SOD	**ADD CLAUSE 2.1.1.1 AS FOLLOWS:** Sod to have no reinforcing mesh for all areas.
	3.1 FINISH GRADE PREPARATION	**ADD CLAUSE 3.1.2.1 AS FOLLOWS:** For finish grade refer to Parks Supplemental Drawing SD PH1.
	3.4 GRASS MAINTENANCE	**ADD CLAUSE 3.4.3 AS FOLLOWS:** No pesticides to be used. Refer to City of Victoria *Pesticide Use Reduction Bylaw 07-094*.
	3.8 GUARANTEE / MAINTENANCE	**DELETE CLAUSE 3.6.1 AND REPLACE WITH THE FOLLOWING:** Thirty-day guarantee period will apply as standard for sod. Contractor to guarantee all materials and workmanship for a period of thirty days from date of Total Performance, unless specified otherwise in Contract Documents.
		DELETE CLAUSE 3.6.2 AND REPLACE WITH THE FOLLOWING: Guarantee includes resodding all areas determined by Contract Administrator to be dead or failing at end of guarantee period. Resodding to be made within ten days upon notification to Contractor by Contract Administrator, and conditions of guarantee will apply to all reseeding for thirty days.
32 93 01 PLANTING OF TREES, SHRUBS,	1.2 REFERENCES	**ADD CLAUSE 1.2.4 AS FOLLOWS:** *Works and Services Bylaw* Schedule A and Part 8 Supplementary Drawings.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
AND GROUND COVERS	2.1 PLANT MATERIAL	**DELETE CLAUSE 2.1.2.9 AND REPLACE WITH THE FOLLOWING:** Trees to have one dominant central leader or single straight trunk, caliper measured 15cm above ground, 5-8cm diameter (or contract specified), well balanced crowns, branching starting at 1.8m-2.5m above ground.
		DELETE CLAUSE 2.1.2.12 AND REPLACE WITH THE FOLLOWING: All trees and plants to be inspected at the nursery and upon delivery to site by the Contract Administrator or designate.
	2.5 STAKES	**DELETE CLAUSE 2.5.1 AND REPLACE WITH THE FOLLOWING:** Pressure treated wood 64 mm diameter, 2.13 m (7') long installed parallel with the road.
	2.6 – 2.12	**DELETE SUB-SECTIONS 2.6-2.12 AND REPLACE WITH 2.6-2.9.**
	NEW 2.6 TREE TIE	**ADD CLAUSE 2.6.1 AS FOLLOWS:** Tree tie to be #14 gauge galvanized wire within a length of 5/8" rubber hose in a suitable length to protect the tree from abrasion.
	NEW 2.7 DEER GUARD	**ADD CLAUSE 2.7.1 AS FOLLOWS:** Deer guard must be placed around each with wooden tree stakes, 1.2 m high #12 gauge galvanized welded wire mesh shall be installed as shown in the Parks Division Supplementary Drawings.
	NEW 2.8 TREE GRATES	**ADD CLAUSE 2.8.1 AS FOLLOWS:** Tree grates are to be Dobney Foundry SP48 Tree grates with black coating applied by the manufacturer, unless an alternate size and manufacturer is specified in the contract documents or approved drawings.
	NEW 2.9 TREE GUARDS	**ADD CLAUSE 2.9.1 AS FOLLOWS:** Tree Guards manufactured by the City of Victoria shall be installed to protect and support each tree where tree grates are required, the contractor shall be responsible for the purchase cost.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.1 PRE-PLANTING OPERATIONS	**DELETE CLAUSE 3.1.3:**
	3.3 PLANTING	**DELETE CLAUSE 3.3.6.5 AND REPLACE WITH THE FOLLOWING:** Upon completion of boulevard, rake planting soil to remove any debris brought to surface by planting operations. After raking mulch planting area with a layer of bark mulch at a depth which will settle to 50mm layer over the soil surface, mulch must be kept 50mm away from plant stems.
	3.4 TREE SUPPORT	**DELETE CLAUSE 3.4.2 AND REPLACE WITH THE FOLLOWING:** Refer to Parks Division Supplemental Drawings for required tree supports.
	3.6 PRUNING	**DELETE CLAUSE 3.6.1 AND REPLACE WITH THE FOLLOWING:** Limit pruning to minimum necessary to remove dead or damaged branches.
		DELETE CLAUSE 3.6.6.
	3.9 MAINTENANCE	**DELETE CLAUSE 3.9.5 AND REPLACE WITH THE FOLLOWING:** No pesticides to be used. Refer to City of Victoria *Pesticide Use Reduction Bylaw 07-094*.
	3.11 GUARANTEE / MAINTENANCE	**DELETE CLAUSE 3.11.2 AND REPLACE WITH THE FOLLOWING:** Guarantee includes replacing all plants determined by Contract administrator to be dead or failing at end of guarantee period. Replacements to be made within thirty days, and conditions of guarantee will apply to all replacement plants for one full growing season.
	3.4 TREE SUPPORT	**ADD CLAUSE 3.4.2.1 AS FOLLOWS:** Install tree stakes as per standard details in Schedule A to City of Victoria *Works and Services Bylaw*.
33 01 30.1 CCTV PIPELINE INSPECTION	3.8 INSPECTION REPORTING HARD COPIES & DIGITAL FORMAT	**ADD CLAUSE:** Digital information to be as specified in Contract Documents.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
33 05 24 CURED IN PLACE PIPE LINERS	3.4 VERIFY EXISTING SEWER DIMENSIONS	**ADD CLAUSE 3.4.2 AS FOLLOWS:** Measure the pipe diameter in each manhole to confirm exact dimensions.
	3.5 PREPARATION	**ADD TO CLAUSE 3.5.6:** Information notices to be pre-approved by the Contract Administrator and are to include the Contractors 24 hour contact information.
		ADD CLAUSE 3.5.7 AS FOLLOWS: Submit schedule of expected service disruptions to Contract Administrator 72 hours in advance and include a description of how the disruptions will be handled.
		ADD CLAUSE 3.5.8 AS FOLLOWS: Notify the Contract Administrator in writing of any repairs or alterations required to be done by the City prior to lining.
33 11 01 WATERWORKS	1.4 MATERIAL CERTIFICATION	**ADD CLAUSE 1.4.3 AS FOLLOWS:** All products must be as per the pre-approved City of Victoria Products List. If not on the City of Victoria Pre-Approved List, products must be pre-approved in writing by the City of Victoria.
	1.7 SCHEDULING OF WORK	**DELETE CLAUSE 1.7.3 AND REPLACE WITH:** Notify Contract Administrator, affected residences and businesses minimum of 48 h in advance of any interruption in service.
		ADD CLAUSE 1.7.4 AS FOLLOWS: Notify Contract Administrator, affected residences and businesses minimum of 72 hours in advance to arrange for Fire Watch as required.
	1.8 MEASUREMENT AND PAYMENT	**ADD TO CLAUSE 1.8.10:** If the Contractor is required to repair a sanitary sewer or storm drain lateral or main in the Township of Esquimalt the contractor shall excavate into trench wall as required to find sound pipe ends that may be trimmed for the repair and a minimum of 300mm soil bearing. The pipe repair shall be to MMCD standards and a representative from the Township of Esquimalt Engineering Department must inspect repair prior to backfilling.
		DELETE CLAUSE 1.8.4 AND REPLACE WITH:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Payment for service connection includes mainline saddles where used, corporation stops, service pipes and all related fittings and appurtenances specified, used and/ or shown on Supplementary Standard Detail Drawings SD W2a or SD W2b, as applicable. Owner to provide water meters at no cost to the Contractor.
		DELETE CLAUSE 1.8.5 AND REPLACE WITH: Payment for test points, air-release/ air-vacuum and combination air valves and apparatus and blow-off assembly as separate items includes all materials, works and appurtenances shown on Supplementary Standard Detail Drawings SD W8a and SD W8b with valve chambers to be paid for under separate items.
		DELETE CLAUSE 1.8.6 AND REPLACE WITH: Payment for air valve chamber complete with drain arrangement includes all materials, work and incidentals shown on Supplementary Standard Detail Drawings SD W6a, SD W6b and W7 as separate items for each location.
		DELETE CLAUSE 1.8.7 AND REPLACE WITH: Payment for blow-down chamber complete with backflow prevention device and drain arrangement includes all materials, work and incidentals shown in Contract Documents as separate items for each location.
		DELETE CLAUSE 1.8.14 AND REPLACE WITH: Payment for hydrants includes the hydrant body, lateral connections from mainline tee off watermain to hydrants, isolation valve at the mainline tee and curb valve with adjustable valve box and all incidental work as shown on Supplemental Standard Detail Drawing SD W4.
	2.2 MAINLINE PIPE, JOINTS AND FITTINGS	**DELETE CLAUSE 2.2.1.1 AND REPLACE WITH:** Ductile Iron Pipe to be Pressure Class 350, as per AWWA C151 and most recent City Approved Products List.
		AMEND CLAUSE 2.2.2.1.1 AS FOLLOWS: Delete Phrase: "AWWA C900 pipe to Pressure Class specified in Contract Documents." **AMEND CLAUSE 2.2.2.1.1 AS FOLLOWS:**

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Add Phrase: "PVC Pipe to DR 18, Pressure Class 235 (formally PR 235), as per AWWA C900 and most recent City Approved Products List."
		DELETE CLAUSE 2.2.4.12.4: Tie rods to 2.2.3.8 of this Section. **ADD CLAUSE 2.2.4.12.4 AS FOLLOWS:** Tie rods to 2.2.4.9 of this Section.
	2.3 VALVES AND VALVE BOXES	**DELETE CLAUSE 2.3.1.1:** Valves to open counter-clockwise. **ADD CLAUSE 2.3.1.1 AS FOLLOWS:** Valves to open clockwise.
		DELETE CLAUSE 2.3.2.2 AND REPLACE WITH: To AWWA C500: 75 to 300 mm to working pressure 1380 kPa; 400 mm and larger to working pressure 1035, cast ductile iron body, bronze mounted solid wedge, or double disc, non-rising stem, hub or flanged ends or as specified in Contract Documents.
		DELETE CLAUSE 2.3.2.3 AND REPLACE WITH: To AWWA C509: 75 to 300 mm to working pressure 1380 kPa; ductile iron body, resilient seated, non-rising stem, hub or flanged ends or as specified in Contract Documents.
		DELETE CLAUSE 2.3.2.6 AND REPLACE WITH: Valves to be complete with 32mm square operating nut for underground service.
		DELETE CLAUSE 2.5.1 AND REPLACE WITH: Pipe diameter 19 mm to 50 mm to be Type K annealed copper, to ASTM B88M, or PEX-a. For pipes greater than 50mm in diameter use ductile iron pipe for underground service.
		DELETE CLAUSE 2.5.2 AND REPLACE WITH: Pipe diameter 100 mm and larger to be of material specified for mainline pipe unless otherwise specified in contract documents.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	2.5 SERVICE CONNECTIONS, JOINTS AND FITTINGS	**DELETE CLAUSE 2.5.4 AND REPLACE WITH:** For services 75 mm and larger use tapping sleeves to 2.2.4.13 of this section.
33 11 01 WATERWORKS	2.6 HYDRANTS	**DELETE CLAUSE 2.6.1 AND REPLACE WITH:** Hydrants to: AWWA C502, standard specifications for dry barrel Fire Hydrants for ordinary waterworks service; Supplemental Standard Detail Drawing SD W4 for typical fire hydrant detail drawing and B.C. Standard for Fire Hydrants with following supplementary details
		DELETE CLAUSE 2.6.1.1: Shut-Off: compression type or slide gate as per supplementary specifications or contract documents.
		DELETE CLAUSE 2.6.1.2: Inlet Connection: to be 150 mm nominal diameter, bell type with harness lugs. **ADD CLAUSE 2.6.1.2 AS FOLLOWS:** Inlet connection to be 150mm or 200mm diameter, to conform with AWWA C111 Tyton and to fit Pressure Class 350 Ductile Iron pipe. Inlet connection can be of type Push-on or Mechanical Joint. For Push-on joints, two lugs to be provided on the joint for receiving 19mm tie rods, these two lugs to be positioned on the horizontal centerline of the inlet connection.
		DELETE CLAUSE 2.6.1.6.2: Pump nozzle to be 117.475 mm outside diameter and 6 threads per 25.4 mm. **REPLACE WITH:** Pump nozzle to be 100mm Storz type painted black.
		DELETE CLAUSE 2.6.1.8: Opening Direction: counter-clockwise. **REPLACE WITH:** Opening Direction: clockwise.
		DELETE CLAUSE 2.6.1.9:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Operating Nut and Cap Nuts: to B.C. Standard for fire Hydrants. Pentagonal 1 1/2" point flat. **REPLACE WITH:** Operating Nut and Cap Nuts: to B.C. Standard for fire Hydrants. Pentagonal 44.45mm (1 3/4") diameter circumscribed circle.
		ADD CLAUSE 2.6.1.12 AS FOLLOWS: Hydrants must have automatic draining system.
		DELETE CLAUSE 2.6.2: Colour: as specified in Contract Documents. **ADD CLAUSE 2.6.2 AS FOLLOWS:** Colour to match City of Victoria Hydrant Red. Hose nozzle caps to be painted white if they are on the unregulated pressure system. Storz cap to be painted black where used or installed.
		ADD CLAUSE 2.6.4 AS FOLLOWS: All inlet joints shall conform to AWWA C111. All joints shall fit Class 350 ductile iron. The inlet joint may be a push-on joint “TYTON”, but preference shall be given to mechanical joints. There is no requirement for nuts, bolts, ring or rubbers for M.J. connection provided. For push-on joints two lugs for 19mm tie rods shall be provided on the horizontal centreline of the inlet connection.
		ADD CLAUSE 2.6.5 AS FOLLOWS: Use of chains is not required on port caps.
		ADD CLAUSE 2.6.7 AS FOLLOWS: Depth of bury shall be 1.0 m.
		ADD CLAUSE 2.6.8 AS FOLLOWS: Hydrants shall have automatic draining system.
	NEW 3.10 SERVICE CONNECTION INSTALLATION	**DELETE CLAUSE 3.10.7 AND REPLACE WITH:** Tap main as shown on Supplemental Standard Detail Drawings SD W2a and SD W2b, not closer to a joint nor closer to adjacent service connections than recommended by manufacturer, or 1 m, whichever is greater.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		DELETE CLAUSE 3.10.11 IN FULL.
	NEW 3.12 HYDRANTS	**DELETE CLAUSE 3.12.2 AND REPLACE WITH:** Install hydrant assemblies in accordance with AWWA M17 and in accordance with Supplemental Standard Detail Drawing SD W4.
		DELETE CLAUSE 3.12.3 AND REPLACE WITH: Set hydrants plumb, with hose nozzles parallel with edge of pavement or curb line, with pumper nozzle facing roadway at right angles to road centreline and with body flange set elevation of 50 to 100 mm above the final grade.
	NEW 3.13 THRUST BLOCKS	**DELETE CLAUSE 3.13.1 AND REPLACE WITH:** Place concrete thrust blocks between valves, tees, plugs, caps, bends, changes in pipe dimeter, reducers, hydrants and fittings and undisturbed ground as shown on Contract Drawings or as directed by Contract Administrator and as detailed on Supplemental Standard Detail Drawing SD W1.
		DELETE CLAUSE 3.13.3 AND REPLACE WITH: Where shown in Contract Documents, joint restraint devices to 2.2.4.12 of this Section.
		DELETE CLAUSE 3.13.6 AND REPLACE WITH: Do not backfill over concrete within 24 h after placing or as directed by Contract Administrator.
	NEW 3.24 DECOMISSION WATER MAIN	After the new water main is connected to the distribution system and water services are connected to the new water main the old water main shall be decommissioned. The Contractor will place concrete at all open pipe ends and crimp copper pipe so soil or water cannot enter the abandoned pipes. The Contractor will salvage existing fire hydrants and valve castings without damaging them and return them to the City of Victoria Public Works Yard.
	3.25 BILL OF MATERIALS	The City of Victoria requires the brand names of valves, hydrants, air release valves, ball valves, etc. used on the project to be entered into the GIS maintenance program. The Contractor is to provide an electronic copy to the Contract Administrator. Cost of materials does not need to be included on the bill.
	NEW 3.26 WORK IN THE VICINITY OF VICTORIA WATERMAIN BY	COV Engineering to be notified a minimum 1 week in advance of any blasting that is to occur within 50m of a watermain. It may be advisable to throttle valves in advance of blasting activity.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	EXTERNAL UTILITIES	COV Engineering to be notified a minimum 1 week in advance of the crossing or exposure of a watermain by a utility or other construction. Proposed Utilities to maintain minimum clearance (measured outside-of-watermain to outside-of-proposed pipe/structure) of; 1.5 m horizontal clearance 0.3 m vertical clearance When watermain joints are exposed within 3m of a sewer, it is required that these joints be protected by Petrolatum tape or shrink wrap, as per requirements of the DESIGN GUIDELINES FOR DRINKING WATER SYSTEMS IN BC, subject to article 5.3 below. In the case of an overcrossing of a water main by a sewer, there shall be review by City of Victoria Engineering and additional protective measures may be required. When an exposed water main joint is found to be a lead-sealed bell joint (as can occur in older cast-iron mains), the City of Victoria requires that a Bell Joint Leak Clamp be installed. This leak Clamp to conform to the City's Approved Products List. Installation of this Clamp to be performed or observed by City Public Works Staff. Denso tape / Shrink Wrap is not required on a water main joint where a Bell Joint Clamp is installed. All costs incurred by the City for these works are to be borne by the contractor / developer responsible.
33 30 01 SANITARY SEWERS	2.1 CONCRETE PIPE	**DELETE CLAUSE 2.1.1 AND REPLACE WITH:** Non-reinforced circular pipe shall not be used in the City of Victoria.
		DELETE CLAUSE 2.1.2 AND REPLACE WITH: Reinforced circular concrete pipe and fittings: to ASTM C76M all pipe greater than 375mm diameter, strength class as shown on Contract Drawings, designed for flexible rubber gasket joints to ASTM C443M.
	3.8 CONNECTIONS TO EXISTING MAINLINE	**ADD CLAUSE 3.8.4 AS FOLLOW:** For Connections to Brick Main as shown on Contract Drawings and specified by Contract Administrator.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.12 LEAKAGE TESTING - GENERAL	**DELETE CLAUSE 3.12.1:** Upon completion of cleaning and flushing of each section, carry out leakage testing as specified in Supplementary Specifications. Specified tests may include one or more of the following: 1. Exfiltration test - using water 2. Low Pressure air test 3. Infiltration test 4. Rubber Ball test, lamp test, mandrel test. 5. Individual joint test **REPLACE WITH:** Upon completion of cleaning and flushing of each section, carry out leakage testing on sanitary main and service connections as outlined in Section 33 30 01 3.14 Low Pressure Air Test. Manholes to be tested as outlined in Section 33 30 01 3.13 Water Exfiltration Test.
	3.18 VIDEO INSPECTION	**ADD CLAUSE 3.18.1.1 AS FOLLOWS:** All Video Inspections must be PACP Compliant.
33 40 01 STORM SEWERS	2.1 CONCRETE PIPE	**DELETE CLAUSE 2.1.1 AND REPLACE WITH:** Non-reinforced circular pipe shall not be used in the City of Victoria.
		DELETE CLAUSE 2.1.2 AND REPLACE WITH: Reinforced circular concrete pipe and fittings: to ASTM C76M all pipe greater than 375mm diameter, strength class as shown on Contract Drawings, designed for flexible rubber gasket joints to ASTM C443M.
	3.8 CONNECTIONS TO EXISTING MAINLINE	**ADD CLAUSE 3.8.5 AS FOLLOWS:** For Connections to Brick Main as shown Contract Drawings and specified by Contract Administrator.
	3.10 SERVICE CONNECTION INSTALLATION	**DELETE CLAUSE 3.10.1 AND REPLACE WITH:** Install service connection to 3.6 and as shown on Standard Detail Drawing S7
		DELETE CLAUSE 3.10.2 AND REPLACE WITH: Install 40 X 90 mm marker stake at service terminus. Paint and mark as shown on Standard Detail Drawing S7. Use green paint for storm drain connections.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		DELETE CLAUSE 3.10.3 AND REPLACE WITH: Install inspection chamber at specified location, set plumb and to the specified elevation. If inspection chamber located in driveway, lane or paved surface install cover or lid as shown on Standard Detail Drawing S9.
		DELETE CLAUSE 3.10.4: Saw cut adjacent curb on alignment of service connection and paint green.
	3.12 VIDEO INSPECTION	**ADD CLAUSE 3.12.1.1 AS FOLLOWS:** All Video Inspections must be PACP Compliant.
33 44 01 MANHOLES AND CATCH BASINS	2.1 MATERIALS	**DELETE CLAUSE 2.1.7 AND REPLACE WITH:** Cast Iron frame and cover as shown on Supplementary Standard Detail Drawing S16SS in accordance with the City of Victoria Supplementary Specifications.
		DELETE CLAUSE 2.1.10.1 AND REPLACE WITH: As shown on Supplementary Standard Drawings SD S11a, SD S11b, SD S11c and SD S11d.
	3.3 MANHOLE INSTALLATION	**DELETE CLAUSE 3.3.10:** Where possible, form channeling using half- sections of pipe or suitable fittings.
		DELETE CLAUSE 3.3.18 AND REPLACE WITH: Pre-fabricated Corrugated Steel Pipe Manholes are not to be used or installed in the City of Victoria.
	3.5 CATCH BASIN INSTALLATION	**DELETE CLAUSE 3.5.1 AND REPLACE WITH:** Install catch basins as shown on Supplementary Standard Detail Drawings SD S11a, SD S11b, SD S11c and SD S11d. To general standards and installation procedures described in 3.3
34 41 13 TRAFFIC SIGNALS	1.3 SHOP DRAWINGS	**ADD CLAUSE 1.3.5 AS FOLLOWS:** Contractor shall provide order details for all items not listed on the City of Victoria approved products list with all equipment types and quantities to be supplied clearly noted separately for each intersection. All equipment shall be per the City of Victoria approved product list unless noted otherwise. Non approved products shall not be ordered prior to approval by contract administrator.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Products identified as MMCD (e.g. Type 1 Poles) and specific products identified on the drawing (e.g. JB type - DFW 1730C4-18-4DP), do not require pre-approval before ordering.
	1.4 ELECTRICAL ENERGY SUPPLY	**DELETE CLAUSE 1.4.3 AND REPLACE WITH:** All connections and disconnections are to be made by the City of Victoria including all modifications to street lights located on utility poles.
	1.8 RECORD DRAWINGS	**DELETE CLAUSE 1.8.1 AND REPLACE WITH:** Contractor to provide: Information on all changes, additions, and deletions to Contract Drawings to reflect "as constructed" installation, including final locations of all equipment installed, per Section 01 33 01 – Project Record Documents All information to Contract Administrator no later than 14 days after Substantial Performance.
	1.9 MEASUREMENT AND PAYMENT	**ADD CLAUSE 1.9.4 AS FOLLOWS:** All existing wiring, conduit and bases shall be removed and disposed of offsite by the contractor.
		ADD CLAUSE 1.9.5 AS FOLLOWS: All existing traffic signal or street lighting equipment that is to be returned to the City shall be confirmed by the electrical supervisor or the technical services supervisor. All returned City equipment or infrastructure shall be torn down.
		ADD CLAUSE 1.9.6 AS FOLLOWS: The contractor shall be responsible for the maintenance and operation of all traffic signals within the limit of construction until project completion. The contractor shall configure all traffic signal devices including signals, loops, vehicle detectors, etc. as required to complete the works and maintain signal operation. The contractor shall obtain training from device manufacturers as required to properly configure devices. At project completion, the contractor shall perform a walk-through and hand-over of the traffic signals with a representative from the City. For all intersections the contractor shall coordinate with the City of Victoria for final wiring connections to traffic controller. Contractor shall flash out all phases and test push buttons (where applicable). City to modify controller phasing

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		(where required) and to confirm controller connections and operations. Contractor shall provide flag-persons traffic control (TCP) during final connection and commissioning.
		ADD CLAUSE 1.9.7 AS FOLLOWS: Signals shall remain in full operation and must meet criteria set forth in BC Motor Vehicle Act. Contractor to maintain signal operation including use of temporary signal displays, operational requirements, and traffic control personal as required.
	2.1 GENERAL	**DELETE CLAUSE 2.1.2 AND REPLACE WITH:** All products, material and fittings supplied shall be new, in accordance with Contract Documents. Products are to meet or exceed Canadian Electrical Code requirements and CSA Standards or special certifications acceptable to the Chief Electrical Inspector. Unapproved items shall be removed and replaced at the contractor's expense.
		DELETE CLAUSE 2.1.3 AND REPLACE WITH: All products shall be in accordance with the current editions of the City of Victoria approved products list, BC Ministry of Transportation and Infrastructure Standard Specifications for Highway Construction except where noted on the contract drawings.
	2.2 CONDUIT	**ADD CLAUSE 2.2.6 AS FOLLOWS:** All conduits shall be RPVC unless noted otherwise.
	2.4 PLASTIC JUNCTION BOXES	**DELETE CLAUSE 2.4.1 AND REPLACE WITH:** Junction boxes shall be in accordance with City of Victoria supplementary drawings.
		ADD CLAUSE 2.4.2 AS FOLLOWS: Junction boxes lids shall be supplied with the manufacturers bolt down hardware.
	2.6 POLES AND ANCHORS	**DELETE CLAUSE 2.6.3:** Steel services bases typically not used by the City of Victoria
		DELETE CLAUSE 2.6.6: Concrete poles not used by the City of Victoria
		ADD CLAUSE 2.7.5 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	2.7 CONDUCTORS AND CABLES	Signal cables shall be in accordance with the City of Victoria supplementary drawings No. SD E8.1a.
		ADD CLAUSE 2.7.6 AS FOLLOWS: Street lighting feeders shall be size 6 AWG. Street light conductors from the junction box to pole shall be size 10 AWG. Street lighting conductors inside pole shall be size 12 AWG.
		ADD CLAUSE 2.7.7 AS FOLLOWS: Where conductors are to be installed in existing non-approved black pipe, the wire shall be rated RWU90.
	2.9 CONDUCTOR CONNECTORS	**DELETE CLAUSE 2.9.1 AND REPLACE WITH:** Street lighting conductors shall be spliced and terminated using an approved method for the location. Street lighting conductors that are terminated within underground junction boxes shall be done using the appropriate rated split bolts or silicone wire nuts that are twisted tight and secured-in-place with vinyl tape. Split bolts shall be taped using black vinyl tape, vulcanized rubber, then black tape. Street lighting conductors within handholes are to be connected with Silicone wire nuts and taped with black vinyl tape. Conductors shall extend a minimum of 200mm outside the pole.
		ADD CLAUSE 2.9.4 AS FOLLOWS: Traffic signal conductors shall be spliced using waterproof marrettes and taped with black vinyl tape. Conductors shall extend a minimum of 200mm outside the pole.
	2.11 SERVICE PANELS	**ADD THE FOLLOWING TO CLAUSE 2.11.1:** 60A and 100A service/distribution panels may be pad or pole mounted. Confirm with CoV if existing service equipment can accommodate new proposed loads and/or current CEC requirements. Services in the downtown core may require 100kA interrupting capacity
		ADD CLAUSE 2.11.4 AS FOLLOWS: New 120/240V 60A or 100A Service panels shall be equipped with clear meter covers and suitable jumper bars.
		ADD CLAUSE 2.11.5 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Service panels shall be equipped with a 600 x600mm step pad if service is not located in hardscape area.
	2.15 TRAFFIC AND PEDESTRIAN SIGNALS	**DELETE CLAUSE 2.15.1 AND REPLACE WITH:** Polycarbonate casing with yellow aluminum reflectorized backboards per the current edition of the City of Victoria's Approved products list.
		DELETE CLAUSE 2.15.2 AND REPLACE WITH: All signal heads shall be green polycarbonate.
	2.17 SIGNAL MOUNTING HARDWARE	**DELETE CLAUSE 2.17.3** Not used by the City of Victoria
		DELETE CLAUSE 2.17.4 Not used by the City of Victoria
		DELETE CLAUSE 2.17.5 Not used by the City of Victoria
		DELETE CLAUSE 2.17.7 Not used by the City of Victoria
		ADD CLAUSE 2.17.8 AS FOLLOWS: Side arm brackets for secondary signal heads and pedestrian brackets shall be powder coated to match the pole RAL colour. Refer to Contract Drawings for specific pole finish for each intersection. Vehicle, pedestrian and cyclist signal side mount infrastructure shall be Pelco Aluminum, powder coated.
	2.19 PEDESTRIAN / CYCLIST PUSHBUTTONS	**DELETE CLAUSE 2.19.1 AND REPLACE WITH:** Pedestrian and cyclist pushbuttons shall be per the City of Victoria Approved Products List.
		DELETE CLAUSE 2.19.8 AND REPLACE WITH: Pedestrian pushbutton signs shall be integral with APS pushbutton assembly. Refer to the City of Victoria approved products list for products.
	2.20 LUMINAIRES	**DELETE CLAUSE 2.20.1 AND REPLACE WITH:** LED luminaires shall be per the contract drawings and be from the manufacturer American Electric, Autobahn series, unless noted otherwise.
		ADD CLAUSE 2.20.2 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		LED luminaires shall have a color temperature of 3000k in the downtown core. Traffic signals and marked crosswalks outside the downtown core shall have LED luminaires with a color temperature of 4000k.
	2.21 HIGH INTENSITY DISCHARGE LAMPS	**DELETE CLAUSE 2.21** Not typically used for new designs/construction at the City of Victoria (e.g. HPS, LPS, MH)
	2.22 PHOTO CONTROLS	**ADD THE FOLLOWING TO CLAUSE 2.22.1:** Refer to Contract drawings for photocell requirements. Where the luminaire is powered from a service with a contactor the luminaire shall be supplied with a shorting cap. When a contactor is added to the lighting system the contractor shall ensure that shorting caps are installed on all luminaires controlled by the contactor.
	2.24 TRAFFIC CONTROLLER CABINETS	**DELETE CLAUSE 2.24.1 AND REPLACE WITH:** Traffic controller and cabinet assembly shall be supplied by the City of Victoria. The City of Victoria will configure and set the timing.
		DELETE CLAUSE 2.24.2 AND REPLACE WITH: Traffic controller and cabinet assembly shall be supplied by the City of Victoria.
		DELETE CLAUSE 2.24.3 AND REPLACE WITH: Traffic controller and cabinet assembly shall be supplied by the City of Victoria.
		DELETE CLAUSE 2.24.4 AND REPLACE WITH: Traffic controller and cabinet assembly shall be supplied by the City of Victoria.
		ADD CLAUSE 2.24.5 AS FOLLOWS: Traffic controller cabinet assembly (332 cabinet) shall be supplied and installed by the City of Victoria. The step pads of 660mm x 914mm required for each door (x2 if cabinet base is not surrounded by sidewalk. The contractor shall install step pads and cabinet concrete base.
		DELETE CLAUSE 2.25.1 AND REPLACE WITH:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	2.25 VIDEO DETECTION SYSTEM	Video detection shall be per the City of Victoria Approved Products List except where indicated on the contract documents.
		DELETE CLAUSE 2.25.2 AND REPLACE WITH: Video detection system to operate with City of Victoria supplied traffic controller.
	2.26 UNINTERRUPTABLE POWER SUPPLY	**DELETE CLAUSE 2.26.1 AND REPLACE WITH:** Uninterruptable power supply shall be per the City of Victorias Approved products list.
	2.29 COLD GALVANIZING COMPOUND	**ADD CLAUSE 2.29.2 AS FOLLOWS:** All redundant holes in poles shall be treated with galvacon paint and plugged using a City of Victoria approved suitable plug or cover plate. Plugged holes shall be painted to match the pole RAL colour.
	2.30 EXTRUDED ALUMINUM SIGNS	**ADD CLAUSE 2.30.5 AS FOLLOWS:** Street name signs supplied by the City of Victoria and installed by contractor.
	2.32 WIRELESS COMMUNICATION SYSTEMS	**ADD CLAUSE 2.32.1 AS FOLLOWS:** Wireless communication shall be per the Contract Drawings.
		ADD CLAUSE 2.32.2 AS FOLLOWS: Contractor field adjust the positioning and angle of the radio antenna to achieve the necessary network speeds. The City will test the network speed between two radios and the contractor shall adjust radio antenna's as required.
		ADD CLAUSE 2.32.3 AS FOLLOWS: Contractor to provide order details with all necessary antennas, cables, mounting brackets and miscellaneous equipment required for the installation and hookup for proper system function prior to construction.
	3.1 GENERAL	**ADD CLAUSE 3.1.5 AS FOLLOWS:** Contractor shall ensure clearances from overhead and underground utilities lines meet utility and Work Safe BC regulations prior to concrete base installations. Contact the contract administrator in the event of a conflict.
		ADD CLAUSE 3.1.6 AS FOLLOWS:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		The contractor shall ensure there is no interruption of existing lighting during darkness hours unless approved by the City of Victoria. No more than two luminaires in a row shall be off, without approval from the City of Victoria.
		ADD CLAUSE 3.1.7 AS FOLLOWS: Notification to work on City electrical infrastructure must be given a minimum of 5 working days in advance to the City of Victoria electrical supervisor.
		ADD CLAUSE 3.1.8 AS FOLLOWS: The contractor shall submit a work plan for electrical work to the contract administrator for approval. For any scheduled activities that deviate from the above work plan, a notification of changes shall be provided to both the contract administrator and the City electrical department for approval at least 1 week prior to starting work.
	3.2 EXCAVATING, TRENCHING AND BACKFILLING	**ADD CLAUSE 3.2.2 AS FOLLOWS:** When working within 1 meter from existing pole bases the contractor shall notify the City of Victoria electrical supervisor and exercise caution to not compromise the structural integrity of the existing pole or pole base. The contractor shall support the pole and review the base condition to ensure that the pole is adequately supported. If the pole is to be secured/supported for more than one shift, the contractor is responsible for all costs associated with having a structural engineer review and approve the securing method.
		ADD CLAUSE 3.2.3 AS FOLLOWS: Use extreme caution when working near utilities and lighting ductwork; duct may contain fibre optic cables. Existing conduit may be installed very shallow.
	3.3 CONCRETE BASES	**ADD THE FOLLOWING TO CLAUSE 3.3.1:** or poured in place concrete bases per City of Victoria supplementary detail drawings.
		ADD CLAUSE 3.3.7 AS FOLLOWS: All new concrete bases shall have 2-53mm RPVC conduits to the adjacent junction box, unless noted otherwise on Contract Drawings. The 2-53mm RPVC conduits shall be on the same side of the base located under the V-Groove drain.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		ADD CLAUSE 3.3.8 AS FOLLOWS: Concrete bases placed in areas requiring lawn mowing require a 150-300mm wide by 200mm thick concrete band completely surrounding the base.
	3.4 JUNCTION BOXES AND VAULTS	**ADD THE FOLLOWING TO CLAUSE 3.4.1:** All new conduit terminations in all junction boxes shall be vertical. Conduit terminations in communication vaults shall be horizontal (enter the side). Refer to City of Victoria supplemental detail drawings.
		ADD CLAUSE 3.4.5 AS FOLLOWS: Junction boxes placed in areas requiring lawn mowing require a 150-300mm wide by 200mm thick concrete band surrounding.
		ADD CLAUSE 3.4.6 AS FOLLOWS: All existing junction boxes (ring and lid style) cast into sidewalks shall be replaced as required if sidewalk is removed or impacted.
	3.5 UNDERGROUND CONDUIT	**ADD THE FOLLOWING TO CLAUSE 3.5.1:** Conduit terminations in all junction boxes shall be vertical except communication vaults where the conduit shall enter the side. Refer to City of Victoria supplemental detail drawings. **DELETE CLAUSE 3.5.5 AND REPLACE WITH:** All empty conduits shall have a pull string and shall be capped. Pull string shall be polypropylene with a minimum tensile strength of 1.1kN. All 53mm and 76mm conduits with conductors must have bell ends installed before conductors are pulled.
		ADD CLAUSE 3.5.6 AS FOLLOWS: All conduits shall be verified and cleaned using the following procedure: To verify integrity of conduit, pull through each duct, a hard rubber mandrel not less than 300mm long and of a diameter of 6mm less than internal diameter of duct, preceded by a swab of suitable diameter to remove sand, earth and other foreign matter.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		Notify project electrical engineer in the event of a conduit failure. Clean ducts before laying. Cap ends of ducts during construction and after installation to prevent entrance of foreign materials. Terminate conduit ends in the junction box as follows: conduit shall be extended between 50mm and 150mm above the bottom of the junction box. Remove all foreign debris and ensure all bolt holes are clean.
		ADD CLAUSE 3.5.7 AS FOLLOWS: All signal pole concrete bases shall have 2-53mm RPVC conduits.
		ADD CLAUSE 3.5.8 AS FOLLOWS: Spare conduits in concrete bases shall be capped at both ends.
		ADD CLAUSE 3.5.9 AS FOLLOWS: All conduits entering traffic controller cabinets shall be sealed with “Duct Seal”.
		ADD CLAUSE 3.5.10 AS FOLLOWS: Existing lighting and signal conduit installed before the year 2000 will typically be very shallow depth and may be located directly in or under the sidewalk. Contractor shall advise contract administrator if encountered. All conduits exposed during construction must be made to conform to current CEC and MMCD specifications and be connected to the new conduit system. Contractor shall identify on the as-builts.
		ADD CLAUSE 3.5.11 AS FOLLOWS: Contractor shall ensure there is a minimum of 75mm of fine sand around all conduits in all newly installed conduits.
	3.6 POLES AND RELATED EQUIPMENT	**DELETE CLAUSE 3.6.6 AND REPLACE WITH:** The contractor shall not pre-drill holes in signal pole until after the base for that pole has been installed. The contractor shall advise the contract administrator of any adjustments made to the base location which will affect the locations of hardware to be mounted on that pole prior to drilling.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.7 TRAFFIC AND PEDESTRIAN SIGNAL HEAD MOUNTING	**DELETE CLAUSE 3.7.1 AND REPLACE WITH:** Install traffic and pedestrian signal heads as shown on City of Victoria Standard Detail Drawings.
	3.8 AUDIBLE SIGNALS	**DELETE CLAUSE 3.8.1 AND REPLACE WITH:** Where audible signals are required overhead next to the pedestrian signal, they shall be installed as shown on the City of Victoria supplemental detail drawings. Audible signals at all new intersections/crossings shall be APS pushbuttons. Refer to contract documents for requirements.
	3.9 PEDESTRIAN PUSHBUTTONS	**ADD CLAUSE 3.9.4 AS FOLLOWS:** Pedestrian pushbuttons shall be installed with the center of pushbutton at 1.0 meter above grade. Cyclist pushbuttons shall be installed with the center of pushbutton at 1.0 meter from the top of curb. Refer to City of Victoria supplemental detail drawings.
	3.10 LUMINAIRES AND PHOTOCELLS	**DELETE CLAUSE 3.10.3 AND REPLACE WITH:** Aim photocells North where applicable.
	3.11 ELECTRICAL SERVICE	**ADD CLAUSE 3.11.2 AS FOLLOWS:** Overhead dip services shall be installed per City of Victoria supplemental detail drawing SD E7.1b. Ensure minimum clearances above roadways comply with BC Hydro standards.
	3.12 ELECTRICAL SERVICE PANELS	**DELETE CLAUSE 3.12.1 AND REPLACE WITH:** Mount electrical service panels on poles as shown in supplementary detail drawings.
	3.13 ELECTRICAL SERVICE PANELS	**ADD THE FOLLOWING TO CLAUSE 3.13.1:** and City of Victoria supplemental detail drawings.
	3.14 WIRING	**DELETE CLAUSE 3.14.3 AND REPLACE WITH:** With the exception of conductor splices of detector loop wires to shielded cables, make conductor splices in pole handholes or in the traffic controller. Cables shall run continuous between traffic controller and signal poles, or between signal poles. Make splices of detector loop wires to shielded cable in junction boxes. See Standard Detail Drawing E8.1a for splice details.
		ADD THE FOLLOWING TO CLAUSE 3.14.8:

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		The wiring from handhole to each signal head shall be City approved IMSA cable. Refer to City of Victoria approved products list.
		ADD CLAUSE 3.14.14 AS FOLLOWS: Contractor shall leave a minimum of 1.0 meter of slack signal cables inside each junction box. Cables shall be coiled neatly inside junction box and labelled.
		ADD CLAUSE 3.14.15 AS FOLLOWS: All Traffic controller power conductors shall not contain any splices from panel to controller cabinet.
		ADD CLAUSE 3.14.16 AS FOLLOWS: The contractor shall alternate luminaire circuits to ensure load is properly balanced.
	3.16 TRAFFIC CONTROLLER CABINET	**DELETE CLAUSE 3.16.1 AND REPLACE WITH:** Install traffic controller cabinet onto concrete base as shown on the supplementary detail drawings.
		DELETE CLAUSE 3.16.2 AND REPLACE WITH: Traffic controller cabinets supplied and installed by the City of Victoria.
		ADD CLAUSE 3.16.8 AS FOLLOWS: Contractor to coordinate with City of Victoria technical services staff to be on site to observe/assist during startup, but site, overall process and verification of proper signal operation is under contractor control and is the contractor's responsibility. Contractor shall provide traffic control to fully control the intersection during start up and testing/commissioning procedures.
	3.20 GROUNDING AND BONDING	**ADD CLAUSE 3.20.5 AS FOLLOWS:** The contractor shall photograph installed ground plates and provide a copy to the City of Victoria to be used as part of the new electrical service permit.
	3.21 COLD GALVANZING COMPOUND APPLICATION	**ADD CLAUSE 3.21.6 AS FOLLOWS:** All redundant holes in poles shall be treated with galvacon paint and plugged using a City of Victoria approved suitable plug or cover plate. Plugged holes shall be painted to match the pole RAL colour.

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
	3.22 POLE FINISH APPLICATION	**DELETE CLAUSE 3.22.1 AND REPLACE WITH:** All steal poles finish shall be hot dip galvanized. Pole in the downtown core will also be powder coated. Refer to Contract Drawings for RAL colours.
	3.24 UNINTERRUPTABLE POWER SUPPLY	**DELETE CLAUSE 3.24.1 AND REPLACE WITH:** Uninterruptable power supply shall be per the City of Victorias Approved products list.
	3.26 WIRELESS COMMUNICATION SYSTEMS	**ADD CLAUSE 3.26.1 AS FOLLOWS:** Install wireless communication system to manufacturer's instructions. Refer to Contract drawings for locations and wiring details.
	3.27 FIBRE OPTIC SYSTEMS	**ADD CLAUSE 3.27.1 AS FOLLOWS:** All fibre optic cable shall be installed in accordance to TIA/EIA 568-C/D, TIA/EIA 569-C, CAN/CSA-C22.2 No. 232-09 (R2014) C22 No. 232-M1988, "Optical Fibre Cables", Canadian Electrical Code manufacturers recommendation, and general best practice to ensure that the fibre optic cable is not damaged and achieves the industry standard optical characteristics. Refer to Contract drawings for locations and wiring details.
		ADD CLAUSE 3.27.2 AS FOLLOWS: The contractor shall provide fibre optic testing before and after cable installation. The testing shall consist of bi-directional OTDR and power meter testing. All testing parameters shall follow the TIA/EIA 568 standards. All test results shall be submitted for review and written approval prior to proceeding to the next construction phase. Fibre optic installation that do not meet acceptance standards shall be remediated at the contractors expense.
		ADD CLAUSE 3.27.3 AS FOLLOWS: The contractor shall provide 30m of fibre optic cable slack in all manholes and vaults unless noted otherwise.
		ADD CLAUSE 3.27.4 AS FOLLOWS: The contractor shall permanently join fibre optic cables via fusion splcing. No mechanical splicing is permitted. The act of fusion splicing shall include, but not limited to, stripping, cleaning, and splicing each individual fibre strand. All fusion spliced fibre optic strands shall be

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		protected by heat shrinkable protective splice sleeve and installed within a protective enclosure. All fusion splice cables shall be within the maximum splice loss specifications. Fibre stands that do not meet the splice loss specifications shall be re-spliced and re-tested.
		ADD CLAUSE 3.27.5 AS FOLLOWS: All proposed fibre optic cabling shall be labelled with the appropriate cable tag and cable name (confirm actual wording with the City of Victoria prior to creating the labels). Cables shall be tagged in the junction boxes and all other access points with the fibre optic cable identifier and with "Caution, Fibre Optic Cable" tags. Fibre cables must be labeled where they enter and leave maintenance holes. All fibres must be labeled entering fibre optic splice enclosures.
		ADD CLAUSE 3.27.6 AS FOLLOWS: The contractor shall be responsible for all fibre splicing and connections. Contractor shall provide the necessary equipment (lashing wire, lashing clamp, cable support ties, and cable spacers) to complete the installation. The contractor shall provide drip loops, splicing, and slack storage as required to facilitate the installation following industry best practices.
		ADD CLAUSE 3.27.7 AS FOLLOWS: The contractor shall have a minimum of two (2) years' experience installing and testing single-mode fibre cables of all types. All optical fibre cables shall be all construction, 9/125 micron (core/clad), suitable for outdoor use in conduit, non-gel filled, and single loose buffer tube design. Maximum attenuation of the cable shall be 0.35 DB/Km, measured at room temperature at 1310 nm.
		ADD CLAUSE 3.27.8 AS FOLLOWS: When armoured fibre cables are used and run through electrical junction boxes they shall be sleeved and labelled. The contractor shall use orange split-loom tube and shall cover the entire length of the fibre optic cable in the electrical junction box and enter into the conduits a minimum of 50mm to prevent exposure of the armoured fibre cable to the electrical equipment inside the junction

MMCD SECTION NUMBER & NAME	CLAUSE REFERENCE	SUPPLEMENTARY SPECIFICATION
		box. The armoured on the fibre cable shall be bonded at all termination/splice points.
	3.28 EV CHARGERS	**ADD CLAUSE 3.28.1 AS FOLLOWS:** EV charger requirements to be confirmed with the City of Victoria. The electrical vehicle interim supplementary details shall only be used where approved by the City.

8. Supplementary Drawings



8.1. Streets and Transportation

The following MMCD 2019 Standard Detail Drawings are to be used or replaced as indicated below:

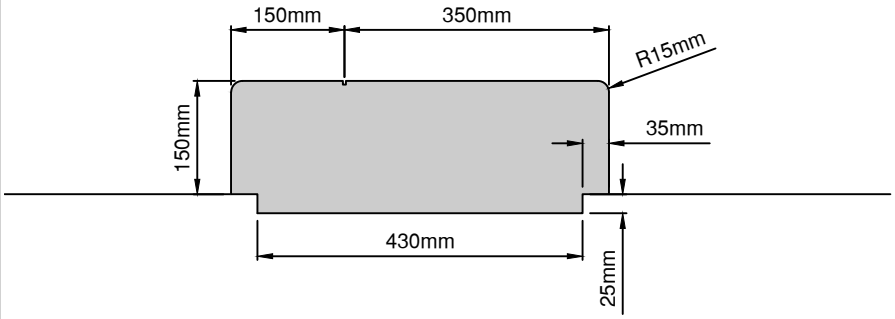
General Details Drawing Index				
MMCD		CoV	Title	Description
Retain	Delete	Replace/Add		
	G0	SD G0.01	Drawing Index – General Details	General Details
	G1	SD G1a	Legend for Contract Drawings	Legend for Contract Drawings
		SD G1b	Legend For Contract Drawings	Legend for Contract Drawings
		SD G1c	Legend For Contract Drawings	Legend for Contract Drawings
G2			Legend For Materials	Adopt MMCD Drawing
	G3	SD G3	Legend for Streetlight and Traffic Signals	Legend for Streetlight and Traffic Signals
G4			Utility Trench	Adopt MMCD
G5			Pavement Restoration	Adopt MMCD Drawing
		SD G5.01	Trenching Pavement Restoration	Typical Trench Pavement Restoration Detail
		SD G5.02	Trench Restoration Concrete Road Base	Trench Restoration on Concrete Road Base Detail
G6			Concrete Encasement for Watermain/ Sewer Separation	Adopt MMCD Drawing
G7			Concrete Protection for Underground Utilities	Adopt MMCD Drawing
G8			Pipe Anchor Blocks	Adopt MMCD Drawing
	G9a G9b G9c G9d G9e		Legend for Contract Drawings - Layers	Legend for Contract Drawings - Layers

Concrete Drawing Index				
MMCD		CoV Replace/Add	Title	Description
Retain	Delete			
	C0	SD C0.01	Drawing Index	Concrete & Miscellaneous Details
C1			Concrete Sidewalk, Infill and Barrier Curb	Adopt MMCD and Revise – Clearance of 1.5m min from all sidewalk obstructions. See trench detail SD E3.1a for electrical conduit installation, at CoV discretion.
C2			Concrete Sidewalk and Barrier Curb	Adopt MMCD and Revise – Clearance of 1.5m min from all sidewalk obstructions See trench detail SD E3.1a for electrical conduit installation, at CoV discretion.
C3			Concrete Sidewalk and Rollover Curb	Adopt MMCD and Revise – Clearance of 1.5m min from all sidewalk obstructions and revise concrete thickness as per SD C7.03. See trench detail SD E3.1a for electrical conduit installation, at CoV discretion.
C4			Concrete Curbs – Narrow Base	Adopt MMCD Drawing
	C5		Concrete Barrier Curb – Wide Base	Do Not Use
	C6	SD C6.01	Concrete Curbs and Medians 1	Concrete Curb and Median Detail
		SD C6.02	Concrete Curbs and Medians 2	Concrete Curb and Median Detail Cont
		SD C6.03	Temporary Median Curb	Temporary Median Curb Detail

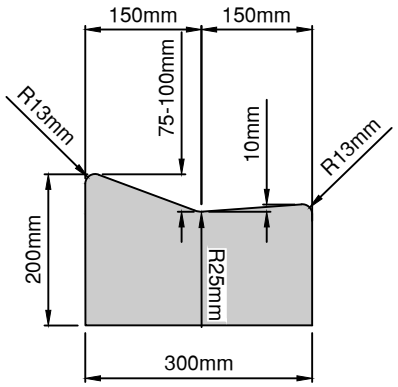
Concrete Drawing Index				
		SD C6.04	Traffic Calming Curb	Traffic Calming Curb Detail
	C7	SD C7.01	Typical Driveway Crossing Type 1	Typical Driveway Crossing Type 1
		SD C7.02	Typical Driveway Crossing Type 2	Typical Driveway Crossing Type 2
		SD C7.03	Typical Driveway Crossing Cross Sections	Driveway Cross Section
		SD C7.04	Continuous Sidewalk	Continuous Sidewalk detail for Local – Arterial/Collector Roads
	C8		Wheelchair Ramp for Sidewalk, Infill and Barrier Curb	Do Not Use
	C9	SD C9.01	Dual Curb Ramp	Double Pedestrian Curb Ramp Detail
		SD C9.02	Single Radial Curb Ramp	Single Pedestrian Curb Ramp Detail
		SD C9.03	Bike Access Ramp/Midblock Ramp	Typical Bike Access Ramp/Midblock Ramp Detail
	C10	SD C10.01	Concrete Walkway – Easement Pathway	Concrete Walkway Detail
	C11		Bicycle Baffle	Do Not Use
C12			Removable Barrier Post	Adopt MMCD Drawing
	C15		Traffic Calming Curb Extensions	Do Not Use
		SD C16.01	Concrete Bus Slab	Concrete Bus Slab Detail
		SD C17.01	Sign Sleeve Bases	Sign Sleeve Installation Detail
		SD C18.01	Corner Surface Treatment	Typical Downtown Public Realm
		SD C18.02	Pavers in Pedestrian Walking Zones	Typical Paver Cross Sections
		SD C18.03	Street Furniture Anchoring Detail	Typical Anchoring for CoV Street Furniture

Roadworks Drawing Index				
MMCD		CoV	Title	Description
Retain	Delete	Replace/Add		
	R0	SD R0.01	Drawing Index - Roadworks	Roadworks Drawing Details
	R1		Paved Shoulders	Do Not Use
	R2		Driveway Letdowns, Cross-Section	Do Not Use
	R3		Sidewalk, Interim Asphalt	Do Not Use
	R4		Single Ramp Letdown with Parallel Scoring	Do Not Use
	R5	SD R5.01	Speed Hump	Speed Hump Detail
		SD R5.02	Bike Friendly Speed Hump	Speed Cushion Detail
		SD R5.03	Raised Crosswalk	Raised Crosswalk Detail
	R6		Traffic Calming Raised Intersection Details	Do Not Use
	R7	SD R7.01	Median Island	Typical Median Island – Hardscaped and Landscaped
		SD R7.02	Pedestrian Refuge/Median Island – Roadway Grade	Typical Pedestrian Refuge at Roadway Grade
		SD R7.03	Pedestrian Refuge/Median Island – Sidewalk Grade	Typical Pedestrian Refuge at Sidewalk Grade
		SD R7.04	Grade Raised Bike Lane	Raised Bike Lane Detail
	R8		Traffic Calming, Curb Extensions and On-Street Parking Bay	Do Not Use
		SD R8.01	Protected Intersection Arrangement	Typical Protected Intersection Corner
		SD R8.02	Pavement Markings 1	Typical Pavement Markings Detail
		SD R8.03	Pavement Markings 2	Typical Pavement Markings Detail
		SD R9.01	Bike Lane Crossing at Intersections, Driveways, and Bus Stops	Typical Pavement Markings Detail
		SD R9.02	Accessible Parking Stalls	Typical Accessible Parking Stall Detail

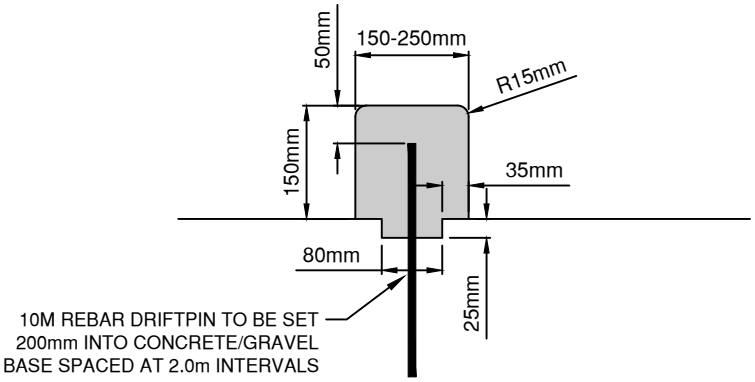
SUPPLEMENTARY STANDARD DETAIL DRAWING



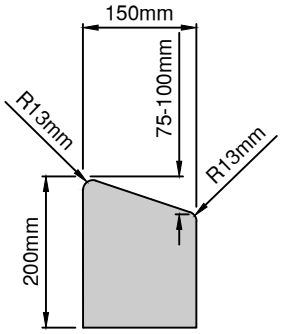
LANDSCAPE MEDIAN TYPE 1



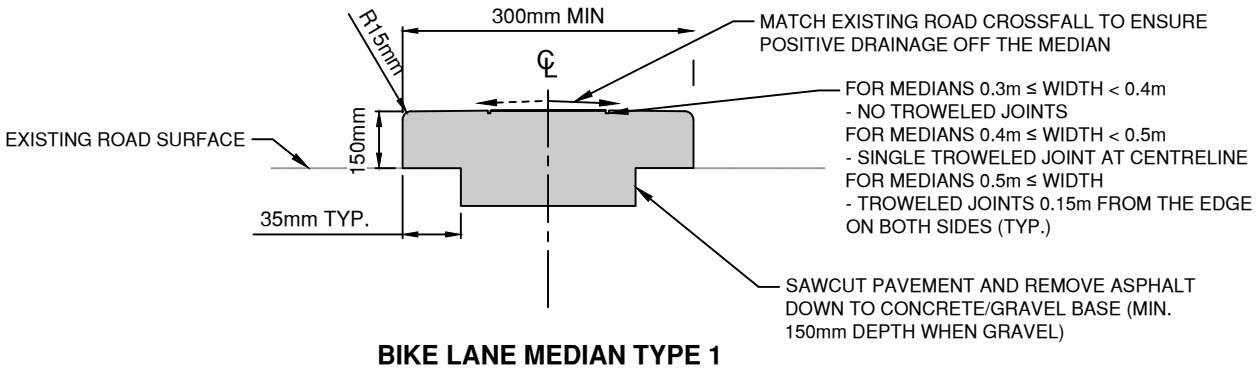
BIKE LANE CURB TYPE 1



LANDSCAPE MEDIAN TYPE 2



BIKE LANE CURB TYPE 2



BIKE LANE MEDIAN TYPE 1

NOTES:

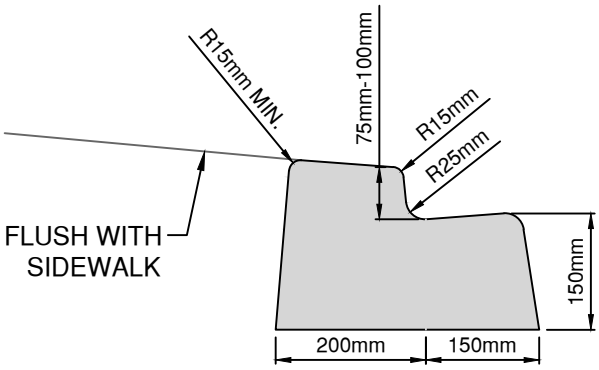
1. CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH)
2. PLACE MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR)
3. USE ONLY CITY APPROVED MIN 32 MPA CONCRETE MIX
4. CONCRETE MEDIAN ISLANDS SHALL BE CONSTRUCTED AFTER ROAD PAVING IS COMPLETED, UNLESS OTHERWISE APPROVED BY CITY OF VICTORIA
5. MEDIAN HEIGHTS ARE TO BE 150mm OR AS APPROVED BY THE CITY

NOT TO SCALE

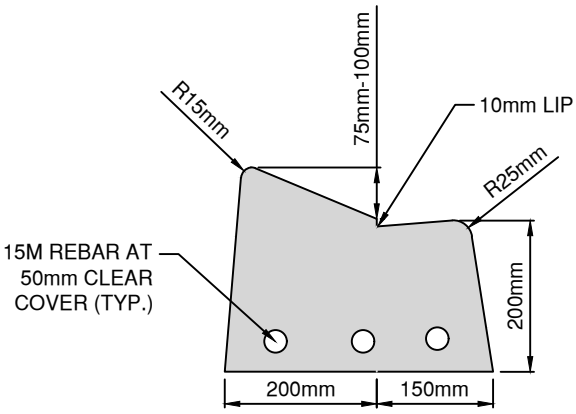
CONCRETE CURBS AND MEDIANS 1

Revision Date	Drawing Number
AUG 2025	SD C6.01

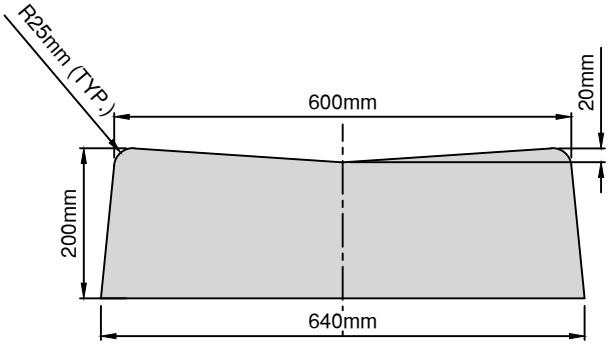
SUPPLEMENTARY STANDARD DETAIL DRAWING



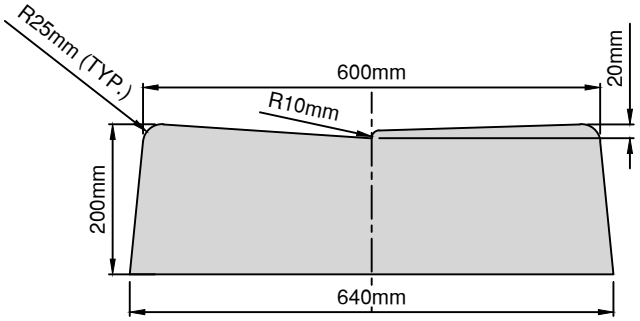
CUSTOM RAISED BIKE LANE CURB TYPE 1



CUSTOM RAISED BIKE LANE CURB TYPE 2 (DRIVEWAYS)



INVERTED GUTTER



INVERTED GUTTER (10mm LIP)

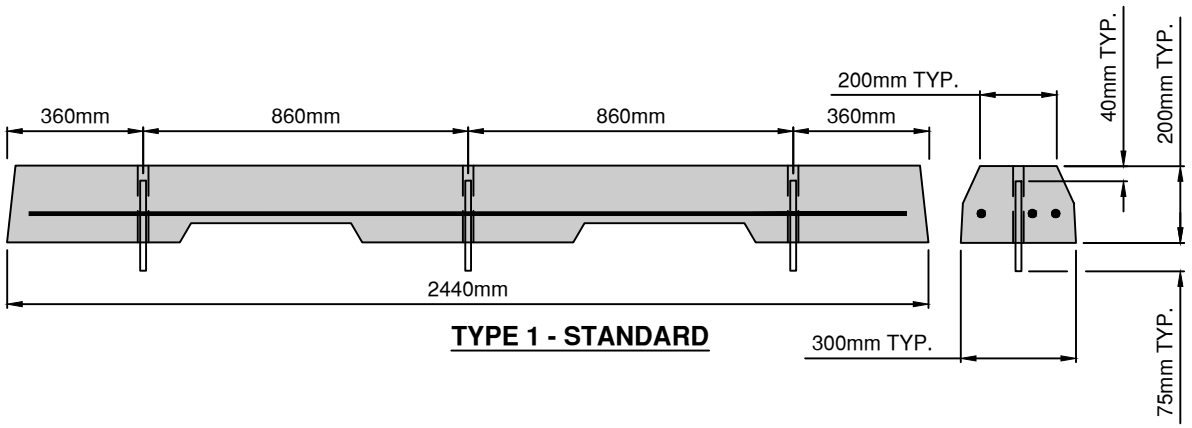
NOTES:

1. CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH)
2. PLACE MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR)
3. USE ONLY CITY APPROVED MIN 32 MPA CONCRETE MIX

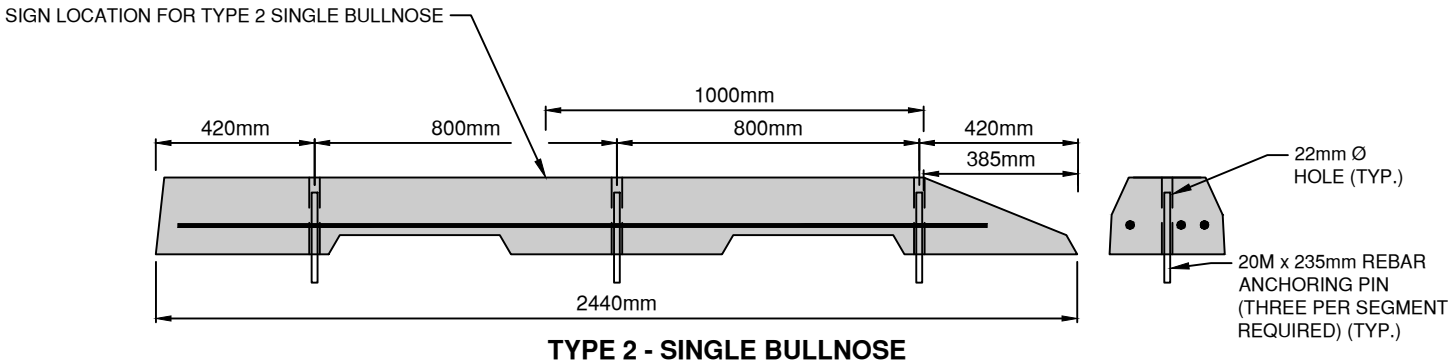
NOT TO SCALE

CONCRETE CURBS AND MEDIANS 2	Revision Date	Drawing Number
	JUNE 2025	SD C6.02

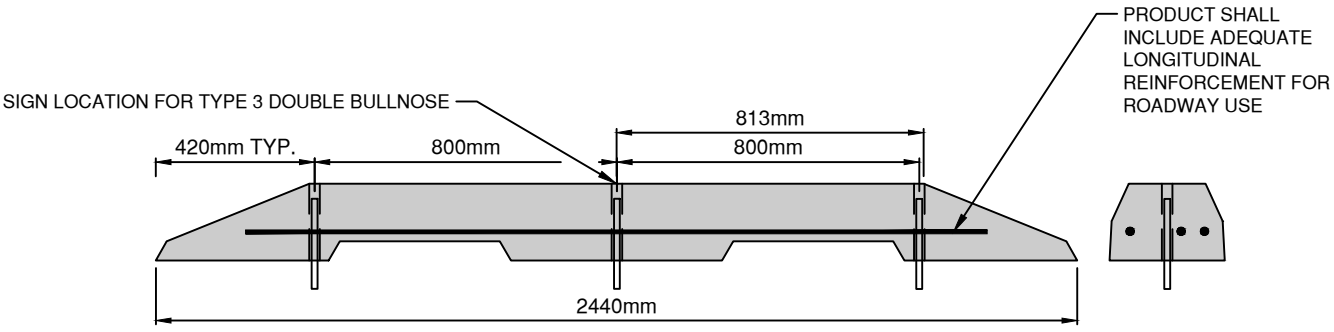
SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPE 1 - STANDARD



TYPE 2 - SINGLE BULLNOSE



TYPE 3 - DOUBLE BULLNOSE

NOTES:

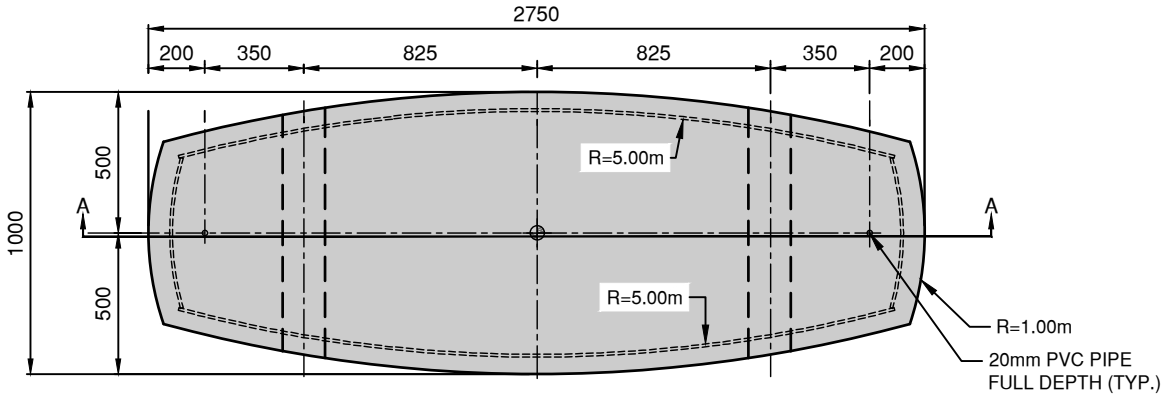
1. TEMPORARY MEDIAN CURBS SHALL BE ORIENTED WITH THE BULLNOSE AT BREAKS GREATER THAN 2.00m
2. BOLLARDS ARE TO BE PLACED 0.50m-2.00m FROM THE EDGE OF BULLNOSE OR IN THE CENTRE OF A SINGLE CURB SEGMENT
3. BOLLARDS ARE TO BE ANCHORED WITH 12.5mm x 50mm ANCHORS AND 12.5mm x 38mm CAP SCREWS
4. ADDITIONAL BOLLARDS MAY BE REQUIRED AT DISCRETION OF CoV
5. ALTERNATIVE PRODUCTS MAY BE CONSIDERED AT DISCRETION OF CoV

NOT TO SCALE

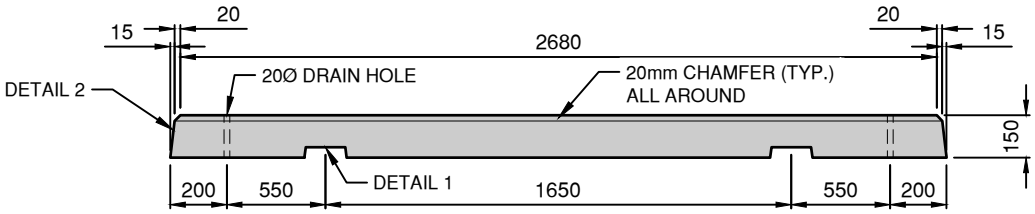
TEMPORARY MEDIAN CURB

Revision Date	Drawing Number
AUG 2025	SD C6.03

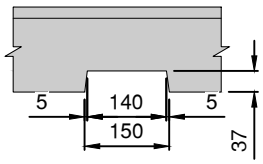
SUPPLEMENTARY STANDARD DETAIL DRAWING



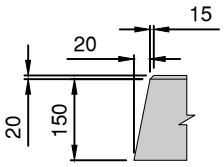
PLAN



SECTION A-A



DETAIL 1



DETAIL 2

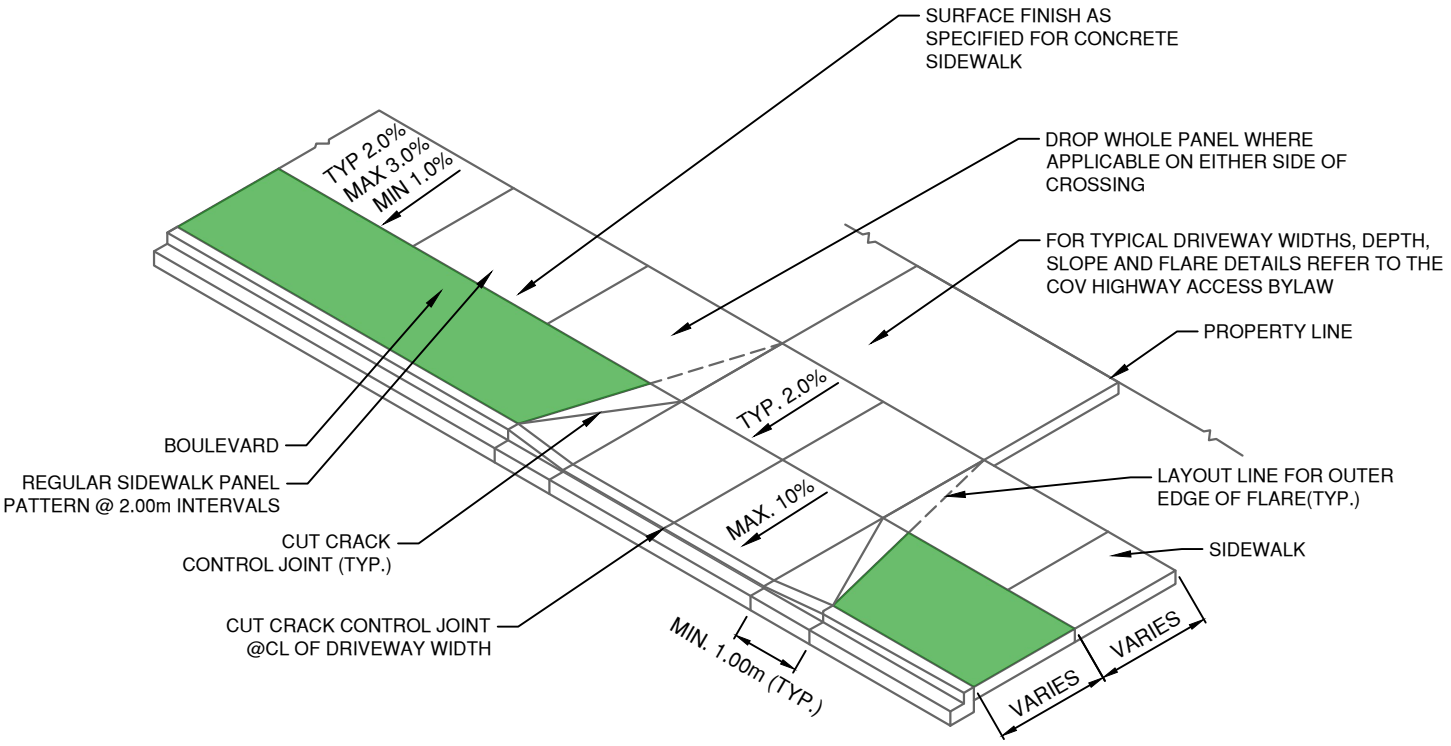
NOTES:

1. ALL DIMENSIONS SHOWN IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

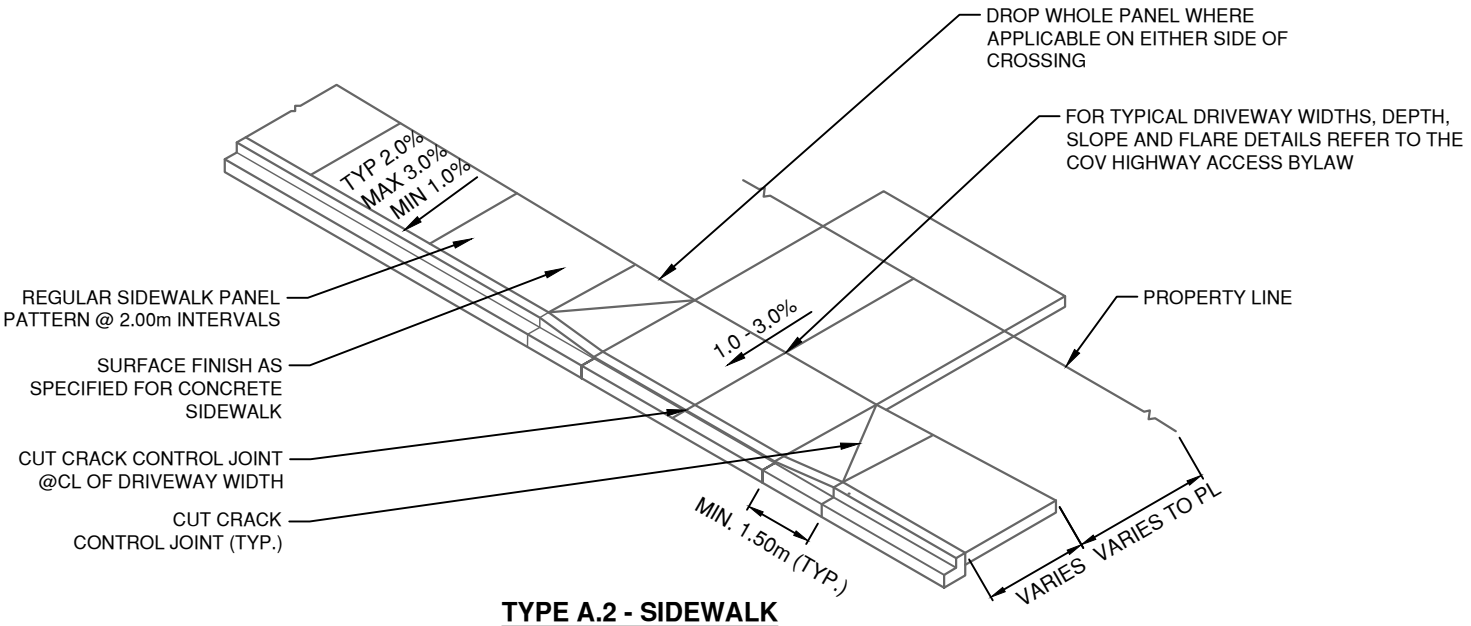
NOT TO SCALE

TRAFFIC CALMING CURB	Revision Date	Drawing Number
	JUNE 2025	SD C6.04

SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPE A.1 - SIDEWALK AND BOULEVARD



TYPE A.2 - SIDEWALK

NOTES:

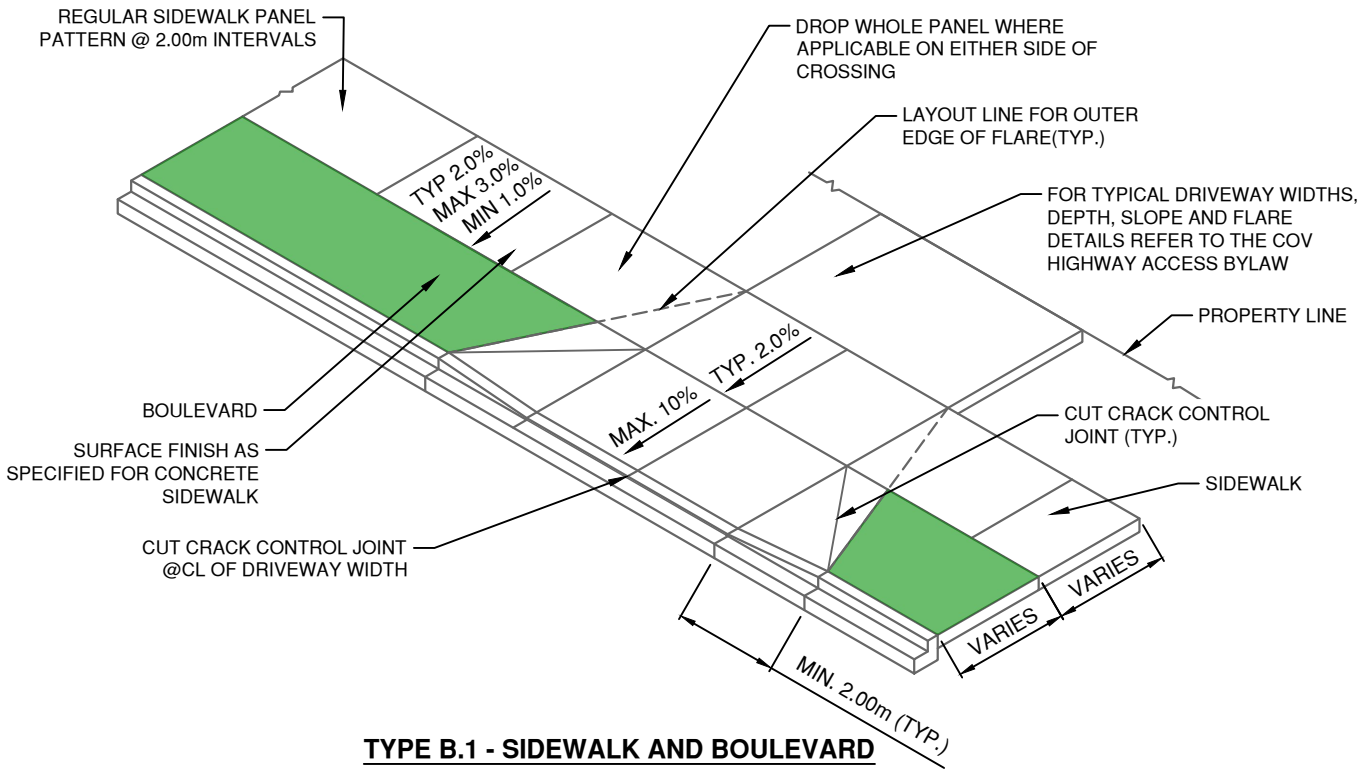
1. USAGE OF TYPE A DRIVEWAY AS PER COV HIGHWAY ACCESS BYLAW.
2. REFER TO SD C7.03 FOR CROSS SECTION VIEWS.

NOT TO SCALE

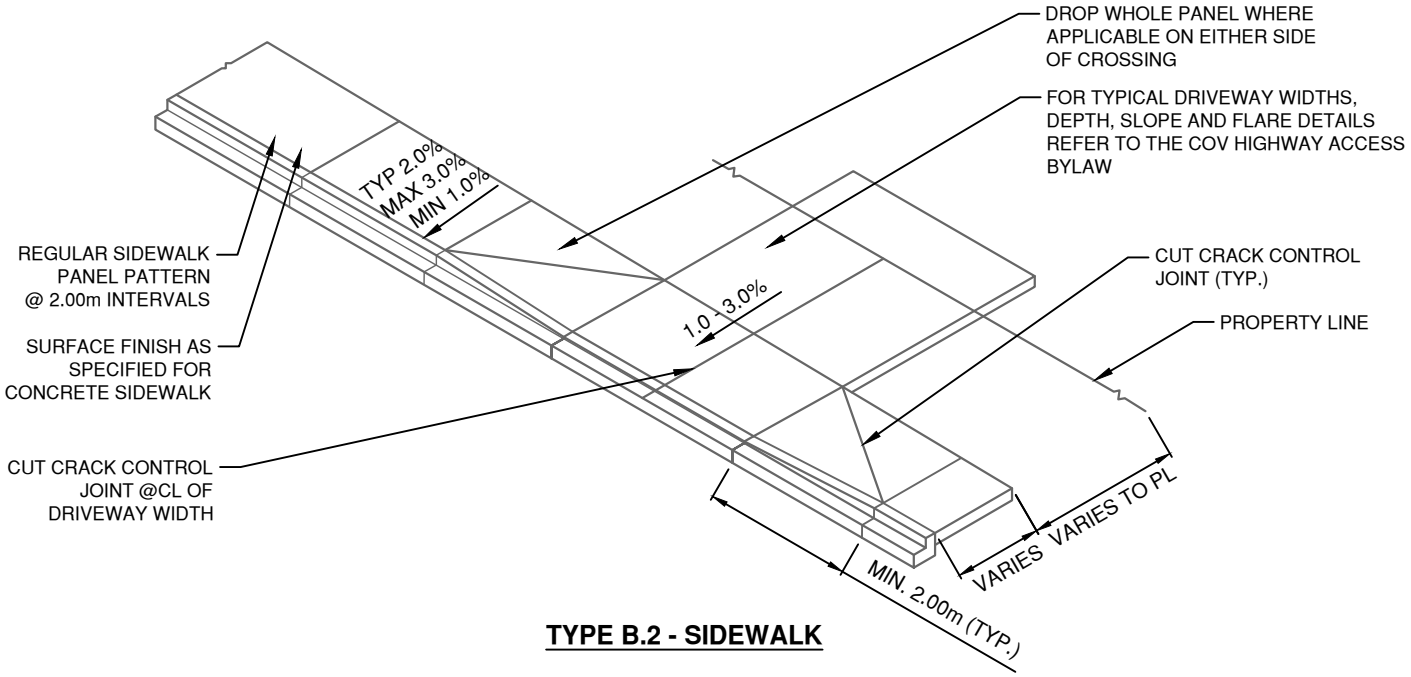
TYPICAL DRIVEWAY CROSSING TYPE A

Revision Date	Drawing Number
AUG 2025	SD C7.01

SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPE B.1 - SIDEWALK AND BOULEVARD



TYPE B.2 - SIDEWALK

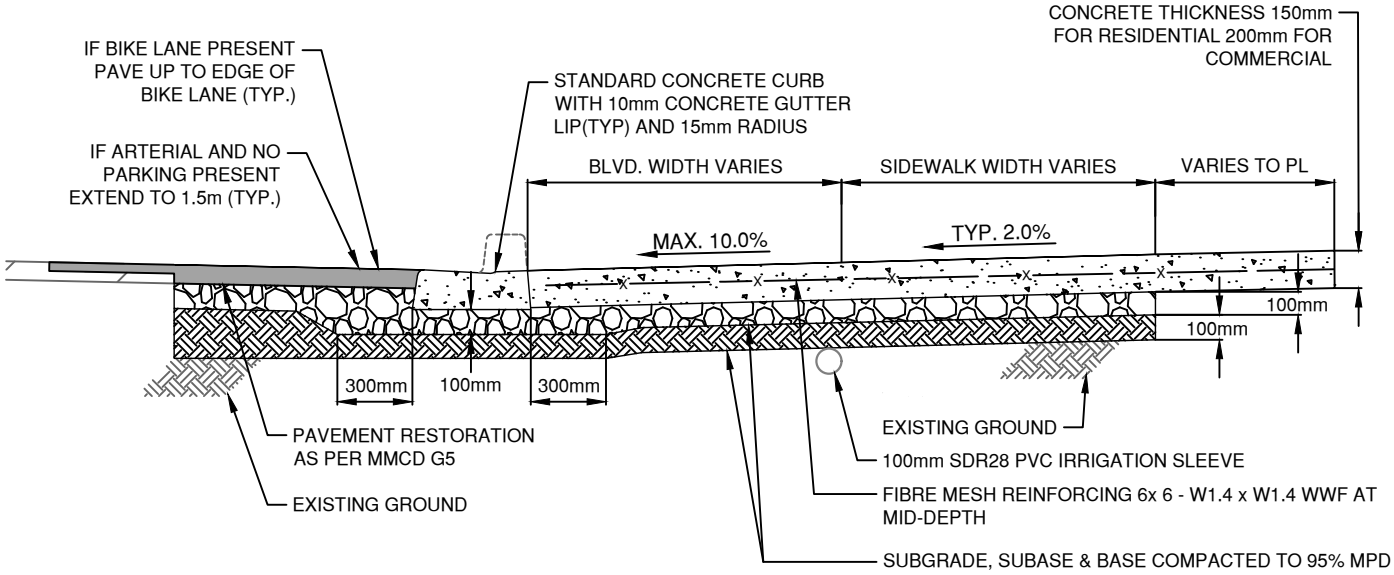
NOTES:

1. USAGE OF TYPE B DRIVEWAY AS PER COV HIGHWAY ACCESS BYLAW.
2. REFER TO SD C7.03 FOR CROSS SECTION VIEWS.

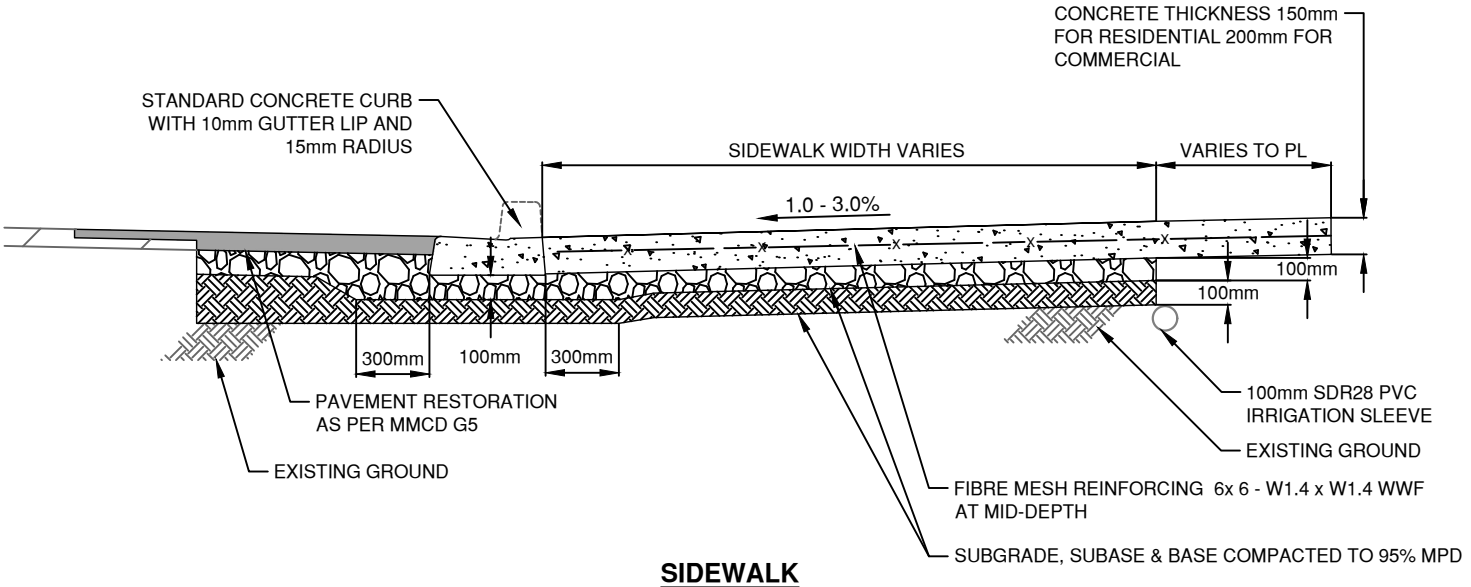
NOT TO SCALE

TYPICAL DRIVEWAY CROSSING TYPE B	Revision Date	Drawing Number
	AUG 2025	SD C7.02

SUPPLEMENTARY STANDARD DETAIL DRAWING



SIDEWALK AND BOULEVARD



SIDEWALK

NOTE:

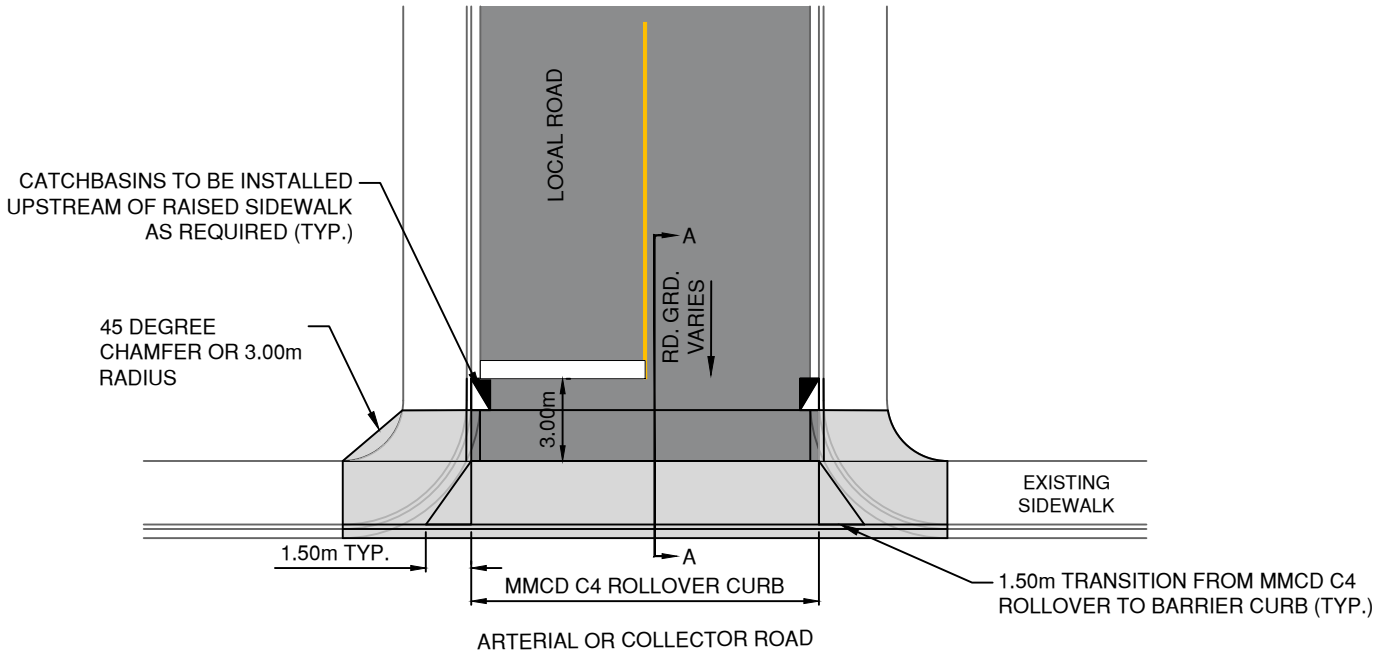
1. REFER TO COV SD C7.01 AND SD C7.02 FOR DRIVEWAY CROSSINGS IN PLAN VIEW
2. ADDITIONAL DESIGN REQUIRED FOR HEAVY INDUSTRIAL USAGE AS REQUIRED BY CITY OF VICTORIA
3. TYPE A DRIVEWAY LOCATED IN RESIDENTIAL WITH COLLECTOR, SECONDARY COLLECTOR OR LOCAL CLASSIFICATION
4. TYPE B DRIVEWAY LOCATED IN COMMERCIAL OR INDUSTRIAL WITH ALL CLASSIFICATIONS AND RESIDENTIAL WITH ARTERIAL OR SECONDARY ARTERIAL CLASSIFICATION
5. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

NOT TO SCALE

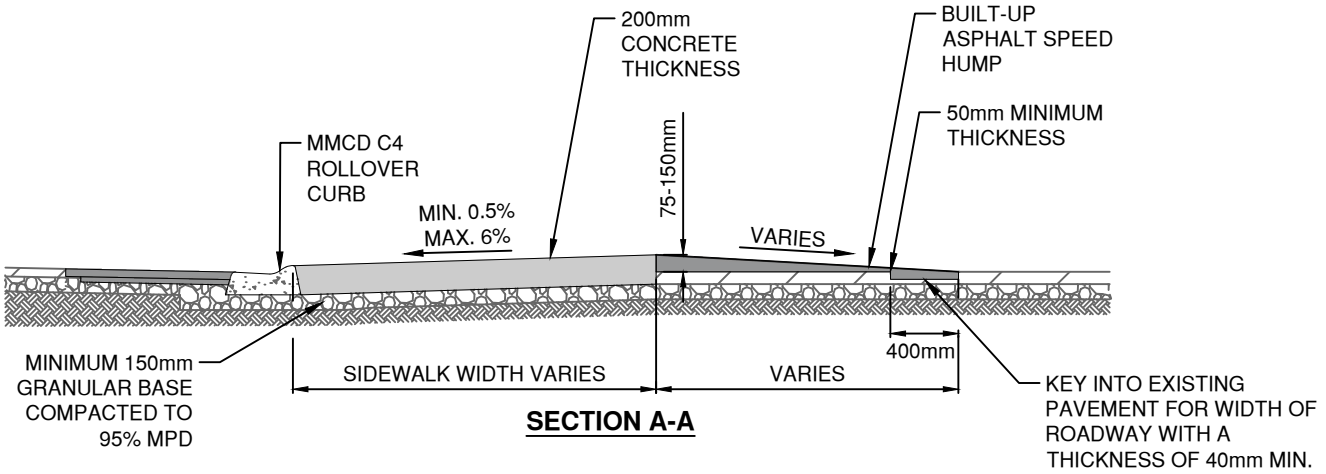
TYPICAL DRIVEWAY CROSSING CROSS SECTIONS

Revision Date	Drawing Number
SEPT 2025	SD C7.03

SUPPLEMENTARY STANDARD DETAIL DRAWING



CONTINUOUS SIDEWALK (CONSTRAINED)



SECTION A-A

NOTES:

1. LOCAL ROAD PROFILE TO BE REVIEWED FOR ALLOWABLE BREAK OVER ANGLE
2. CoV REVIEW REQUIRED IF BOULEVARD IS PRESENT
3. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

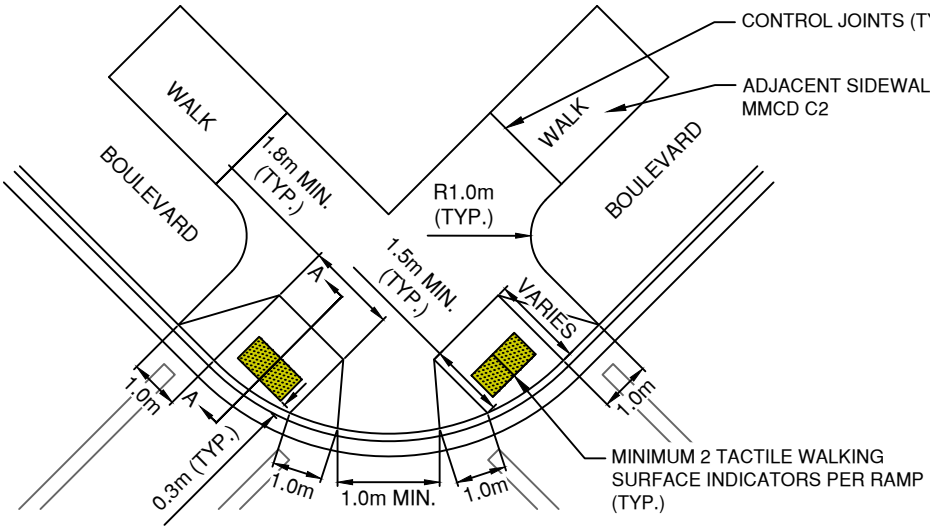
NOT TO SCALE

CONTINUOUS SIDEWALK	Revision Date	Drawing Number
	SEPT 2025	SD C7.04

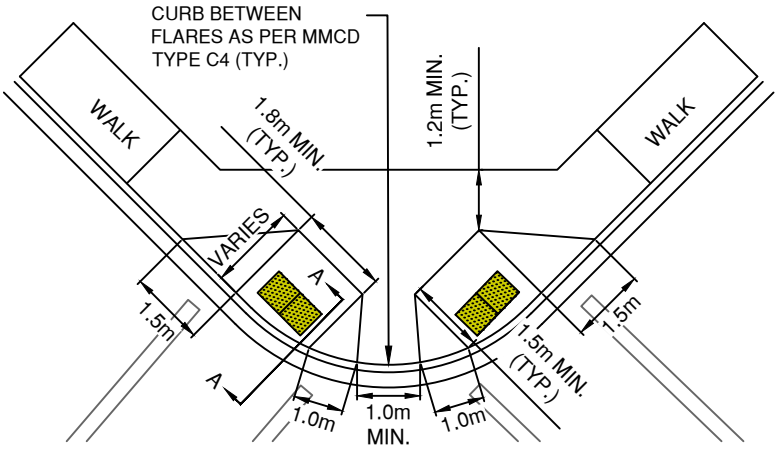
SUPPLEMENTARY STANDARD DETAIL DRAWING

CITY OF VICTORIA

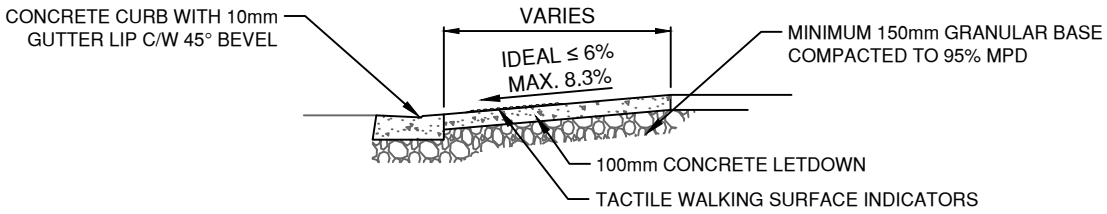
BOULEVARD WALK



CURBSIDE WALK



DUAL CURB RAMP



SECTION A-A

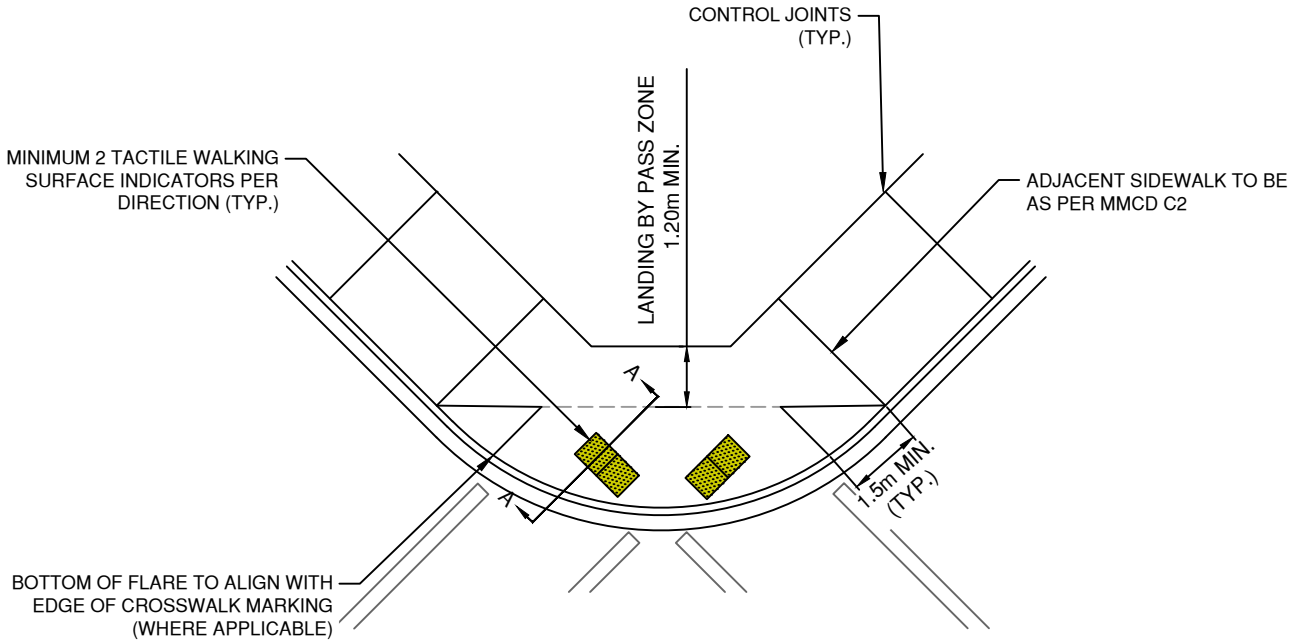
NOTES:

1. CATCH BASINS ARE NOT PERMITTED IN CURB LET DOWN AND SHOULD BE LOCATED UP STREAM OF CROSSWALK
2. TACTILE WALKING SURFACE INDICATOR (CSA APPROVED) ARE TO BE CAST-IN-PLACE, UNLESS SPECIFIED OTHERWISE
3. PAVEMENT MARKINGS SHOWN FOR REFERENCE ONLY
4. SEE ELECTRICAL DRAWINGS FOR DETAILS ON SIGNAL POLE PLACEMENT
5. REFER TO DOWNTOWN PUBLIC REALM PLAN FOR ADDITIONAL INFO ON SURFACE TREATMENT AND TACTILE WALKING SURFACE INDICATOR COLOUR
6. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE
7. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

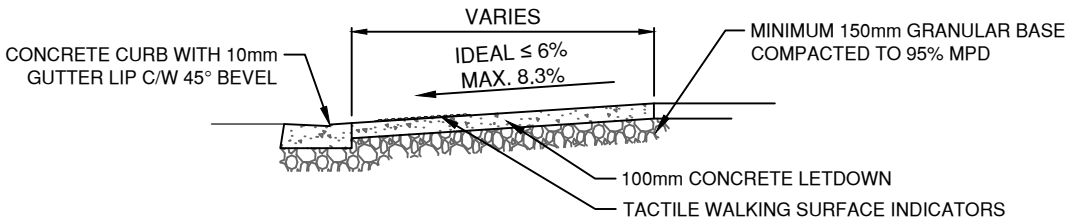
NOT TO SCALE

DUAL CURB RAMP	Revision Date	Drawing Number
	SEPT 2025	SD C9.01

SUPPLEMENTARY STANDARD DETAIL DRAWING



SINGLE CURB RAMP



SECTION A-A

NOTES:

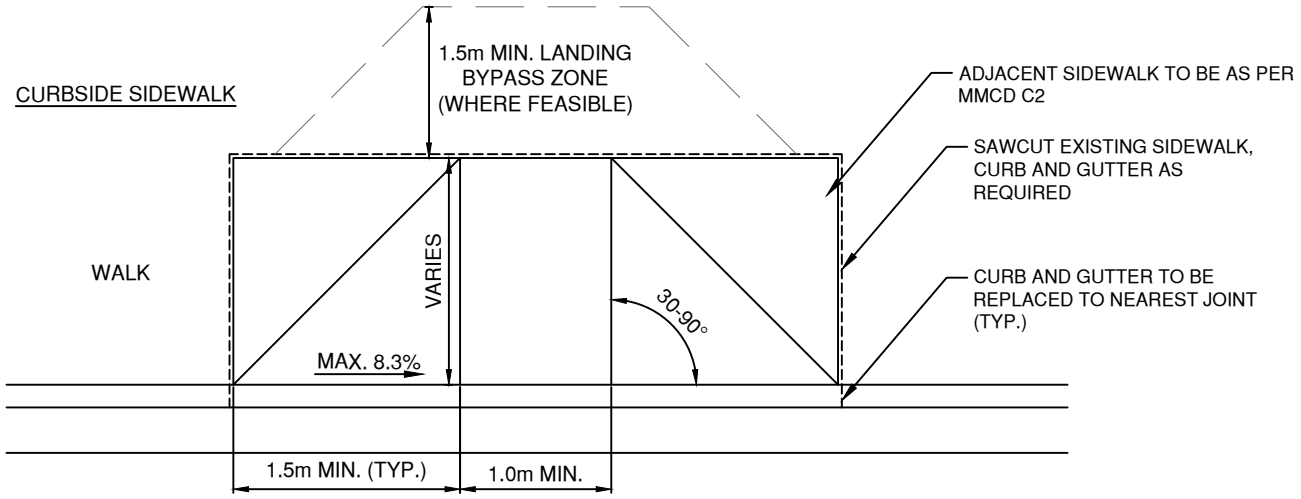
1. SINGLE CURB RAMP TO BE USED ONLY IN LOCATIONS WHERE DUAL CURB RAMPS ARE NOT ACHIEVABLE
2. CATCH BASINS ARE NOT PERMITTED IN CURB LET DOWN AND SHOULD BE LOCATED UP STREAM OF CROSSWALK
3. TACTILE WALKING SURFACE INDICATORS (CSA APPROVED) ARE TO BE CAST-IN-PLACE, UNLESS SPECIFIED OTHERWISE
4. PAVEMENT MARKINGS SHOWN FOR REFERENCE ONLY.
5. SEE ELECTRICAL DRAWINGS FOR DETAILS ON SIGNAL POLE PLACEMENT
6. REFER TO DOWNTOWN PUBLIC REALM PLAN FOR ADDITIONAL INFO ON SURFACE TREATMENT AND TACTILE WALKING SURFACE INDICATOR COLOUR
7. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE
8. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

NOT TO SCALE

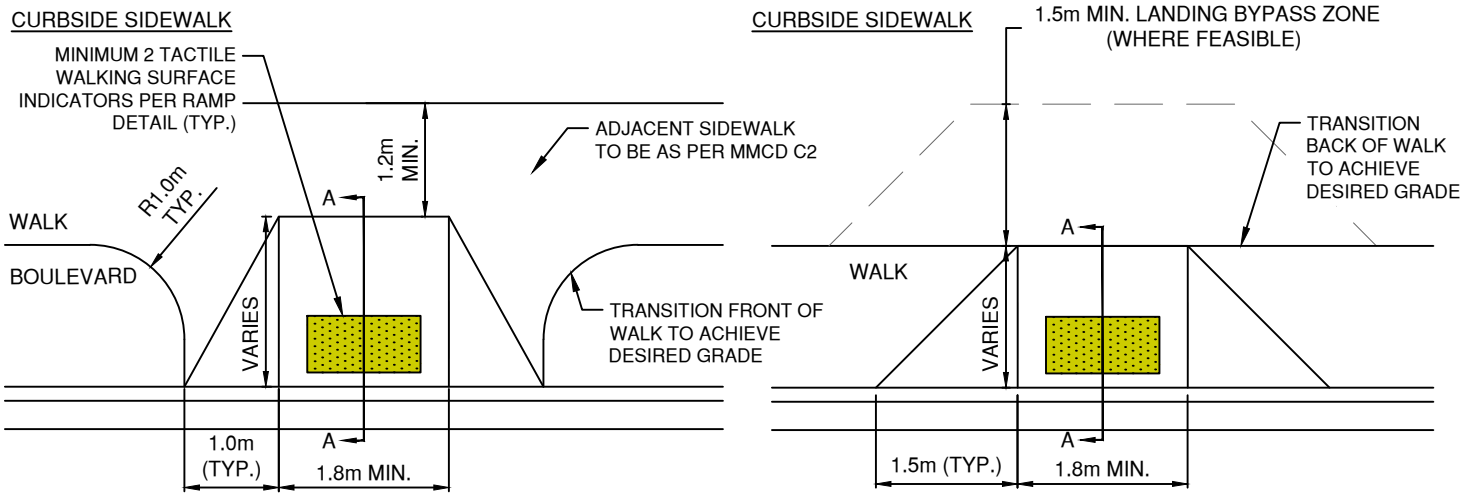
SINGLE RADIAL CURB RAMP

Revision Date	Drawing Number
SEPT. 2025	SD C9.02

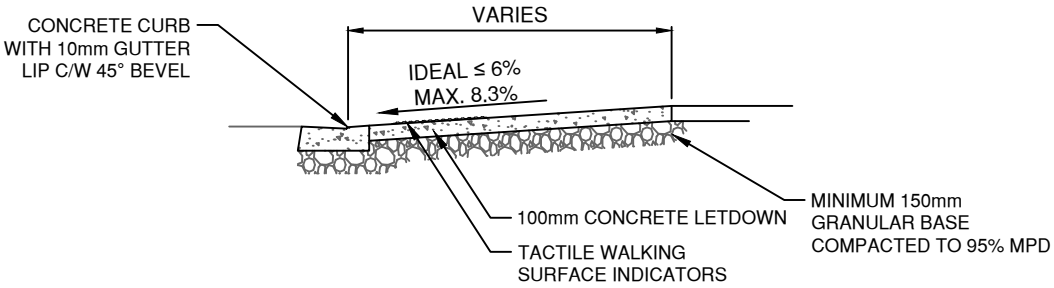
SUPPLEMENTARY STANDARD DETAIL DRAWING



BIKE ACCESS RAMP



MIDBLOCK CURB RAMP



SECTION A-A

NOTES:

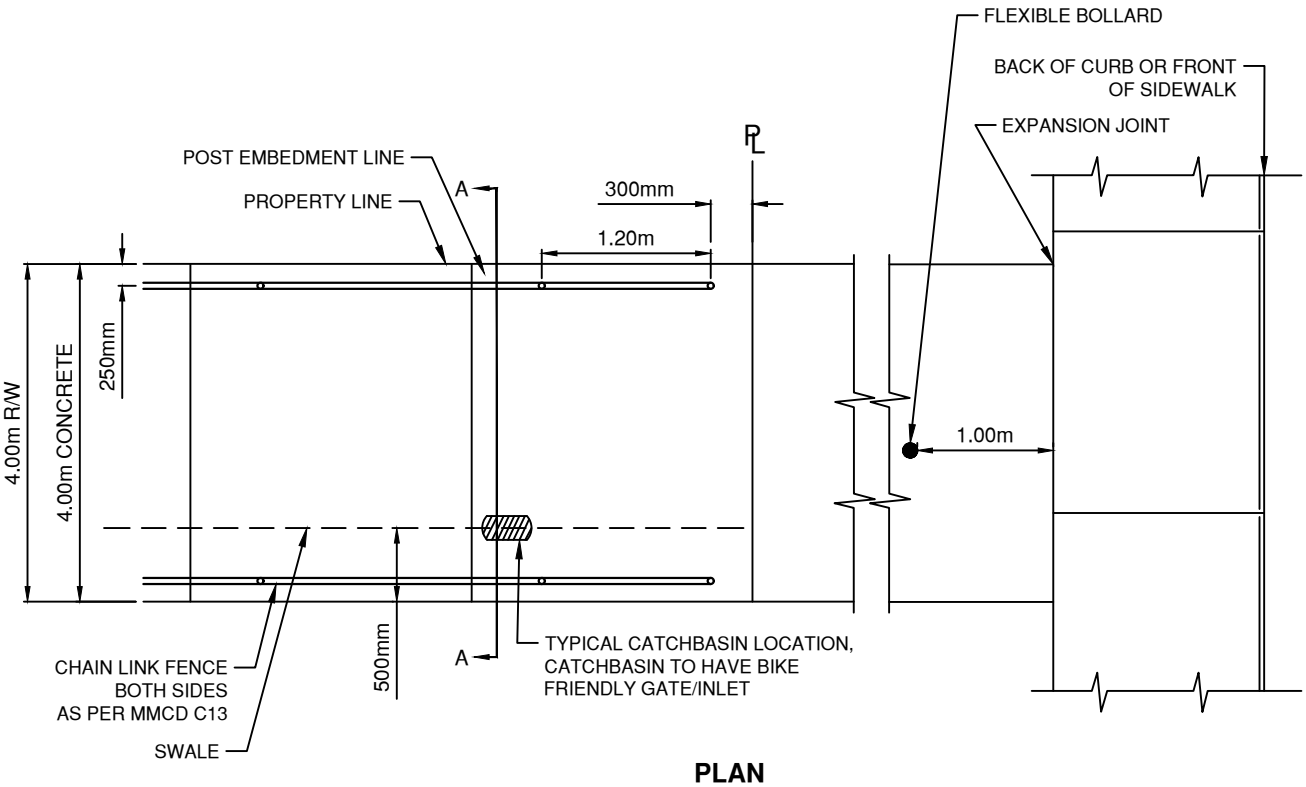
1. CATCH BASINS ARE NOT PERMITTED IN CURB LET DOWN AND SHOULD BE LOCATED UP STREAM OF CROSSWALK
2. TACTILE WALKING SURFACE INDICATORS (CSA APPROVED) ARE TO BE CAST-IN-PLACE, UNLESS SPECIFIED OTHERWISE
3. TACTILE WALKING SURFACE INDICATORS WILL NOT BE REQUIRED FOR A LOADING ZONE
4. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE

NOT TO SCALE

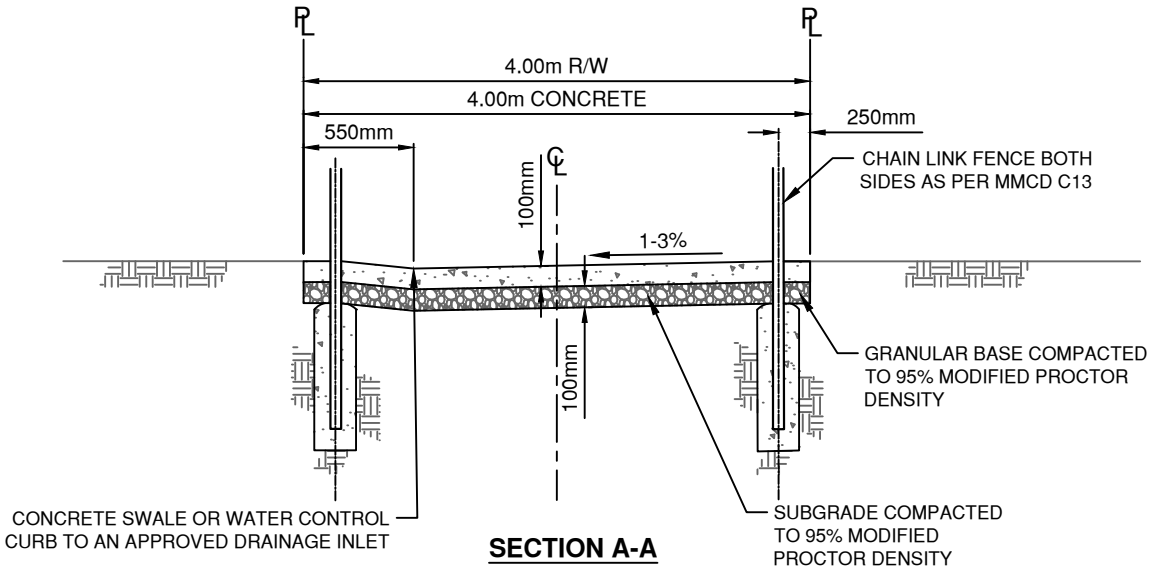
BIKE ACCESS RAMP/MIDBLOCK RAMP

Revision Date	Drawing Number
JUNE 2025	SD C9.03

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION A-A

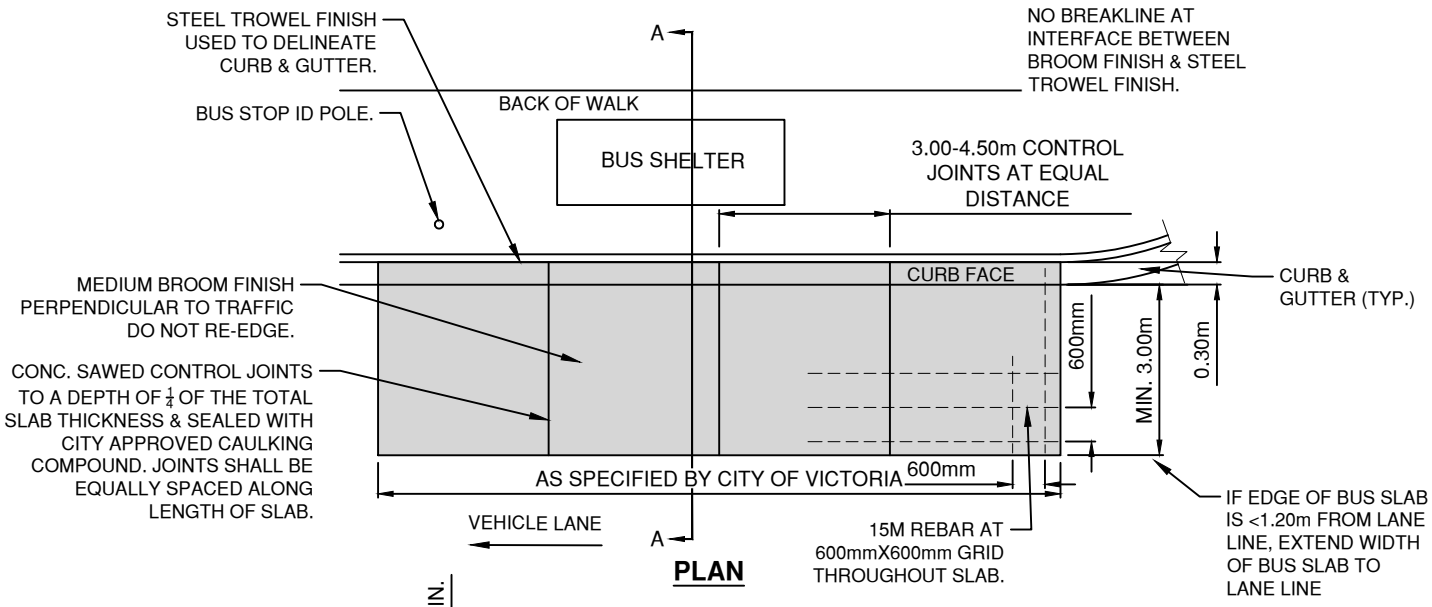
NOTES:

1. COORDINATE WITH CoV TO CONDUCT LIGHTING REVIEW OF LOCATION DURING DESIGN
2. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

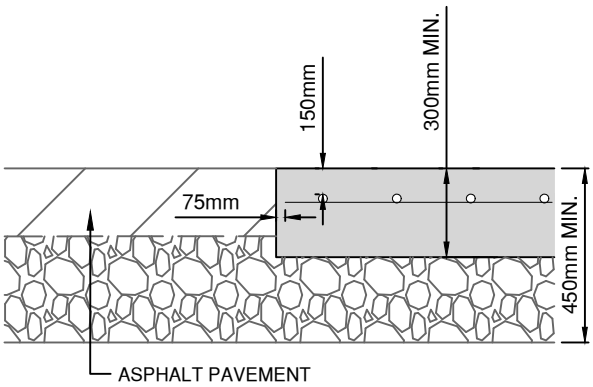
NOT TO SCALE

CONCRETE WALKWAY-EASEMENT PATHWAY	Revision Date	Drawing Number
	SEPT 2025	SD C10.01

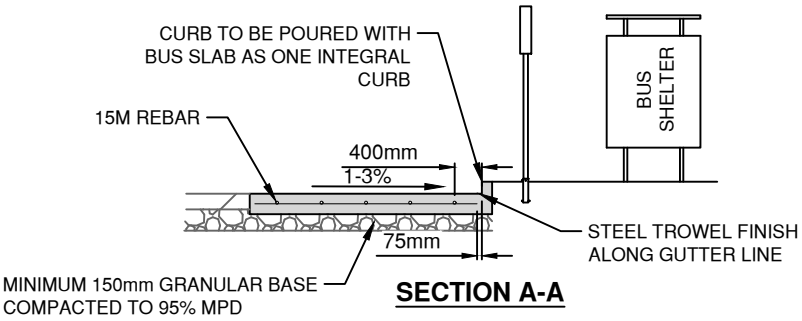
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



REBAR DETAIL



SECTION A-A

NOTES:

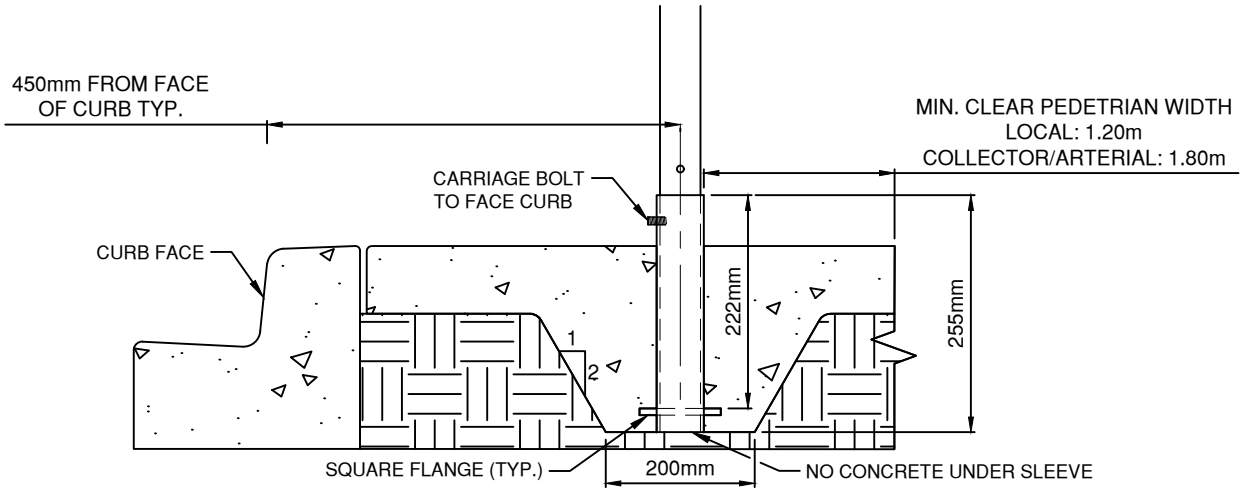
1. THE BUS SLAB SHOULD BE INSTALLED AS A CONTINUOUS POUR. IF THE BUS SLAB IS INSTALLED IN NO MORE THAN TWO SEPARATE POURS, THEN THE EDGE OF THE POUR MUST BE KEYED OR REBAR INSERTS USED TO TIE BOTH PADS TOGETHER.
2. ALL CUT JOINTS ARE TO RUN PERPENDICULAR TO THE CURB. THE CUT JOINTS MUST RUN FROM OUTSIDE EDGE OF BUS SLAB TO BACK OF INTEGRAL CURB.
3. CUT JOINTS SHOULD BE SAWED INTO THE BUS SLAB WITHIN 24 HOURS AFTER THE POUR TO MINIMIZE ANY CRACKING.
4. BUS SLABS THAT CONTAIN MAINTENANCE HOLES, CATCH BASINS, VALVE BOXES, CHAMBERS OR OTHER UTILITY COVERS MUST HAVE CONTROL CUT JOINTS ON BOTH SIDES OF THE UTILITY COVER.
5. CUT JOINTS MUST MAINTAIN EQUAL DISTANCE OF 3.00-4.50m FROM ANY CONSTANTS (I.E., MAINTENANCE HOLE, CATCH BASIN, VALVE BOX, CHAMBERS) WITHIN THE BUS SLAB.
6. INTERNAL VIBRATOR OR POWER SCREED SHALL BE USED WHEREVER PRACTICABLE TO CONSOLIDATE THE CONCRETE. ANY OTHER CONSOLIDATION METHODS MUST BE APPROVED BY THE CITY OF VICTORIA PRIOR TO THE CONCRETE POUR.
7. CONCRETE MIX:
   - 7.1. CITY MIX NO. 1503 OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD IS PUT ON THE BUS SLAB FOR 3 DAYS AFTER POUR.
   - 7.2. CITY MIX NO. 20MPa IN 24 HRS OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD IS PUT ON THE BUS SLAB FOR 24 HRS AFTER POUR.
   - 7.3. NO CHLORIDE BASED ADDITIVES SHALL BE USED IN CONCRETE SLAB WITH EMBEDDED STEEL.
8. USE 15M REBAR WITH MINIMUM 75mm COVER.
9. PLACE REBAR MAT AT 150mm BELOW TOP OF CONCRETE.
10. PLACE REBAR IN A 600mm X 600mm GRID.
11. MILL AND RE-CONTOUR ASPHALT TO MATCH CONCRETE BUS SLAB CROSS FALL.

NOT TO SCALE

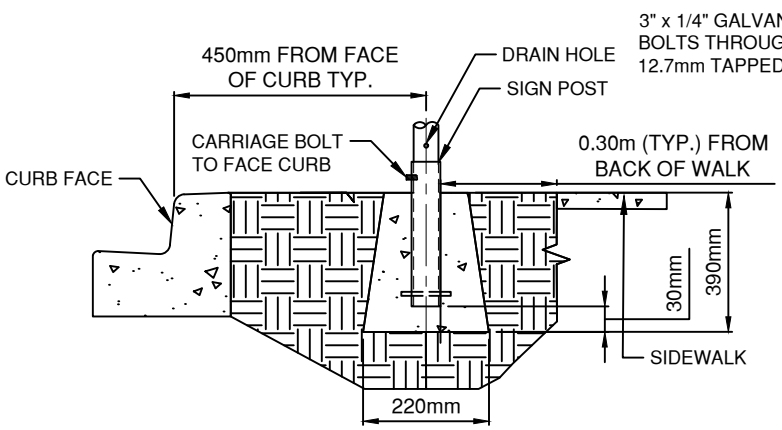
CONCRETE BUS SLAB

Revision Date	Drawing Number
JUNE 2025	SD C16.01

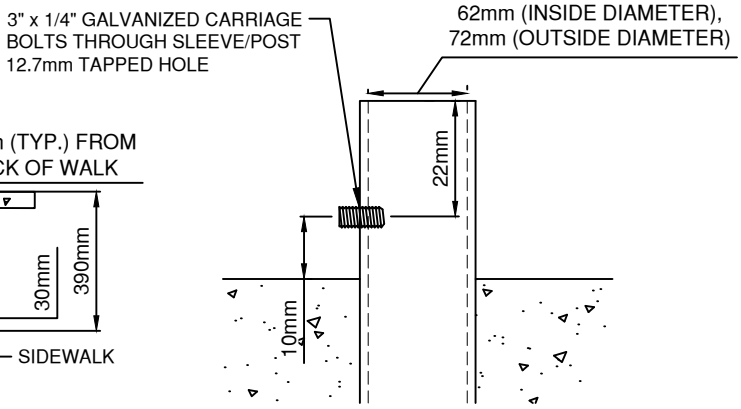
SUPPLEMENTARY STANDARD DETAIL DRAWING



POST AND SLEEVE



POST AND BASE



SLEEVE

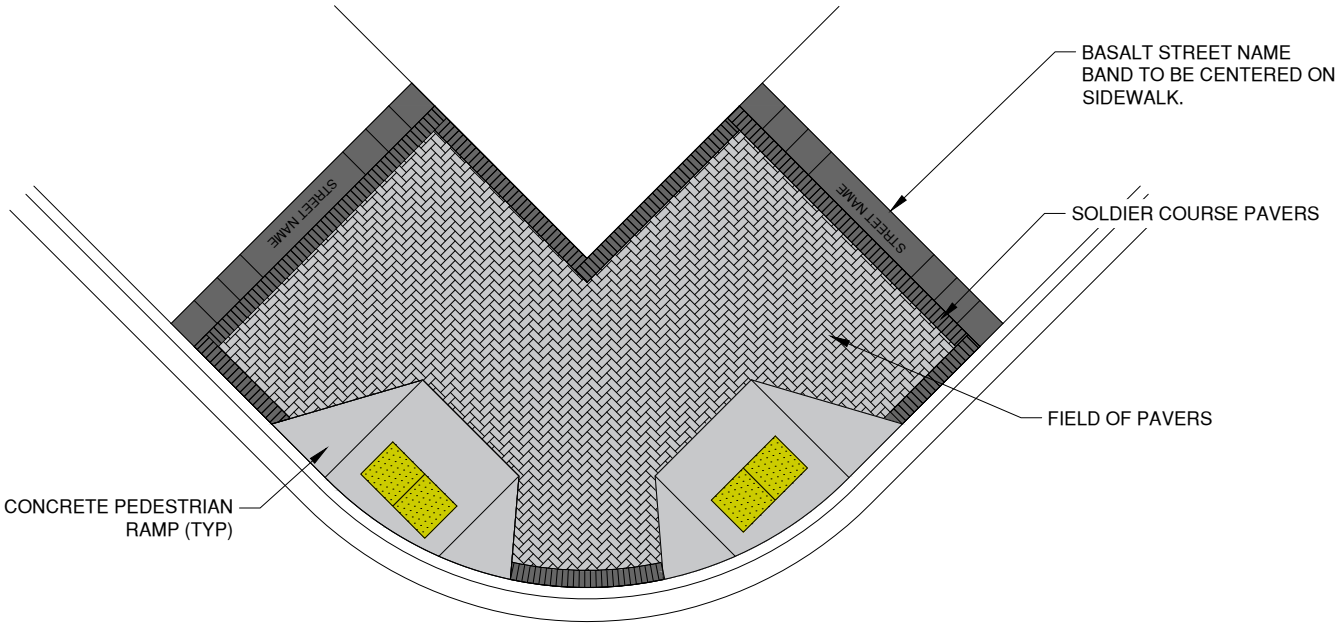
NOTES:

1. CAUTION MUST BE TAKEN TO ENSURE THAT NO CONCRETE OR DEBRIS GET INSIDE THE SLEEVE.
2. THE SLEEVE IS TO BE PLUMB.
3. ALTERNATIVE SIGN LOCATIONS MAY BE NECESSARY IN INSTANCES OF CONFLICT WITH UNDERGROUND UTILITIES.

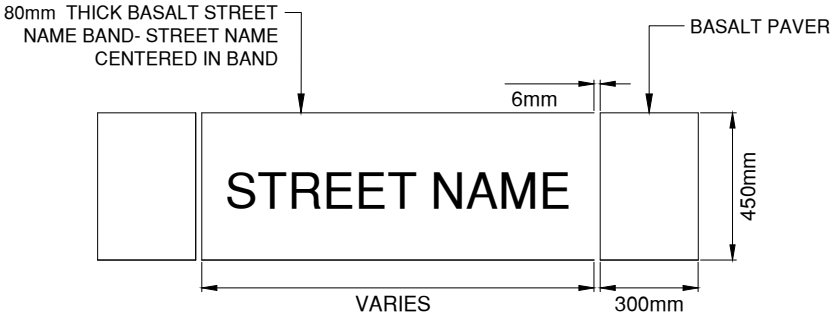
NOT TO SCALE

SIGN SLEEVE BASES	Revision Date	Drawing Number
	JUNE 2025	SD C17.01

SUPPLEMENTARY STANDARD DETAIL DRAWING



CORNER SURFACE TREATMENT LAYOUT



BASALT STREET NAME BAND

NOTES:

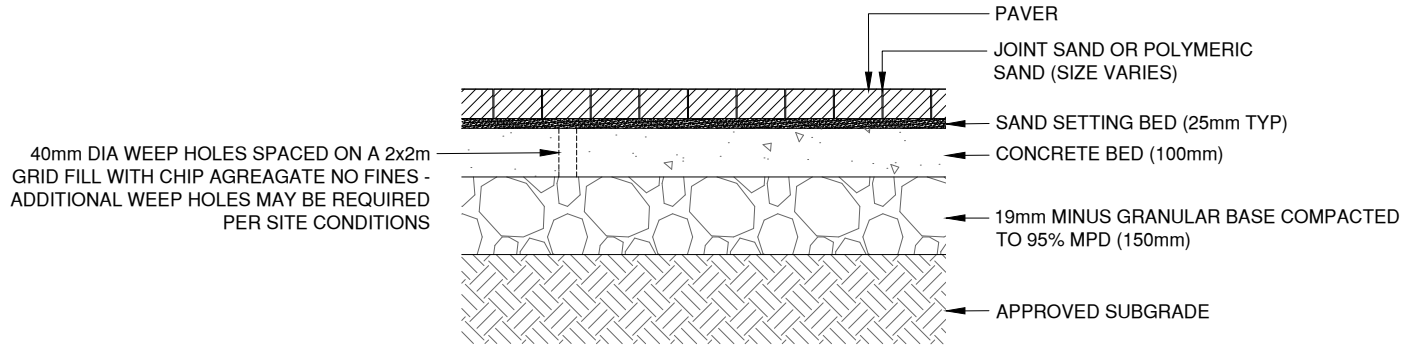
1. PAVER TYPE, SIZE, COLOUR, AND LAYING PATTERN TO BE AS PER SPECIFIED IN THE DOWN TOWN PUBLIC REALM PLAN (DTPRP)
2. SEE DUAL CURB RAMP DETAIL SD C9.01 FOR CURB CONSTRUCTION DETAILS
3. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE
4. STREET NAME INSERT FONT TO BE:
   - 4.1. TISA PRO BOLD (OR EQUIVALENT)
   - 4.2. USE ABREVIATION FOR STREET NAME WITH NO PUNCUTATION SUCH AS AVE ST RD
   - 4.3. TEXT TO BE ALL CAPITAL LETTERS
   - 4.4. FONT SIZE 90mm
5. SEE DRAWING SD C18.02 FOR PAVER DETAIL

NOT TO SCALE

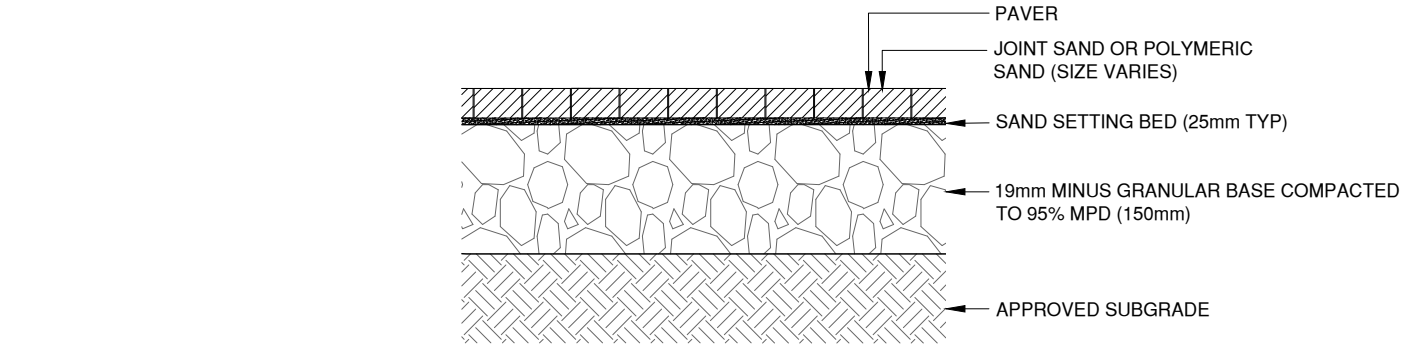
CORNER SURFACE TREATMENT

Revision Date	Drawing Number
JULY 2025	SD C18.01

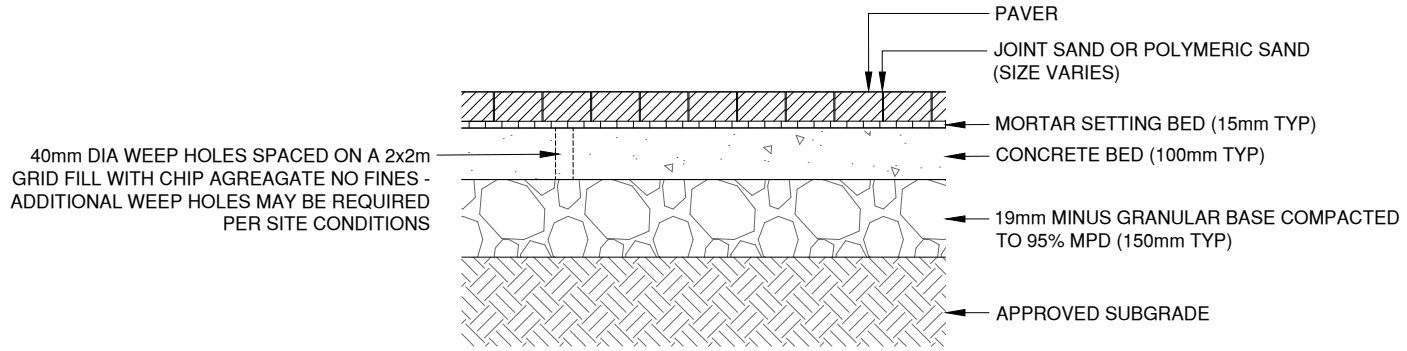
SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPE 1 - SAND SET PAVERS w/CONCRETE BED



TYPE 2 - SAND SET PAVERS



TYPE 3 - MORTAR SET PAVERS W/CONCRETE BED

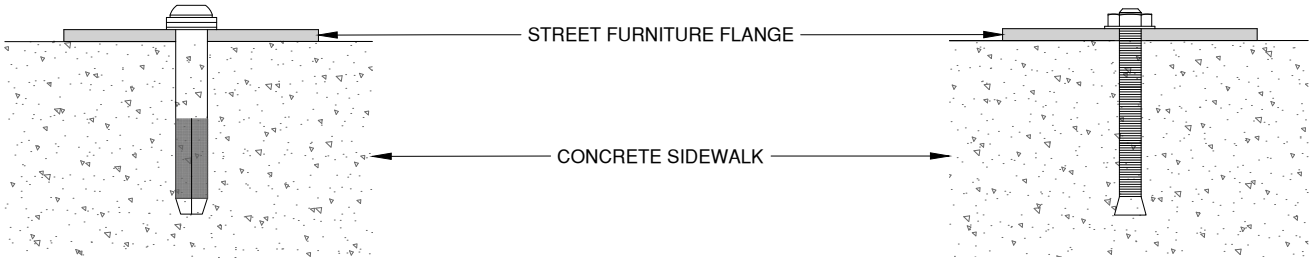
NOTES:

1. PAVER TYPE, SIZE, COLOUR, AND LAYING PATTERN TO BE AS PER SPECIFIED IN THE DOWN TOWN PUBLIC REALM PLAN (DTPRP)
2. GEOTEXTILE FABRIC TO BE LAID IN 0.6m STRIPS IN AREAS WHERE BEDDING SAND LOSS MAY OCCUR. FOR EXAMPLE BUT NOT LIMITED TO, JOINTS IN CURBS OR AROUND WEEP HOLES AND OTHER APPURTENANCES.
3. REFER TO MANUFACTURERS SPEC FOR VARIENCES IN PAVER INSTALL
4. FOR STREET FURNITURE ANCHORING DETAILS SEE SD C18.03

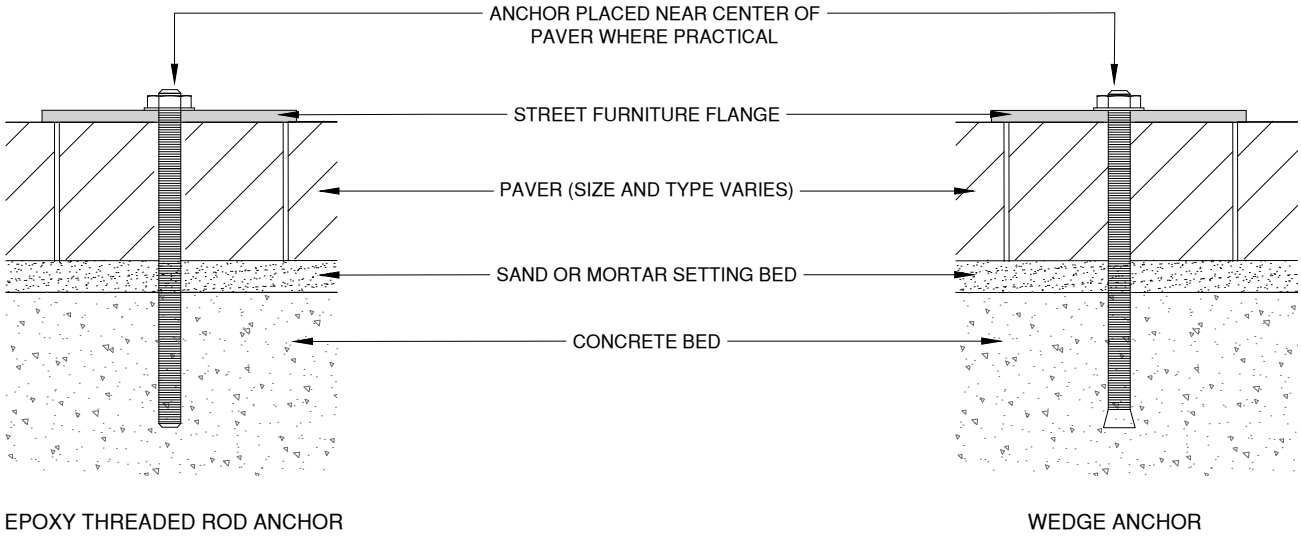
NOT TO SCALE

PAVERS IN PEDESTRIAN WALKING ZONES	Revision Date	Drawing Number
	JULY 2025	SD C18.02

SUPPLEMENTARY STANDARD DETAIL DRAWING



STREET FURNITURE ANCHOR IN CONCRETE SIDEWALK



STREET FURNITURE ANCHOR IN BRICK PAVERS

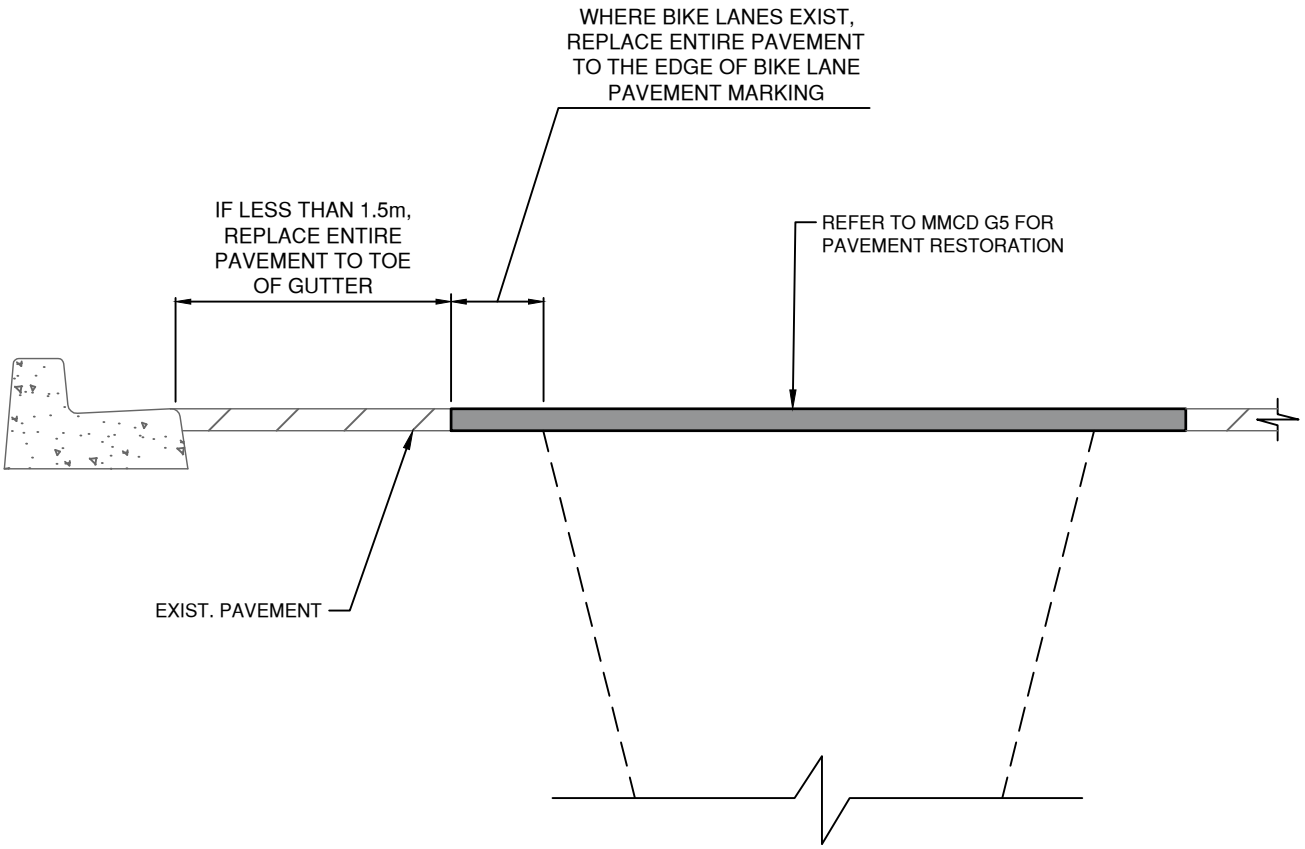
NOTES:

1. REFER TO MANUFACTURERS SPEC FOR ANY NON CITY SUPPLIED ITEMS (INCLUDING ANCHORS, FASTENING HARDWARE, AND STREET FURNITURE).
2. ANCHORING INTO PAVERS REQUIRES CONCRETE BED SEE DETAIL SD C9.05
3. STREET FURNITURE TO BE LOCATED OUTSIDE OF PEDESTRIAN CLEAR ZONE
4. ANCHORS NOT TO PENETRATE MORE THAN 100mm DEEP INTO CONCRETE
5. STAINLESS STEEL FASTENING HARDWARE REQUIRED
6. TAMPER PROOF FASTENING HARDWARE MAY BE REQUIRED AT DISCRETION OF COV
7. ANCHORS TO BE FLUSH WITH NUT TO AVOID TRIPPING HAZARD

NOT TO SCALE

STREET FURNITURE ANCORING DETAIL	Revision Date	Drawing Number
	JULY 2025	SD C18.03

SUPPLEMENTARY STANDARD DETAIL DRAWING



ELEVATION

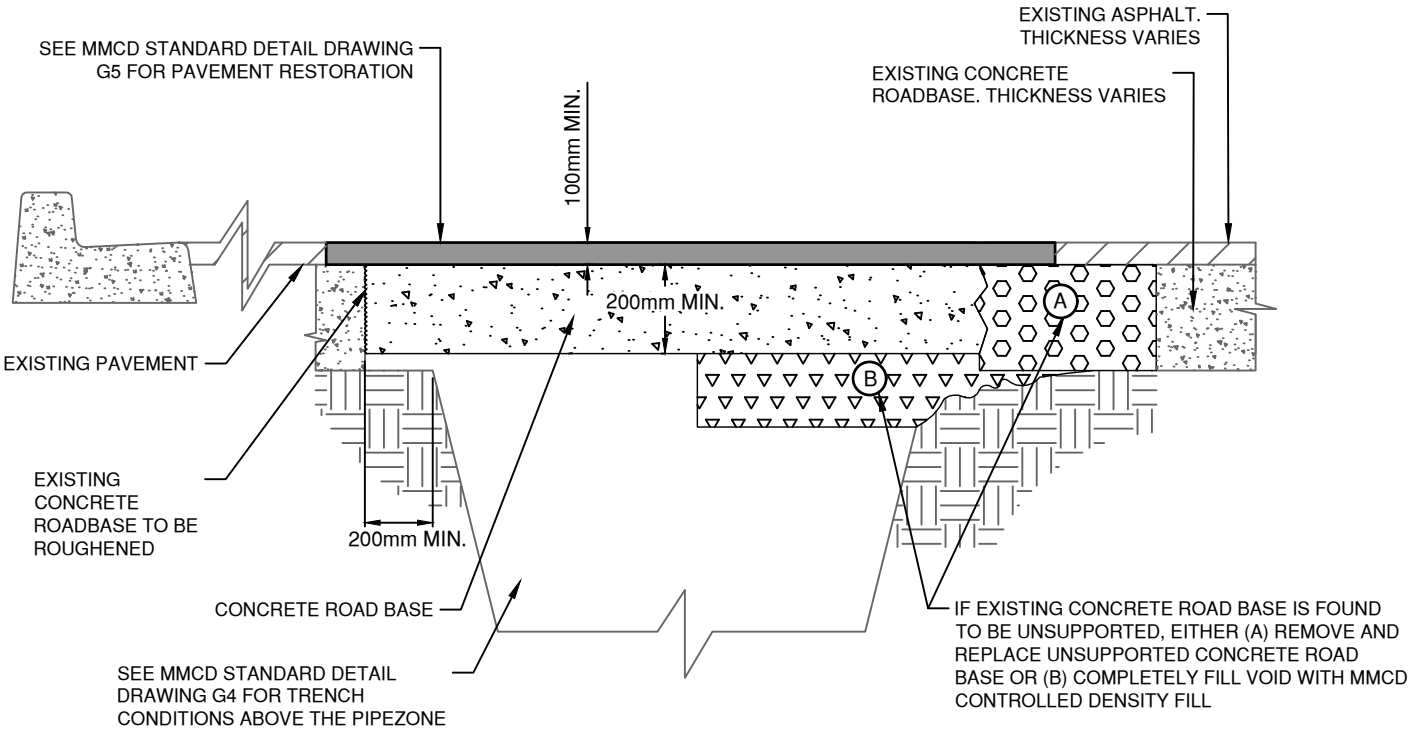
NOTES:

1. FURTHER ASPHALT RESTORATION MAY BE REQUIRED AT THE DISCRETION OF CITY OF VICTORIA DEPENDING ON PAVEMENT CONDITIONS. REFER TO CONTRACT DRAWINGS & DETAILS.
2. REFER TO MMCD G4 FOR TRENCH CONDITIONS ABOVE THE PIPE ZONE.

NOT TO SCALE

TRENCHING PAVEMENT RESTORATION	Revision Date	Drawing Number
	JUNE 2025	SD G5.01

SUPPLEMENTARY STANDARD DETAIL DRAWING



TRENCH RESTORATION IN CONCRETE ROADBASE

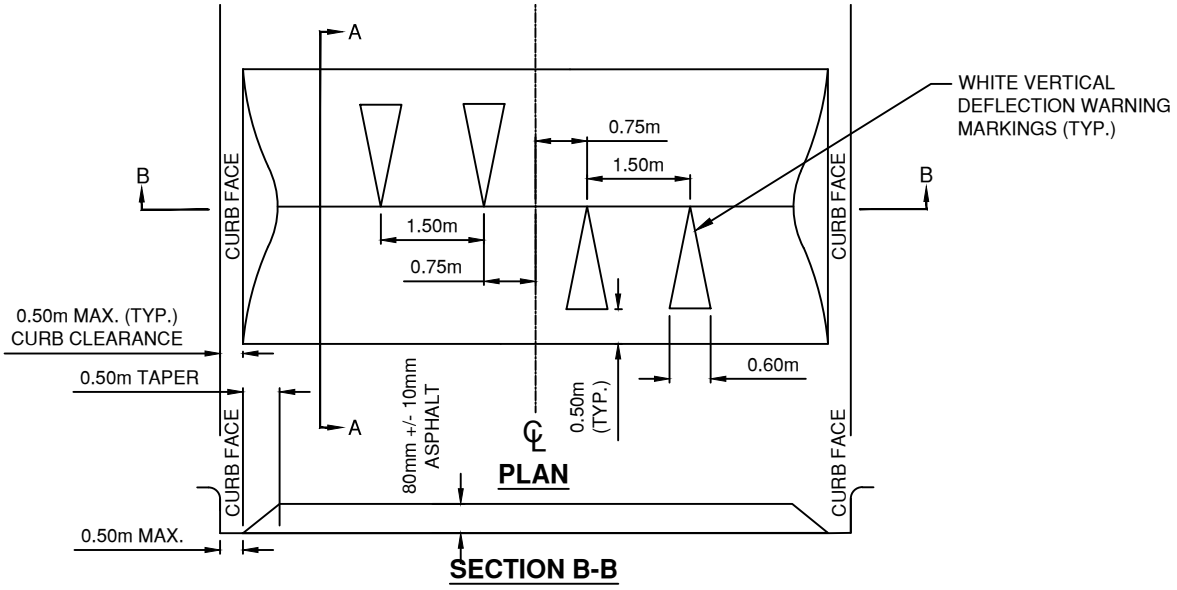
NOTES:

1. TOP OF CONCRETE ROAD BASE TO MATCH THE TOP EXISTING CONCRETE ROAD BASE BUT SHALL NOT BE LESS THAN 100mm FROM THE FINISHED ASPHALT SURFACE.
2. CITY OF VICTORIA MAY REQUEST FURTHER ASPHALT REMOVAL DEPENDING ON THE PAVEMENT CONDITIONS.
3. DOWEL NEW CONCRETE ROAD BASE INTO EXISTING AT THE DISCRETION OF THE CITY ENGINEER. IF THE EXISTING CONCRETE ROAD BASE IS SAW CUT, DOWELS SHALL BE REQUIRED . INSERT 30mm X 450mm EPOXY COATED PRE-FORMED TIE BARS SPACED AT 600mm CENTRES. DRILL 35mm HOLES ON 600mm CENTRES, 255mm DEEP, TO EXISTING CONCRETE, AND GROUT THE BARS USING A QUICK SETTING MORTAR. QUICK SETTING MORTAR.
4. CONCRETE TO BE 40 MPa.
5. ACCELERANT IS ALLOWED WITH THESE MIX CODES. A COPY OF THE CONCRETE SLIP SHALL BE REQUIRED TO THE CITY REPRESENTATIVE. CONCRETE SHALL REACH A MINIMUM OF 15MPa PRIOR TO PAVING. TRENCH SHALL BE SAFELY AND SECURELY STEEL PLATED WHILE CONCRETE CURES.

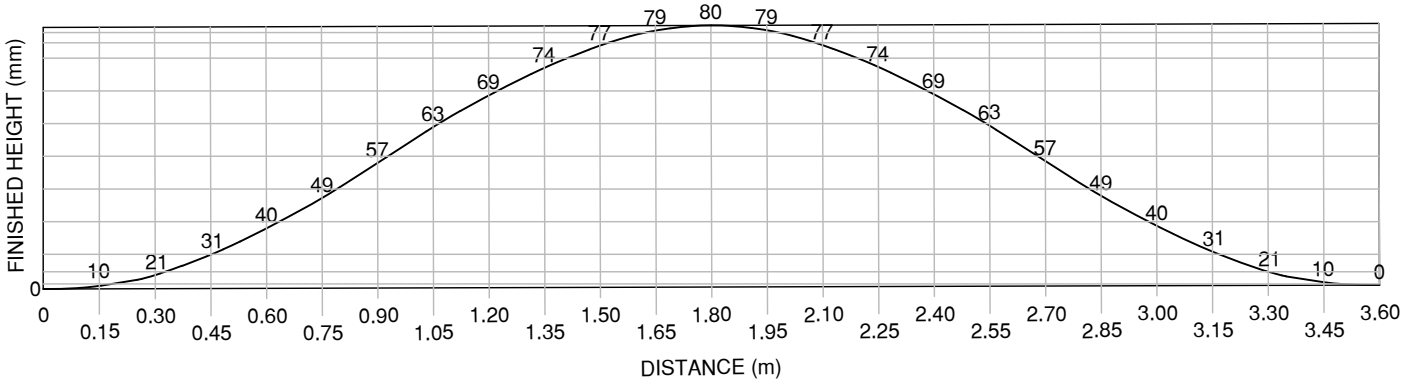
NOT TO SCALE

TRENCH RESTORATION CONCRETE ROADBASE	Revision Date	Drawing Number
	MAR. 2025	SD G5.02

SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION B-B



30km/hr SINUSOIDAL SPEED HUMP DEVELOPMENT
SECTION A-A

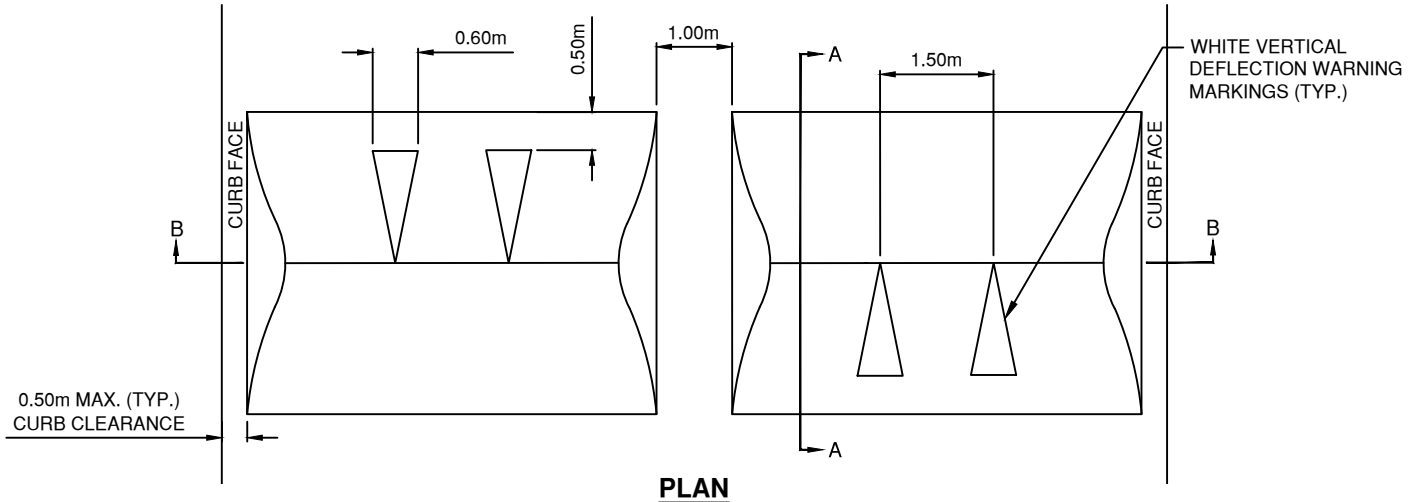
NOTES:

1. SITE ACCESS TO BE CONSIDERED IN LOCATING SPEED HUMP.
2. HAND PLACED ASPHALT TOLERANCE TO BE +/- 10mm FOR SPEED HUMPS.
3. SPEED HUMPS TO INCLUDE 450mm WIDE 50mm DEEP MILLED KEYS ON BOTH ENDS FOR WIDTH OF HUMP.

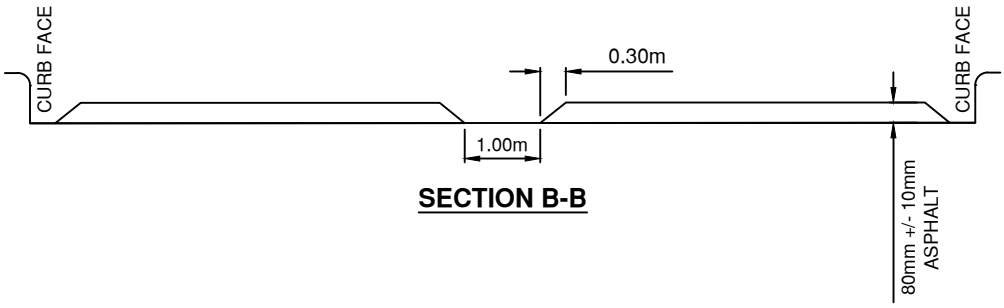
NOT TO SCALE

	Revision Date	Drawing Number
SPEED HUMP	**AUG 2025**	**SD R5.01**

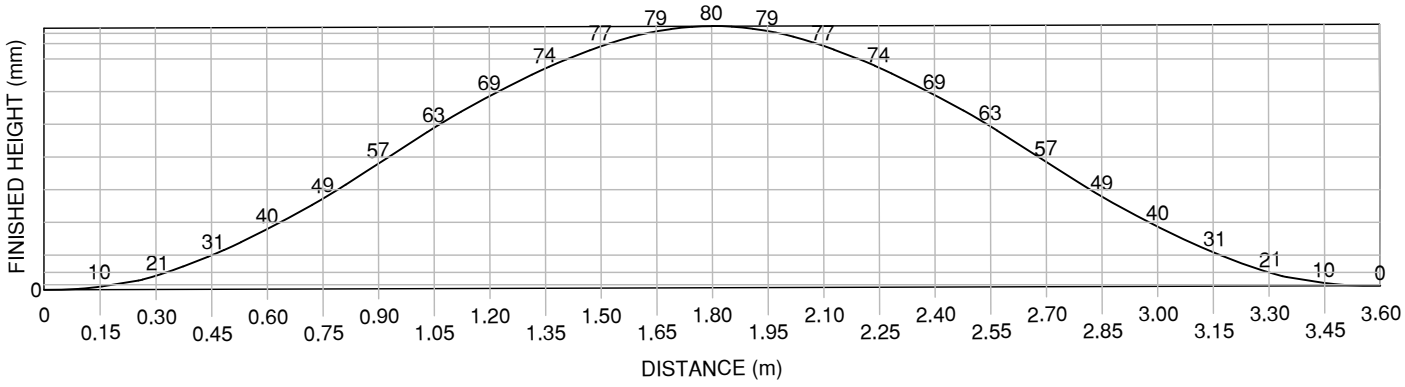
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION B-B



SINUSOIDAL SPEED HUMP DEVELOPMENT
SECTION A-A

NOTES:

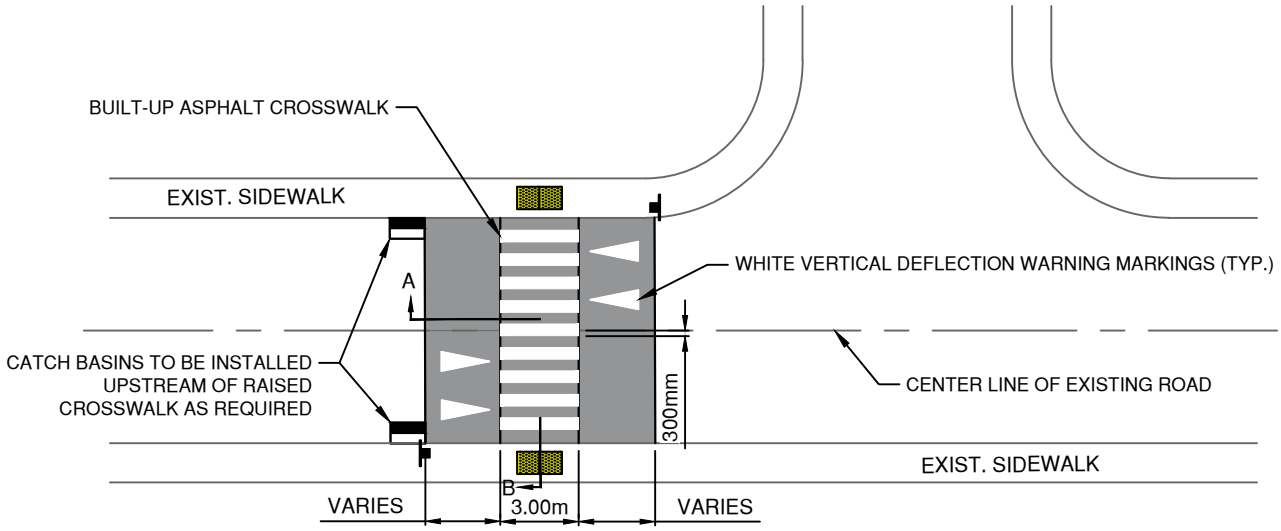
1. SITE ACCESS TO BE CONSIDERED IN LOCATING SPEED HUMP.
2. HAND PLACED ASPHALT TOLERANCE TO BE +/- 10mm FOR SPEED HUMPS.
3. SPEED HUMPS TO INCLUDE 450mm WIDE 50mm DEEP MILLED KEYS ON BOTH ENDS FOR WIDTH OF HUMP.

NOT TO SCALE

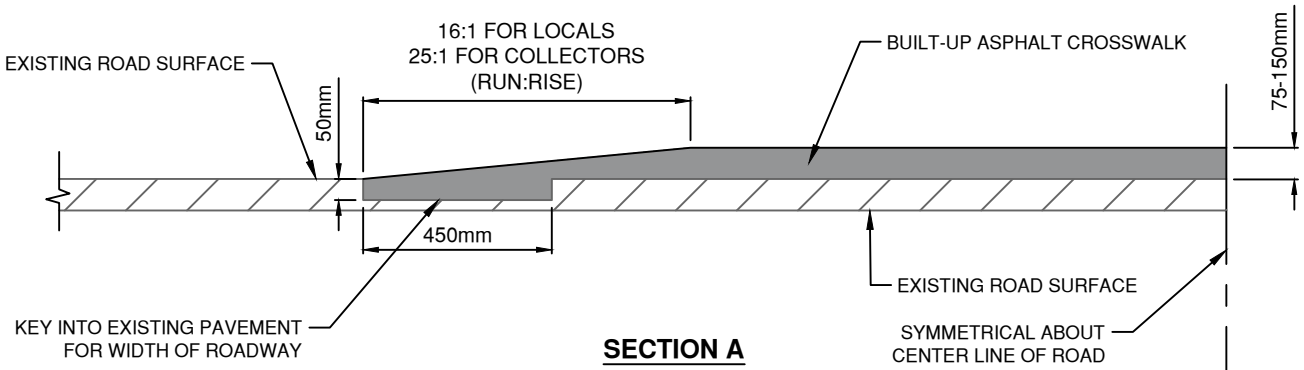
BIKE FRIENDLY SPEED HUMP

Revision Date	Drawing Number
AUG 2025	SD R5.02

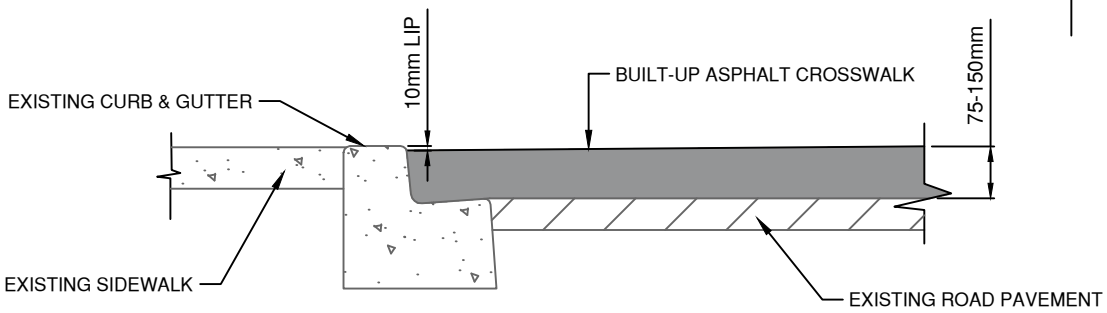
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION A



SECTION B

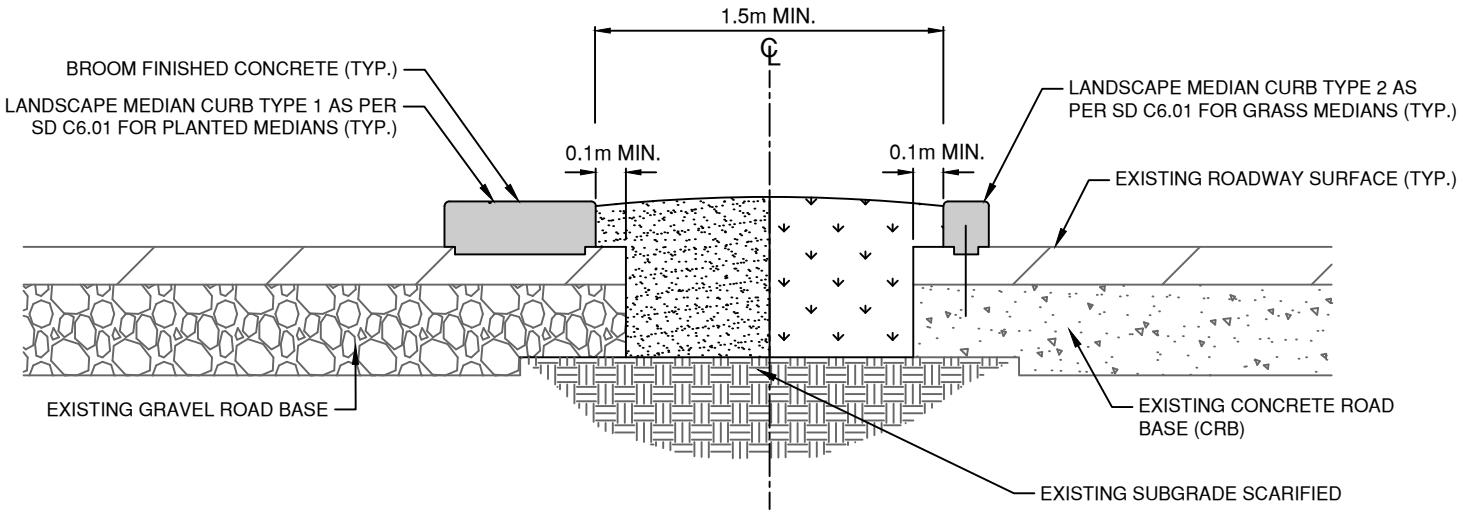
NOTES:

1. DUE TO EXISTING ROAD CROWN AND CURB HEIGHT VARIATIONS, THE HEIGHT OF RAISED CROSSWALKS AND LENGTH OF RAMP WILL VARY.
2. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE.

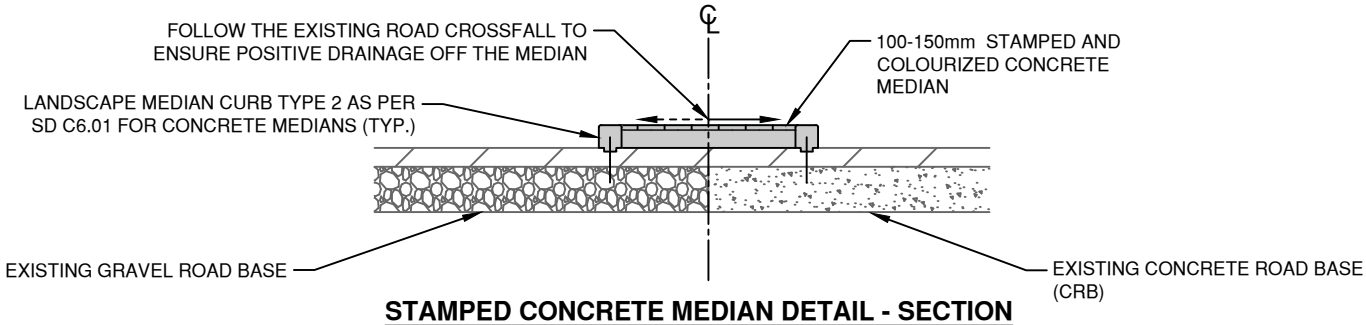
NOT TO SCALE

RAISED CROSSWALK	Revision Date	Drawing Number
	AUG 2025	SD R5.03

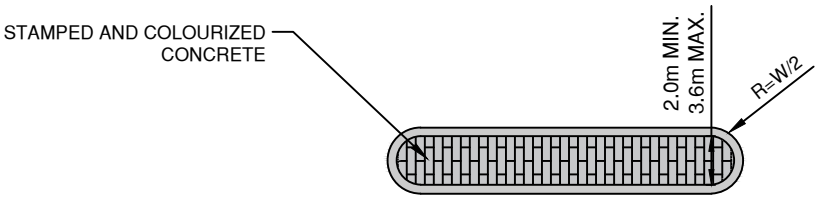
SUPPLEMENTARY STANDARD DETAIL DRAWING



LANDSCAPE MEDIAN DETAIL



STAMPED CONCRETE MEDIAN DETAIL - SECTION



STAMPED CONCRETE MEDIAN DETAIL - PLAN

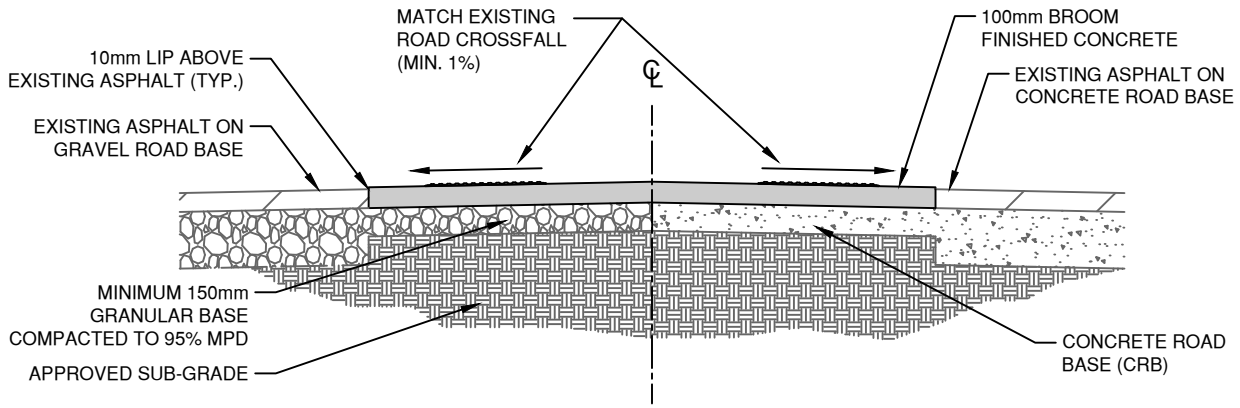
NOTES:

1. CONCRETE MEDIAN ISLANDS SHALL BE CONSTRUCTED AFTER ROAD PAVING IS COMPLETED, UNLESS OTHERWISE APPROVED BY CITY OF VICTORIA.
2. REFER TO PARKS SPECIFICATIONS FOR LANDSCAPE MEDIAN DESIGN INCLUDING PLANTING AND IRRIGATION DETAILS

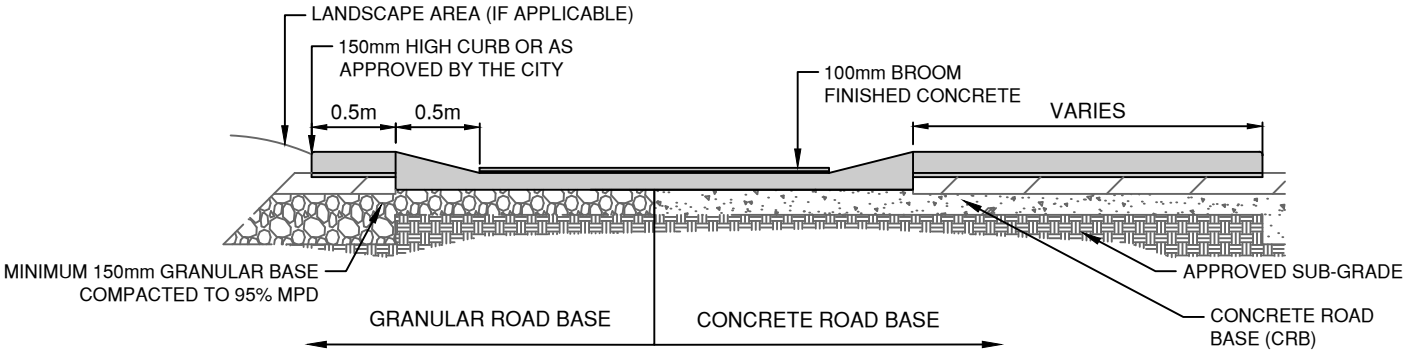
NOT TO SCALE

MEDIAN ISLAND	Revision Date	Drawing Number
	JUNE 2025	SD R7.01

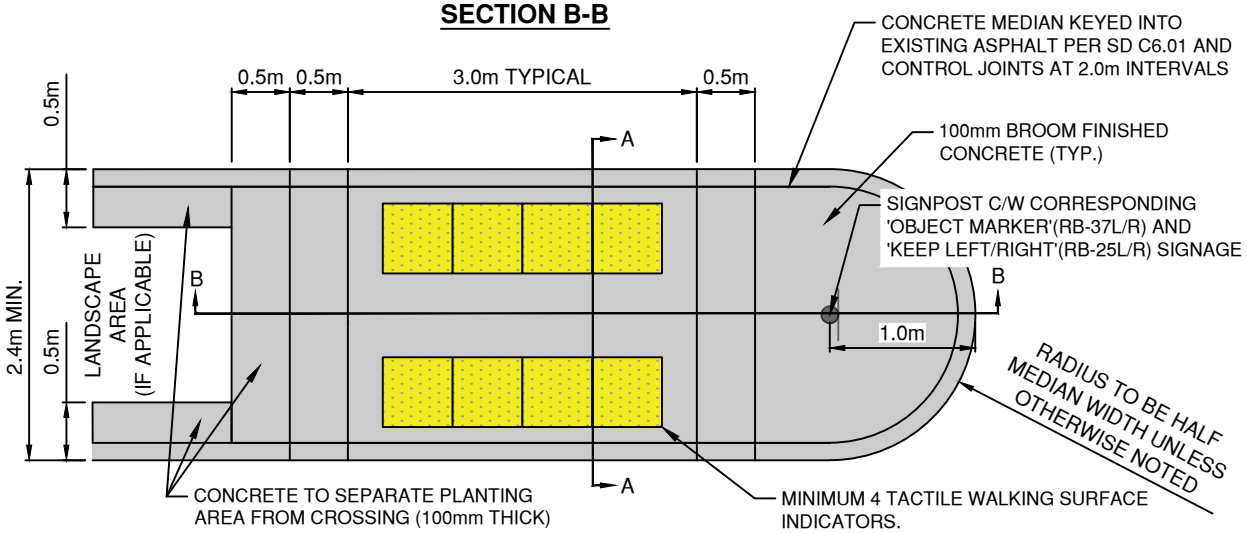
SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION A-A



SECTION B-B



PEDESTRIAN REFUGE/MEDIAN - ROADWAY GRADE (RAISED BULLNOSE)

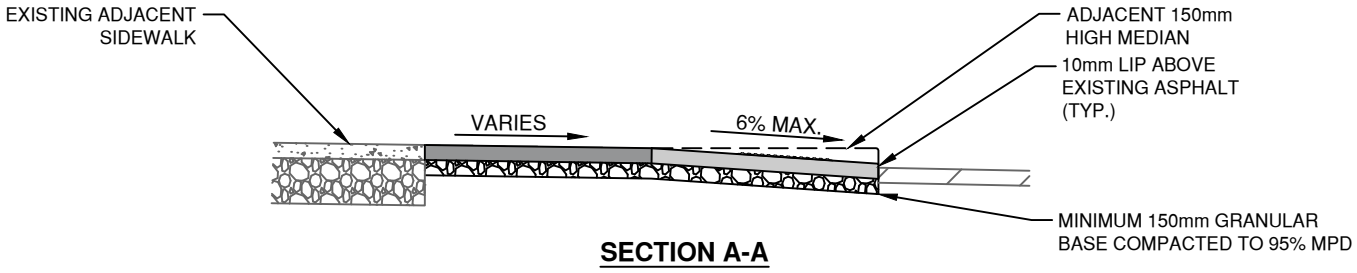
NOTES:

1. CONCRETE MEDIAN ISLANDS SHALL BE CONSTRUCTED AFTER ROAD PAVING IS COMPLETED, UNLESS APPROVED OTHERWISE BY THE CITY OF VICTORIA.
2. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE

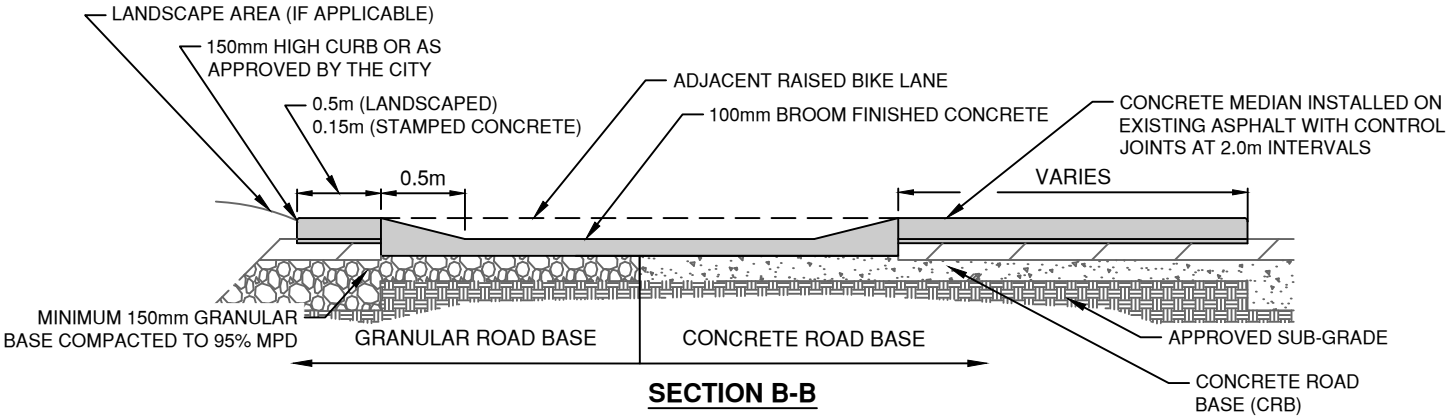
NOT TO SCALE

PEDESTRIAN REFUGE/MEDIAN ISLAND - ROADWAY GRADE	Revision Date	Drawing Number
	AUG 2025	SD R7.02

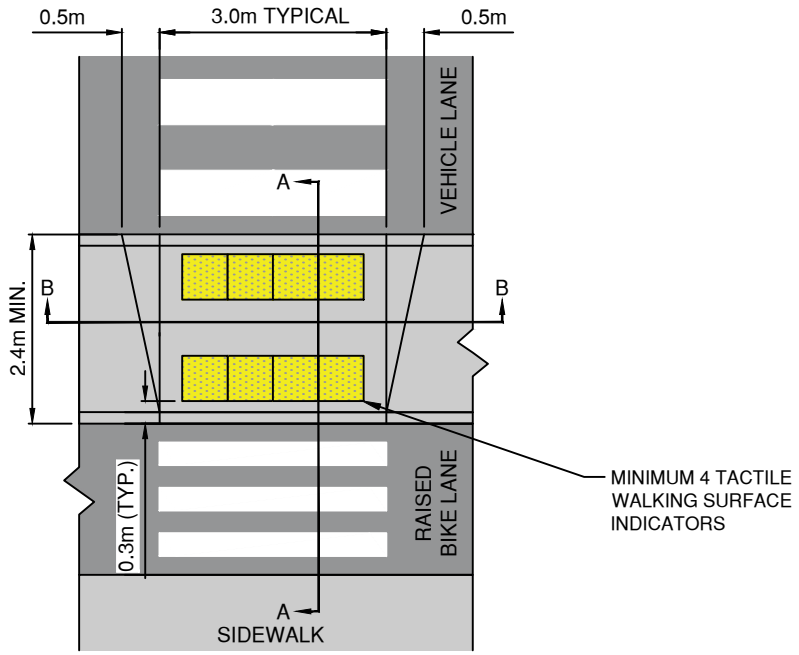
SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION A-A



SECTION B-B



PEDESTRIAN REFUGE/MEDIAN SIDEWALK GRADE

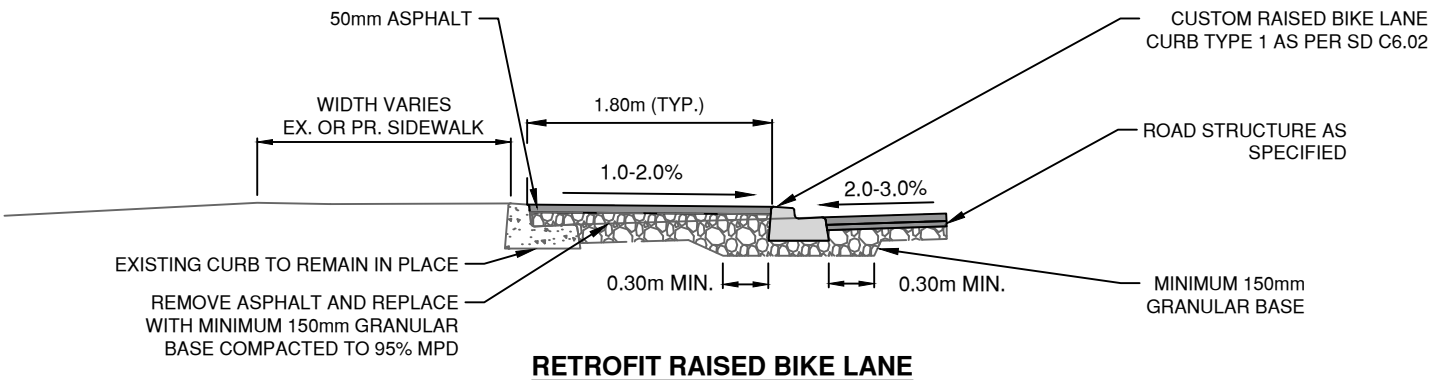
NOTES:

1. CONCRETE MEDIAN ISLANDS SHALL BE CONSTRUCTED AFTER ROAD PAVING IS COMPLETED UNLESS APPROVED OTHERWISE BY THE CITY OF VICTORIA
2. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE

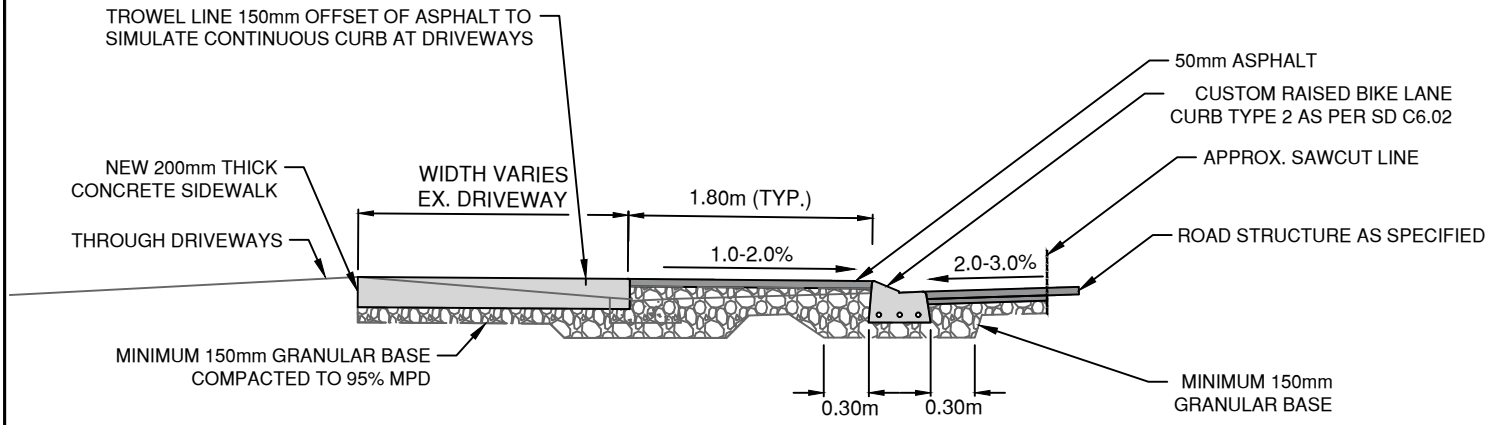
NOT TO SCALE

PEDESTRIAN REFUGE/MEDIAN ISLAND - SIDEWALK GRADE	Revision Date	Drawing Number
	JUNE 2025	SD R7.03

SUPPLEMENTARY STANDARD DETAIL DRAWING



RETROFIT RAISED BIKE LANE



RAISED BIKE LANE AT DRIVEWAY

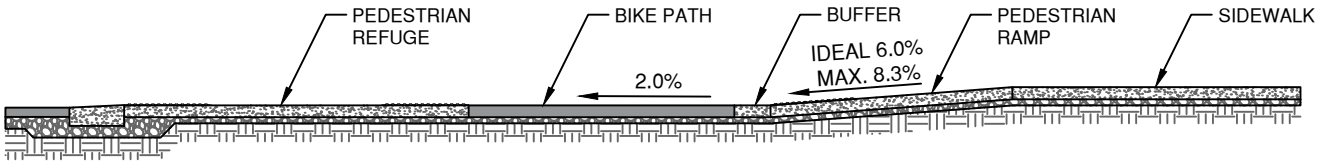
NOTES:

1. DESIGN DETAILS TO BE CONFIRMED BY CoV DURING DESIGN PROCESS

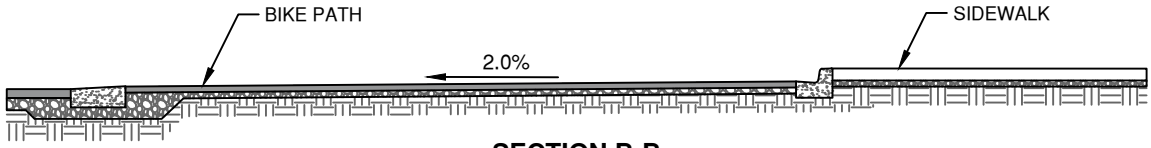
NOT TO SCALE

GRADE RAISED BIKE LANE	Revision Date	Drawing Number
	JUNE 2025	SD R7.04

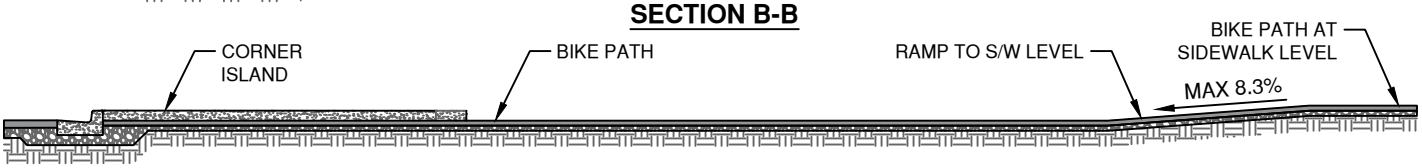
SUPPLEMENTARY STANDARD DETAIL DRAWING



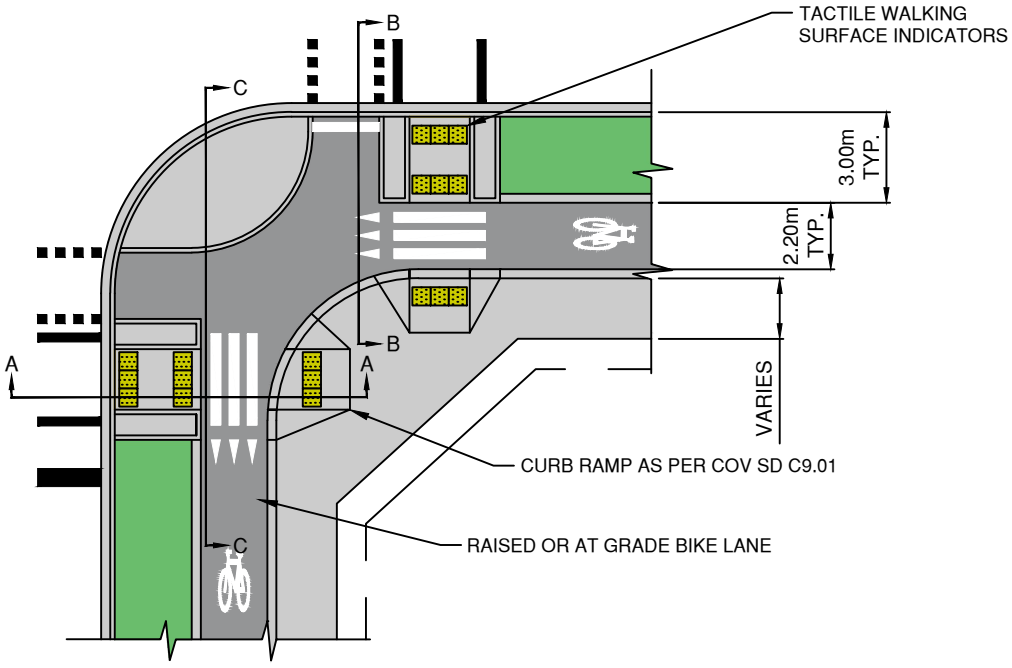
SECTION A-A



SECTION B-B



SECTION C-C



PROTECTED INTERSECTION

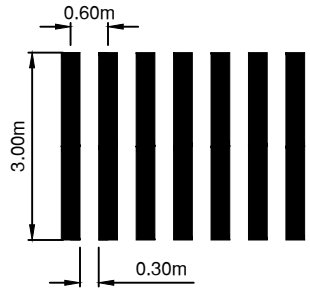
NOTES:

1. PLACEMENT AND ORIENTATION OF TACTILE WALKING SURFACE INDICATORS SUBJECT TO CHANGE
2. DESIGN DETAILS TO BE CONFIRMED BY CoV DURING DESIGN PROCESS
3. SEE TRENCH DETAIL SD E3.1a FOR ELECTRICAL CONDUIT INSTALLATION, AT CoV DISCRETION

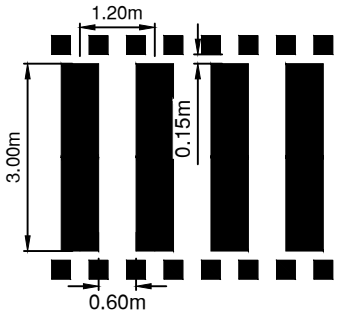
NOT TO SCALE

PROTECTED INTERSECTION ARRANGEMENT	Revision Date	Drawing Number
	SEPT 2025	SD R8.01

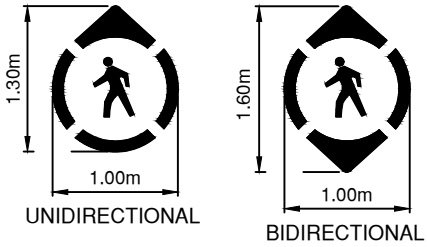
SUPPLEMENTARY STANDARD DETAIL DRAWING



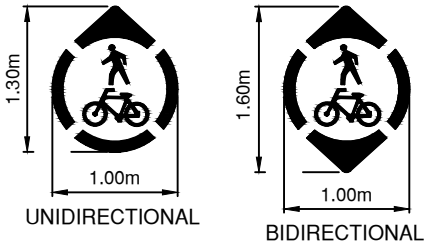
WHITE 300mm ZEBRA MARKINGS (PROTECTED BICYCLE LANE CROSSING)



WHITE 600mm ZEBRA MARKINGS (MOTOR VEHICLE LANE CROSSING) WITH BICYCLE CROSSRIDE



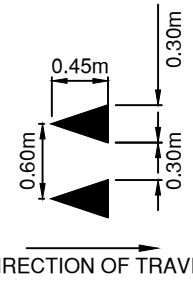
PEDESTRIAN PATH SYMBOLS



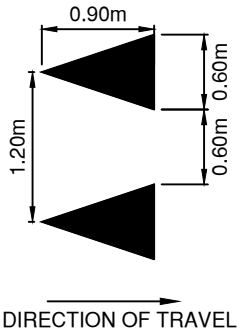
MULTI USE SYMBOLS



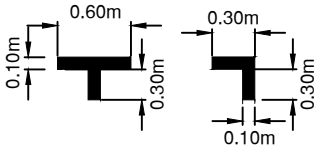
WHITE ELEPHANT'S FEET MARKINGS



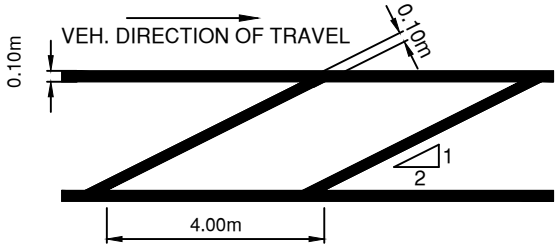
BICYCLE YIELD TRIANGLES



VEHICLE YIELD TRIANGLES



WHITE PARALLEL PARKING PAVEMENT MARKING



BIKE LANE BUFFER



WHITE 600mm VEHICLE STOP BAR



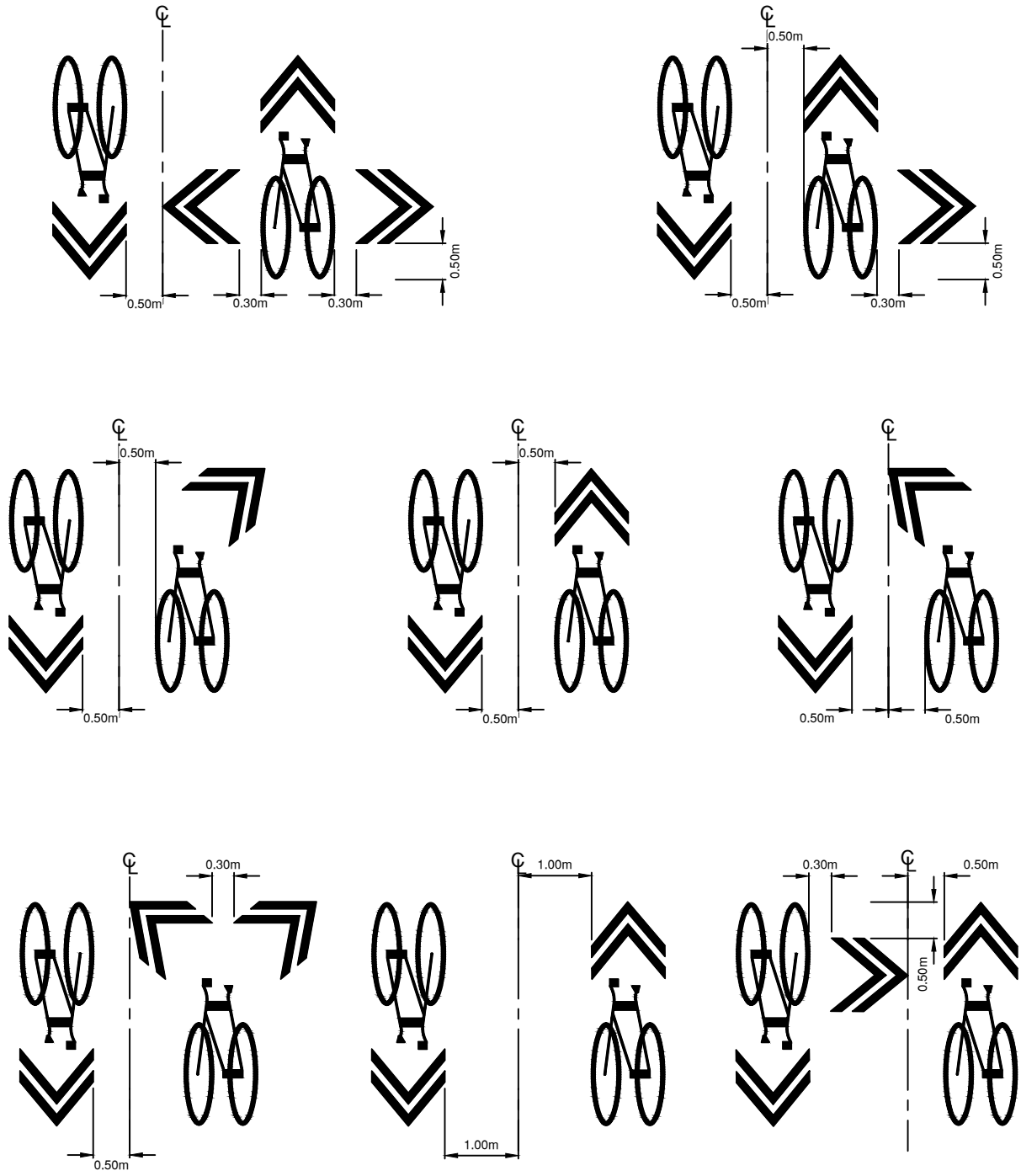
WHITE 300mm BIKE STOP BAR

NOTES:

1. ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC UNLESS OTHERWISE SPECIFIED BY THE CITY OF VICTORIA.

NOT TO SCALE

	Revision Date	Drawing Number
PAVEMENT MARKINGS 1	**AUG 2025**	**SD R8.02**



SHARROW GROUPINGS

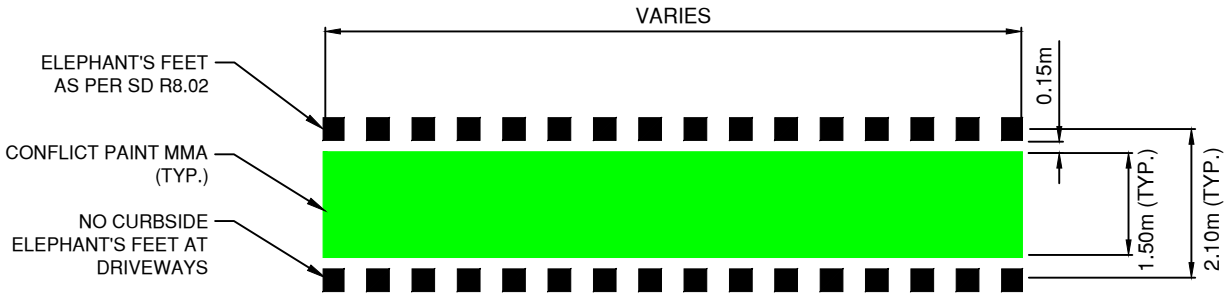
NOTES:

1. ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC UNLESS OTHERWISE SPECIFIED BY THE CITY OF VICTORIA
2. WIDER SPACING TO BE CONSIDERED WHERE ROAD WIDTH ALLOWS, OR CONDITIONAL UPON PARKING LAYOUTS

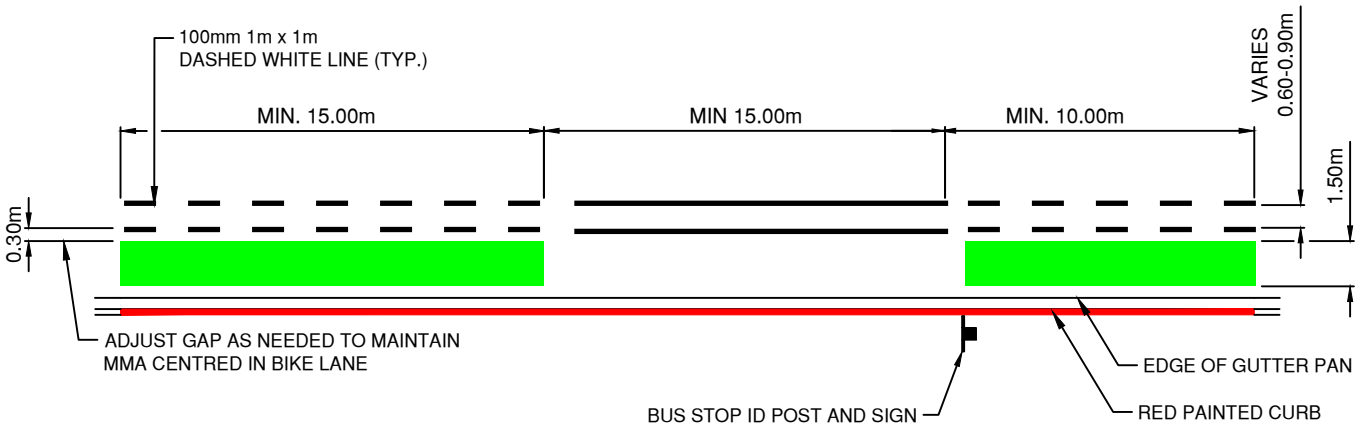
NOT TO SCALE

PAVEMENT MARKINGS 2	Revision Date	Drawing Number
	JUNE 2025	SD R8.03

SUPPLEMENTARY STANDARD DETAIL DRAWING



CROSSRIDE AT INTERSECTIONS AND DRIVEWAYS



BUS STOP IN BIKE LANE

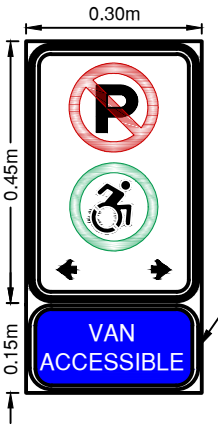
NOTES:

1. ALL PAVEMENT MARKINGS AND SIGNS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION UNLESS OTHERWISE NOTED
2. REFER TO BC TRANSIT DESIGN GUIDE FOR TYPICAL BUS STOP LAYOUTS
3. CONFLICT PAINT METHYL-METHACRYLATE (MMA):
   - 3.1 ULTRA-VIOLET ("UV") STABLE;
   - 3.2 ISO CERTIFIED DURABLE ROAD MARKING MATERIAL;
   - 3.3 HAVE MINIMUM SKID RESISTANCE OF 55 BPN;
   - 3.4 COLOUR MUST MATCH THE CITY'S CURRENT GREEN TINT (PANTONE #368) WHICH CONFORMS TO THE NEW FHWA FLUORESCENT GREEN STANDARDS; AND
   - 3.5 GLASS BEADS MUST CONFORM TO AASHTO M247 TYPE 1 (STANDARD GRADATION) SPECIFICATIONS
4. WHITE AND YELLOW PAVEMENT MARKINGS WITHIN MMA CONFLICT PAINT TO BE MMA
5. ELEPHANTS FEET MARKINGS FOR CONSIDERATION THROUGH DRIVEWAYS

NOT TO SCALE

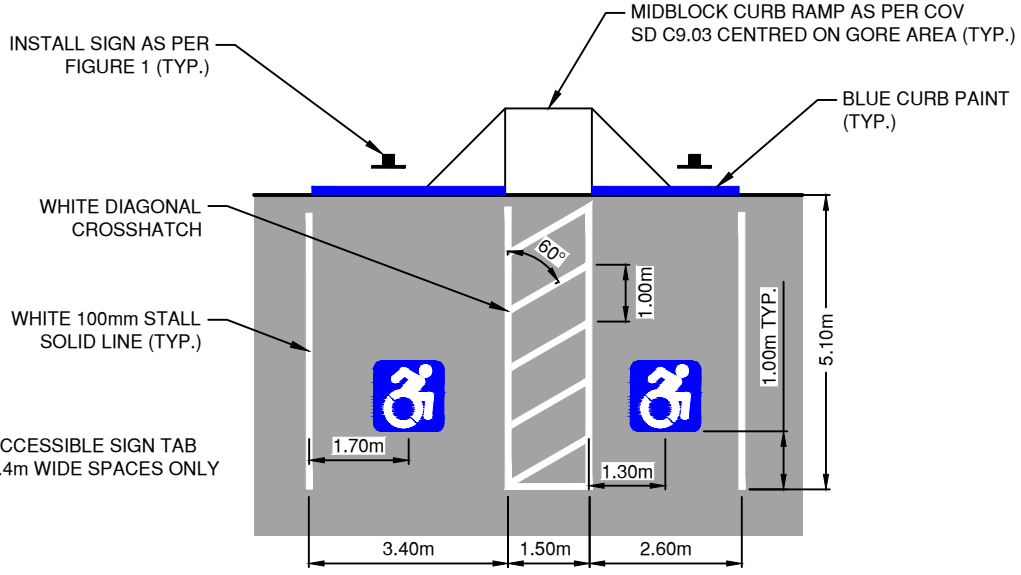
BIKE LANE CROSSING AT INTERSECTIONS, DRIVEWAYS, AND BUS STOPS	Revision Date	Drawing Number
	AUG 2025	SD R9.01

SUPPLEMENTARY STANDARD DETAIL DRAWING

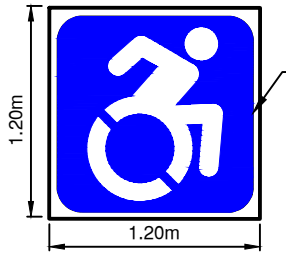


VAN ACCESSIBLE SIGN TAB FOR 3.4m WIDE SPACES ONLY

FIGURE 1
VERTICAL ACCESSIBLE PARKING SPACE SIGN

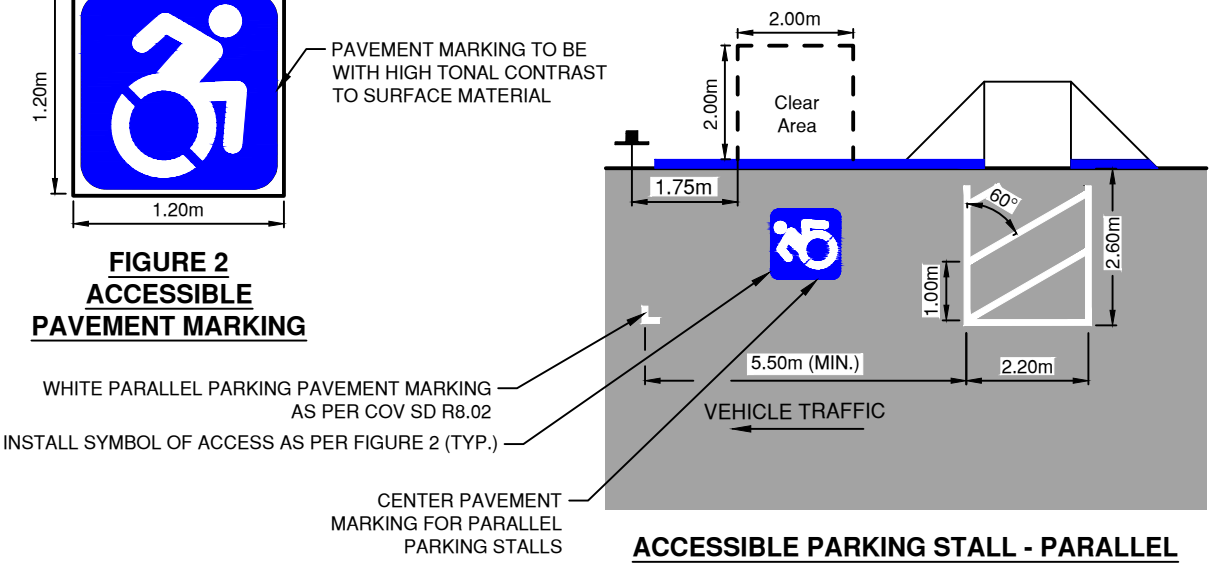


ACCESSIBLE PARKING STALL - 90 DEGREE



PAVEMENT MARKING TO BE WITH HIGH TONAL CONTRAST TO SURFACE MATERIAL

FIGURE 2
ACCESSIBLE PAVEMENT MARKING



ACCESSIBLE PARKING STALL - PARALLEL

NOTES:

1. ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC UNLESS SPECIFIED OTHERWISE BY THE CITY OF VICTORIA.
2. ACCESSIBLE PARKING SPACES AND SURROUNDING AREAS:
   - 2.1 MUST HAVE A FIRM, STABLE AND SLIP RESISTANT SURFACE
   - 2.2 SHOULD BE LEVEL AND HAVE A MAX SLOPE OF 5% IN ANY DIRECTION
   - 2.3 ROAD PAINT MARKING LINES SHALL HAVE A WIDTH OF 100mm

NOT TO SCALE

ACCESSIBLE PARKING STALLS

Revision Date	Drawing Number
JUNE 2025	SD R9.02

8.2. Electrical

The following MMCD 2019 Standard Detail Drawings are to be used or replaced as indicated below:

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
CE1.1	Concrete Base Index		Adopt MMCD Drawing
		SD CE1.1a	Poured in Place Concrete Base Index
CE1.2	Type A and B Sonotube Concrete Bases		Adopt MMCD Drawing
		SD CE1.2a	Q1 Concrete Base for City of Victoria Cluster Lights
		SD CE1.2b	Q2 Concrete Base for City of Victoria Cluster Lights
		SD CE1.2c	Q3 Concrete Base for Decorative Light (Pedestrian) Pole
		SD CE1.2d	Q4 Concrete Base for Chinatown Pole
CE1.3	Type C, C1, C2 & C3 Trapezoidal Shape Concrete Bases		Adopt MMCD Drawing for Type C Base Only (Do Not Use for Type C1-3 Bases)
CE1.4	Type C, C1, C2 & C3 Trapezoidal Shape Concrete Bases		Adopt MMCD Drawing for Type C Base Only (Do Not Use for Type C1-3 Bases)
CE1.5	Type C4 & C5 Spread Footing Shape Concrete Bases		Adopt MMCD Drawing for Type C4 Base Only (Do Not Use for Type C5 Base)
CE1.6	Type C4 & C5 Spread Footing Concrete Bases		Adopt MMCD Drawing for Type C4 Base Only (Do Not Use for Type C5 Base)
CE1.7	Type C4 & C5 Spread Footing Concrete Bases		Adopt MMCD Drawing for Type C4 Base Only (Do Not Use for Type C5 Base)
CE1.8	Concrete Bases V1 & V2 Poured in Place Concrete Bases		Adopt MMCD Drawing
CE1.9	Concrete Bases V1 & V2 Poured in Place Concrete Bases		Adopt MMCD Drawing
CE1.10	Type E2 Trapezoidal Shape Concrete		Adopt MMCD Drawing

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
	Base		
CE1.11	Type E2 Trapezoidal Shape Concrete Base		Adopt MMCD Drawing
CE1.12	Type F1, L1 & S1 Spread Footing Shape Concrete Bases		Adopt MMCD Drawing
CE1.13	Types F1, L1 & S1 Spread Footing Shape Concrete Bases		Adopt MMCD Drawing
CE1.14	Types F2, L2 & S2 Trapezoidal Shape Concrete Bases		Adopt MMCD Drawing
CE1.15	Types F2, L2 & S2 Trapezoidal Shape Concrete Bases		Adopt MMCD Drawing
CE1.16	Types F2, L2 & S2 Trapezoidal Shape Concrete Bases		Adopt MMCD Drawing
CE1.17	1” ø Anchor Bolts		Adopt MMCD Drawing
CE1.18	Anchor Bolt Cage for Type 6, 7, & S Poles		Adopt MMCD Drawing
CE1.19	Anchor Bolt Cage for Type L Poles		Adopt MMCD Drawing
CE1.20	Type M2 Concrete Base		Adopt MMCD Drawing
CE1.21	Type M2 Concrete Base		Adopt MMCD Drawing
CE1.22	Anchor Bolt Cage for Type M Poles		Adopt MMCD Drawing
CE1.23	Concrete Base for Post Mounted Flasher Luminaire (Precast)		Do Not Use
CE1.24	Pole Base Installation Details		Adopt MMCD Drawing
CE1.25	Pole Base Installation Details		Adopt MMCD Drawing

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
E1.1	Type M (Nema Cabinet) Concrete Controller Base		Do Not Use
		SD E1.1a	332 Cabinet Base
		SD E1.1b	Service Kiosk Base
E1.2	Type P (Nema Cabinet) Concrete Controller Base		Do Not Use
E1.3	Model 170 Concrete Controller Base		Do Not Use
E1.4	Controller Installation (For Type P & M Cabinets)		Do Not Use
E1.5	Controller Installation (For Model 170 Cabinets)		Do Not Use
E1.6	Type F Controller Pedestal		Do Not Use
E1.7	Type F Controller Pedestal		Do Not Use
E2.1	Round Plastic Junction Boxes		Do Not Use
		SD E2.1a	City Light Junction Box (Existing Only)
		SD E2.1b	City Light Junction Box- Casting Detail (Existing Only)
		SD E2.1c	Traffic Signal Junction Box (Existing Only)
		SD E2.1d	Traffic Signal Junction Box - Casting Details (Existing Only)
		SD E2.1e	Round Steel Casting for Roadway Applications (Existing/Retrofit Only)
		SD E2.1f	City Street Light Junction Box
		SD E2.1g	City Traffic Signal Junction Box
		SD E2.1h	Typical Junction Box Installation

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
E2.2	Type 37 and 66 Concrete Junction Boxes		Do Not Use
E2.3	Large Concrete Junction Boxes		Adopt MMCD Drawing
E2.4	Large Concrete Junction Boxes		Adopt MMCD Drawing
E2.5	Concrete Vault		Adopt MMCD Drawing *Alternatively: MoTT SSHC SP635 – 1.3.4
E2.6	Concrete Vault		Adopt MMCD Drawing *Alternatively: MoTT SSHC SP635 – 1.3.4
E3.1	Underground Conduit in Paved Areas		Do Not Use
E3.2	Underground Conduit in Non-Paved Areas		Do Not Use
		SD E3.1a	Conduit Trench Detail
E4.1	Luminaire Pole (Type 2 Shaft)		Adopt MMCD Drawing
		SD E4.1a	One Piece Street Light Pole
E4.2	Luminaire Pole (Type 2 Shaft) - Details		Adopt MMCD Drawing
E4.3	Signal Pole (Type 1 Shaft)		Adopt MMCD Drawing
E4.4	Signal Pole (Type 1 Shaft) - Details		Adopt MMCD Drawing
E4.5	Signal Pole (Type 3 Shaft)		Not Typically Used – Confirm with City for Approval
E4.6	Signal Pole (Type 3 Shaft) - Details		Not Typically Used – Confirm with City for Approval
E4.7	Signal Pole (Type 6 Shaft)		Not Typically Used – Confirm with City for Approval
E4.8	Signal Pole (Type 6 Shaft) - Details		Not Typically Used – Confirm with City for Approval
E4.9	Signal Pole (Type 7 Shaft)		Adopt MMCD Drawing
E4.10	Signal Pole (Type 7 Shaft) - Details		Adopt MMCD Drawing

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
E4.11	Signal Pole (Type S Shaft)		Adopt MMCD Drawing
E4.12	Signal Pole (Type S Shaft)		Adopt MMCD Drawing
E4.13	Signal Pole (Type S Shaft) - Details		Adopt MMCD Drawing
E4.14	Signal Pole (Type L Shaft)		Adopt MMCD Drawing
E4.15	Signal Pole (Type L Shaft)		Adopt MMCD Drawing
E4.16	Signal Pole (Type L Shaft) - Details		Adopt MMCD Drawing
E4.17	Type M Signal Pole Installation Details		Adopt MMCD Drawing
E4.18	Type M Signal Pole Installation Details		Adopt MMCD Drawing
E4.19	Type M Signal Pole Installation Details		Adopt MMCD Drawing
E4.20	Signal Posts (Type 4A and 5 Shafts)		Do Not Use
		SD E4.20a	Signal Posts (Type 4A, 5 and Custom 3m Shafts)
E4.21	Signal Posts (Type 4A and 5 Shafts)		Adopt MMCD Drawing
E4.22	Post Top Luminaire Poles		Adopt MMCD Drawing
		SD E4.22a	City of Victoria Cluster Lights Type 'A' & 'B'
		SD E4.22b	City of Victoria – Standardized Pedestrian Poles and Fixtures
E4.23	Post Top Luminaire Poles		Adopt MMCD Drawing
E4.24	Service Base		Not Typically Used – Confirm with City for Approval
E4.25	Pole Accessories		Adopt MMCD Drawing
E5.1	Post Top Signal Head Mounting		Do Not Use
E5.2	Side of Pole Signal Head Mounting		Adopt MMCD Drawing

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
	(Method 1)		
E5.3	Side of Pole Signal Head Mounting (Method 2)		Do Not Use
		SD E5.3a	Side of Pole Pedestrian & Audible Signal Head Mounting (Existing/Retrofit Only) (Side Mount)
E5.4	Side of Pole Signal Head Mounting (Method 3)		Do Not Use
E5.5	Overhead Signal Head Mounting (Spring Cushion End Hanger Method)		Do Not Use
E5.6	Overhead Signal Head Mounting (Spring Cushion Mid Hanger Method)		Do Not Use
E5.7	Overhead Signal Head Mounting (Plumbizer Method)		Do Not Use
E5.8	Overhead Signal Head Mounting (Plumbizer Method)		Do Not Use
E5.9	Overhead Signal Head Mounting (Adjustable Bracket Method)		Adopt MMCD Drawing
E5.10	Overhead Signal Head Mounting on Pole Arm (Ball Hanger Method)		Do Not Use
E5.11	Overhead Signal Head Mounting on Span Wire (Ball Hanger Method)		Do Not Use
E5.12	Audible Signals		Not Typically Used – Confirm Mounting Method with City if Used
E5.13	Heads, Fire Signal Signs		Adopt MMCD Drawing
		SD E5.14a	Pole, Junction Box and Conduit Placement - Dual Curb Ramp
		SD E5.14b	Pole, Junction Box and Conduit Placement – Single Let Down With Tactiles
		SD E5.14c	Pole, Junction Box and Conduit Placement – Protected Intersection

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
		SD E5.14d	Signal Mounting Heights
E5.15	Internally Illuminated Pedestrian Crosswalk Sign		Not Typically Used
		SD E5.16	Video Detection Detail and Wiring
		SD E5.17	CCTV Camera Detail and Wiring
		SD E5.18	Rectangular Rapid Flashing Beacon (RRFB) Pole Details (Solar and Hardwired)
E6.1	Pedestrian Pushbutton with Separate Sign		Do Not Use
E6.2	Pedestrian Pushbutton with Integral Sign		Adopt MMCD Drawing
E6.3	Pedestrian Pushbutton Post		Adopt MMCD Drawing
E7.1	Underground Dip Service		Do Not Use
		SD E7.1a	Overhead Dip Service for Signals and Street Lights (BC Hydro Approval Required)
		SD E7.1b	Overhead Dip Service for Signals and Street Lights c/w Metered Service Panel
		SD E7.1c	Wiring Diagram - Metered Service Panel
E7.2	Service Panel in Service Base (Mounting Details)		Not Typically Used – Confirm with City for Approval
E7.3	Service Panel in Service Base (Conduit Details)		Not Typically Used – Confirm with City for Approval
E7.4	Service Panel in Service Base (Mounting Details)		Not Typically Used – Confirm with City for Approval
E7.5	40A (120/240V) Street Lighting Service Panel in Service Base (Wiring Diagram)		Not Typically Used – Confirm with City for Approval

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
E7.6	100A (120/240V) Traffic Signal /Street Lighting Service Panel in Service Base (Wiring Diagram)		Not Typically Used – Confirm with City for Approval
E7.7	100A Traffic Signal / Street Lighting Service Panel on Pole (Mounting Details)		Adopt MMCD Drawing
E7.8	100A Traffic Signal / Street Lighting Service Panel on Pole (Mounting Details)		Adopt MMCD Drawing
E7.9	100A (120/240V) Traffic Signal / Street Lighting Service Panel (Wiring Diagram)		Adopt MMCD Drawing
E7.10	Service Ground Plate Installation Detail		Do Not Use
		SD E7.10a	Ground Plate Installation Details
E7.11	Luminaire Wiring in Pole Handhole		Adopt MMCD Drawing
		SD E7.11a	Luminaire Pole Wiring Diagram
E7.12	Signal Cable Wiring in Pole Handhole		Adopt MMCD Drawing
E7.13	Signal Cable Colour Code Sample (Ontario Spec Method)		Do Not Use
E7.14	Minimum Clearances to Overhead Powerlines		Adopt MMCD Drawing
E7.15	Pole Mounted Receptacle		Adopt MMCD Drawing
E7.16	Telephone Demarcation Enclosure Mounting Details on Controller or Pole		Do Not Use

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
E7.17	Conduit on Wood Utility Pole		Do Not Use
E7.18	Conduit Tie-in to Telephone Vault, Manhole or Junction Box		Do Not Use
E8.1	Typical Detector Loop types		Do Not Use
		SD E8.1a	Traffic Signal Loops & Wiring
		SD E8.1b	Bike Loop Detail 1m x 2m Quadrupole Loops
E8.2	Detector Loops		Adopt MMCD Drawing
E8.3	Detector Loops		Adopt MMCD Drawing
E8.4	Detector Loop to Shielded Cable Splices		Adopt MMCD Drawing
E8.5	Detector Loop Procedures and Rules		Adopt MMCD Drawing
E8.6	Detector Loop Procedures and Rules		Adopt MMCD Drawing
E8.7	Typical Layout for Diamond and Round Traffic Signal Detector Loops		Do Not Use
		SD E8.7a	Typical Layout for Round Vehicle Detector Loops
		SD E8.7b	Typical Layout for Rectangular Vehicle Count Loops
E8.8	Pre-formed Diamond Detector Loop Installation Details		Do Not Use
E8.9	Pre-formed Diamond Detector Loop Installation Details		Do Not Use
E8.10	Pre-formed Diamond Detector Loop Installation Details		Do Not Use
E9.1	Flasher Luminaire and Signs on Perforated		Do Not Use

ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
	Steel Tubing		
E9.2	Flasher Luminaire and Signs on Perforated Steel Tubing		Do Not Use
E9.3	Flasher Luminaire and Signs on Steel Pole		Do Not Use
E9.4	Flasher Luminaire and Signs on Steel Pole		Do Not Use
E10.1	Overhead Extruded Aluminum Advance Warning Sign Assembly Details		Do Not Use
E10.2	Overhead Extruded Aluminum Advance Warning Sign Installation Details		Do Not Use
E10.3	Overhead Extruded Aluminum Advance Warning Sign Installation Details		Do Not Use
E10.4	Overhead Extruded Aluminum Sign Installation Details		Do Not Use
E10.5	Overhead Extruded Aluminum Sign Installation Details		Do Not Use
E10.6	Overhead Extruded Aluminum Sign Assembly Details		Do Not Use
E10.7	Overhead Extruded Aluminum Sign Assembly Details		Do Not Use
E10.8	Overhead Extruded Aluminum Sign Assembly Details		Do Not Use
E10.9	Overhead Extruded Aluminum Sign Luminaire Installation Details		Do Not Use
E10.10	Junction Box Installation Details on Sign		Do Not Use

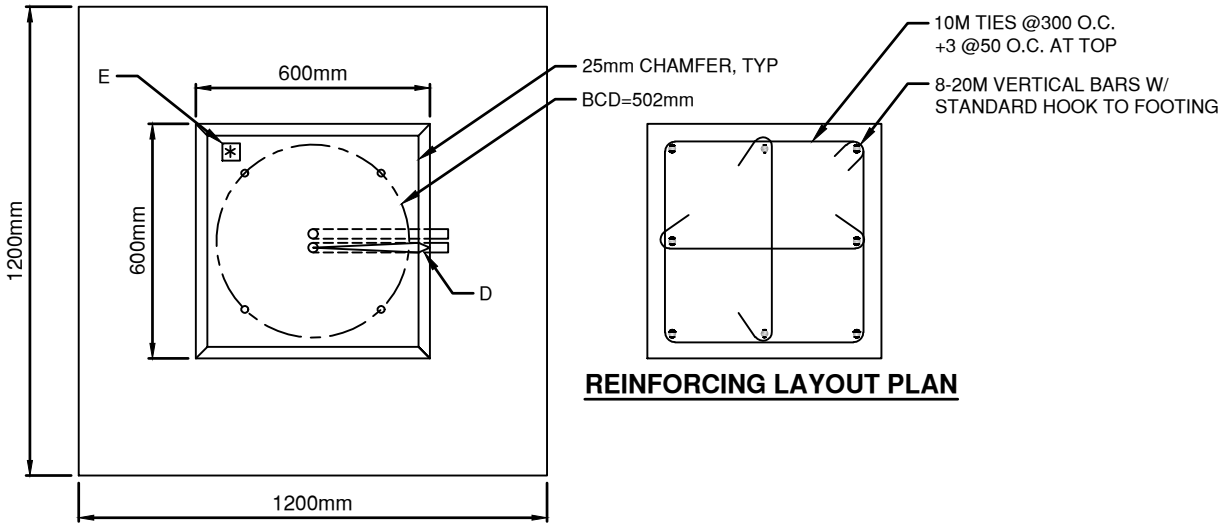
ELECTRICAL DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
	Arms		
		SD E11.1	Communication System Ducting
		SD E11.2	Typical Fibre Repair (Microtrench/Sawcut/Direct Buried)
		SD E11.3	EV Chargers – Level 2 Interim Design Standards
		SD E11.4	EV Chargers – Level 2 Interim Design Standards
		SD E11.5	Electrical Kiosk (EV Charging) - Interim Design Standards
		SD E12.1	Typical Pole Elevation – Type 1 Pole
		SD E12.2	Typical Pole Elevation – Type 3 Pole
		SD E12.3	Typical Pole Elevation – Type 7 Pole
		SD E12.4	Typical Pole Elevation – Type S Pole
		SD E12.5	Typical Pole Elevation – Type L Pole
		SD E12.6	Signal Head Alignment Detail for Multiple Lane Configurations
		SD E12.7	Signal Head Alignment Detail for Multiple Lane Configurations

POURED IN PLACE CONCRETE BASE

TYPE	POLE TYPES	STYLE	BC MoTT STANDARD SPECIFICATIONS DRAWING
E1	TYPE 1 & 3 SHAFTS	SPREAD FOOTING (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.4 TO 1.1.6
E3		RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.9 TO 1.1.10
F3	TYPE 6 & 7 SHAFTS	RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.16 TO 1.1.17
S3	TYPE S POLES	RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.16 TO 1.1.17
L3	TYPE L POLES	RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.16 TO 1.1.17
M1	TYPE M POLES	SPREAD FOOTING (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.20 TO 1.1.21
M2		RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.22 TO 1.1.23
H1	TYPE H POLES	SPREAD FOOTING (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.26 TO 1.1.28
H2		RECTANGULAR (POURED IN PLACE)	REFER TO BC MoTT DRAWINGS: SP635 - 1.1.29 TO 1.1.30

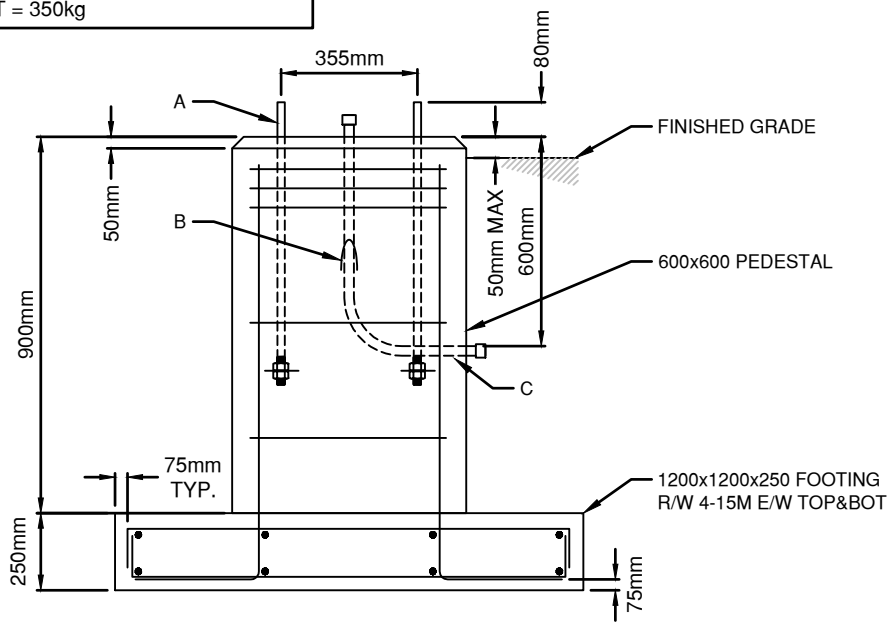
NOTES:
1. CONDUIT LOCATIONS IN POURED IN PLACE CONCRETE BASES SHALL BE VERIFIED ON SITE PRIOR TO INSTALLATION.

SUPPLEMENTARY STANDARD DETAIL DRAWING



REINFORCING LAYOUT PLAN

POLE AND BASEPLATE BY SUPPLIER
MAX POLE HEIGHT = 4.6m
MAX CROSS-SECTIONAL AREA OF FIXTURE = 1m²
MAX TOTAL WEIGHT = 350kg



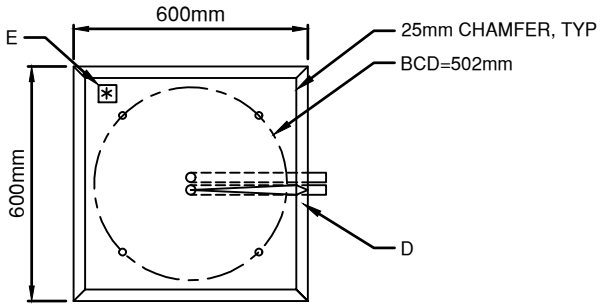
NOTES:

A. 19Ø X 760 ASTM A36 GALVANIZED STEEL ANCHOR BOLTS C/W DOUBLE NUT AND 100Ø x 6.4THK STEEL WASHER PLATE.
B. PRECAST SUPPLIER TO INSTALL PLACING CABLES OR LIFT EYE (PIN) TO BE USED WITH LIFTING CLUTCHES, AS REQUIRED (FOR PRE-CAST ONLY).
C. 2-53mmØ CONDUIT (SIDE BY SIDE), CONDUIT STUBBED OUT 50mm AND CAPPED AT BOTH ENDS.
D. V-GROOVE DRAIN TO START AT ZERO DEPTH IN THE CENTRE OF THE BASE AND EXTEND TO A DEPTH OF 10mm AT THE OUTSIDE EDGE. ALIGN WITH CONDUIT.
E. BASE SHALL BE IMPRINTED "Q1" IN CONCRETE WITH 25mm HIGH LETTERS. LOCATE SO IT IS VISIBLE AFTER POLE INSTALLATION.
F. CONCRETE BASE FOUNDED ON UNDISTURBED NATIVE SOIL OR STRUCTURAL FILL. TYPE F-2 CONCRETE, MINIMUM 25MPA

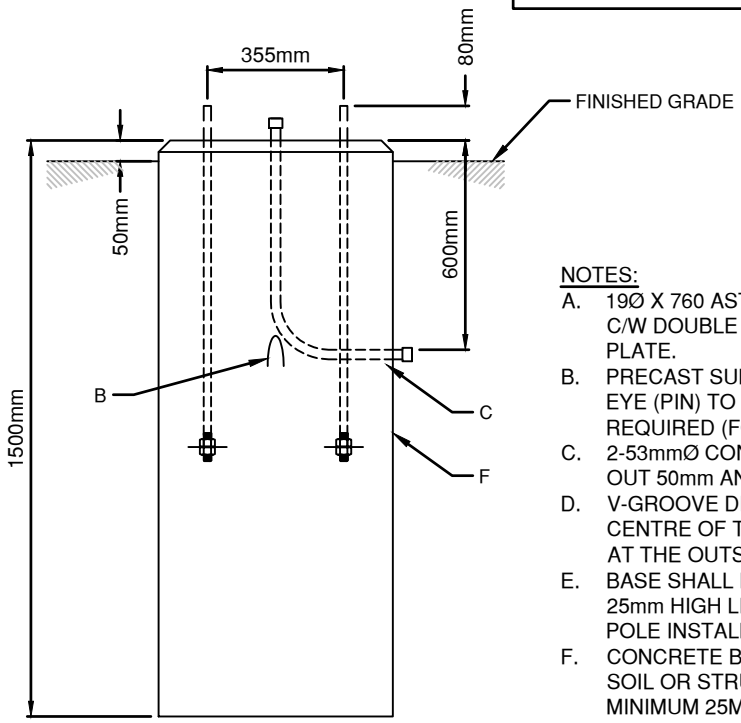
NOT TO SCALE

Q1 CONCRETE BASE FOR CITY OF VICTORIA CLUSTER LIGHTS	**Revision Date**	**Drawing Number**
	SEPT. 2025	**SD CE1.2a**

SUPPLEMENTARY STANDARD DETAIL DRAWING



POLE AND BASEPLATE BY SUPPLIER
MAX POLE HEIGHT = 4.6m
MAX CROSS-SECTIONAL AREA OF FIXTURE = 1m²
MAX TOTAL WEIGHT = 350kg



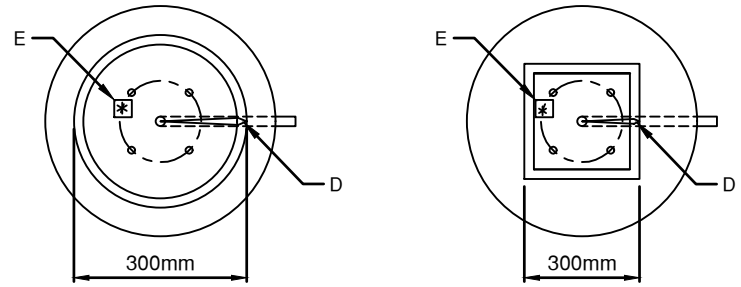
NOTES:

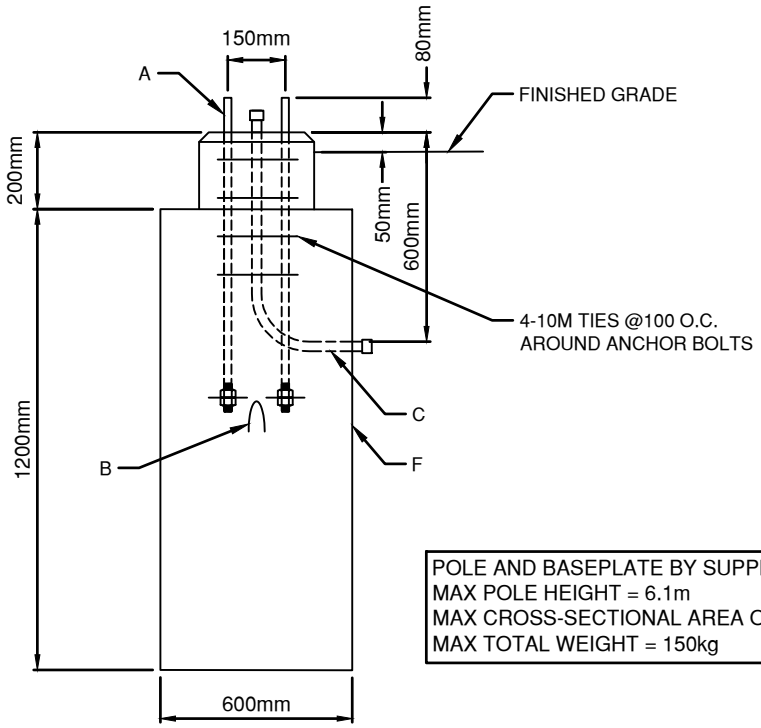
A. 19Ø X 760 ASTM A36 GALVANIZED STEEL ANCHOR BOLTS C/W DOUBLE NUT AND 100Ø x 6.4THK STEEL WASHER PLATE.
B. PRECAST SUPPLIER TO INSTALL PLACING CABLES OR LIFT EYE (PIN) TO BE USED WITH LIFTING CLUTCHES AS REQUIRED (FOR PRE-CAST ONLY).
C. 2-53mmØ CONDUIT (SIDE BY SIDE), CONDUIT STUBBED OUT 50mm AND CAPPED AT BOTH ENDS.
D. V-GROOVE DRAIN TO START AT ZERO DEPTH IN THE CENTRE OF THE BASE AND EXTEND TO A DEPTH OF 10mm AT THE OUTSIDE EDGE. ALIGN WITH CONDUIT.
E. BASE SHALL BE IMPRINTED "Q2" IN CONCRETE WITH 25mm HIGH LETTERS. LOCATE SO IT IS VISIBLE AFTER POLE INSTALLATION.
F. CONCRETE BASE FOUNDED ON UNDISTURBED NATIVE SOIL OR STRUCTURAL FILL. TYPE F-2 CONCRETE, MINIMUM 25MPA

NOT TO SCALE

Q2 CONCRETE BASE FOR CITY OF VICTORIA CLUSTER LIGHTS	Revision Date	Drawing Number
	SEPT. 2025	SD CE1.2b

SUPPLEMENTARY STANDARD DETAIL DRAWING





POLE AND BASEPLATE BY SUPPLIER
MAX POLE HEIGHT = 6.1m
MAX CROSS-SECTIONAL AREA OF FIXTURE = 0.55m²
MAX TOTAL WEIGHT = 150kg

NOTES:

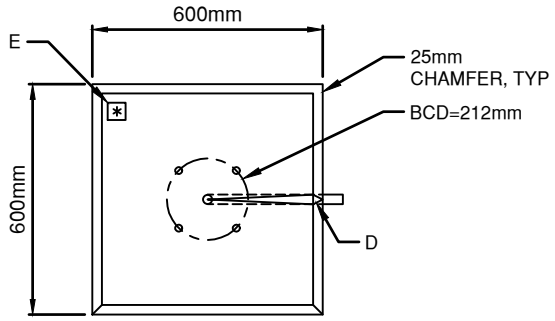
A. 15Ø X 760 ASTM A36 GALVANIZED STEEL ANCHOR BOLTS C/W DOUBLE NUT AND 100Ø x 6.4THK STEEL WASHER PLATE.
B. PRECAST SUPPLIER TO INSTALL PLACING CABLES OR LIFT EYE (PIN) TO BE USED WITH LIFTING CLUTCHES, AS REQUIRED (FOR PRE-CAST ONLY).
C. 53mmØ RPVC FACTORY BEND.
D. V-GROOVE DRAIN TO START AT ZERO DEPTH IN THE CENTRE OF THE BASE AND EXTEND TO A DEPTH OF 10mm AT THE OUTSIDE EDGE. ALIGN WITH CONDUIT.
E. BASE SHALL BE IMPRINTED "Q3" IN CONCRETE WITH 25mm HIGH LETTERS. LOCATE SO IT IS VISIBLE AFTER POLE INSTALLATION.
F. CONCRETE BASE FOUNDED ON UNDISTURBED NATIVE SOIL OR STRUCTURAL FILL. TYPE F-2 CONCRETE, MINIMUM 25MPA COMPRESSIVE STRENGTH.

NOT TO SCALE

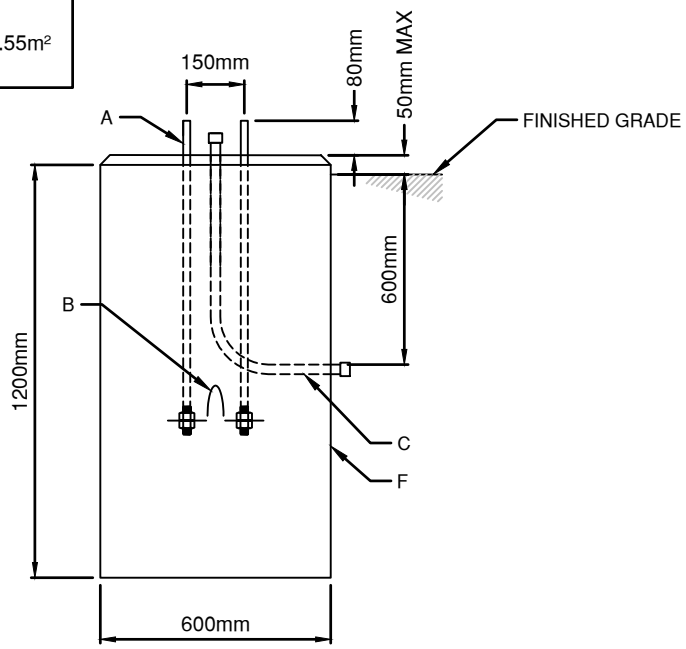
Q3 CONCRETE BASE FOR DECORATIVE LIGHT (PEDESTRIAN) POLE

Revision Date	Drawing Number
SEPT. 2025	SD CE1.2c

SUPPLEMENTARY STANDARD DETAIL DRAWING



POLE AND BASEPLATE BY SUPPLIER
MAX POLE HEIGHT = 6.1m
MAX CROSS-SECTIONAL AREA OF FIXTURE = 0.55m²
MAX TOTAL WEIGHT = 150kg



NOTES:

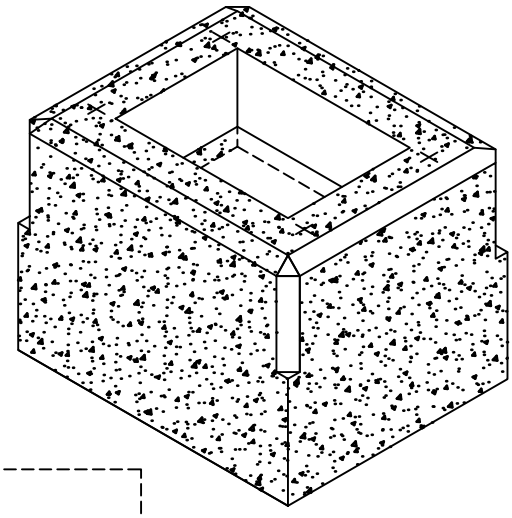
A. 25Ø X 760 ASTM A36 GALVANIZED STEEL ANCHOR BOLTS C/W DOUBLE NUT AND 100Ø x 6.4THK STEEL WASHER PLATE
B. PRECAST SUPPLIER TO INSTALL PLACING CABLES OR LIFT EYE (PIN) TO BE USED WITH LIFTING CLUTCHES, AS REQUIRED (FOR PRE-CAST ONLY)
C. 50mmØ RPVC FACTORY BEND.
D. V-GROOVE DRAIN TO START AT ZERO DEPTH IN THE CENTRE OF THE BASE AND EXTEND TO 10mm AT THE OUTSIDE EDGE. ALIGN WITH CONDUIT.
E. BASE SHALL BE IMPRINTED "Q4" IN CONCRETE WITH 25mm HIGH LETTERS. LOCATE SO IT IS VISIBLE AFTER POLE INSTALLATION.
F. CONCRETE BASE FOUNDED ON UNDISTURBED NATIVE SOIL OR STRUCTURAL FILL. TYPE F-2 CONCRETE, MINIMUM 25MPA COMPRESSIVE STRENGTH.

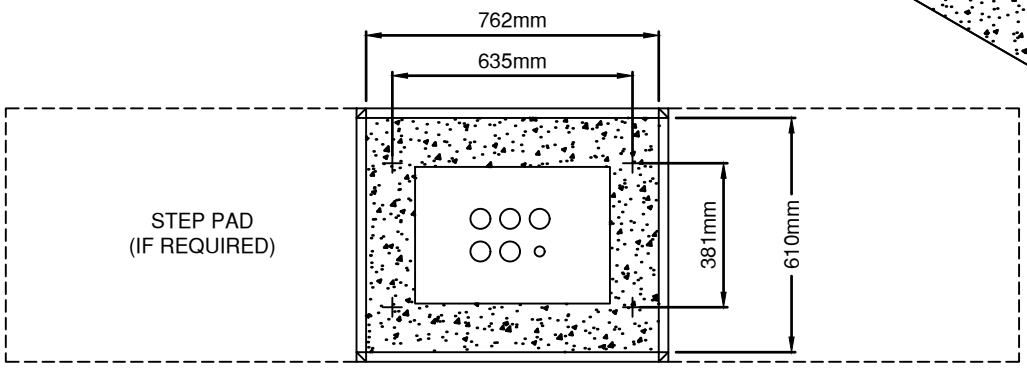
NOT TO SCALE

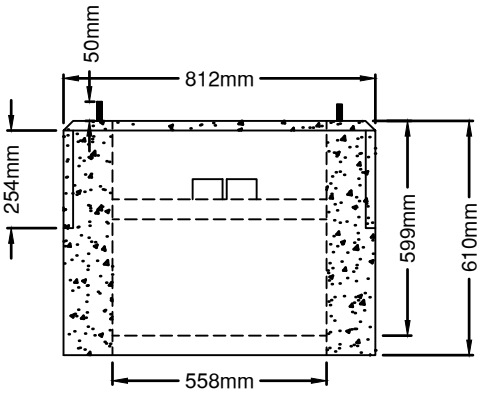
Q4 CONCRETE BASE FOR CHINATOWN POLE

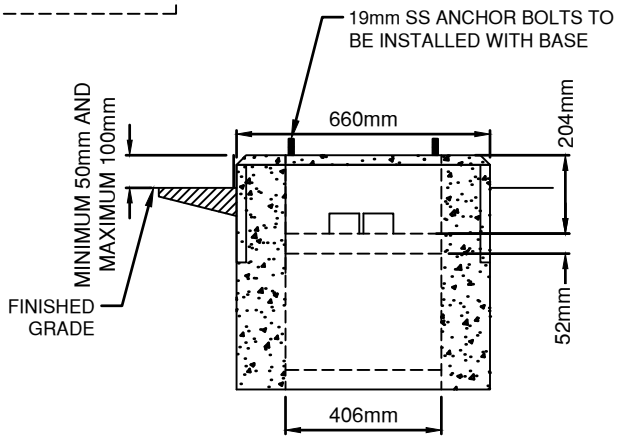
Revision Date	Drawing Number
SEPT. 2025	SD CE1.2d

SUPPLEMENTARY STANDARD DETAIL DRAWING









NOTES:

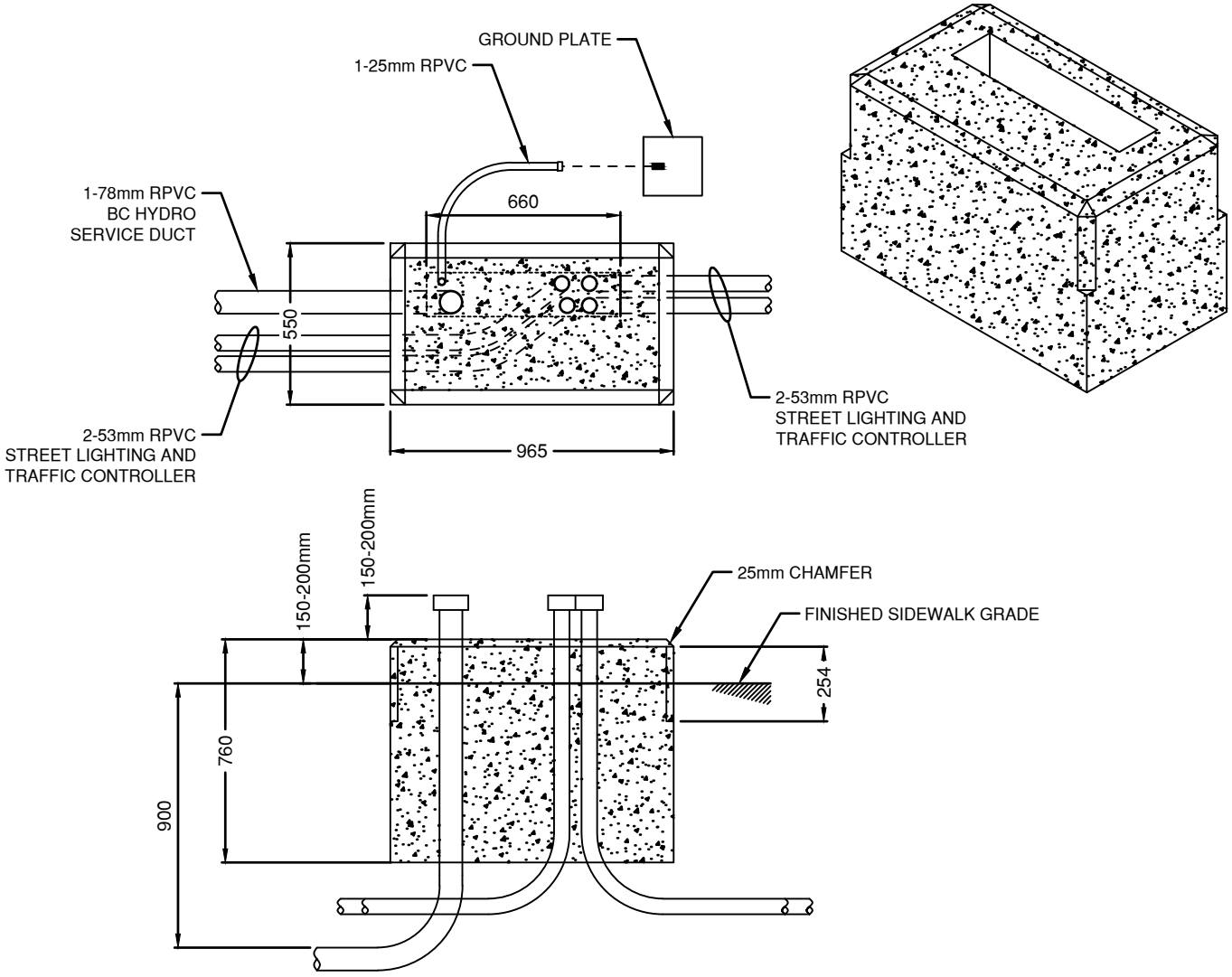
1. ALL CHAMFER IS 25mm
2. FINISHED BASE TO SUIT 762mm x 610mm CABINET FOOTPRINT
3. ANCHOR BOLTS CAN BE INSTALLED USING HILTI EPOXY TO MINIMUM DEPTH OF 152mm (4") AND EXTEND TO 50mm (2") ABOVE FINISHED GRADE OF BASE. ¾" STAINLESS ROD.
4. ANCHOR BOLT PATTERN DIMENSIONS: 635mm (25in) x 381mm (15in)
5. FLOOR TO BE POURED AFTER THE SIDES ARE CURED
6. FLOOR TO INCLUDE THE FOLLOWING CONDUIT, PROTRUDING ~52mm FROM CENTER OF FLOOR:
7. REQUIRED CONDUITS:
   - 1-53mm CONDUIT (SPARE)
   - 2-53mm CONDUITS (120V SIGNAL CONDUCTORS)
   - 1-53mm CONDUIT (LOW VOLTAGE CONDUCTORS)
   - 1-53mm CONDUIT (COMMUNICATIONS)
   - 1-27mm CONDUIT (CONTROLLER POWER)
   - IF CHANGES TO CONDUIT SIZE OR QUANTITY IS REQUIRED CONTACT THE CITY FOR APPROVAL PRIOR TO CONSTRUCTION
8. CONDUITS SHALL BE ADEQUATELY SPACED SO REQUIRED BELL ENDS CAN BE INSTALLED AFTER FLOOR POURED.
9. TOP CONCRETE FLOOR IN BASE 204mm BELOW FINISHED TOP OF BASE, THICKNESS ~52mm
10. STEP PAD 660mm x 914mm (~78mm THICK) REQUIRED IF NOT SURROUNDED BY SIDEWALK (POURED IN PLACE).
11. ANCHOR BOLTS TO BE EPOXIED IF INSTALLED AFTER CONCRETE HAS CURED.

NOT TO SCALE

332 CABINET BASE

Revision Date	Drawing Number
SEPT. 2025	SD E1.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. CONFIRM CONDUIT SIZES AND QUANTITY WITH CoV DURING DESIGN
2. ALL DIMENSIONS IN MILLIMETRES
3. SERVICE KIOSK IS 915mm (l) X 410mm (w) x 1220mm (h)
4. CONDUIT WELL TO BE FILLED WITH SAND AND CAPPED WITH 25mm OF CONCRETE AFTER CONDUITS ARE INSPECTED AND APPROVED
5. CONDUIT WELL TO BE SLOPED COMPLETE WITH 25mm DRAIN
6. THE NUMBER OF CONDUITS AND LOCATION TO BE CONFIRMED PRIOR TO INSTALLATION

BC HYDRO REQUIREMENTS:

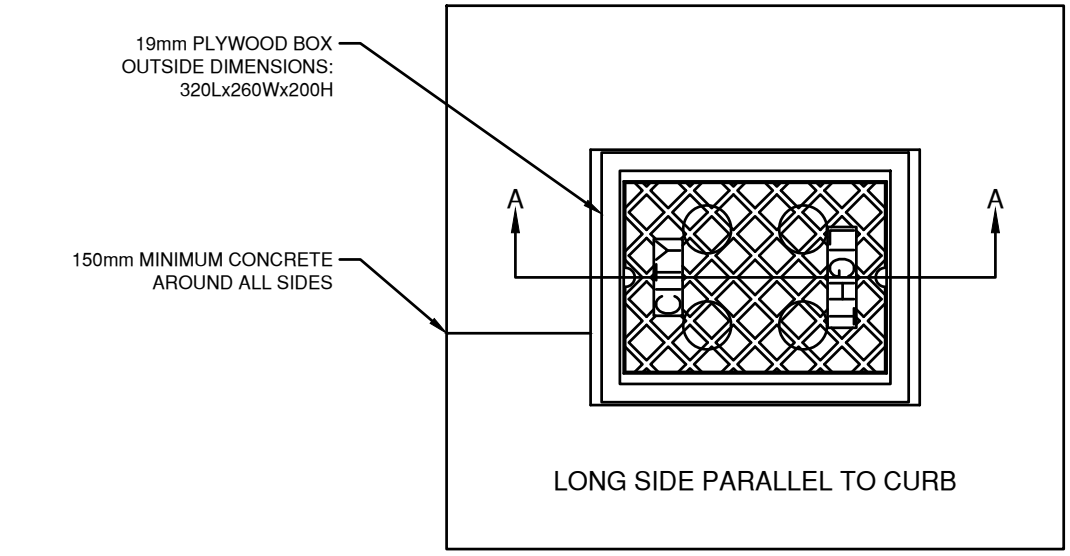
1. METERED SERVICE FED UNDERGROUND FROM A HYDRO POLE;
   - BC HYDRO INSTALLS: CONDUIT ON THE POLE, PILASTER, FIRST 900mm OF 78mm RPVC, AND WIRE.
2. METERED SERVICE FED OVERHEAD FROM A HYDRO POLE;
   - CONSUMER INSTALLS: CONDUIT, WEATHER HEAD, AND WIRE.
3. ALL SERVICE REQUIREMENTS SHALL BE COORDINATED WITH, AND CONFIRMED BY BC HYDRO PRIOR TO INSTALLATION.

NOT TO SCALE

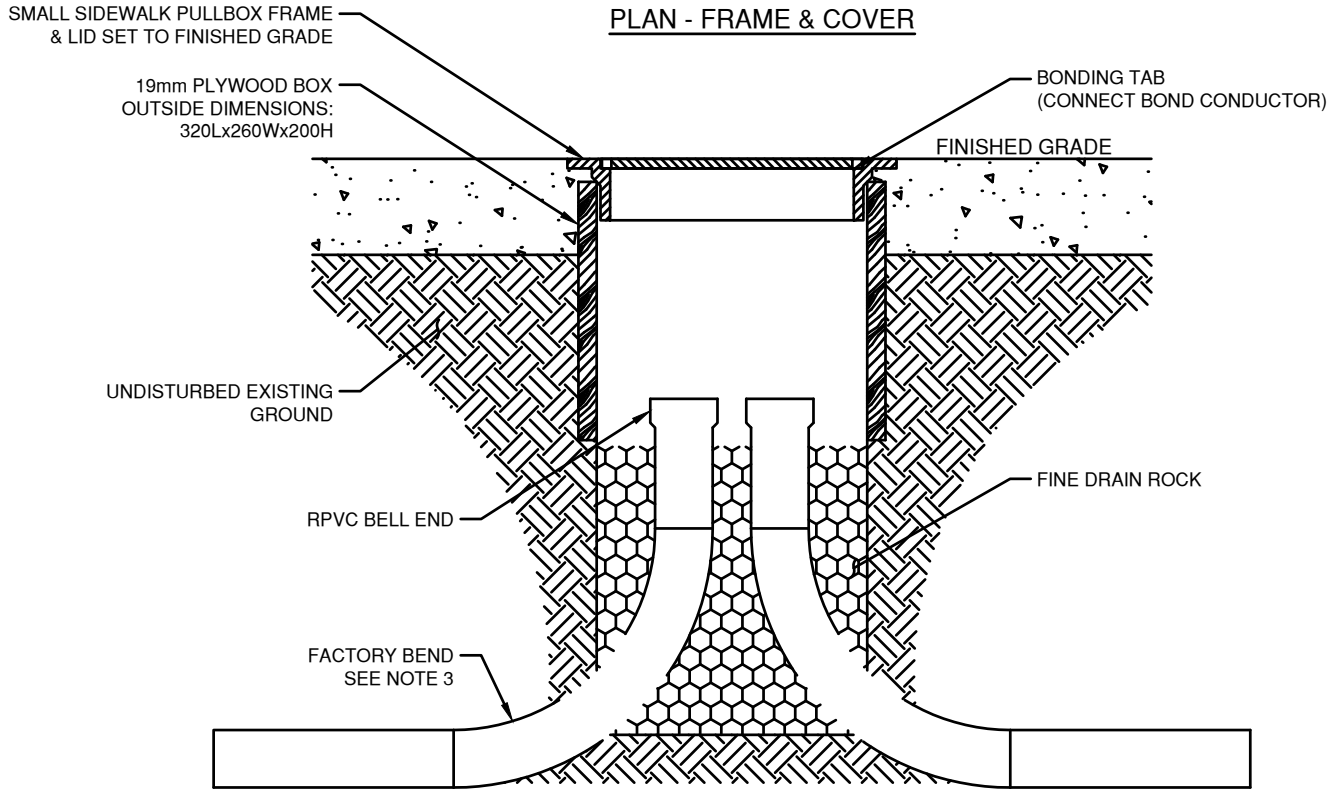
SERVICE KIOSK BASE

Revision Date	Drawing Number
SEPT. 2025	SD E1.1b

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME & COVER



SECTION A-A

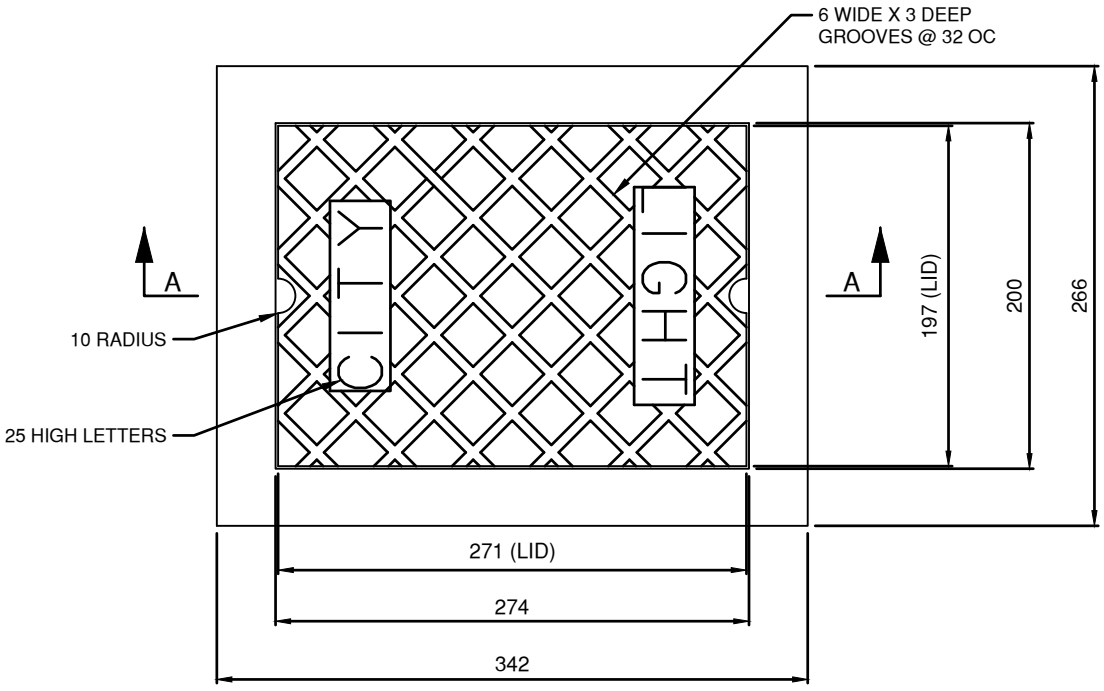
NOTES:
1. NUMBER & SIZE OF CONDUIT VARIES.
2. PULLBOX SIZE VARIES WITH NUMBER OF CONDUIT:
   - UP TO 4 CONDUIT, USE SMALL PULLBOX (STD300A)
   - 5-8 CONDUIT, USE SIGNAL PULLBOX (STD301A)
   - 9+ CONDUIT, USE STREET PULLBOX (STD302A)
3. USE RIGID PVC CONDUIT INSIDE PULLBOX.
4. ALL DIMENSIONS MILLIMETRES UNLESS OTHERWISE NOTED.

NOT TO SCALE

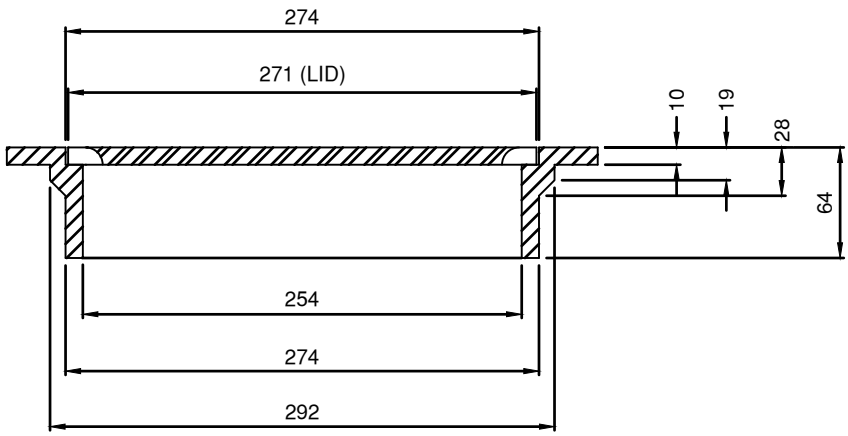
CITY LIGHT JUNCTION BOX (EXISTING ONLY)

Revision Date	Drawing Number
SEPT. 2025	SD E2.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME & COVER



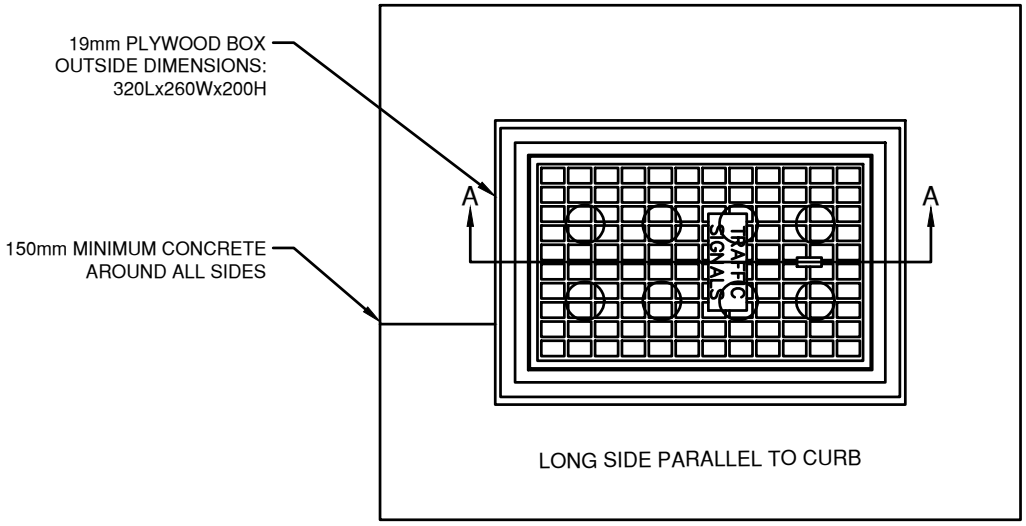
SECTION A-A

NOTES:
1. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE GOOD SEATING.
2. DIMENSIONS ARE BASED ON GRAY IRON CASTINGS
3. CASTING TO HAVE GROUNDING STUD AND BE BONDED TO GROUND.

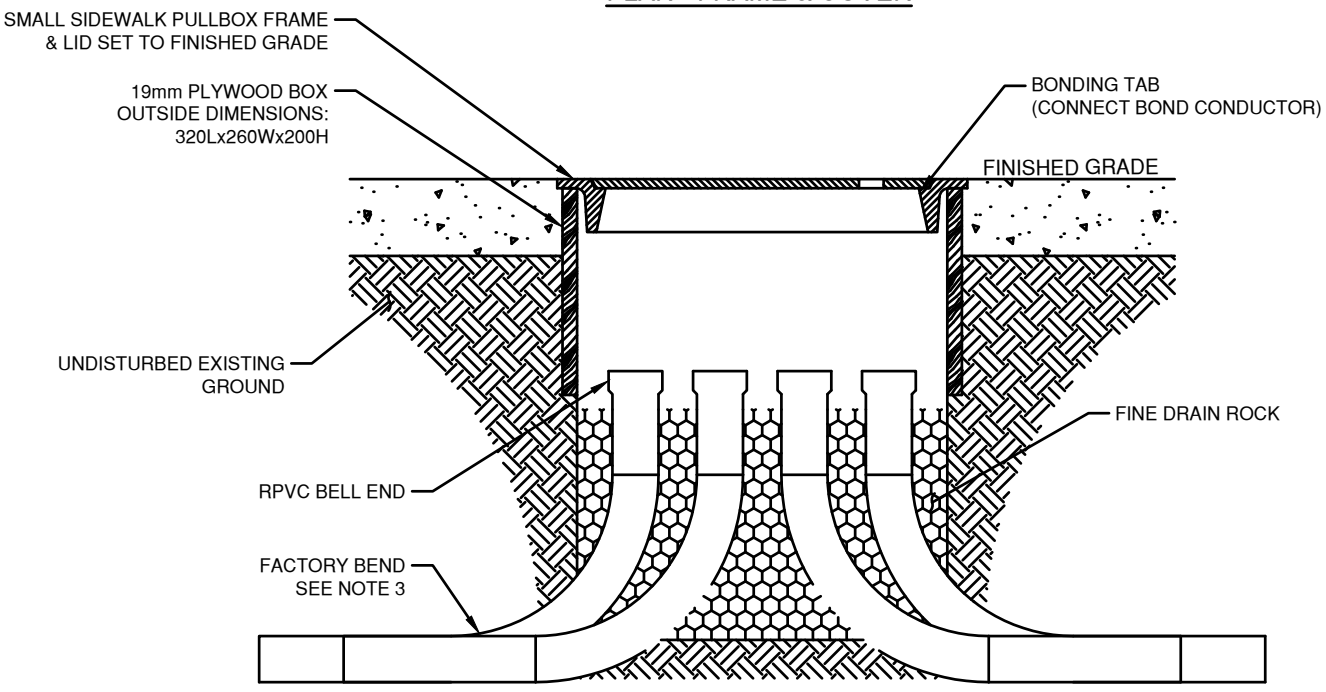
NOT TO SCALE

CITY LIGHT JUNCTION BOX CASTING DETAIL (EXISTING ONLY)	Revision Date	Drawing Number
	SEPT. 2025	SD E2.1b

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME & COVER



SECTION A-A

NOTES:

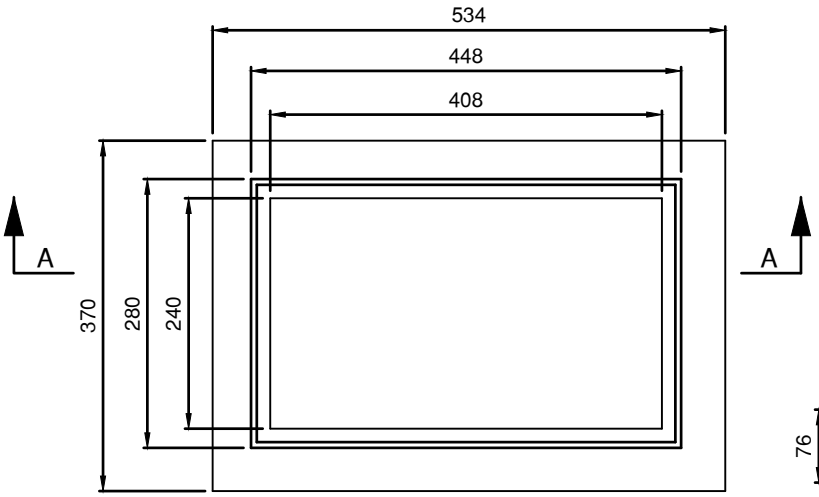
1. NUMBER & SIZE OF CONDUIT VARIES.
2. PULLBOX SIZE VARIES WITH NUMBER OF CONDUIT:
   - UP TO 4 CONDUITS, USE SMALL PULLBOX (STD300A)
   - 5-8 CONDUITS, USE SIGNAL PULLBOX (STD301A)
   - 9+ CONDUITS, USE STREET PULLBOX (STD302A)
3. USE RIGID PVC CONDUIT INSIDE PULLBOX.
4. ALL DIMENSIONS MILLIMETRES UNLESS OTHERWISE NOTED.

NOT TO SCALE

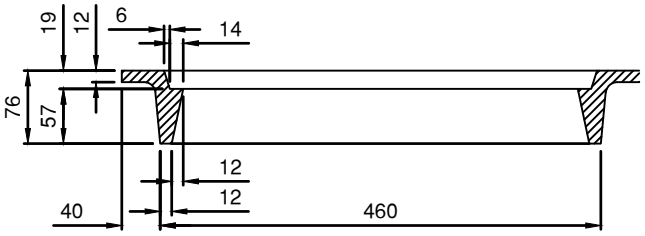
TRAFFIC SIGNAL JUNCTION BOX (EXISTING ONLY)

Revision Date	Drawing Number
SEPT. 2025	SD E2.1c

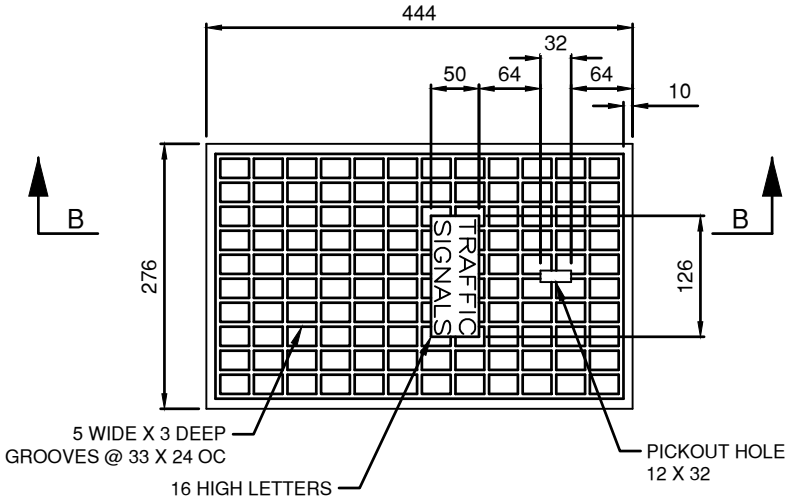
SUPPLEMENTARY STANDARD DETAIL DRAWING



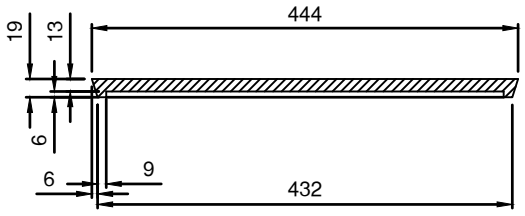
PLAN - FRAME



SECTION A-A



PLAN - COVER



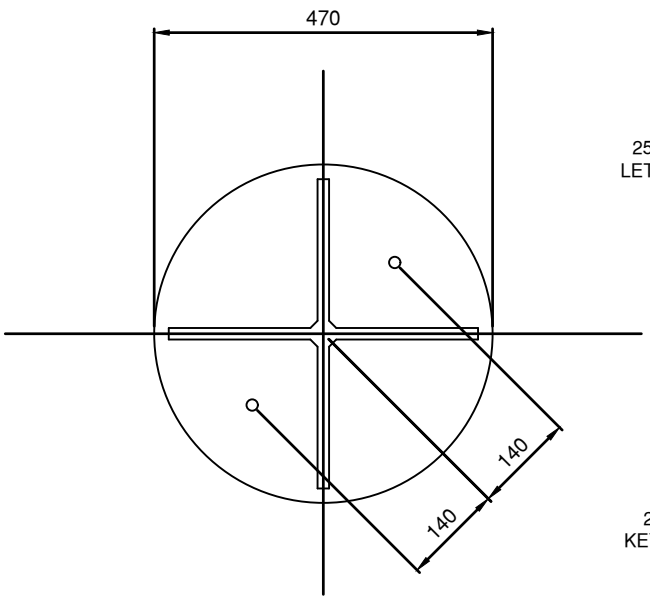
SECTION B-B

NOTES:
1. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE GOOD SEATING.
2. DIMENSIONS ARE BASED ON GRAY IRON CASTING.
3. CASTING TO HAVE GROUNDING STUD AND BE BONDED TO GROUND.

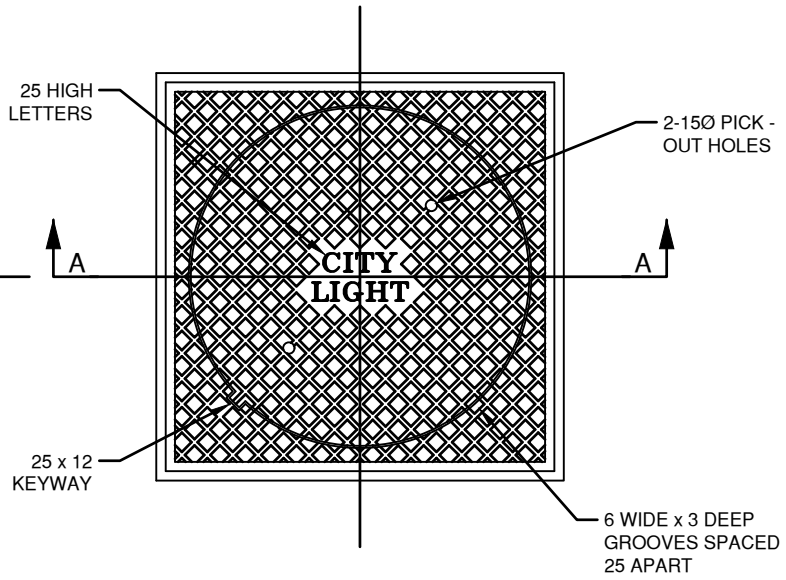
NOT TO SCALE

TRAFFIC SIGNAL JUNCTION BOX CASTING DETAILS (EXISTING ONLY)	**Revision Date**	**Drawing Number**
	SEPT. 2025	**SD E2.1d**

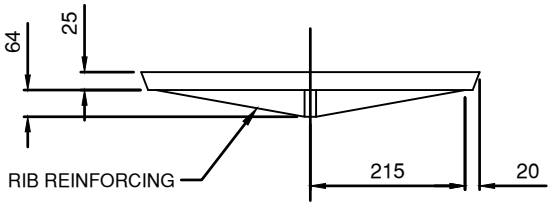
SUPPLEMENTARY STANDARD DETAIL DRAWING



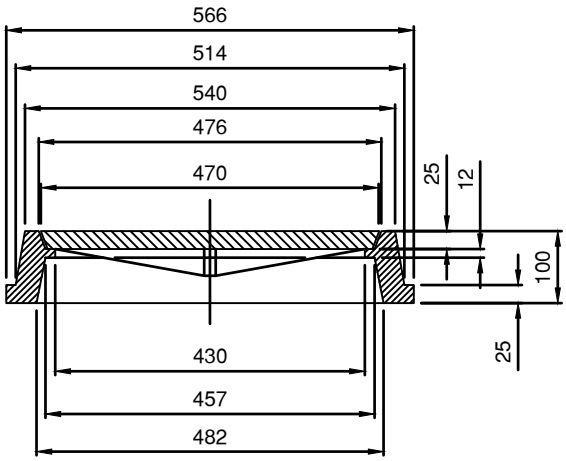
PLAN - COVER U/S REINF.



PLAN - FRAME & COVER



SECTION - COVER



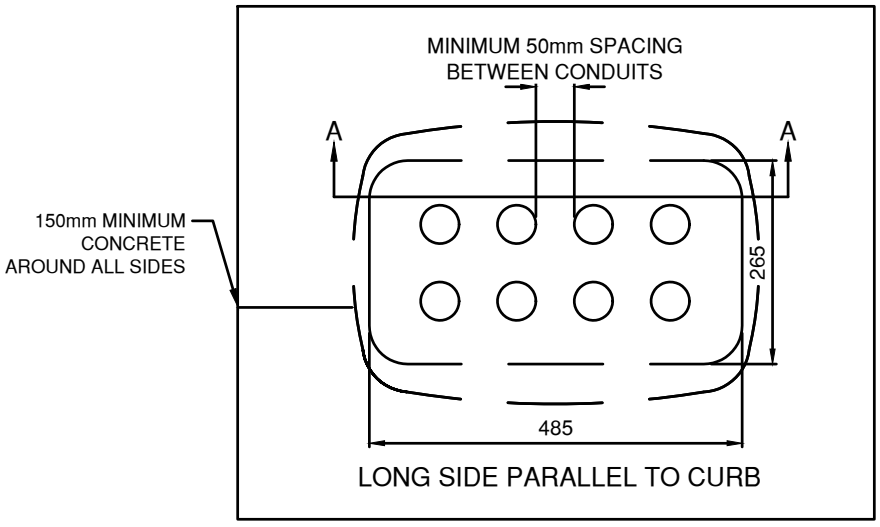
SECTION A-A

NOTES:
1. MATERIAL: CAST IRON.
2. CASTING SHALL HAVE A DESIGN LOAD STRENGTH IN ACCORDANCE WITH AASHTO H20 LOADING.
3. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO INSURE GOOD SEATING.
4. CASTING TO HAVE GROUNDING STUD AND BE BONDED TO GROUND.

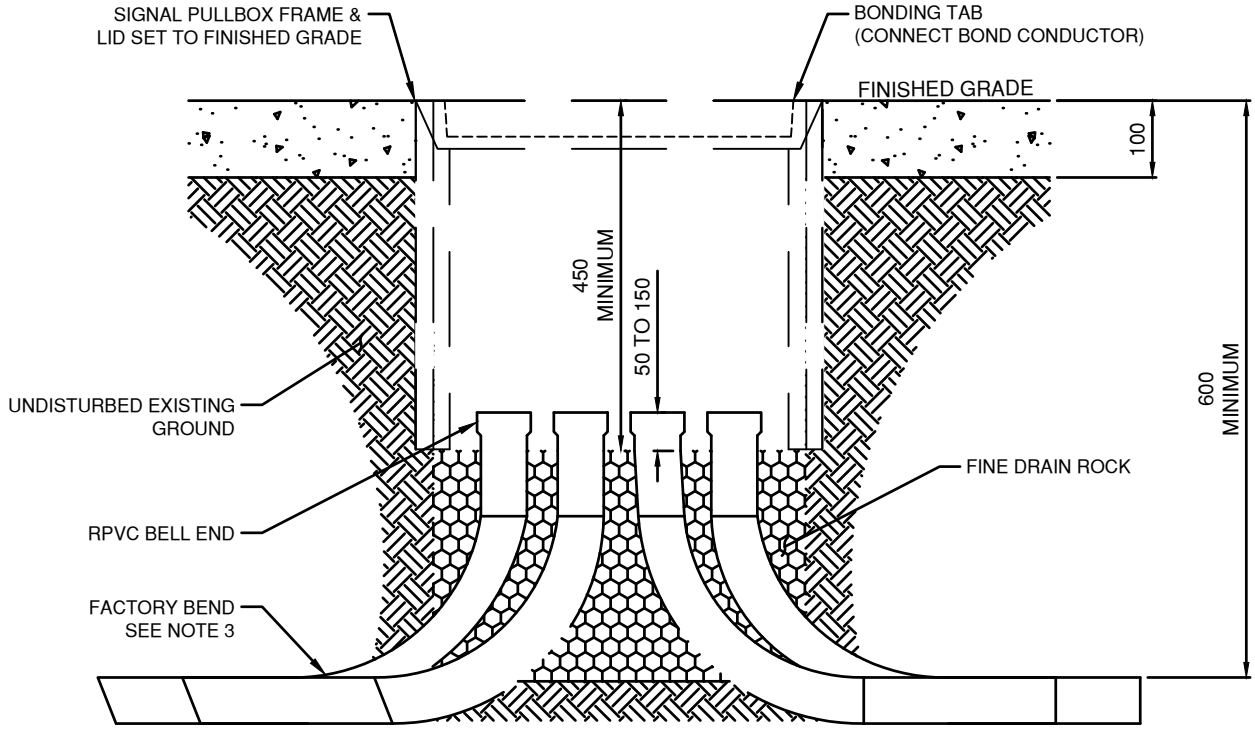
NOT TO SCALE

ROUND STEEL CASTING FOR ROADWAY APPLICATIONS (EXISTING/RETROFIT ONLY)	Revision Date	Drawing Number
	SEPT. 2025	SD E2.1e

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME

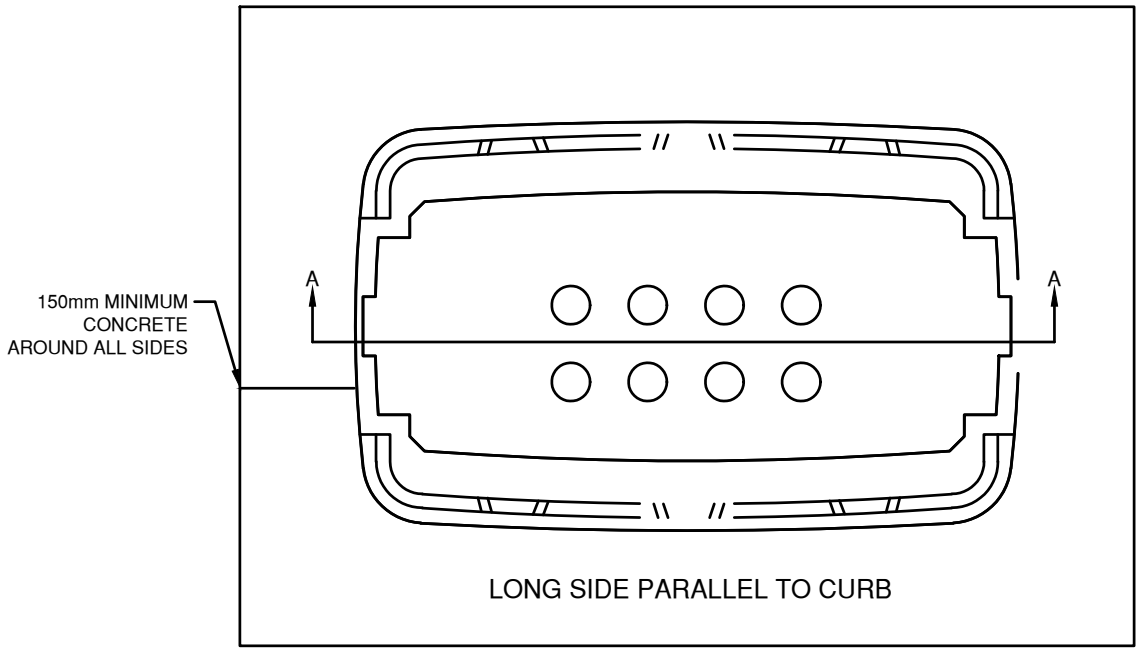


SECTION A-A

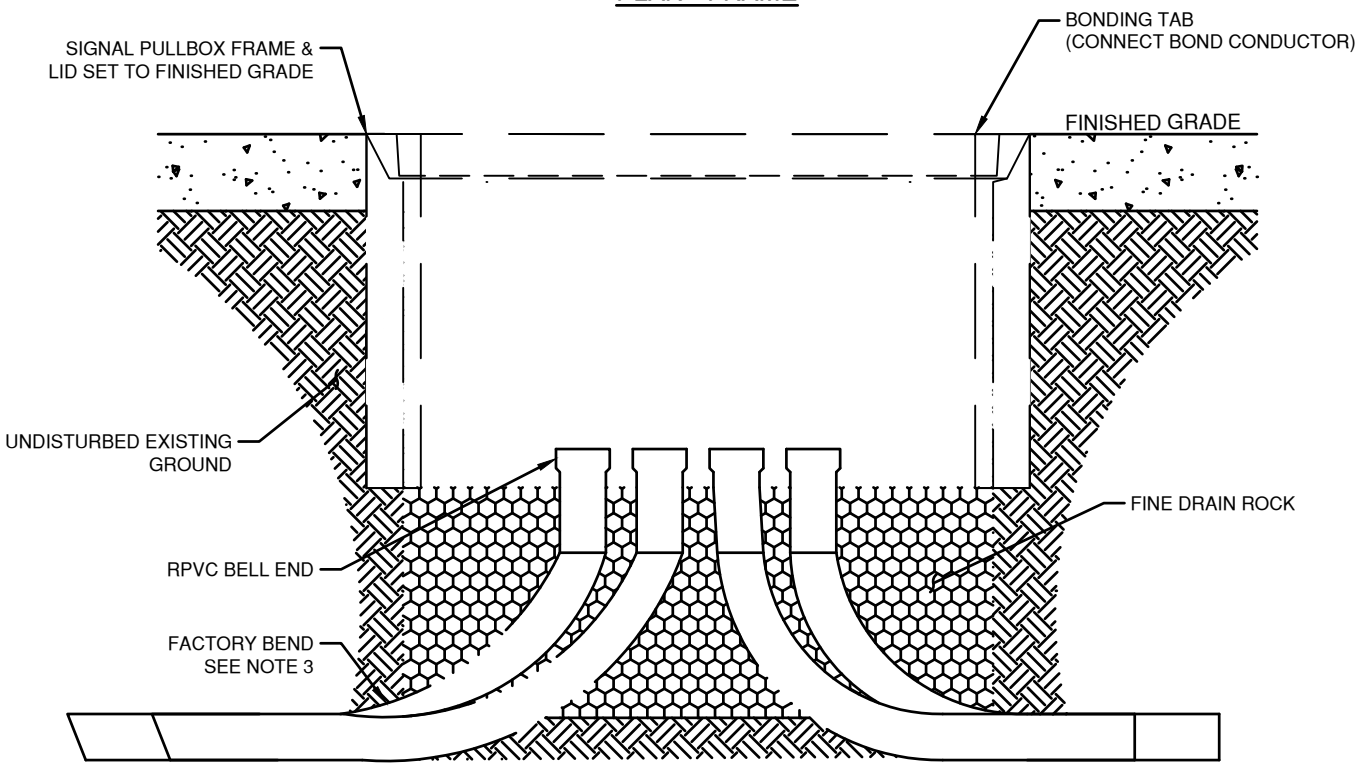
NOTES:
1. NUMBER & SIZE OF CONDUIT VARIES.
2. UP TO 8 x 53mmCONDUIT.
3. USE RIGID PVC CONDUIT INSIDE PULLBOX.
4. DO NOT INSTALL IN AREAS SUBJECT TO VEHICLE TRAFFIC.
5. ALL DIMENSIONS MILLIMETRES UNLESS OTHERWISE NOTED.

CITY STREET LIGHT JUNCTION BOX (SL - STREET LIGHT)	Revision Date	Drawing Number
	SEPT. 2025	SD E2.1f

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME



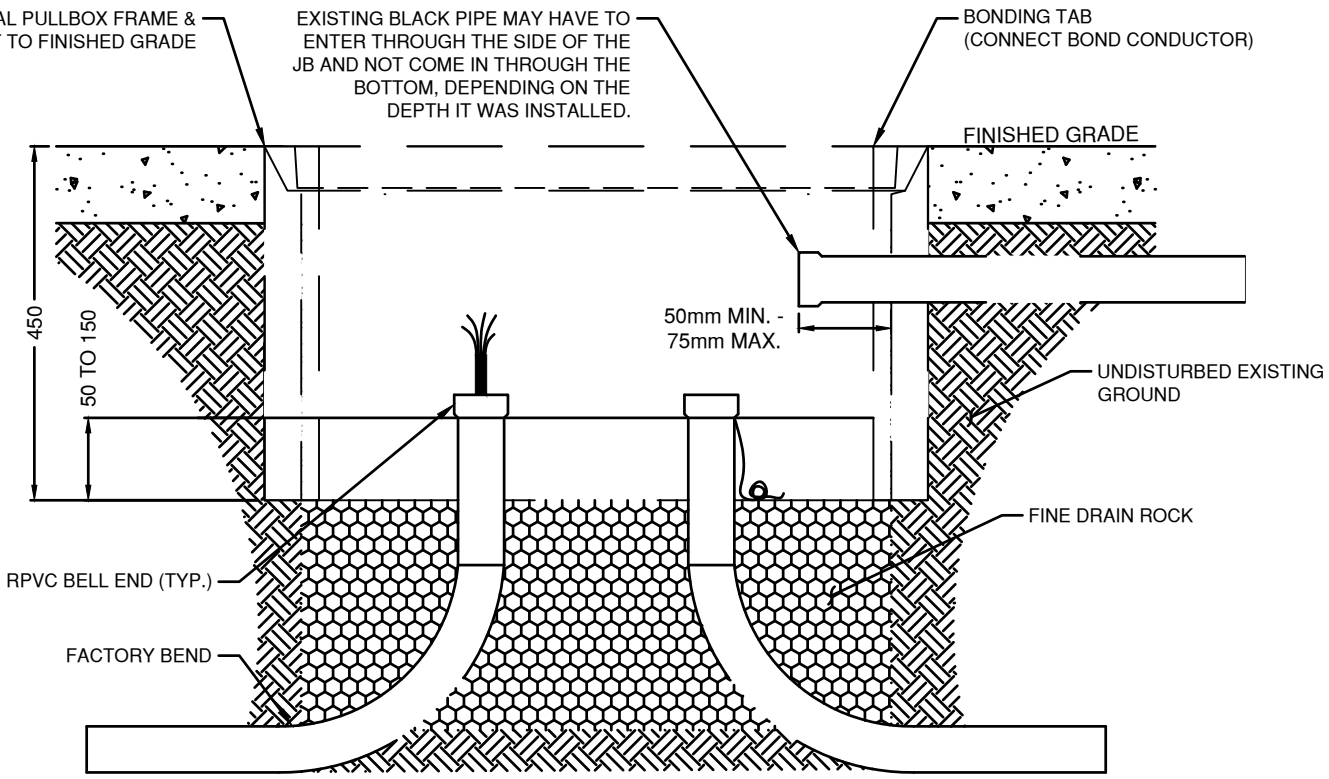
SECTION A-A

NOTES:
1. NUMBER & SIZE OF CONDUIT VARIES.
2. UP TO 16 x 53mm CONDUITS.
3. USE RIGID PVC CONDUIT INSIDE PULLBOX.
4. DO NOT INSTALL IN AREAS SUBJECT TO VEHICLE TRAFFIC.
5. ALL DIMENSIONS MILLIMETRES UNLESS OTHERWISE NOTED.

CITY TRAFFIC SIGNAL JUNCTION BOX (TS - TRAFFIC SIGNAL)

Revision Date	Drawing Number
SEPT. 2025	SD E2.1g

SUPPLEMENTARY STANDARD DETAIL DRAWING

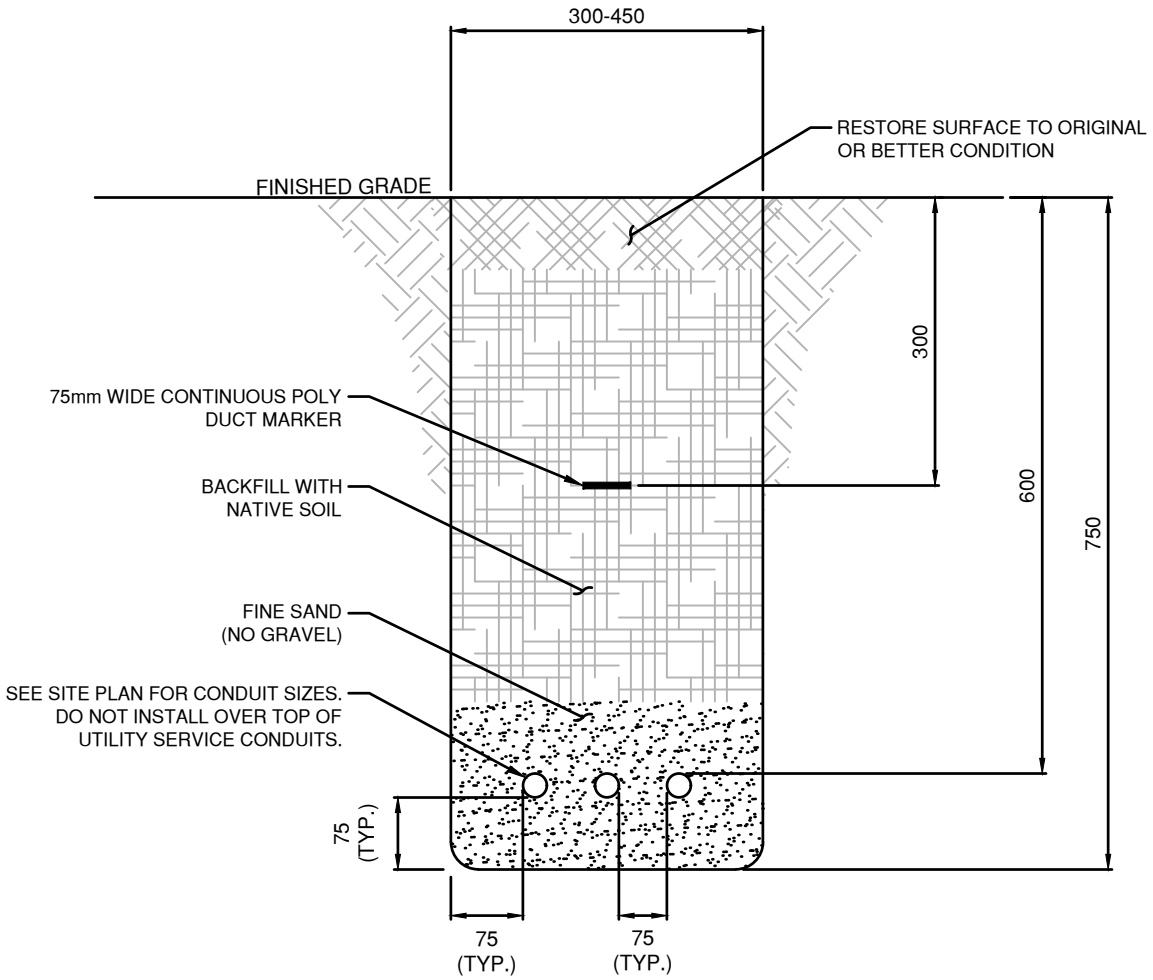


NOTES:

1. BELL ENDS ARE TO BE INSTALLED ON BOTH ENDS OF THE CONDUIT BEFORE CONDUCTORS ARE PULLED IN.
2. EMPTY CONDUITS ARE TO BE INSTALLED WITH PULL STRINGS AND CAPPED AT BOTH ENDS.
3. ALL DIMENSIONS ARE IN MILLIMETRES.
4. IF NOT IDENTIFIED, 2-53mm RPVC IS THE MIN. REQUIRED CONDUITS.
5. EXISTING CONDUITS FOUND DURING CONSTRUCTION MUST BE TIED INTO NEW WORKS.

NOT TO SCALE

TYPICAL JUNCTION BOX INSTALLATION	Revision Date	Drawing Number
	SEPT. 2025	SD E2.1h



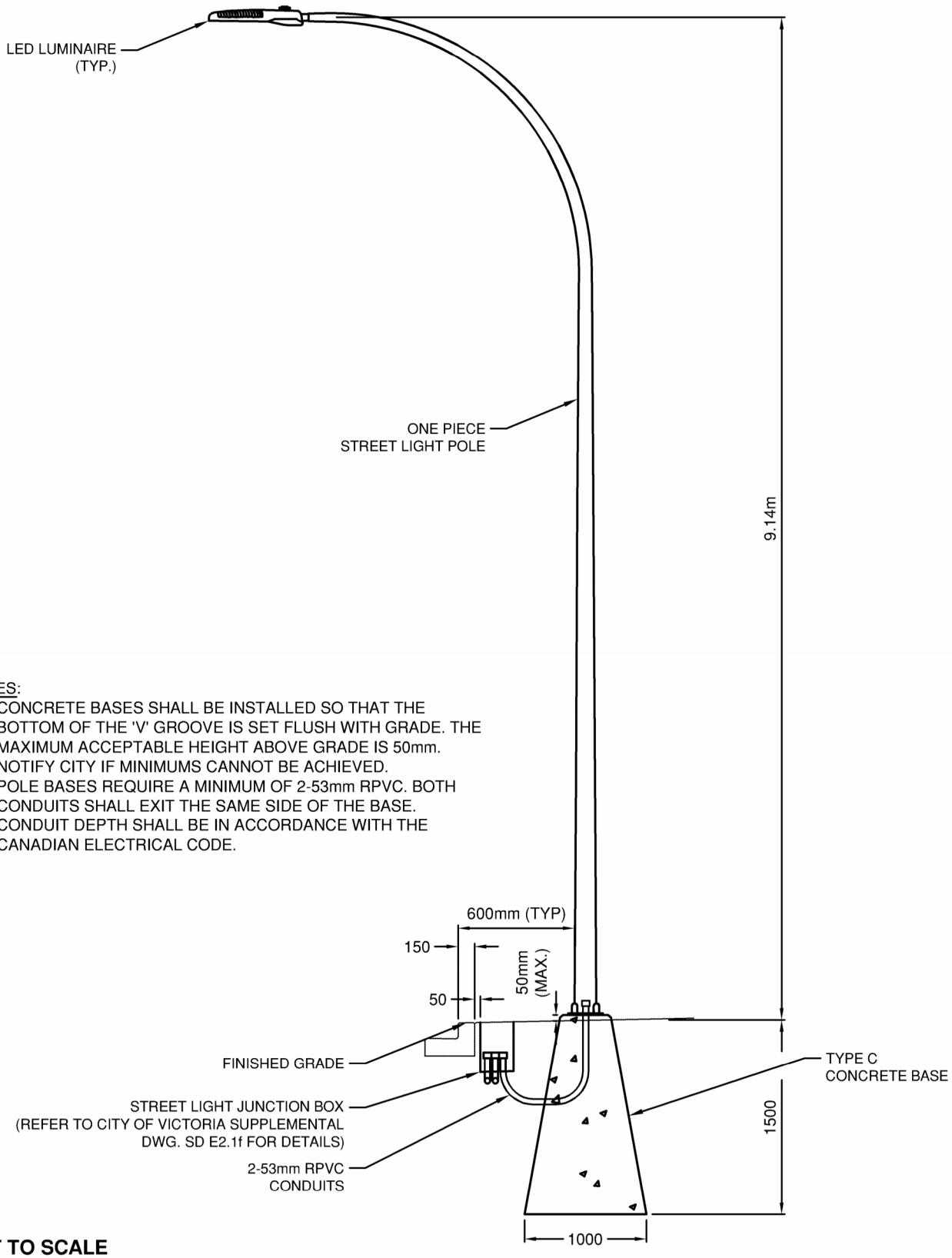
NOTES:

1. ALL COMMUNICATION CONDUITS SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 300mm FROM OTHER UNDERGROUND SYSTEMS WITH WELL-TAMPED EARTH AND NOT INSTALLED IN THE SAME VERTICAL PLANE WITH OTHER UNDERGROUND SYSTEMS.

CONDUIT TRENCH DETAIL

Revision Date	Drawing Number
SEPT. 2025	SD E3.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

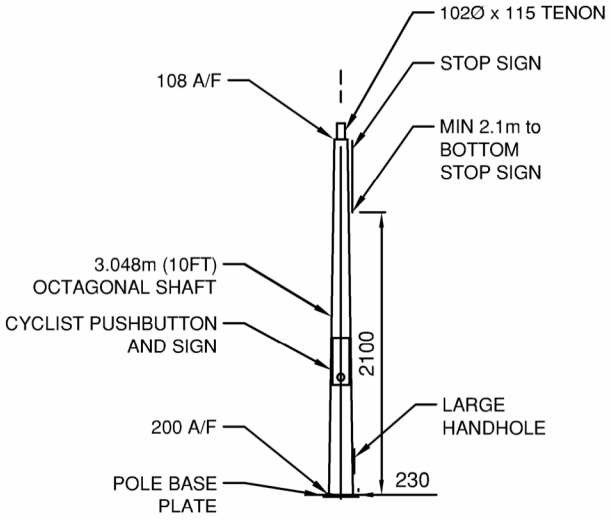
1. CONCRETE BASES SHALL BE INSTALLED SO THAT THE BOTTOM OF THE 'V' GROOVE IS SET FLUSH WITH GRADE. THE MAXIMUM ACCEPTABLE HEIGHT ABOVE GRADE IS 50mm.
2. NOTIFY CITY IF MINIMUMS CANNOT BE ACHIEVED.
3. POLE BASES REQUIRE A MINIMUM OF 2-53mm RPVC. BOTH CONDUITS SHALL EXIT THE SAME SIDE OF THE BASE.
4. CONDUIT DEPTH SHALL BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.

NOT TO SCALE

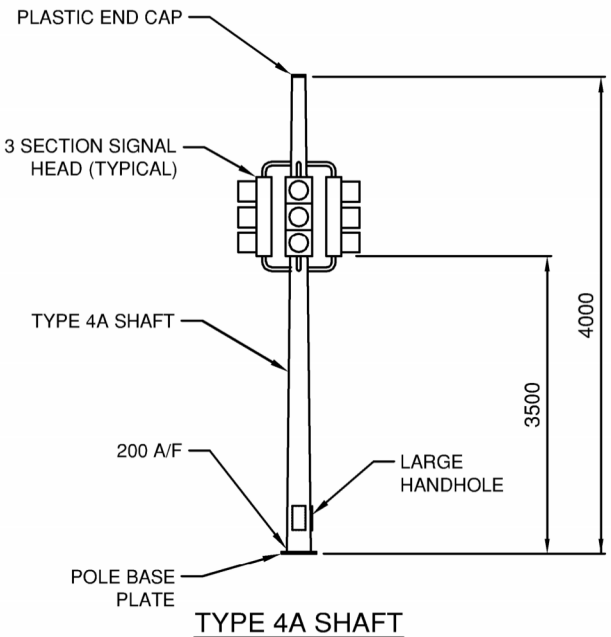
ONE PIECE STREET LIGHT POLE

Revision Date	Drawing Number
SEPT. 2025	SD E4.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING



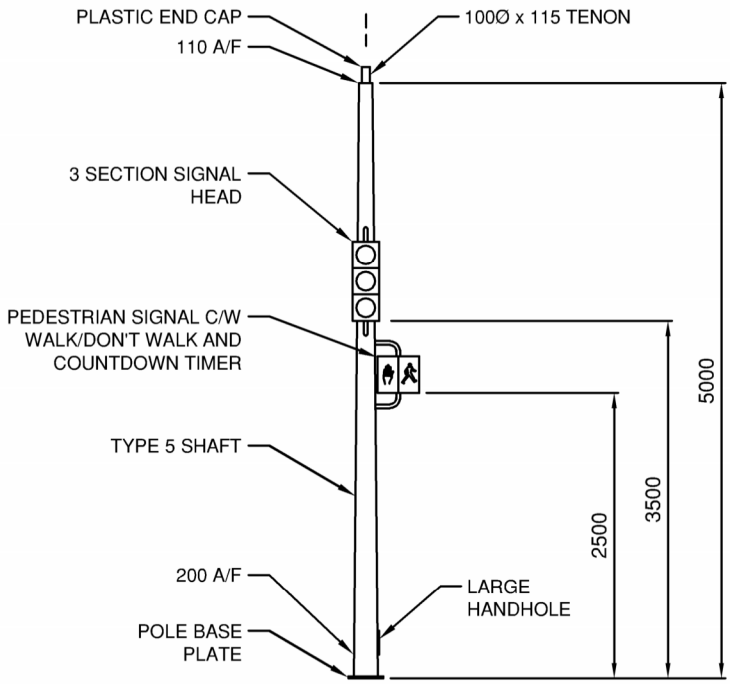
TYPE 4B - 3.0m (10FT) POLE SHAFT



TYPE 4A SHAFT

PARTS LIST	
PART	MASS (kg)
TYPE [4A] SHAFT TYPE [5] SHAFT	66 77

* [ ] I.D. LABEL ON POLE



TYPE 5 SHAFT

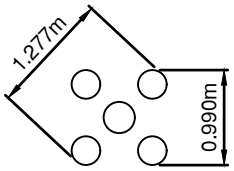
NOTES:
1. REFER TO CONTRACT DRAWINGS. SECTION 34 41 13 FOR DETAILED SPECIFICATIONS.
2. SEE DRAWING E4.21 FOR TYPE 4A AND 5 SHAFT, BOLT KITS AND POLE ASSEMBLY DETAILS.
3. ALL DIMENSION IN MILLIMETRES UNLESS OTHERWISE NOTED.

NOT TO SCALE

SIGNAL POSTS (TYPE 4A, TYPE 4B AND 5 SHAFTS)

Revision Date	Drawing Number
SEPT. 2025	SD E4.20a

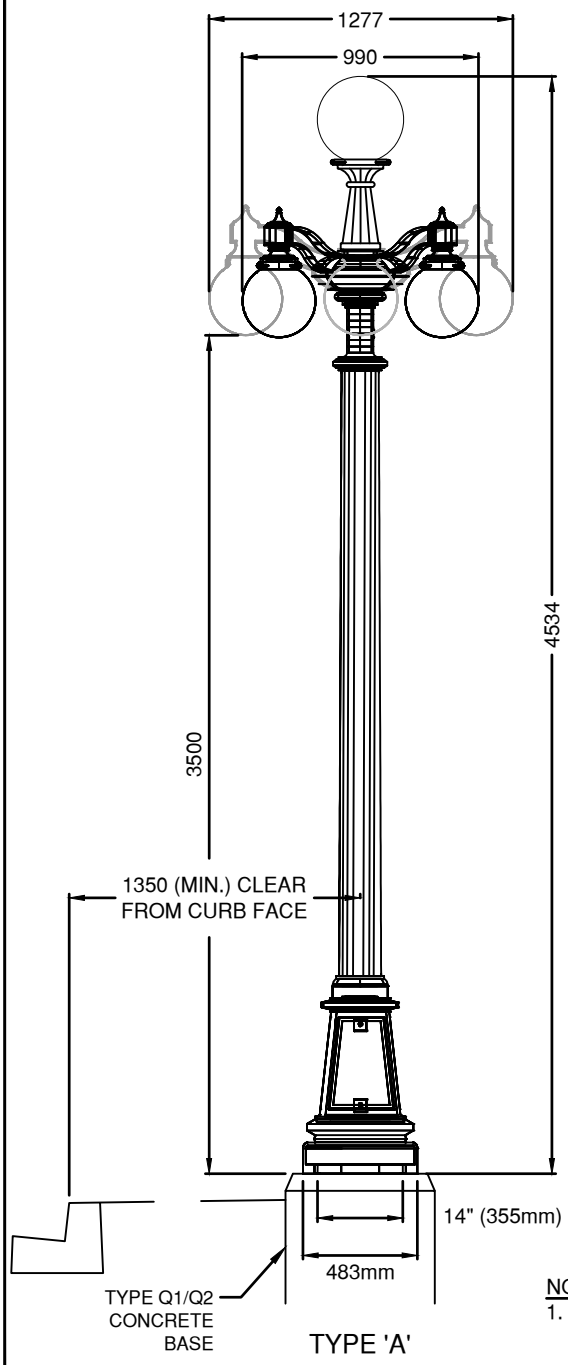
SUPPLEMENTARY STANDARD DETAIL DRAWING



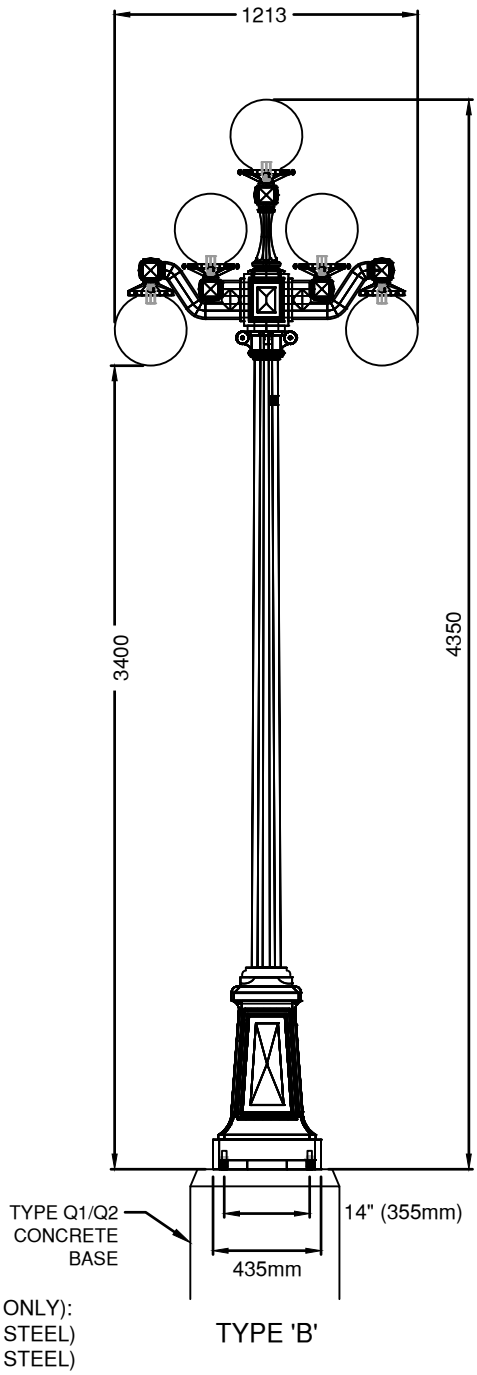
PLAN OF LAMP GLOBES

DECORATIVE POLE - CONCRETE BASE INDEX			
TYPE	DRAWING	BASE TYPE	POLE TYPE
Q1	SD CE1.2a	SQUARE	TYPE A AND B CLUSTERS
Q2	SD CE1.2b	SQUARE	TYPE A AND B CLUSTERS

NOTE: ALL PRE-CAST BASES MUST HAVE A "V" GROOVE DRAIN ALIGNED WITH CONDUIT DIRECTION.



TYPE 'A'



TYPE 'B'

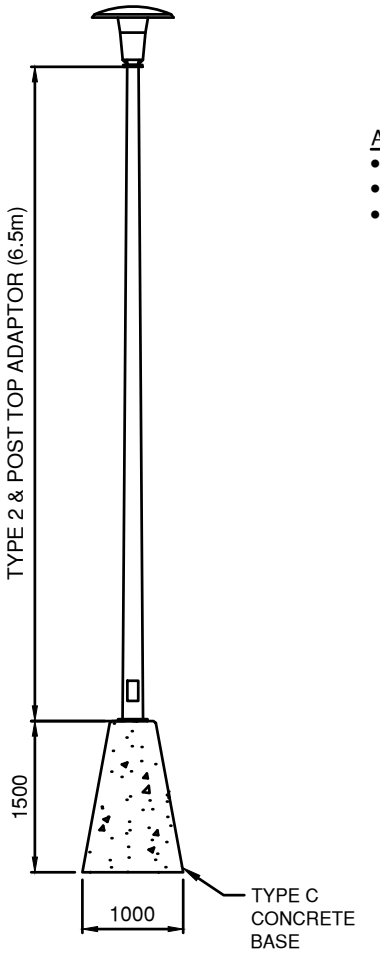
NOT TO SCALE

NOTES:
1. POLE WEIGHTS (POLE ONLY):
   TYPE A: 340kg (CAST STEEL)
   TYPE B: 270kg (CAST STEEL)

CITY OF VICTORIA CLUSTER LIGHTS TYPE 'A' & 'B'

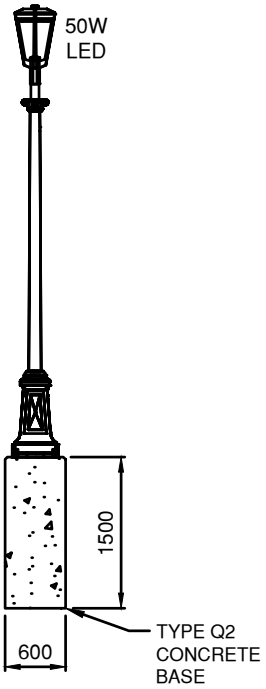
Revision Date	Drawing Number
SEPT. 2025	SD E4.22a

SUPPLEMENTARY STANDARD DETAIL DRAWING



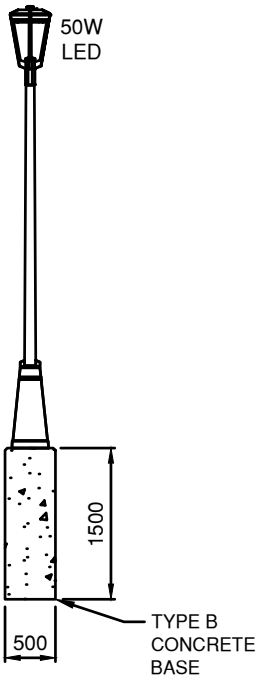
POST TOP:
- GALVANIZED FINISHED

ASHBERY FIXTURE:
- B CLUSTER POLE
- POLE ADAPTOR
- TYPE Q2 BASE



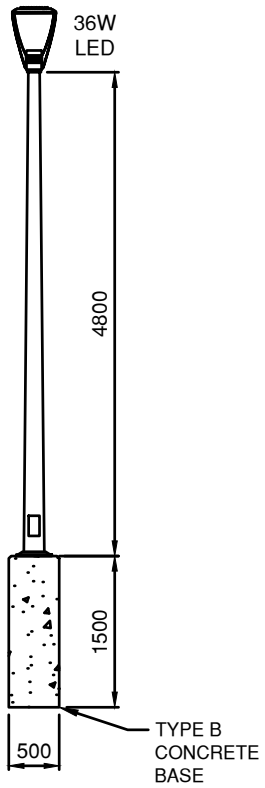
MODERN HERITAGE (MH):
- GLOSS BLACK (RAL 9005)

ASHBERY FIXTURE:
- 100mm ALUMINUM POLE (3.6 - 4.3m) (SEE NOTE 1)
- ASHBERY SKIRT
- TYPE B BASE



SIMPLE HERITAGE (SH):
- GLOSS BLACK (RAL 9005 OR 9017)

LUMINIS MA 20 FIXTURE:
- 100mm ALUMINUM POLE (4.8m) (SEE NOTE 1)
- POLE SKIRT
- TYPE B BASE



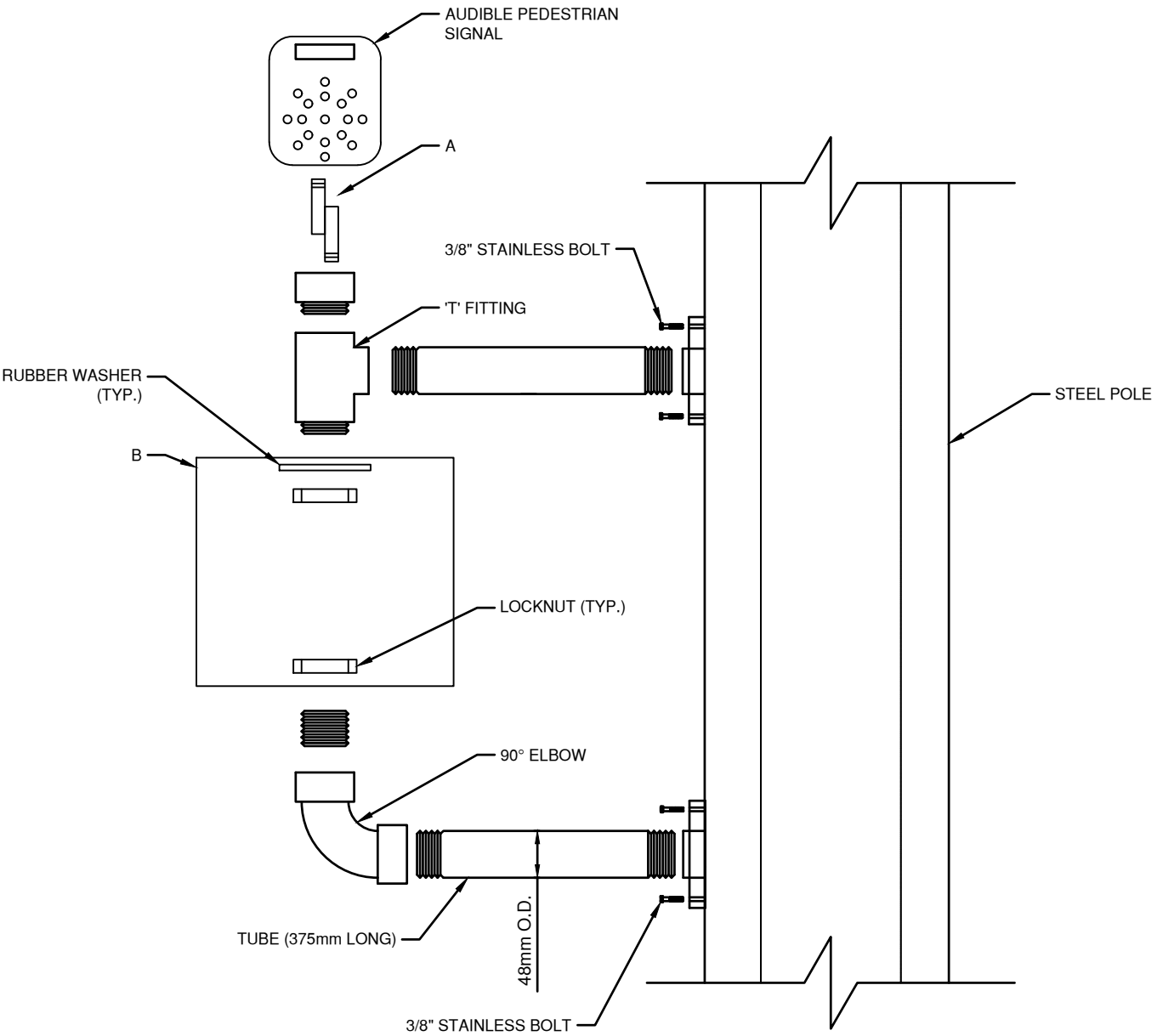
MODERN PEDESTRIAN (MP):
- GLOSS BLACK (RAL 9005)
- LIGHT GREY - JOHNSON STREET BRIDGE (RAL 7046)

NOTES:
1. MINIMUM POLE THICKNESS SHALL BE 4.5mm.
2. ADDITIONAL POLE COLOURS INCLUDE:
   - RAL 3002 (RED) - CHINATOWN
   - RAL 6009 (DARK GREEN) - PARKS

NOT TO SCALE

CITY OF VICTORIA - STANDARDIZED PEDESTRIAN POLES AND FIXTURES	Revision Date	Drawing Number
	SEPT. 2025	SD E4.22b

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

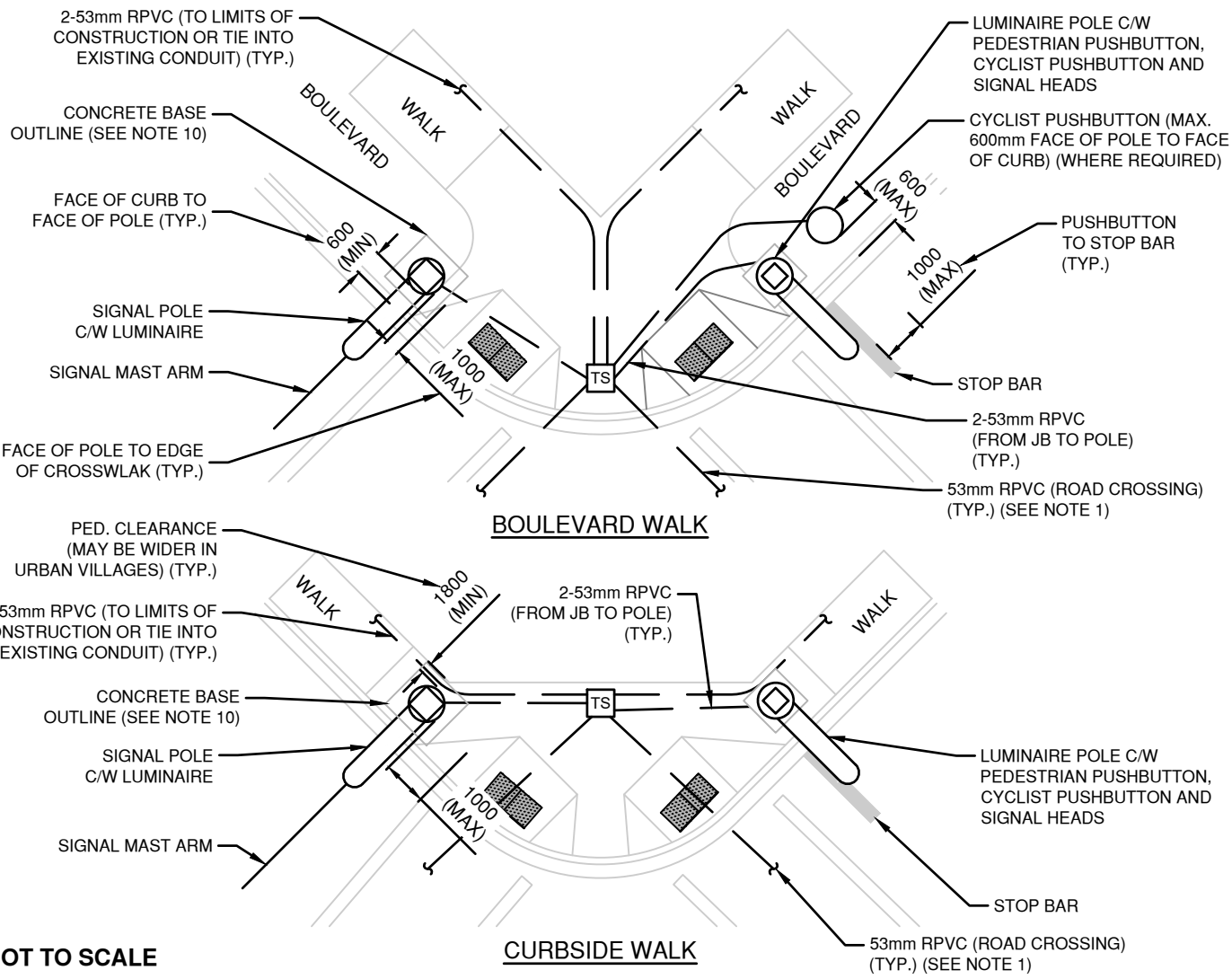
A. ORIENT AUDIBLE SIGNAL DOWNWARD (AIMED AT THE MIDDLE OF THE CROSSWALK). AIM, ADJUST AND CONNECT AUDIBLE SIGNAL AS PER MANUFACTURER'S INSTRUCTIONS TO SATISFACTION OF CONTRACT ADMINISTRATOR.

B. PEDESTRIAN HEAD IS 475mm H X 470mm W (16" McCAIN POLYCARBONATE PED HEAD C/W VANTAGE VISOR).

NOT TO SCALE

SIDE OF POLE PEDESTRIAN & AUDIBLE SIGNAL HEAD MOUNTING (EXISTING/RETROFIT ONLY) (SIDE MOUNT)	Revision Date	Drawing Number
	SEPT. 2025	SD E5.3a

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOT TO SCALE

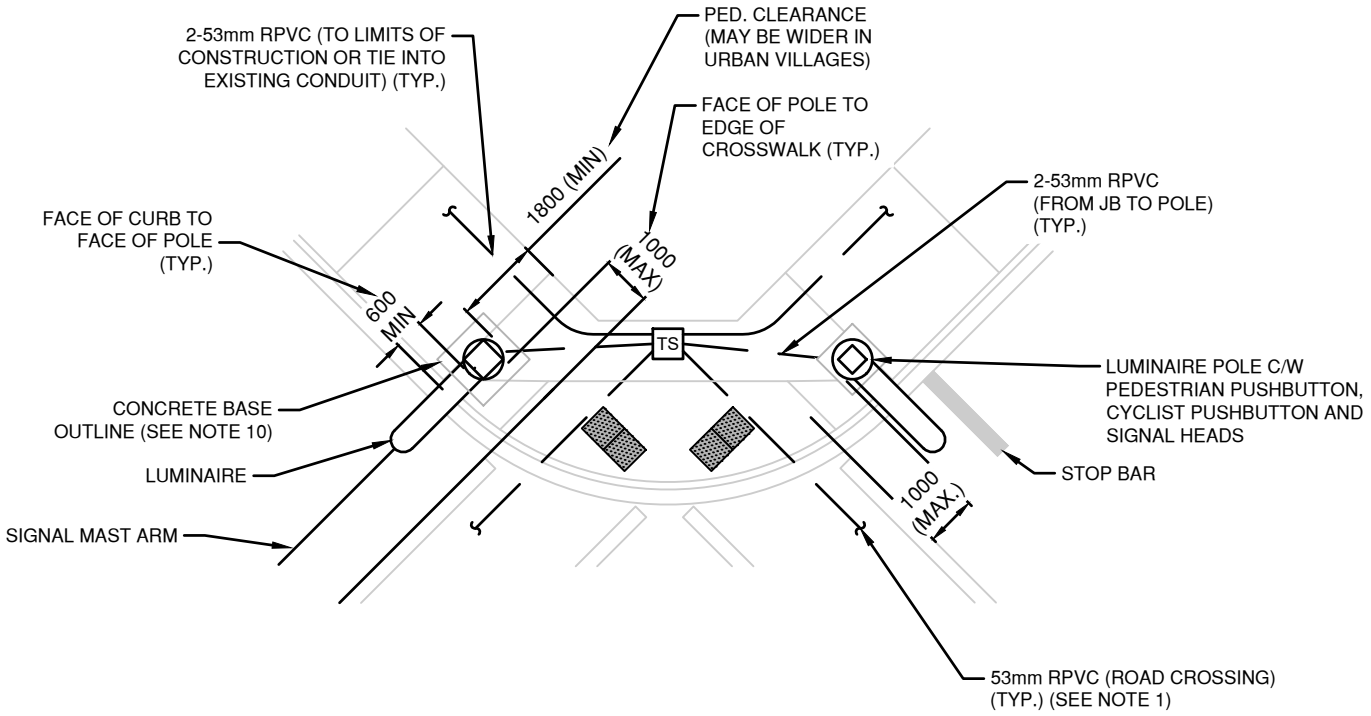
DUAL CURB RAMP DETAIL

NOTES:

1. ALL CONDUIT CROSSINGS AT AN INTERSECTION SHALL INCLUDE AN EQUAL NUMBER OF CONDUITS. THE TOTAL QUANTITY SHALL BE BASED ON THE CROSSING WITH THE GREATEST NUMBER OF LANES. A MINIMUM OF 4-53mm RPVC CONDUITS FOR A ROAD CROSSING WITH 2 LANES, AND 6-53mm RPVC CONDUITS FOR A ROAD CROSSING WITH 3 OR MORE LANES.
2. MINIMUM SIZE AND QUANTITY OF CONDUIT SHOWN FOR ROAD CROSSINGS AND FROM JB TO POLE.
3. JUNCTION BOX PLACEMENT IS DIAGRAMATIC ONLY. IF POSSIBLE JUNCTION BOX SHALL BE INSTALLED OUTSIDE OF WALKABLE AREAS OR AT BACK OF SIDEWALK. JUNCTION BOXES ARE NOT PERMITTED TO BE INSTALLED IN CURB RAMPS.
4. EXISTING JUNCTION BOXES LOCATED IN THE ROADWAY SHALL BE REMOVED, AND A NEW CONDUIT ROAD CROSSING SHALL BE INSTALLED TO NEW JUNCTION BOXES IN THE SIDEWALK.
5. IDEAL LOCATIONS SHOWN FOR REFERENCE. POLE LOCATIONS SHALL BE CONFIRMED WITH THE CITY OF VICTORIA AND THE ENGINEER OF RECORD.
6. LUMINAIRE AND SIGNAL POLES SHALL BE LOCATED A MINIMUM OF 600mm FROM THE EDGE OF THE CURB.
7. PUSHBUTTONS SHALL BE LOCATED A MAXIMUM OF 1000mm FROM EDGE OF CROSSWALK. THE PREFERRED OFFSET IS 300mm FROM PUSHBUTTON TO EDGE OF CROSSWALK.
8. CYCLIST PUSHBUTTONS SHALL BE LOCATED MAX. 600mm FROM FACE OF POLE TO FACE OF CURB, AND SHALL BE MAX. 1000mm FROM THE STOP BAR.
9. IF PREFERRED DISTANCES (MIN/MAX) CANNOT BE ACHIEVED CONTACT THE CITY OF VICTORIA FOR CONFIRMATION.
10. POLE SHALL BE ORIENTATED PARALLEL WITH CROSSWALKS AND MAST ARM SHALL BE ORIENTATED PERPENDICULAR WITH TRAVEL LANES (CUSTOM FLANGE REQUIRED IN SOME CASES). CONCRETE BASES CAN BE INSTALLED IN CROSSWALK LETDOWNS IF REQUIRED.

POLE, JUNCTION BOX AND CONDUIT PLACEMENT - DUAL CURB RAMP

Revision Date	Drawing Number
SEPT. 2025	SD E5.14a



PEDESTRIAN RAMP - SINGLE LET DOWN

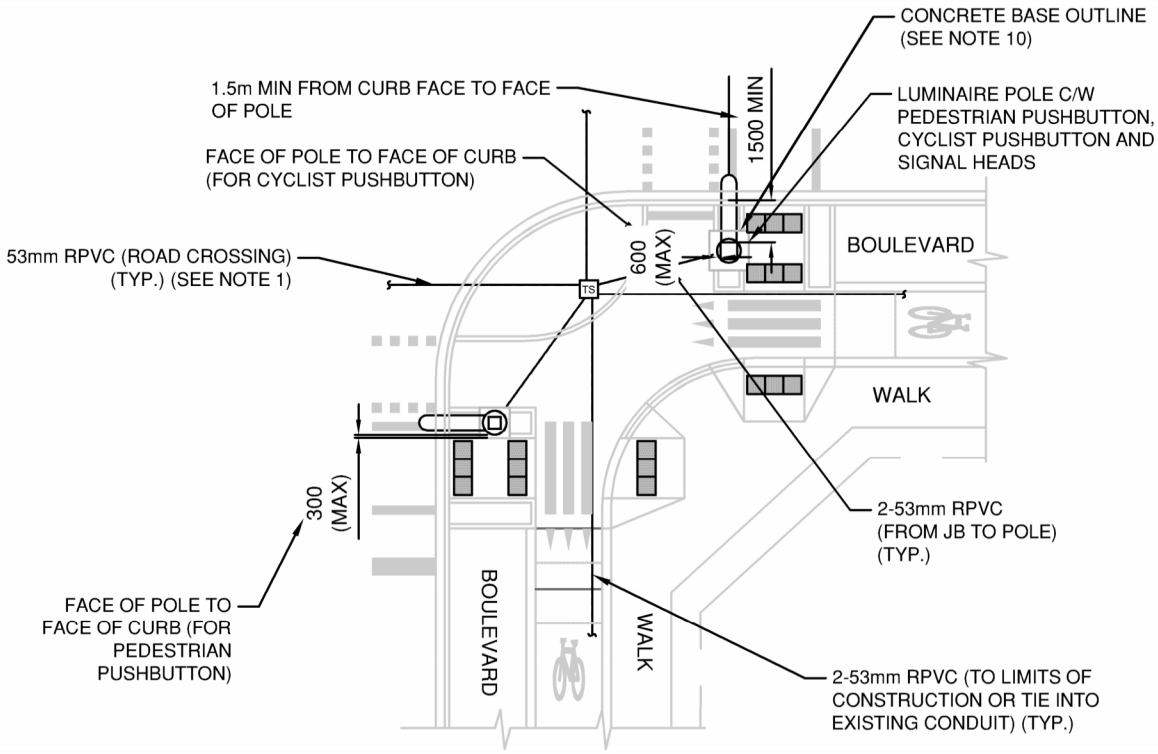
NOTES:

1. ALL CONDUIT CROSSINGS AT AN INTERSECTION SHALL INCLUDE AN EQUAL NUMBER OF CONDUITS. THE TOTAL QUANTITY SHALL BE BASED ON THE CROSSING WITH THE GREATEST NUMBER OF LANES. A MINIMUM OF 4-53mm RPVC CONDUITS FOR A ROAD CROSSING WITH 2 LANES, AND 6-53mm RPVC CONDUITS FOR A ROAD CROSSING WITH 3 OR MORE LANES.
2. MINIMUM SIZE AND QUANTITY OF CONDUIT SHOWN FOR ROAD CROSSINGS AND FROM JB TO POLE.
3. JUNCTION BOX PLACEMENT IS DIAGRAMATIC ONLY. IF POSSIBLE JUNCTION BOX SHALL BE INSTALLED OUTSIDE OF WALKABLE AREAS OR AT BACK OF SIDEWALK. JUNCTION BOXES ARE NOT PERMITTED TO BE INSTALLED IN CURB RAMPS.
4. EXISTING JUNCTION BOXES LOCATED IN THE ROADWAY SHALL BE REMOVED, AND NEW CONDUIT ROAD CROSSING SHALL BE INSTALLED TO NEW JUNCTION BOXES IN THE SIDEWALK.
5. IDEAL LOCATIONS SHOWN FOR REFERENCE. POLE LOCATIONS SHALL BE CONFIRMED WITH THE CITY OF VICTORIA AND THE ENGINEER OF RECORD.
6. LUMINAIRE AND SIGNAL POLES SHALL BE LOCATED A MINIMUM OF 600mm FROM THE EDGE OF THE CURB.
7. PUSHBUTTONS SHALL BE LOCATED A MAXIMUM OF 1000mm FROM EDGE OF CROSSWALK. THE PREFERRED OFFSET IS 300mm FROM PUSHBUTTON TO EDGE OF CROSSWALK.
8. CYCLIST PUSHBUTTONS SHALL BE LOCATED A MAXIMUM OF 600mm FROM FACE OF POLE TO FACE OF CURB, AND SHALL BE
9. IF PREFERRED DISTANCES (MIN/MAX) CANNOT BE ACHIEVED CONTACT THE CITY OF VICTORIA FOR CONFIRMATION.
10. POLE SHALL BE ORIENTATED PARALLEL WITH CROSSWALKS AND MAST ARM SHALL BE ORIENTATED PERPENDICULAR WITH TRAVEL LANES (CUSTOM FLANGE REQUIRED IN SOME CASES). CONCRETE BASES CAN BE INSTALLED IN CROSSWALK LETDOWNS IF REQUIRED.

NOT TO SCALE

POLE, JUNCTION BOX, AND CONDUIT PLACEMENT - SINGLE LET DOWN WITH TACTILES	**Revision Date**	**Drawing Number**
	SEPT. 2025	**SD E5.14b**

SUPPLEMENTARY STANDARD DETAIL DRAWING



PROTECTED INTERSECTION

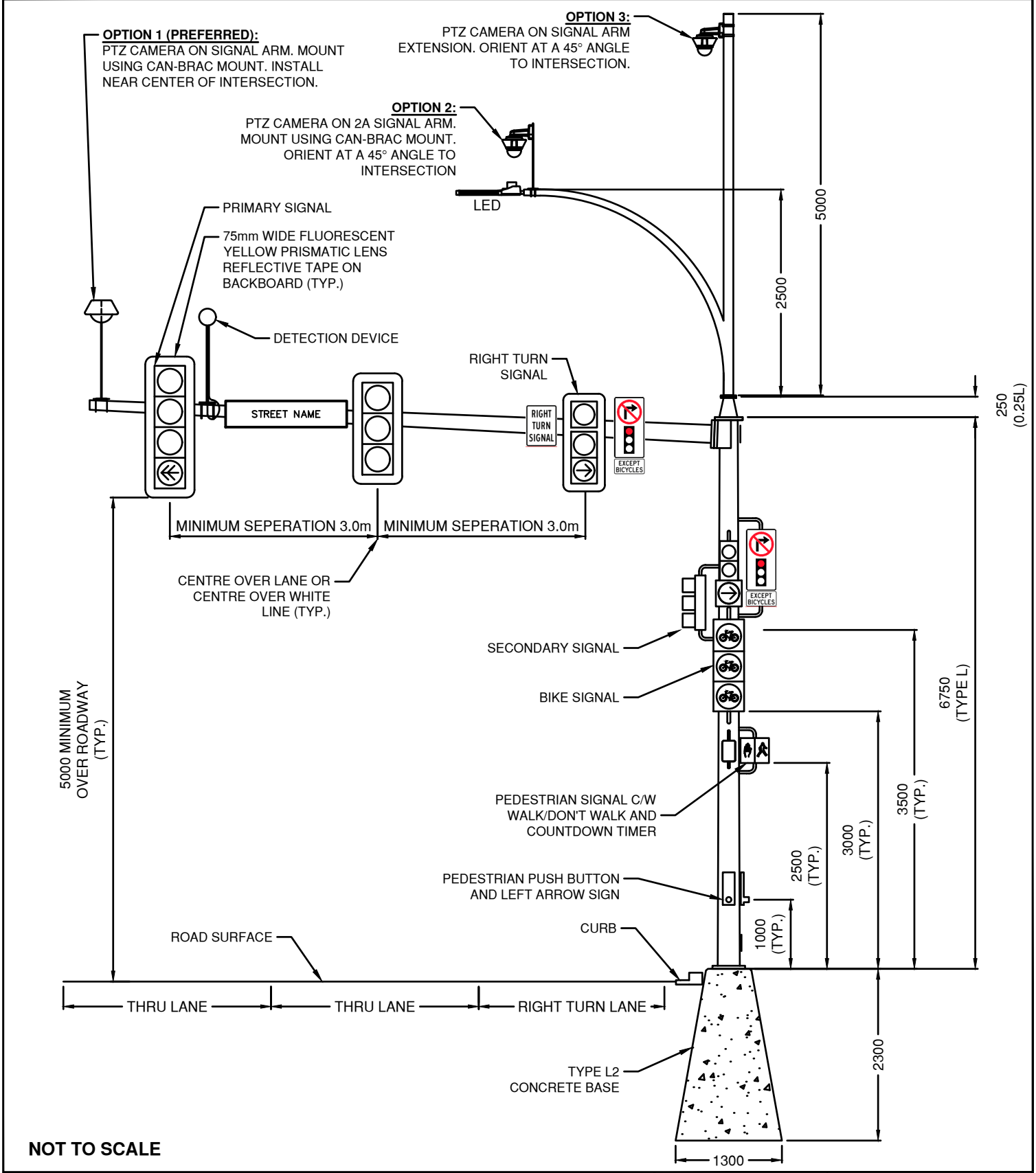
NOTES:

1. ALL CONDUIT CROSSINGS AT AN INTERSECTION SHALL INCLUDE AN EQUAL NUMBER OF CONDUITS. TYPICALLY 6-53mm RPVC CONDUITS FOR ALL SIGNALIZED INTERSECTIONS.
2. MINIMUM SIZE AND QUANTITY OF CONDUIT SHOWN FOR ROAD CROSSINGS AND FROM JB TO POLE.
3. JUNCTION BOX PLACEMENT IS DIAGRAMATIC ONLY. IF POSSIBLE JUNCTION BOX SHALL BE INSTALLED OUTSIDE OF WALKABLE AREAS OR AT BACK OF SIDEWALK. JUNCTION BOXES ARE NOT PERMITTED TO BE INSTALLED IN CURB RAMPS.
4. EXISTING JUNCTION BOXES LOCATED IN THE ROADWAY SHALL BE REMOVED, AND NEW CONDUIT ROAD CROSSING SHALL BE INSTALLED TO NEW JUNCTION BOXES IN THE SIDEWALK.
5. IDEAL LOCATIONS SHOWN FOR REFERENCE. POLE LOCATIONS SHALL BE CONFIRMED WITH THE CITY OF VICTORIA AND THE ENGINEER OF RECORD.
6. LUMINAIRE AND SIGNAL POLES SHALL BE LOCATED A MINIMUM OF 600mm FROM FACE OF CURB (ROAD).
7. PEDESTRIAN PUSHBUTTONS SHALL BE LOCATED A MAXIMUM OF 300mm FROM FACE OF DROP CURB (AT CROSSWALK).
8. CYCLIST PUSHBUTTONS SHALL BE LOCATED A MAXIMUM OF 600mm FROM FACE OF POLE TO FACE OF DROP CURB (AT CROSSWALK).
9. IF PREFERRED DISTANCES (MIN/MAX) CAN NOT BE ACHIEVED CONTACT THE CITY OF VICTORIA FOR CONFIRMATION.
10. POLE SHALL BE ORIENTATED PARALLEL WITH CROSSWALKS AND MAST ARM SHALL BE ORIENTATED PERPENDICULAR WITH TRAVEL LANES (CUSTOM FLANGE REQUIRED IN SOME CASES).

NOT TO SCALE

POLE, JUNCTION BOX, AND CONDUIT PLACEMENT - PROTECTED INTERSECTION	Revision Date	Drawing Number
	SEPT. 2025	SD E5.14c

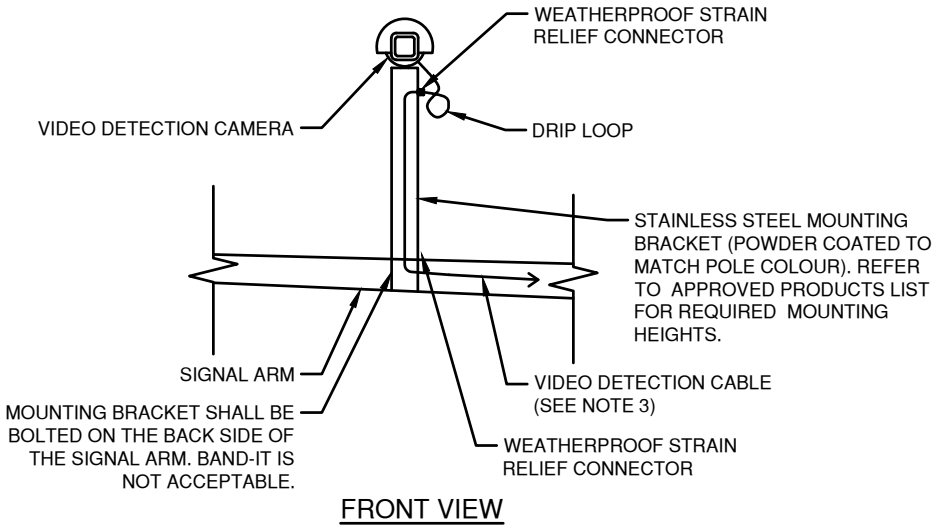
SUPPLEMENTARY STANDARD DETAIL DRAWING



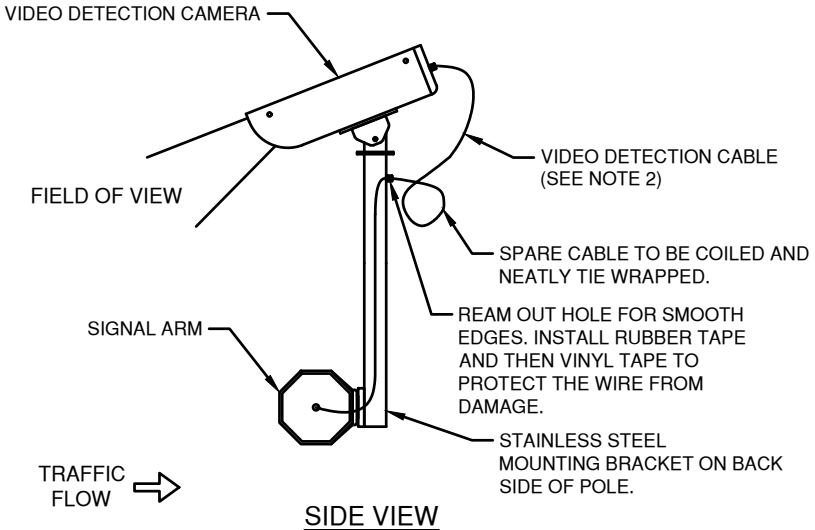
NOT TO SCALE

SIGNAL MOUNTING HEIGHTS

Revision Date	Drawing Number
SEPT. 2025	SD E5.14d



FRONT VIEW



SIDE VIEW

NOTES:

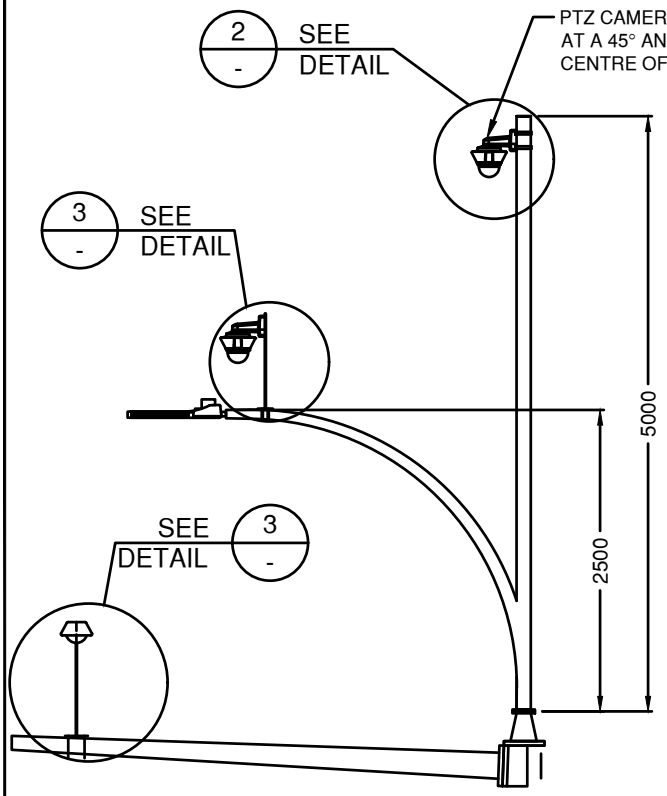
1. CONTRACTOR SHALL PROVIDE THE VIDEO DETECTION COMPONENTS TO THE CITY OF VICTORIA FOR INSTALLATION INSIDE TRAFFIC CONTROLLER CABINET. CABINET COMPONENTS SHALL BE RACK MOUNT SUITABLE FOR INSTALLATION INSIDE THE 332 TRAFFIC CONTROLLER CABINET. REFER TO THE INSTALLATION GUIDE FOR DETAILS AND REQUIRED CONTRACTOR SUPPLIED ITEMS.
2. VIDEO DETECTION CABLE SHALL BE RATED PER MANUFACTURER RECOMMENDATIONS.
3. VIDEO DETECTION CAMERA SHALL BE INSTALLED AT FURTHEST POINT ON THE SIGNAL ARM TO PROVIDE THE BEST FIELD OF VIEW. CONFIRM WITH THE CITY OF VICTORIA TECHNICAL SERVICE SUPERVISOR BEFORE MOUNTING.
4. VIDEO DETECTION CAMERAS SHALL BE LABELLED BY PHASE OR COLOUR CODED. REFER TO THE SIGNAL WIRING - COLOUR CODING TABLE ON SD-E8.1a OF THIS DOCUMENT.

NOT TO SCALE

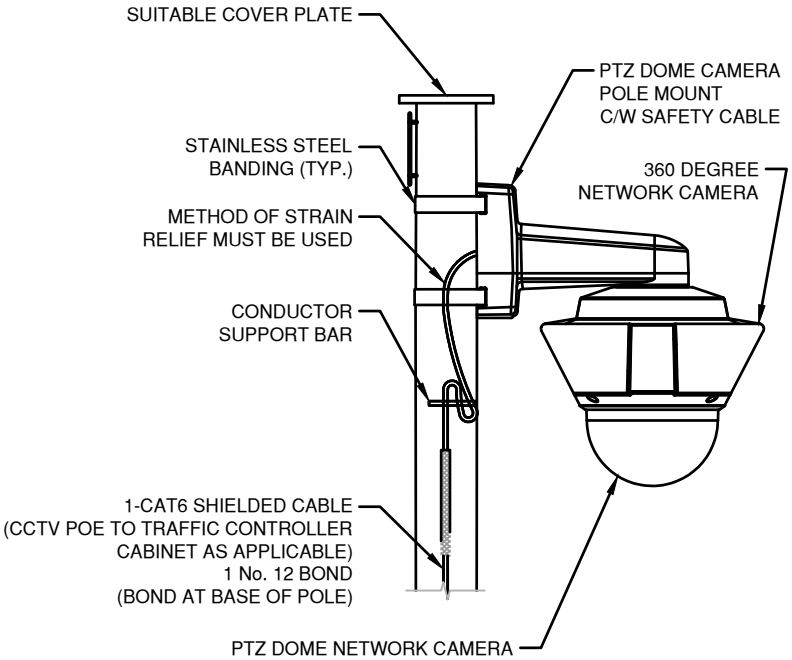
VIDEO DETECTION DETAIL AND WIRING

Revision Date	Drawing Number
SEPT. 2025	SD E5.16

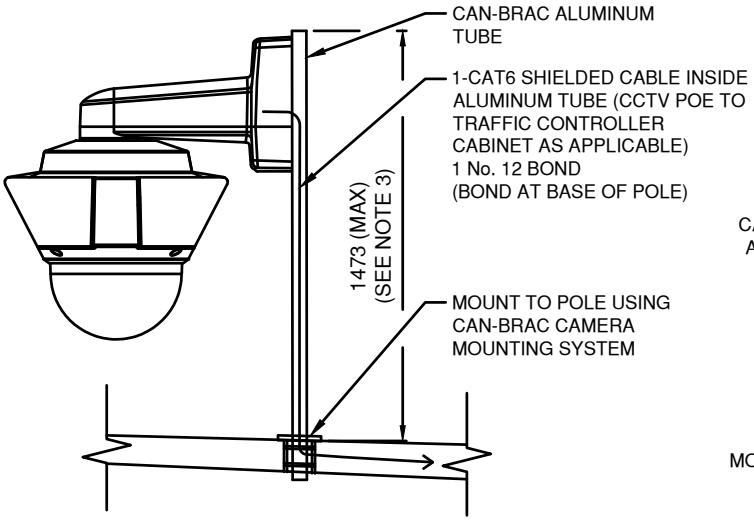
SUPPLEMENTARY STANDARD DETAIL DRAWING



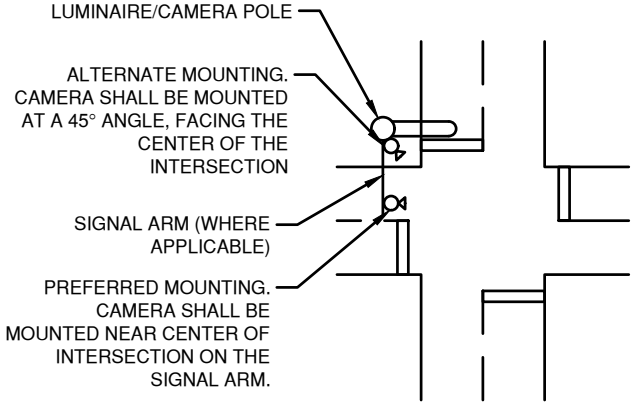
DETAIL 1 - NETWORK CAMERA MOUNTING CONFIGURATION
N.T.S.



DETAIL 2 - PTZ DOME NETWORK CAMERA MOUNTING
N.T.S.



DETAIL 3 - PTZ DOME NETWORK CAMERA CAN-BRAC MOUNTING
N.T.S



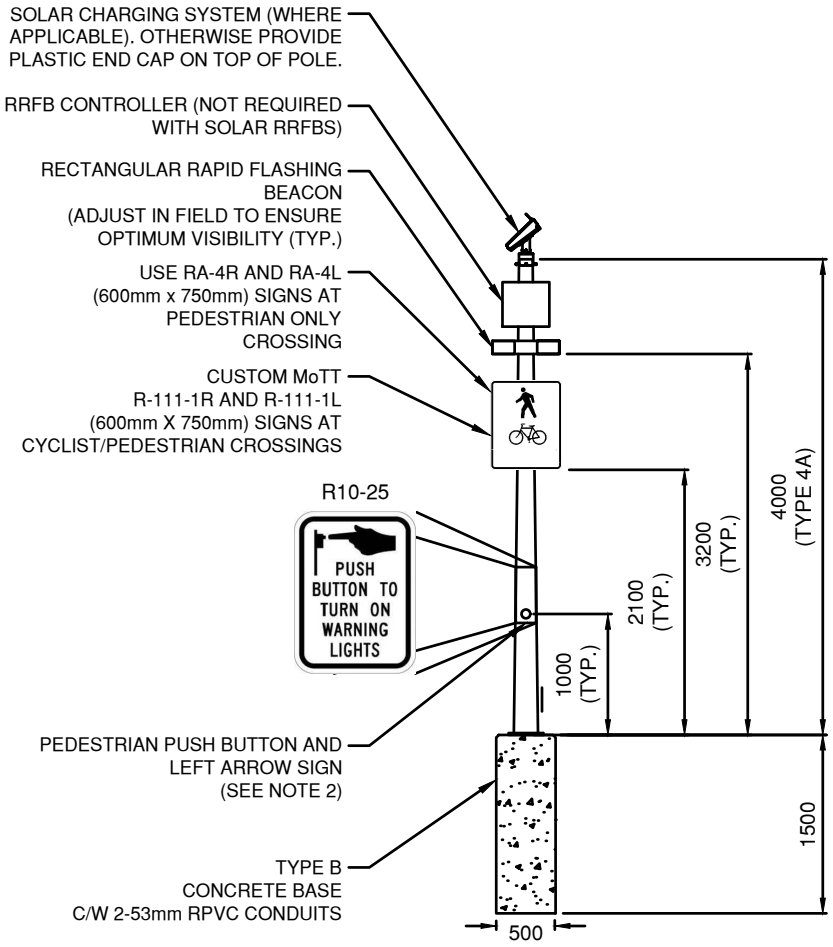
PTZ CAMERA MOUNTING PLAN VIEW

NOTES:
1. 3/8" BOLT SHALL BE USED TO ATTACH SAFETY CABLE TO POLE.
2. CAMERA MODELS SHALL BE CONFIRMED WITH THE CITY OF VICTORIA PRIOR TO ORDERING.
3. THE PREFERRED BRACKET HEIGHT IS 1473mm. IF REQUIRED, CAMERAS MAY BE MOUNTED ON A BRACKET AS SHORT AS 305mm.

NOT TO SCALE

CCTV CAMERA DETAIL AND WIRING

Revision Date	Drawing Number
SEPT. 2025	SD E5.17



RRFB DETAIL

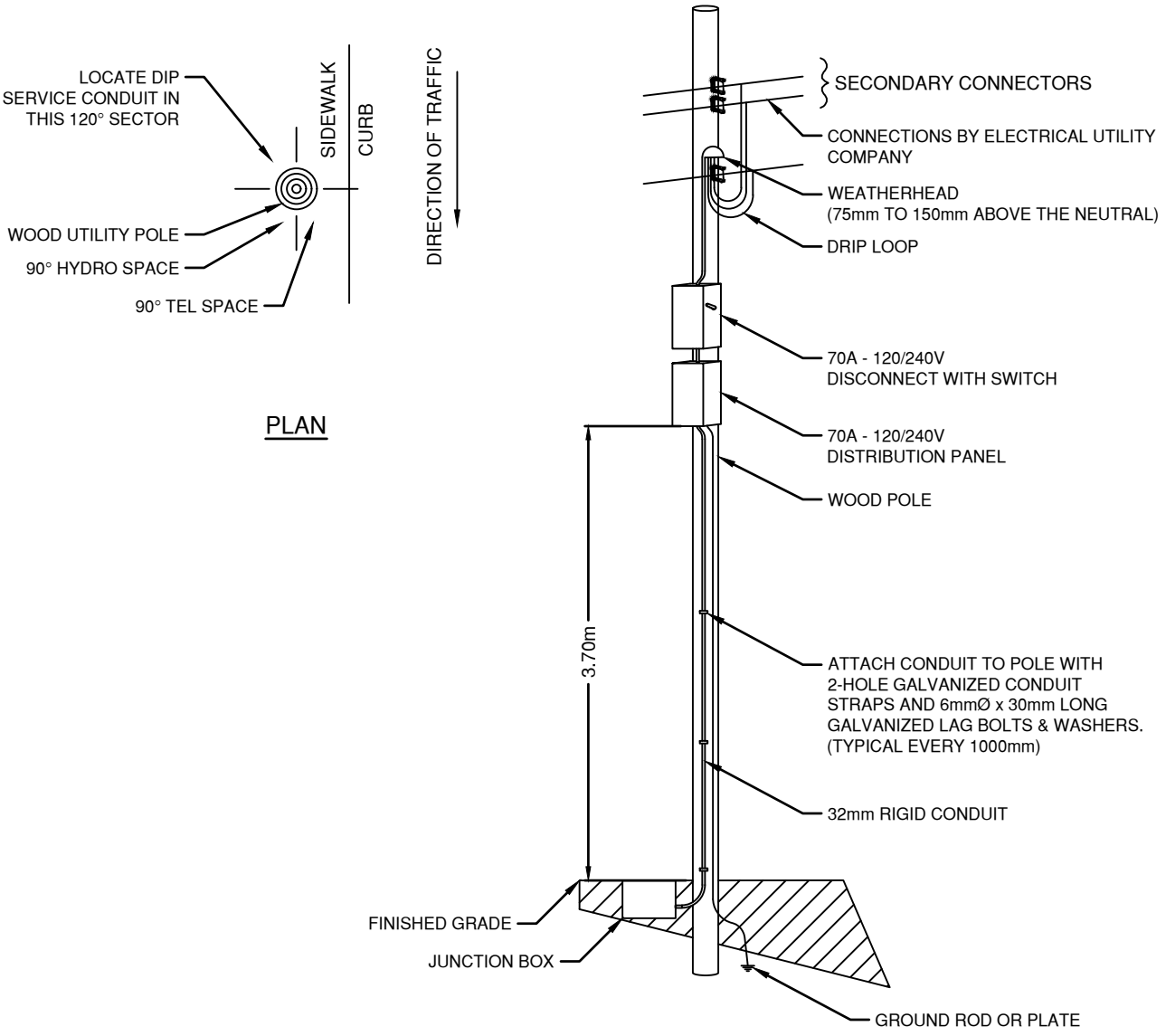
NOTES:

1. RRFBs SHALL BE 120V HARDWIRED WITH ALL PUSHBUTTONS HARDWIRED (NO SOLAR PANELS AND WIRELESS COMMUNICATION UNLESS APPROVED BY THE CITY).THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL COMPONENTS OF THE RRFBs.
2. PEDESTRIAN PUSHBUTTON SHALL BE AUDIBLE INFORMATION DEVICE (AID) STYLE. AID PUSHBUTTON AUDIBLE MESSAGE TO BE CONFIRMED WITH THE CITY.
3. PEDESTRIAN RRFB SHALL BE ADJUSTED IN THE FIELD TO ENSURE OPTIMUM VISIBILITY.
4. CYCLIST PUSHBUTTONS SHALL BE BULLDOG PUSHBUTTON WITH MOMENTARY RED LED INDICATION AND DUAL PULSE AUDIBLE FEEDBACK. CYCLIST PUSHBUTTON SIGN SHALL BE GEL 210.
5. USE MANUFACTURER SUPPLIED OR RECOMMENDED MATERIAL ONLY. DO NOT MODIFY HARNESSES OR FACTORY CONNECTIONS. NO SPLICES ALLOWED IN MANUFACTURER SUPPLIED CABLE.
6. SOLAR PANELS SHALL BE ORIENTED FACING SOUTH, OR, IF THE SOUTH IS BLOCKED SOLAR PANELS SHALL BE ORIENTED FACING WEST.

NOT TO SCALE

RECTANGULAR RAPID FLASHING BEACON (RRFB) POLE DETAILS (SOLAR AND HARDWIRED)	Revision Date	Drawing Number
	SEPT. 2025	SD E5.18

SUPPLEMENTARY STANDARD DETAIL DRAWING

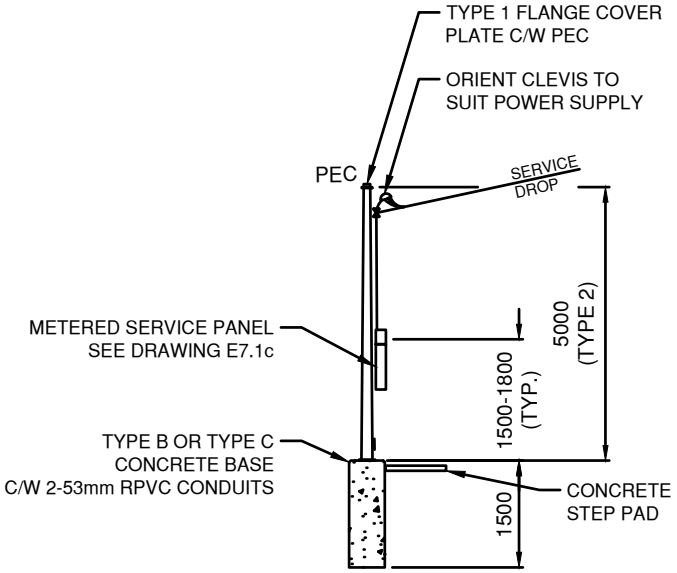


NOTES:

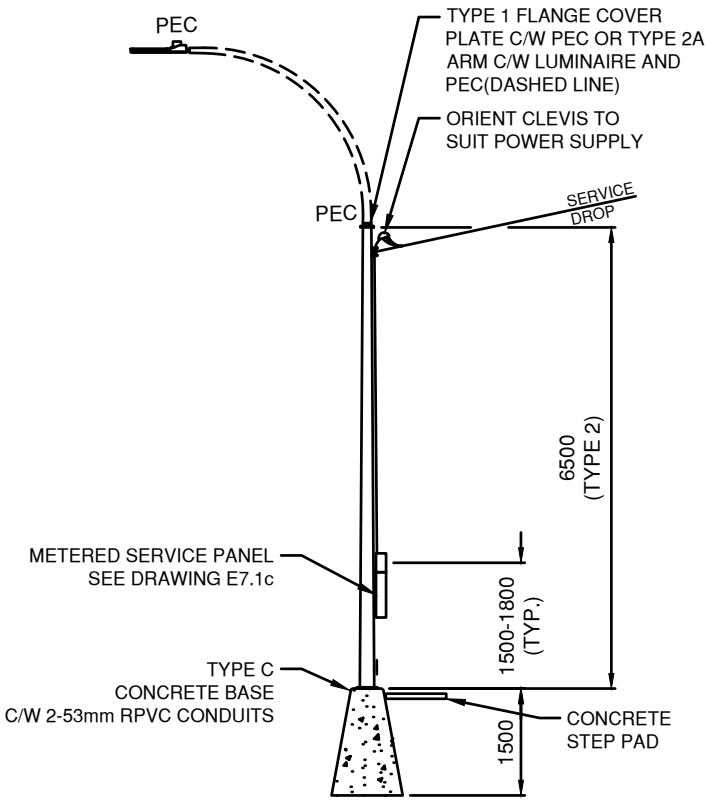
1. REFER TO CONTRACT DRAWINGS, AND MMCD SECTION 34 41 13 FOR DETAIL SPECIFICATIONS.
2. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF SERVICE CONDUCTORS. CONNECTION BY ELECTRICAL UTILITY COMPANY UNLESS OTHERWISE NOTED.
3. CONTRACTOR TO OBTAIN PERMISSION FROM UTILITY COMPANY PRIOR TO INSTALLING EQUIPMENT ON THEIR POLE.
4. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
5. SERVICE CONDUCTORS AS DETAILED ON CONTRACT DRAWINGS.
6. EXISTING CONFIGURATIONS ONLY.

OVERHEAD DIP SERVICE FOR SIGNALS AND STREET LIGHTS (BC HYDRO APPROVAL REQUIRED)	Revision Date	Drawing Number
	SEPT. 2025	SD E7.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING



OVERHEAD SERVICE DROP ON ROADWAY SHOULDER



OVERHEAD SERVICE DROP ACROSS ROADWAY

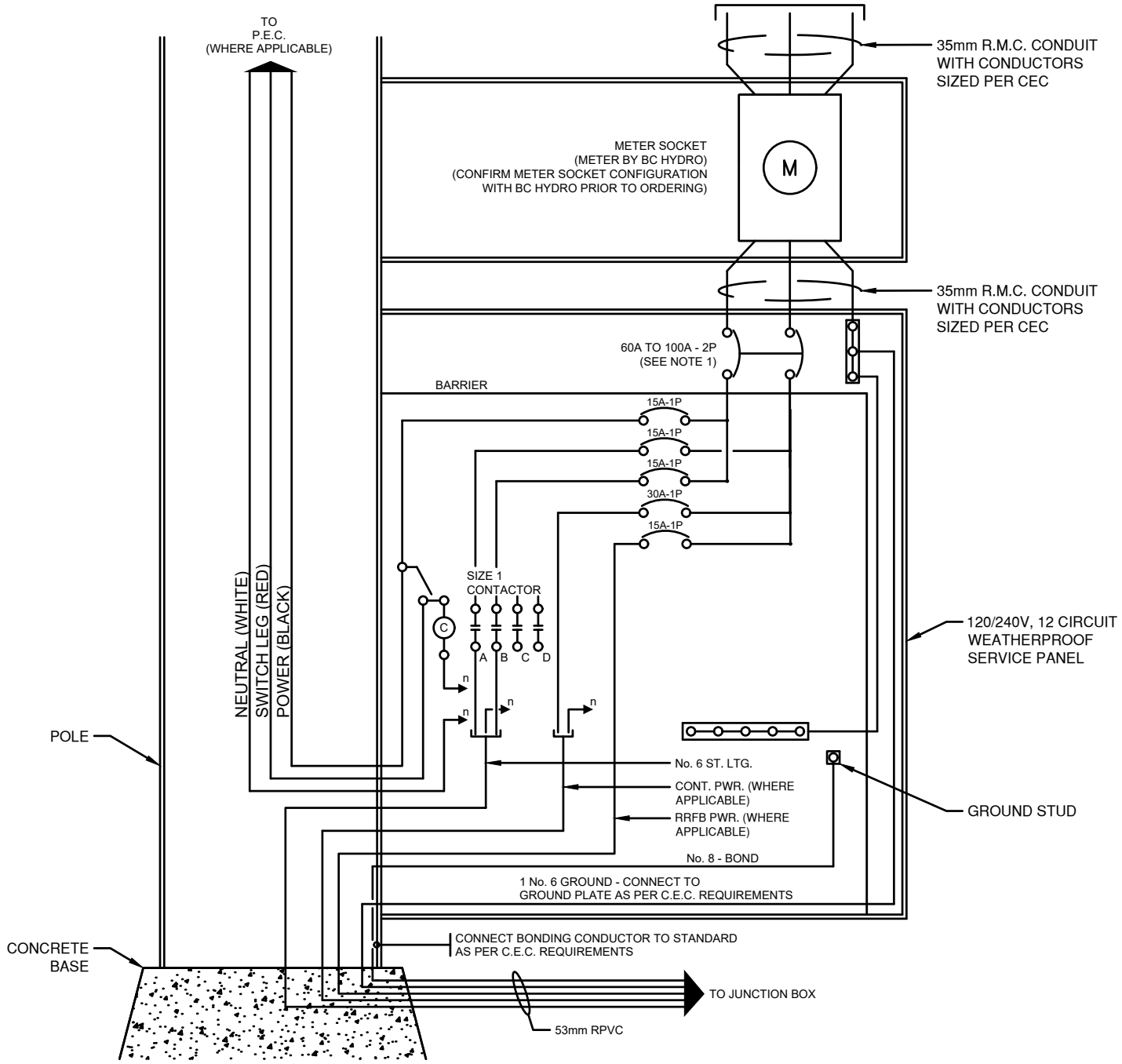
NOTES:

1. REFER TO CONTRACT DRAWINGS, AND MMCD SECTION 34 41 13 FOR DETAIL SPECIFICATIONS.
2. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF SERVICE CONDUCTORS. ALL CONNECTIONS AND DISCONNECTIONS ARE TO BE MADE BY THE CITY OF VICTORIA UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
4. SERVICE CONDUCTORS AS DETAILED ON CONTRACT DRAWINGS.
5. PROVIDE PROVISIONS FOR METER WHERE IT IS NOT REQUIRED YET.
6. ENSURE BC HYDRO MINIMUM VERTICAL CLEARANCES ARE MET.
7. SERVICE PANELS SHALL NOT BE INSTALLED ADJACENT TO SIDEWALKS OR PATHWAYS.
10. SERVICE PANELS SHALL NOT BE INSTALLED ON POLES WITH TRAFFIC SIGNAL PUSHBUTTONS.
11. THE CONTRACTOR SHALL PHOTOGRAPH INSTALLED GROUND PLATES AND PROVIDE A COPY TO THE CITY ALONG WITH THE ELECTRICAL PERMIT NUMBER.
12. SERVICE PANELS SHALL BE EQUIPPED WITH A 600mmx600mmx100mm CONCRETE STEP PAD IF SERVICE IS NOT LOCATED IN HARDSCAPE AREA.

NOT TO SCALE

OVERHEAD DIP METERED SERVICE FOR SIGNALS AND STREET LIGHTS C/W METERED SERVICE PANEL	Revision Date	Drawing Number
	SEPT. 2025	SD E7.1b

SUPPLEMENTARY STANDARD DETAIL DRAWING



WIRING DIAGRAM - METERED SERVICE PANEL

NOTES:

1. BREAKER TERMINALS SHALL BE RATED FOR 75 DEGREE CONDUCTOR TERMINATION TEMPERATURE (OR HIGHER).

WIRING DIAGRAM - METERED SERVICE PANEL	Revision Date	Drawing Number
	SEPT. 2025	SD E7.1c

SUPPLEMENTARY STANDARD DETAIL DRAWING

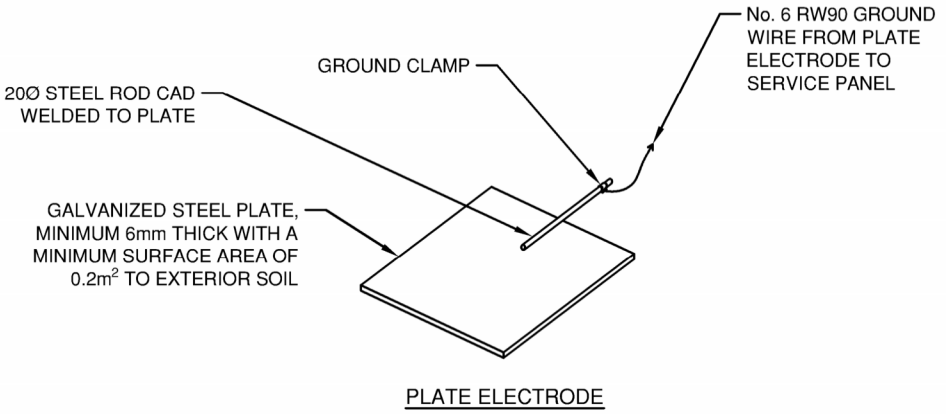
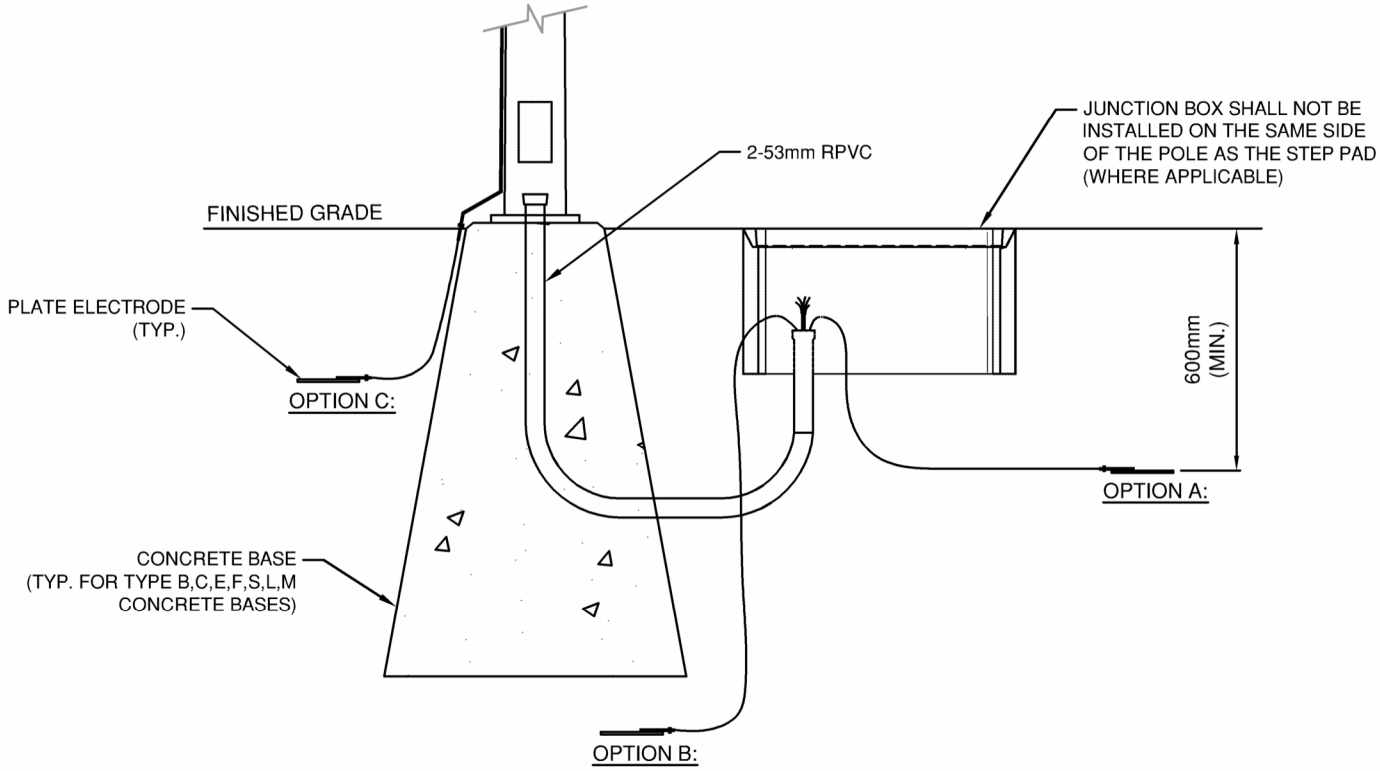


PLATE ELECTRODE



NOTES:

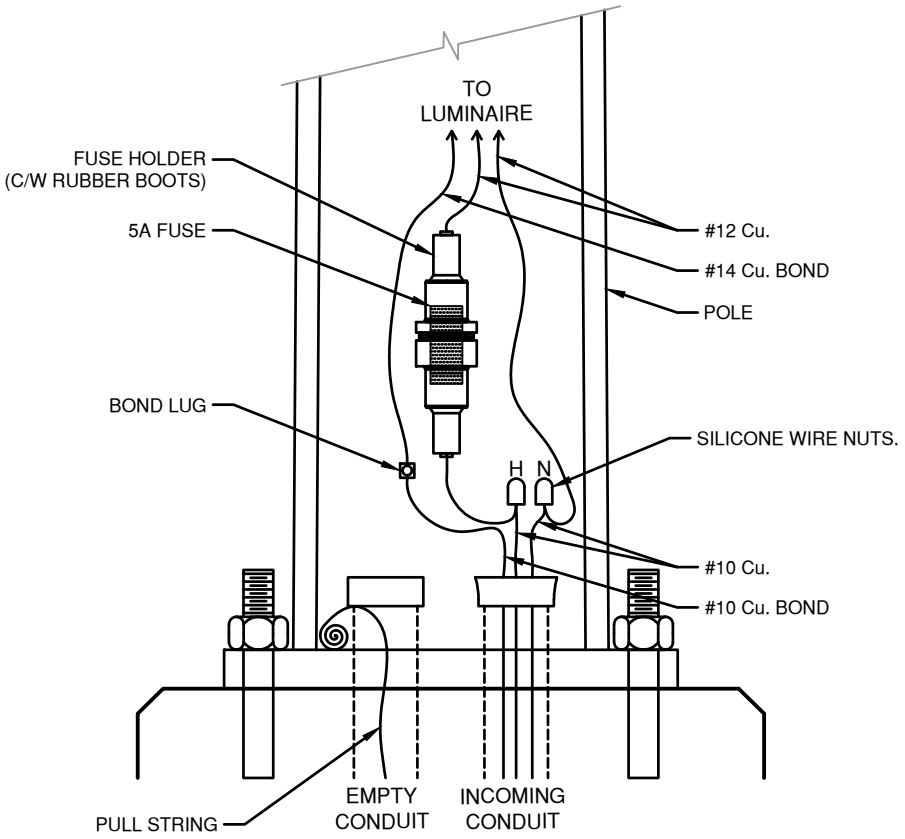
1. 600mm, MINIMUM INSTALLATION DEPTH OF GROUND PLATE.
2. PROVIDE A PICTURE OF THE GROUND PLATE INSTALLATION TO THE CITY OF VICTORIA, IF NOT INSPECTED.
3. GROUND RESISTANCE READING SHALL BE 25 OHMS OR LESS.
4. OPTION A: GROUND CONDUCTOR RUN SHALL BE RUN IN CONDUIT THROUGH JUNCTION BOX. GROUND PLATE TO BE INSTALLED NEXT TO JUNCTION BOX AT A MINIMUM DEPTH OF 600mm BELOW GRADE.
5. OPTION B: GROUND CONDUCTOR SHALL BE RUN IN CONDUIT THROUGH JUNCTION BOX. GROUND PLATE TO BE INSTALLED UNDER CONCRETE BASE.
6. OPTION C: RMC STRAPPED TO THE OUTSIDE OF THE POLE (REQUIRED GROUNDING AT BOTH ENDS OF THE CONDUIT), TRANSITIONING TO RPVC FOR 300mm (MIN.)
7. SERVICE PANELS SHALL BE EQUIPPED WITHA 600mm x 600mm x 100mm CONCRETE STEP PAD IF SERVICE IS NOT LOCATED IN HARDSCAPE AREA. JUNCTION BOX SHALL NOT BE INSTALLED ON THE SAME SIDE OF THE POLE AS THE STEP PAD.

NOT TO SCALE

GROUND PLATE INSTALLATION DETAILS

Revision Date	Drawing Number
SEPT. 2025	SD E7.10a

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOT TO SCALE

LUMINAIRE POLE WIRING DIAGRAM

Revision Date	Drawing Number
SEPT. 2025	SD E7.11a

SUPPLEMENTARY STANDARD DETAIL DRAWING

SIGNAL WIRE - COLOUR CODING

COLOUR	TRACER	DIRECTION	DESCRIPTION
RED	-	NORTHBOUND	VEH/PED/PUSHBUTTON
GRN	-	EASTBOUND	VEH/PED/PUSHBUTTON
YEL	-	SOUTHBOUND	VEH/PED/PUSHBUTTON
BLU	-	WESTBOUND	VEH/PED/PUSHBUTTON
COLOUR	TRACER	DIRECTION	DESCRIPTION
RED	ORG	NORTHBOUND	LEFT TURN ARROW
GRN	ORG	EASTBOUND	LEFT TURN ARROW
YEL	ORG	SOUTHBOUND	LEFT TURN ARROW
BLU	ORG	WESTBOUND	LEFT TURN ARROW

COLOUR	TRACER	DIRECTION	DESCRIPTION
RED	BRN	NORTHBOUND	BIKE
GRN	BRN	EASTBOUND	BIKE
YEL	BRN	SOUTHBOUND	BIKE
BLU	BRN	WESTBOUND	BIKE
COLOUR	TRACER	DIRECTION	DESCRIPTION
RED	-	NORTHBOUND	CAMERA
GRN	-	EASTBOUND	CAMERA
YEL	-	SOUTHBOUND	CAMERA
BLU	-	WESTBOUND	CAMERA

SIGNAL WIRING

LOOP WIRE
CURB = BLUE
NEXT = YELLOW
NEXT = RED
NEXT = BROWN
T.T. = TRACE TAPE

PHASE MOVEMENT
Ø 2 = RED
Ø 4 = GREEN
Ø 6 = YELLOW
Ø 8 = BLUE

SIGNAL CONDUCTORS
5C (#14AWG) = VEHICLE
4C (#14AWG) = L/T ARROW AND PED
3C (#14AWG) = PRE-EMPTION (120V)
3C (#20AWG) C/W DRAIN = PRE-EMPTION (LOW VOLTAGE)
2C (#16AWG)= PUSH BUTTON
2C (#16AWG) BELDEN c/w SHIELD =VEHICLE LOOP
2C (#16AWG) BELDEN NO SHIELD = PED INHIBIT

*ALL CONDUCTORS TO THE CONTROLLER NEED TO BE 2X THE CABINET HEIGHT

STREET LIGHTING CONDUCTOR NOTES:

1. #6 STREET LIGHTING CONDUCTORS THAT ARE TERMINATED WITHIN UNDERGROUND JB's ARE TO BE CONNECTED WITH THE APPROPRIATE RATED SPLIT BOLTS OR SILICONE WIRE NUTS THAT ARE TWISTED TIGHT AND SECURED-IN-PLACE WITH VINYL TAPE.
2. SPLIT BOLT TAPING TO BE BLACK VINYL TAPE, VULCANIZED RUBBER, THEN BLACK VINYL TAPE.
3. ALL TERMINATIONS TO BE MINIMUM 450mm OUT OF THE JB.
4. STREET LIGHTING CONDUCTORS WITHIN HANDHOLES ARE TO BE CONNECTED WITH SILICONE WIRE NUTS. CONDUCTORS TO EXTEND MIN. 200mm OUTSIDE POLE.
5. MINIMUM WIRE SIZES:
   - FEEDERS: #6
   - JB TO POLE: #10
   - INSIDE POLE: #12
6. TRAFFIC CONTROLLER POWER CONDUCTORS CANNOT BE SPLICED AND MUST BE RUN CONTINUOUS FROM SERVICE TO CONTROLLER.

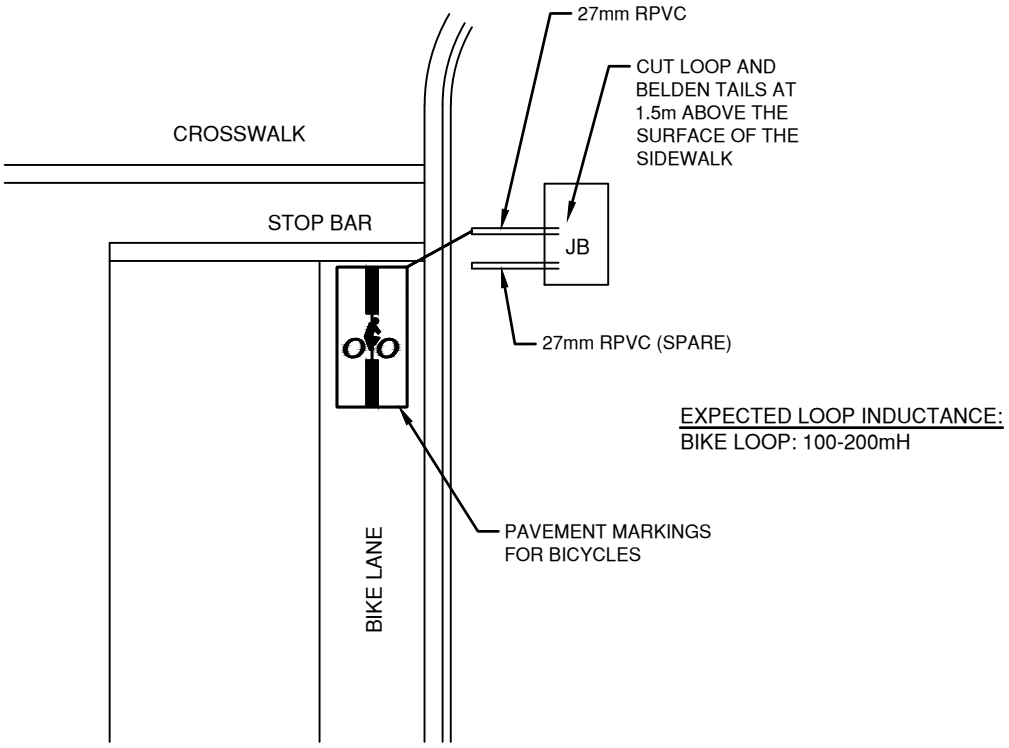
TRAFFIC SIGNAL LOOPS & WIRING

Revision Date	Drawing Number
SEPT. 2025	SD E8.1a

SUPPLEMENTARY STANDARD DETAIL DRAWING

BIKE LOOP DETAIL

1x2m QUADRUPOLE LOOPS



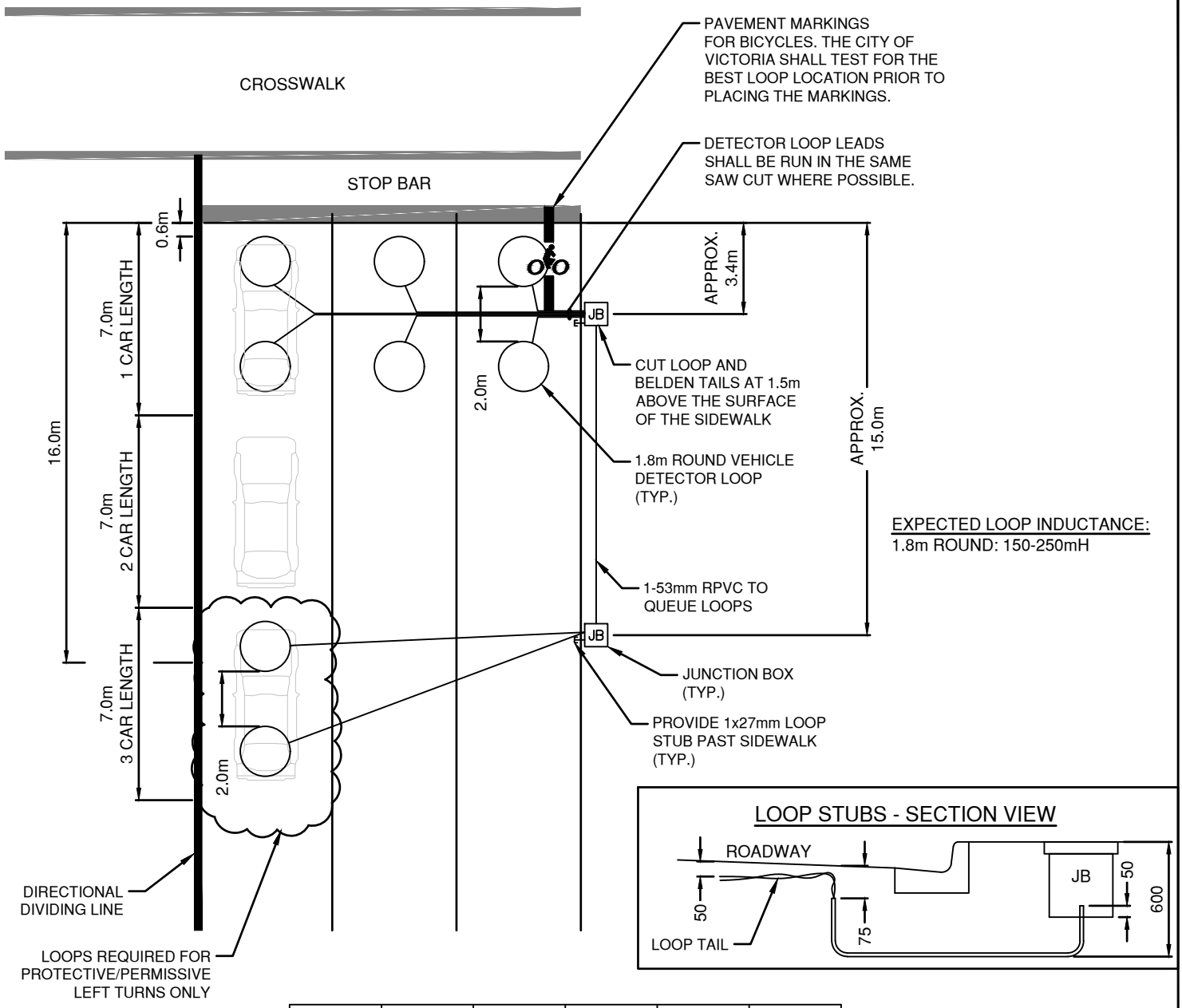
NOTES:

1. REFER TO CONTRACT DRAWINGS, MMCD AND CITY SUPPLEMENTAL SPECIFICATIONS FOR FURTHER INFORMATION.
2. MINIMUM 1-27mm RPVC STUB PER LANE FOR EACH SET OF LOOPS AND ADD ONE LOOP STUB, SPARE.
3. LOOPS MUST BE TESTED PRIOR TO MARKING BIKE SYMBOL.
4. LOOP INDUCTANCE SHALL BE GREATER THAN THE SHIELDED CABLE INDUCTANCE (2:1 RATIO MINIMUM IS REQUIRED). NUMBER OF TURNS PER MoTT SPECIFICATIONS.
5. 16GA SHIELD WIRE SHALL BE USED.

NOT TO SCALE

BIKE LOOP DETAIL 1m X 2m QUADRUPOLE LOOPS	Revision Date SEPT. 2025	Drawing Number SD E8.1b

SUPPLEMENTARY STANDARD DETAIL DRAWING



LOOP SET	LANE 1	LANE 2	LANE 3	LANE 4	LANE 5
STOP	BLUE	YELLOW	RED	BROWN	ORANGE
QUEUE	YELLOW	RED	BROWN	ORANGE	BLUE

NOTES:

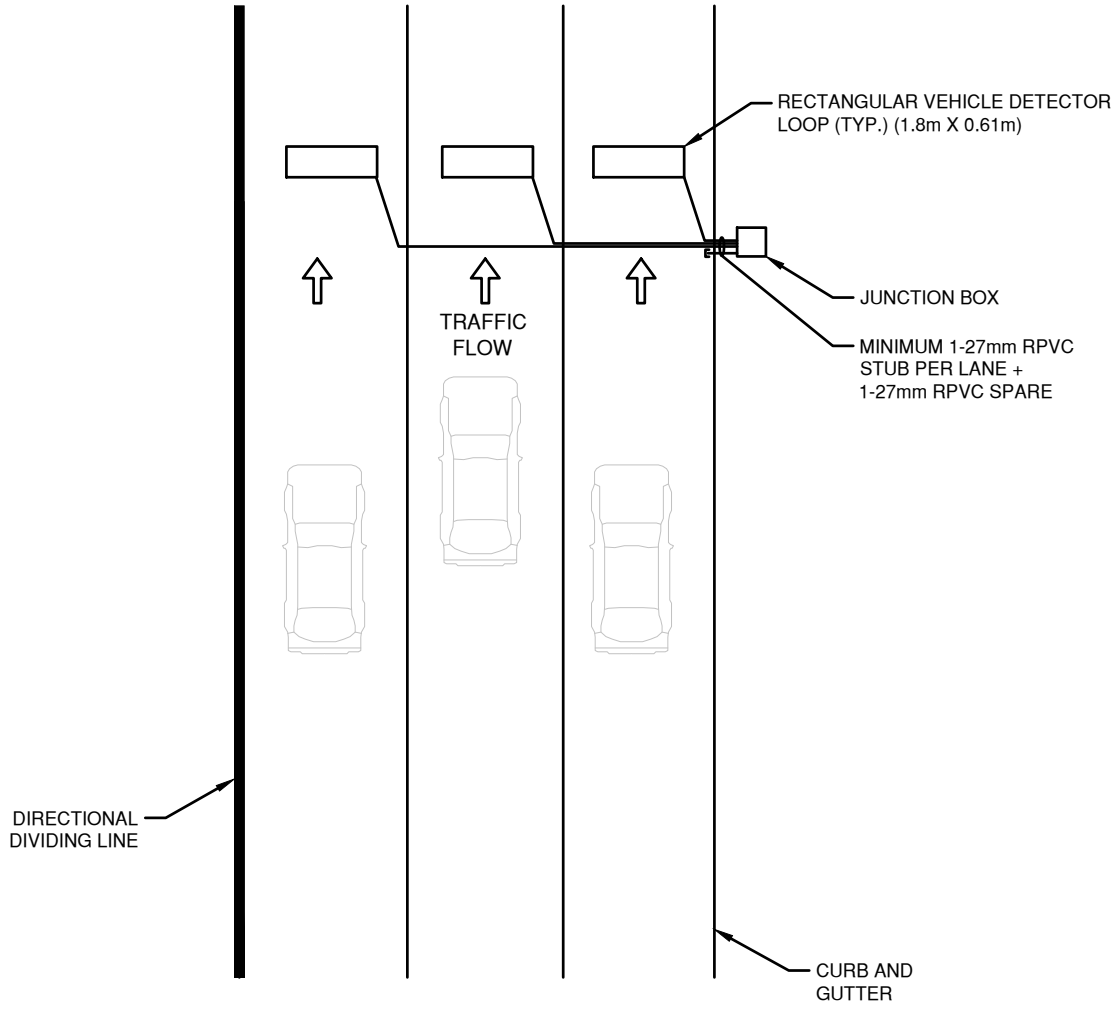
1. REFER TO CONTRACT DRAWINGS, MMCD AND CITY SUPPLEMENTAL SPECIFICATIONS FOR FURTHER INFORMATION.
2. WHITE TAPE INDICATES THE BACK LOOP OF THE SET.
3. LANE 1 IS THE CURB (SLOW) LANE INCLUDING WHEN TAILS ARE FROM THE MEDIAN.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
5. MINIMUM 1-27mm RPVC STUB PER LANE FOR EACH SET OF LOOPS AND ADD ONE LOOP STUB, SPARE.
6. ALL LOOPS MUST BE TESTED PRIOR TO MARKING BIKE SYMBOL.
7. LOOP INDUCTANCE SHALL BE GREATER THAN THE SHIELDED CABLE INDUCTANCE (2:1 RATIO MINIMUM IS REQUIRED). NUMBER OF TURNS PER MoTT SPECIFICATIONS.
8. 16GA SHIELD WIRE SHALL BE USED.

NOT TO SCALE

TYPICAL LAYOUT FOR ROUND VEHICLE DETECTOR LOOPS

Revision Date	Drawing Number
SEPT. 2025	SD E8.7a

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

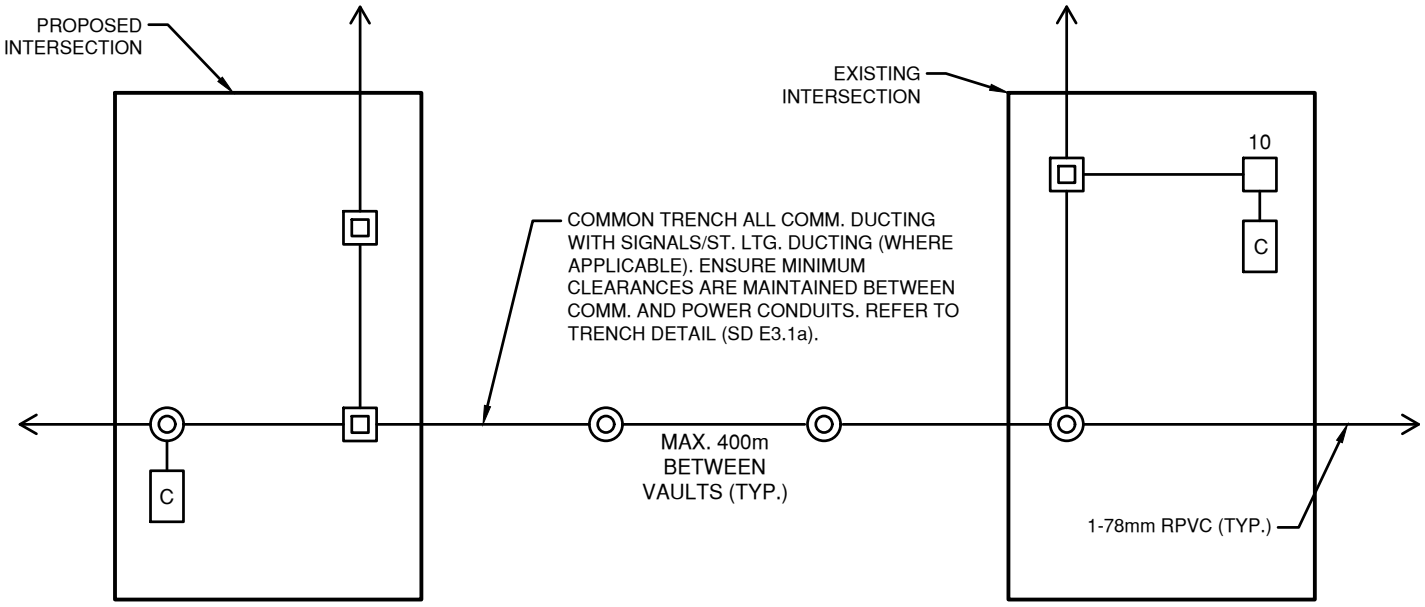
1. REFER TO CONTRACT DRAWINGS, MMCD AND CITY SUPPLEMENTAL SPECIFICATIONS FOR FURTHER INFORMATION.
2. CONSULT CITY FOR SYSTEM LOOP LOCATION.
3. MINIMUM 1-27mm RPVC STUB FOR EACH COUNT LOOP PLUS 1-27mm RPVC LOOP STUB AS A SPARE.
4. LOOP INDUCTANCE SHALL BE GREATER THAN THE SHIELDED CABLE INDUCTANCE (2:1 RATIO MINIMUM IS REQUIRED). NUMBER OF TURNS PER MoTT SPECIFICATIONS.
5. 16GA SHIELD WIRE SHALL BE USED.
6. SYSTEM LOOP DIMENSIONS: 1.8m X 0.61m.

NOT TO SCALE

TYPICAL LAYOUT FOR RECTANGULAR VEHICLE COUNT LOOPS

Revision Date	Drawing Number
SEPT. 2025	SD E8.7b

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. NEW INTERSECTIONS SHALL BE EQUIPPED WITH DEDICATED COMM. CONDUITS AND VAULTS. VERIFY REQUIREMENTS WITH THE CITY OF VICTORIA.
2. AT EXISTING SIGNALS THAT ARE BEING MODIFIED OR UPGRADED, MoTT TYPE 10 JB'S MAY BE PERMITTED TO BE USED IN PLACE OF CONCRETE VAULTS FOR SPLICING. COORDINATE WITH THE CITY OF VICTORIA AS REQUIRED.
3. TYPICAL SPLICING FOR DEVICES CONNECTED TO FIBRE:
   - UNDERGROUND SPLICE ENCLOSURES IN UTILITY PORTS, VAULTS AND/OR TYPE 10 JUNCTION BOXES.
   - SPLICING 6C FIBRE WHIP FROM 48C FIBRE CABLES
4. ALL FIBRE OPTIC CABLE SHALL BE INSTALLED IN ACCORDANCE WITH TIA/EIA 568-C/D, THE CANADIAN ELECTRICAL CODE, MANUFACTURERS RECOMMENDATIONS, AND GENERAL BEST PRACTICES TO ENSURE THAT THE FIBRE OPTIC CABLE IS NOT DAMAGED AND ACHIEVES INDUSTRY STANDARD OPTICAL CHARACTERISTICS.
   - MAXIMUM ALLOWABLE FUSION SPLICE LOSS IS 0.3dB AND MAXIMUM ALLOWABLE CONNECTOR LOSS IS 0.5dB.
5. FIBRE OPTIC TESTING SHALL BE COMPLETED BEFORE AND AFTER CABLE INSTALLATION. THE TESTING SHALL CONSIST OF BI-DIRECTION OTDR AND POWER METER TESTING AND LIGHT LOSS TESTS. ALL TESTING PARAMETERS SHALL FOLLOW TIA/EIA 568 STANDARDS. ALL TEST RESULTS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL. FIBRE OPTIC INSTALLATIONS THAT DO NOT MEET ACCEPTABLE STANDARDS SHALL BE REMEDIATED AT THE CONTRACTORS EXPENSE.
6. FOR FIBRE OPTIC CABLES INSTALLED IN JUNCTION BOXES, 30m OF SLACK SHALL BE PROVIDED.
7. ARMOURED FIBRE SHALL ONLY BE INSTALLED WITHIN CONDUIT WITHOUT POWER CONDUCTORS.
8. FIBRE OPTIC CABLE SHALL BE FUSION SPLICED TO THE PATCH PANEL IN REVERSE PAIRS IN THE FIELD LOCATION ONLY. FOR EXAMPLE, FUSION SPLICE THE FIRST FIBRE PAIRS (BLUE AND BROWN) IN SUCH MANNER: BLUE TO ORANGE AND ORANGE TO BLUE.
9. FIBRE SPLICING CONNECTIONS, INCLUDING THOSE WITHIN TRAFFIC SIGNAL CABINETS, SHALL BE COMPLETED AS PART OF A TYPICAL FIBRE INSTALLATION. REQUIRED EQUIPMENT (INCLUDING LASHING WIRE, LASHING CLAMPS, CABLE SUPPORT TIES, AND CABLE SPACERS) SHALL BE PROVIDED, AND DRIP LOOPS, SPLICE ENCLOSURES, AND SLACK STORAGE SHALL BE INSTALLED IN ACCORDANCE WITH INDUSTRY BEST PRACTICES.
10. FIBRE CABLE NAMING CONVENTION SHALL BE CONFIRMED WITH THE CITY OF VICTORIA.
11. EXISTING CONDUITS SHALL BE PROOFED PRIOR TO THE INSTALLATION OF FIBRE CABLES.
12. ARMOURED FIBRE CABLES SHALL BE BONDED AT ALL TERMINATION AND SPLICE POINTS.

LEGEND:

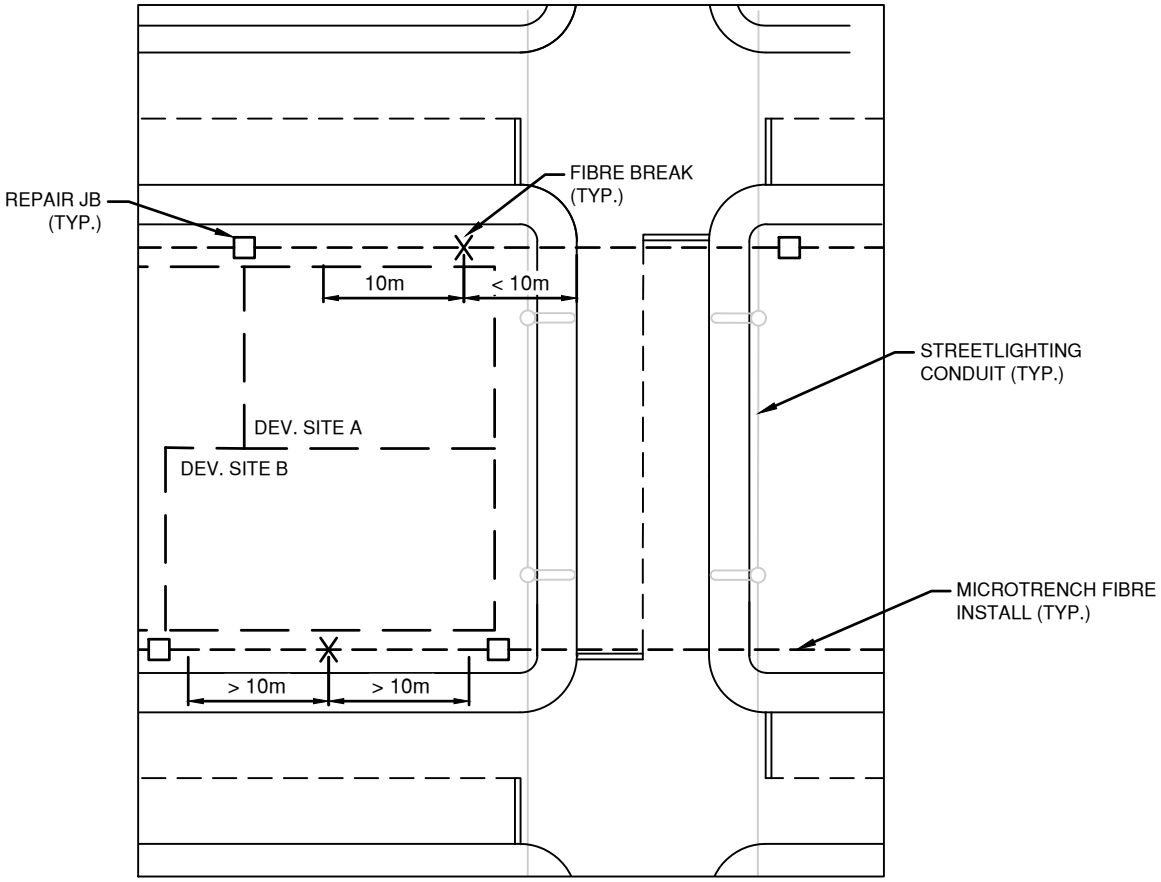
- C — TRAFFIC CONTROLLER
- 10 — MoTT TYPE 10 JB AND SPLICE CLOSURE (USED AT EXISTING UPGRADED INTERSECTION. REQUIRES CITY APPROVAL)
- V — 1.2m CONCRETE VAULT C/W SECURED LID
- 1-78mm RPVC (COMM.)
- SL / TS JB's
- MAINTENANCE HOLE

NOT TO SCALE

COMMUNICATION SYSTEM DUCTING

Revision Date	Drawing Number
SEPT. 2025	SD E11.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:
1. THE MAJORITY OF EXISTING FIBRE INSTALLED IN THE CITY OF VICTORIA IS INSTALLED IN MICROTRENCHES (ALSO REFERRED TO AS DIRECT BURIED OR SAWCUT INSTALLED FIBRE). EXISTING FIBRE INSTALL IS SUBJECT TO DAMAGE DURING NEW DEVELOPMENT.
2. JUNCTION BOXES SHALL BE EITHER CONCRETE VAULTS, OR MoTT TYPE 10 JUNCTION BOXES.
3. REFER TO CITY OF VICTORIA APPROVED PRODUCTS LIST FOR FIBRE CABLE AND SPLICE ENCLOSURE MODEL NUMBERS.

REPAIR METHOD:
1. NEW JUNCTION BOXES SHALL BE INSTALLED ON EACH SIDE OF THE FIBRE BREAK. 10m OF EXISTING UNDAMAGED FIBRE CABLE SHALL BE LEFT ON EITHER SIDE SIDE OF THE BREAK BEFORE JUNCTION BOXES ARE INSTALLED.
   - IF THE FIBRE BREAK OCCURS WITHIN 10m OF AN INTERSECTION, THE JUNCTION BOX MUST BE INSTALLED ON THE OPPOSITE SIDE OF THE INTERSECTION. A NEW ROAD CROSSING MAY BE REQUIRED, REFER TO TYPICAL TRENCH DETAIL - SD E3.1a.
   - NEW JUNCTION BOXES SHALL TYPICALLY BE PLACED AT THE EDGE OF THE PROPERTY LINE.
   - COORDINATE JUNCTION BOX PLACEMENT WITH THE CITY OF VICTORIA AS REQUIRED.
2. INSTALL NEW 78mm RPVC BETWEEN NEW JUNCTION BOXES.
3. INSTALL NEW 48C FIBRE CABLE IN CONDUIT BETWEEN NEW JUNCTION BOXES. NEW FIBRE CABLE MUST BE PROTECTED OVER THE ENTIRE LENGTH OF THE PROPERTY FRONTAGE.
4. PROVIDE SPLICE ENCLOSURES IN EACH NEW JUNCTION BOX AND SPLICE NEW 48C FIBRE CABLE TO EXISTING FIBRE.
5. ALTERNATE REPAIR METHODS MAY BE APPROVED BY THE CITY OF VICTORIA.

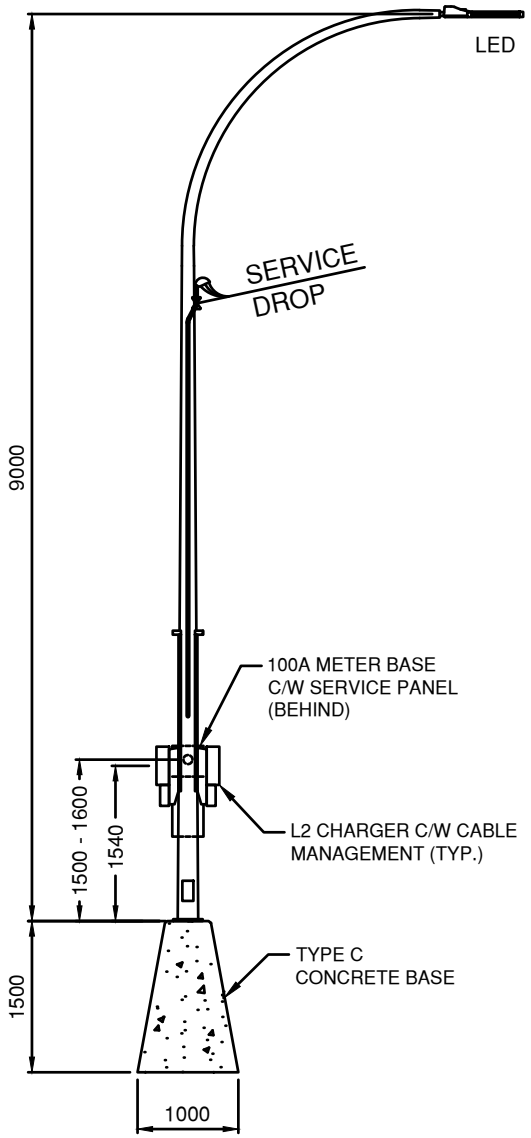
NOT TO SCALE

TYPICAL FIBRE REPAIR (MICROTRENCH/SAWCUT/DIRECT BURIED)	Revision Date	Drawing Number
	SEPT. 2025	SD E11.2

SUPPLEMENTARY STANDARD DETAIL DRAWING

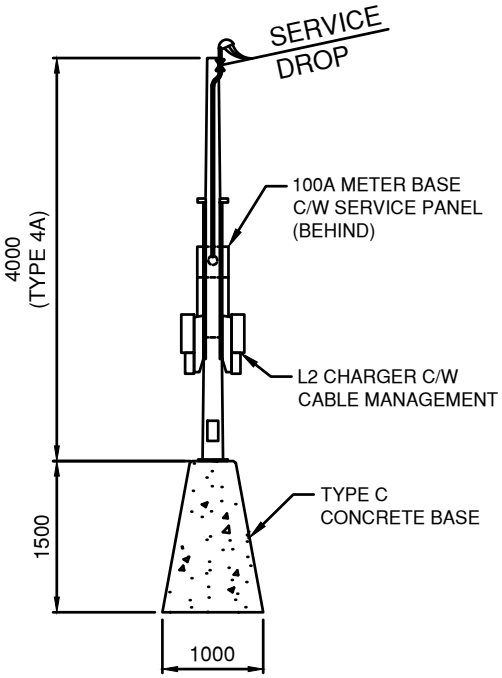
L2 - EV CHARGER

NO EXISTING POWER OPTIONS (RESIDENTIAL)



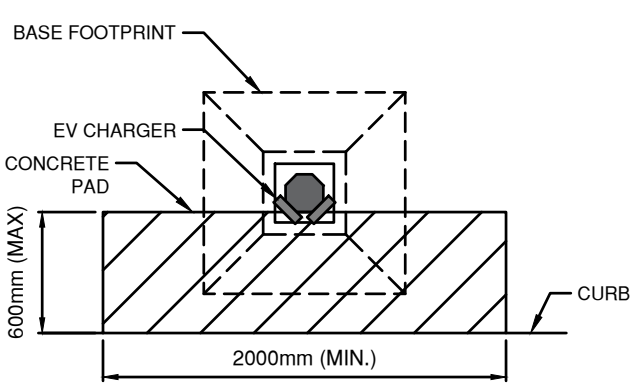
NOTES:

1. TWO TYPICAL OPTIONS.
2. EQUIPMENT ORIENTATION SHOWN FOR CLARITY, NOT FUNCTION.
3. ELECTRICAL SERVICE SHALL BE COORDINATED WITH BC HYDRO AND THE CITY OF VICTORIA PRIOR TO INSTALLATION.
4. MOUNTING HEIGHTS (ABOVE GRADE):
   - MIDDLE OF CHARGER SCREEN: 1540mm
   - METER BASES: 1500-1600mm



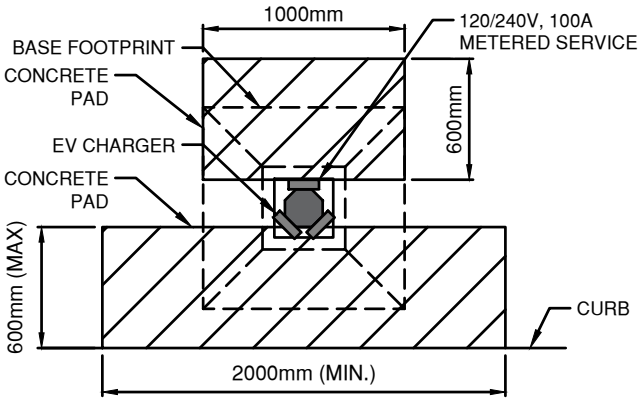
L2 - EV CHARGER

EQUIPMENT AND CONCRETE PAD LAYOUTS - NO SERVICE



L2 - EV CHARGER

EQUIPMENT AND CONCRETE PAD LAYOUTS - SERVICE

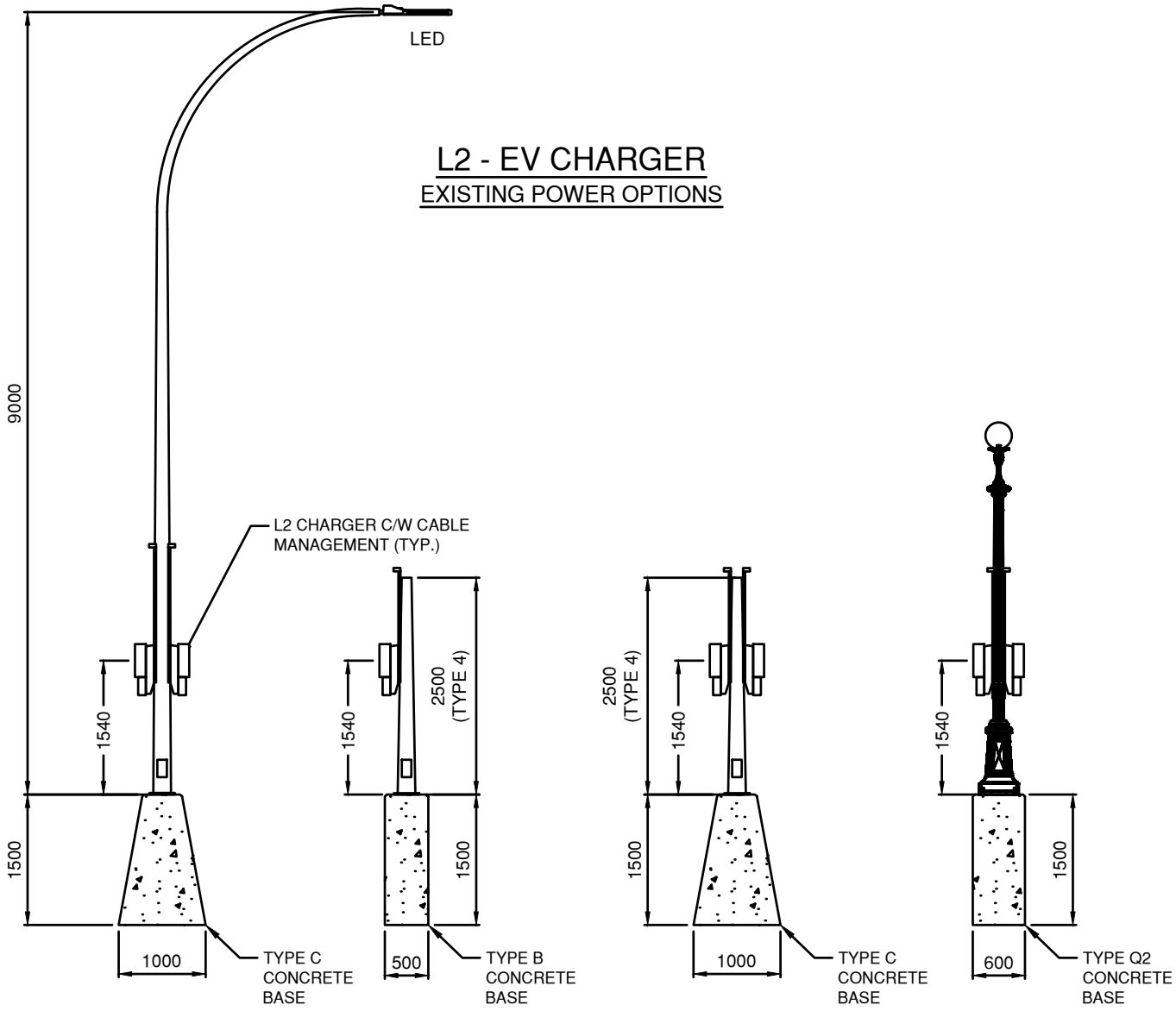


NOT TO SCALE

EV CHARGERS - LEVEL 2 INTERIM DESIGN STANDARDS

Revision Date	Drawing Number
SEPT. 2025	SD E11.3

SUPPLEMENTARY STANDARD DETAIL DRAWING



DESIGN/STANDARDS CONSIDERATIONS:

1. POLES TYPES
   - "A" CLUSTER, 4, 4A, 2 (6.5m)/STREETLIGHT
2. ELECTRICAL SERVICE
   - 1500 - 1600mm TO MIDDLE OF BASE
   - 100A, SINGLE PHASE 240V, METERED - 40A BREAKER PER UNIT
3. PAINT:
   - DOWNTOWN CORE - GLOSS BLACK
   - RESIDENTIAL - BLUE (TO MATCH FLO EV CHARGERS)
4. EV UNIT (1540mm TO MIDDLE OF SCREEN) C/W CABLE MANAGEMENT SYSTEM SMART TWO LEVEL 2. REFER TO CITY OF VICTORIA APPROVED PRODUCTS LIST FOR ACCEPTABLE MODELS.

NOTES:

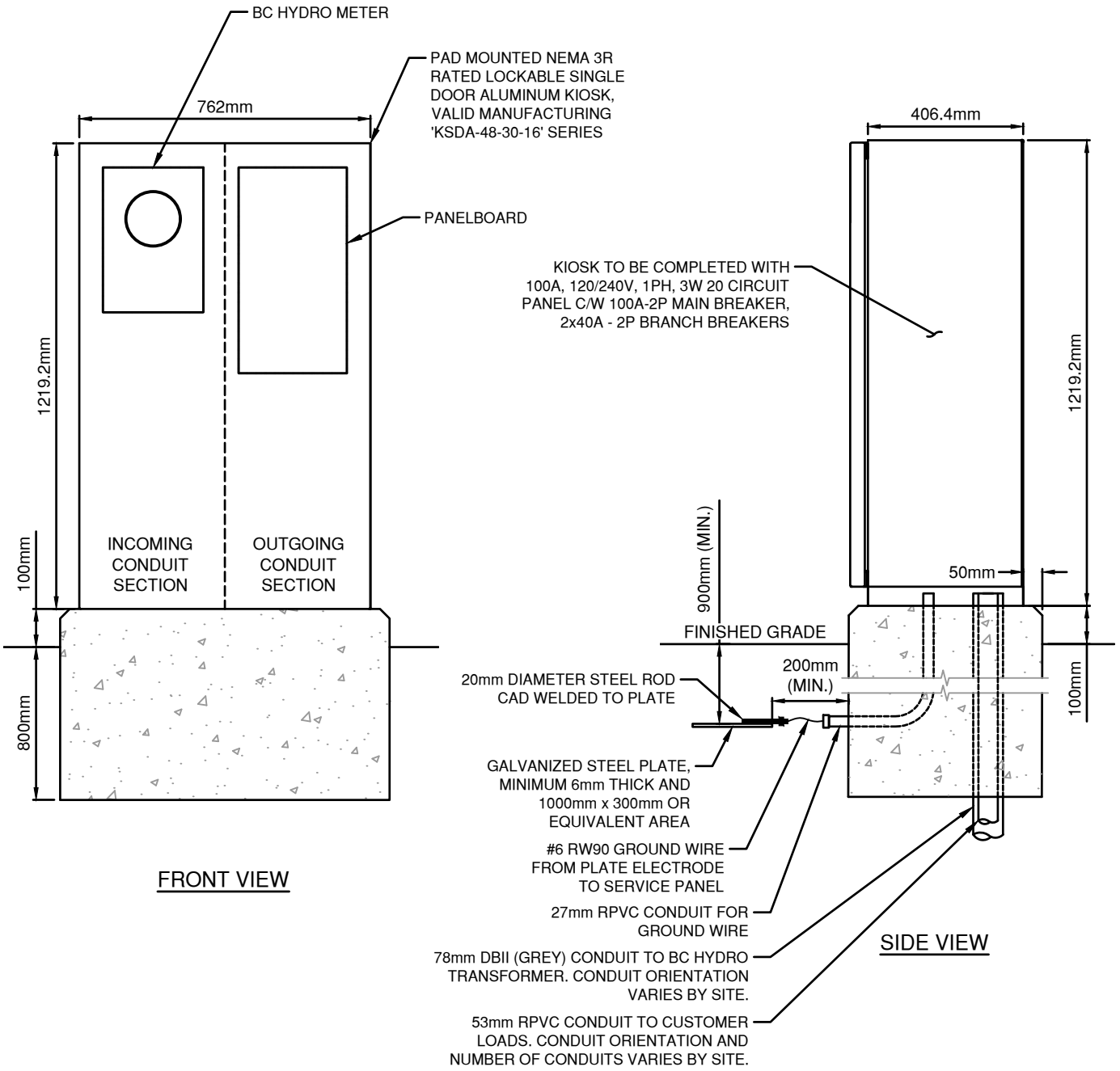
1. ALL BASES REQUIRE 2 X 53mm RPVC (BOTH CONDUITS EXIT THE BASE UNDER THE "V" GROOVE)
2. BASES ARE TO BE INSTALLED FLUSH TO GRADE (50mm MAX. ABOVE FINISHED GRADE)
3. "V" GROOVE NEEDS TO BE INSTALLED IN A MANNER SUCH THAT WATER WILL NOT POOL AT THE BASE OF THE POLE
4. ALL ELECTRICAL DEVICES IN GRASS AREAS REQUIRED 150-300mm CONCRETE COLLARS (FOR MOWING)
5. LEVEL 3 - DC FAST CHARGERS TYPICALLY REQUIRE A 480V SERVICE. COORDINATE WITH THE CITY OF VICTORIA AS REQUIRED.

NOT TO SCALE

EV CHARGERS - LEVEL 2 INTERIM DESIGN STANDARDS

Revision Date	Drawing Number
SEPT. 2025	SD E11.4

SUPPLEMENTARY STANDARD DETAIL DRAWING

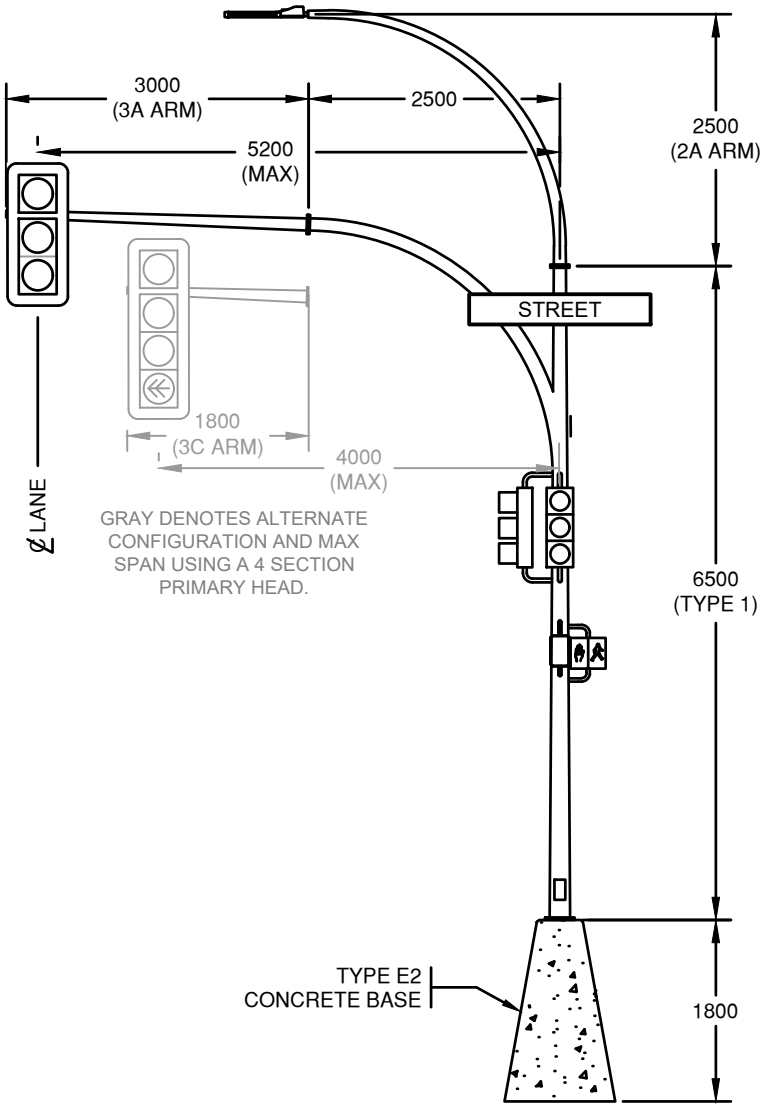


NOT TO SCALE

ELECTRICAL KIOSK (EV CHARGING) INTERIM DESIGN STANDARDS

Revision Date	Drawing Number
SEPT. 2025	SD E11.5

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

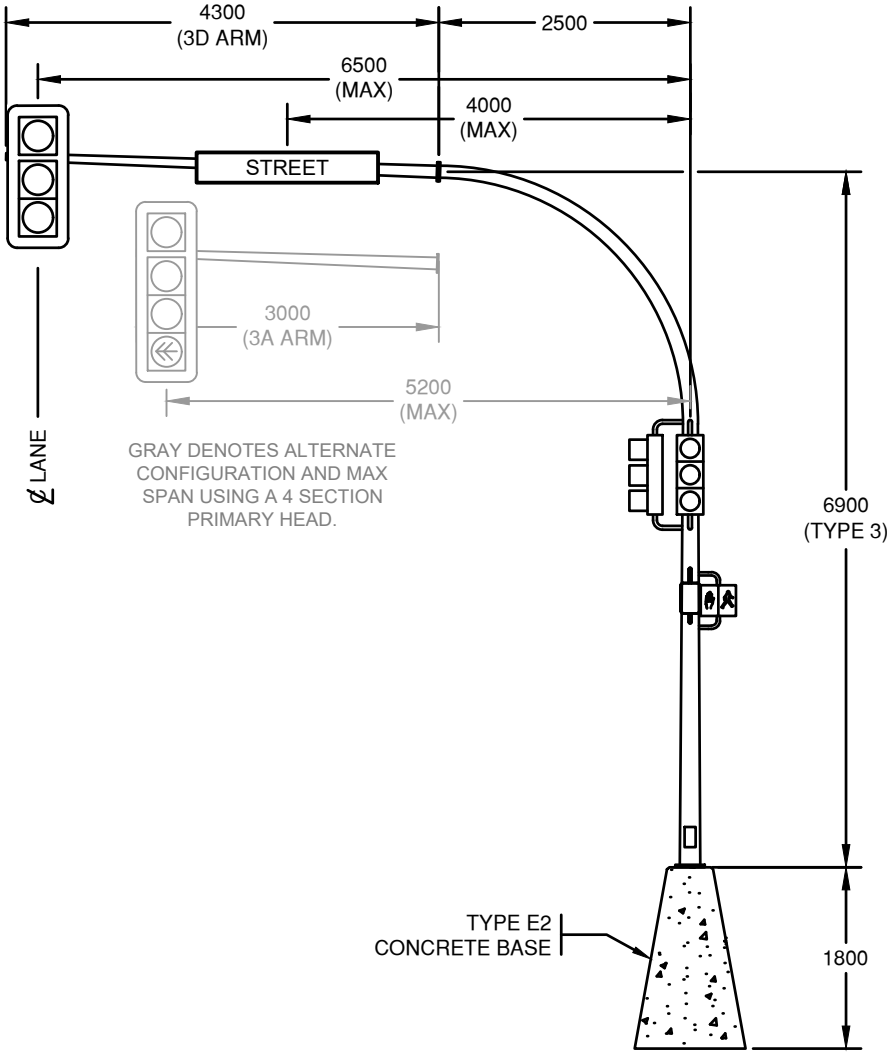
1. THIS DETAIL IS INTENDED FOR REFERENCE ONLY AND SHALL NOT BE RELIED UPON FOR DESIGN OR CONSTRUCTION OF SIGNAL POLES. CALCULATIONS ARE BASED ON THE MoTT POLE CAPACITY PROGRAM. FINAL POLE CONFIGURATIONS MUST BE VERIFIED BY THE POLE MANUFACTURER OR A STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
2. FOR THE DEVELOPMENT OF THESE DETAILS, SECONDARY AND PEDESTRIAN SIGNAL HEADS ARE NOT ACCOUNTED FOR IN POLE LOADING CALCULATIONS.
3. REFER TO MoTT ELECTRICAL AND TRAFFIC ENGINEERING MANUAL APPENDIX 500.1 - WIND PRESSURE TABLES FOR WIND LOADING.

NOT TO SCALE

TYPICAL POLE ELEVATION - TYPE 1 POLE

Revision Date	Drawing Number
SEPT. 2025	SD E12.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

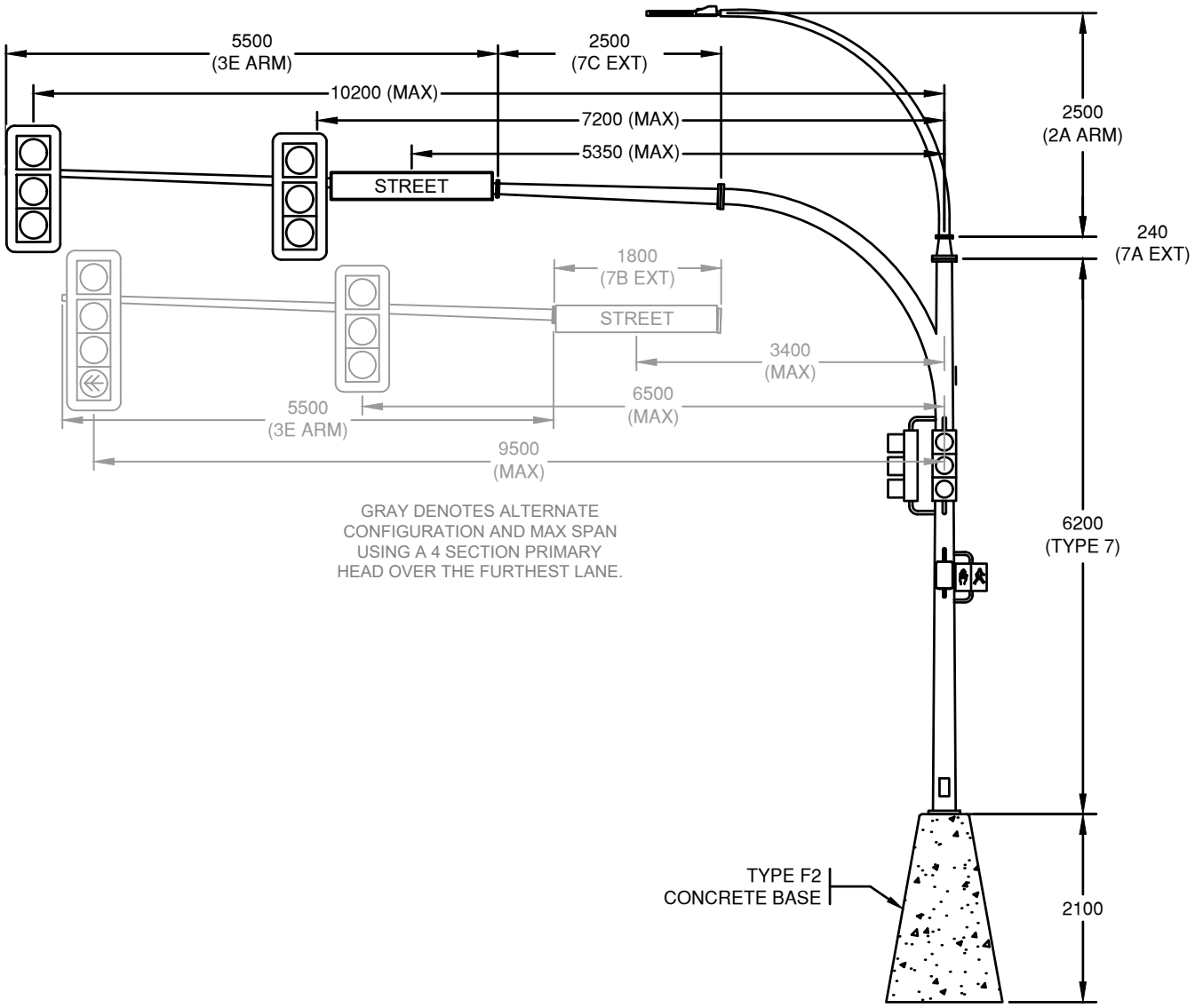
1. THIS DETAIL IS INTENDED FOR REFERENCE ONLY AND SHALL NOT BE RELIED UPON FOR DESIGN OR CONSTRUCTION OF SIGNAL POLES. CALCULATIONS ARE BASED ON THE MoTT POLE CAPACITY PROGRAM. FINAL POLE CONFIGURATIONS MUST BE VERIFIED BY THE POLE MANUFACTURER OR A STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
2. FOR THE DEVELOPMENT OF THESE DETAILS, SECONDARY AND PEDESTRIAN SIGNAL HEADS ARE NOT ACCOUNTED FOR IN POLE LOADING CALCULATIONS.
3. REFER TO MoTT ELECTRICAL AND TRAFFIC ENGINEERING MANUAL APPENDIX 500.1 - WIND PRESSURE TABLES FOR WIND LOADING.

NOT TO SCALE

TYPICAL POLE ELEVATION - TYPE 3 POLE

Revision Date	Drawing Number
SEPT. 2025	SD E12.2

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. THIS DETAIL IS INTENDED FOR REFERENCE ONLY AND SHALL NOT BE RELIED UPON FOR DESIGN OR CONSTRUCTION OF SIGNAL POLES. CALCULATIONS ARE BASED ON THE MoTT POLE CAPACITY PROGRAM. FINAL POLE CONFIGURATIONS MUST BE VERIFIED BY THE POLE MANUFACTURER OR A STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

2. FOR THE DEVELOPMENT OF THESE DETAILS, SECONDARY AND PEDESTRIAN SIGNAL HEADS ARE NOT ACCOUNTED FOR IN POLE LOADING CALCULATIONS.

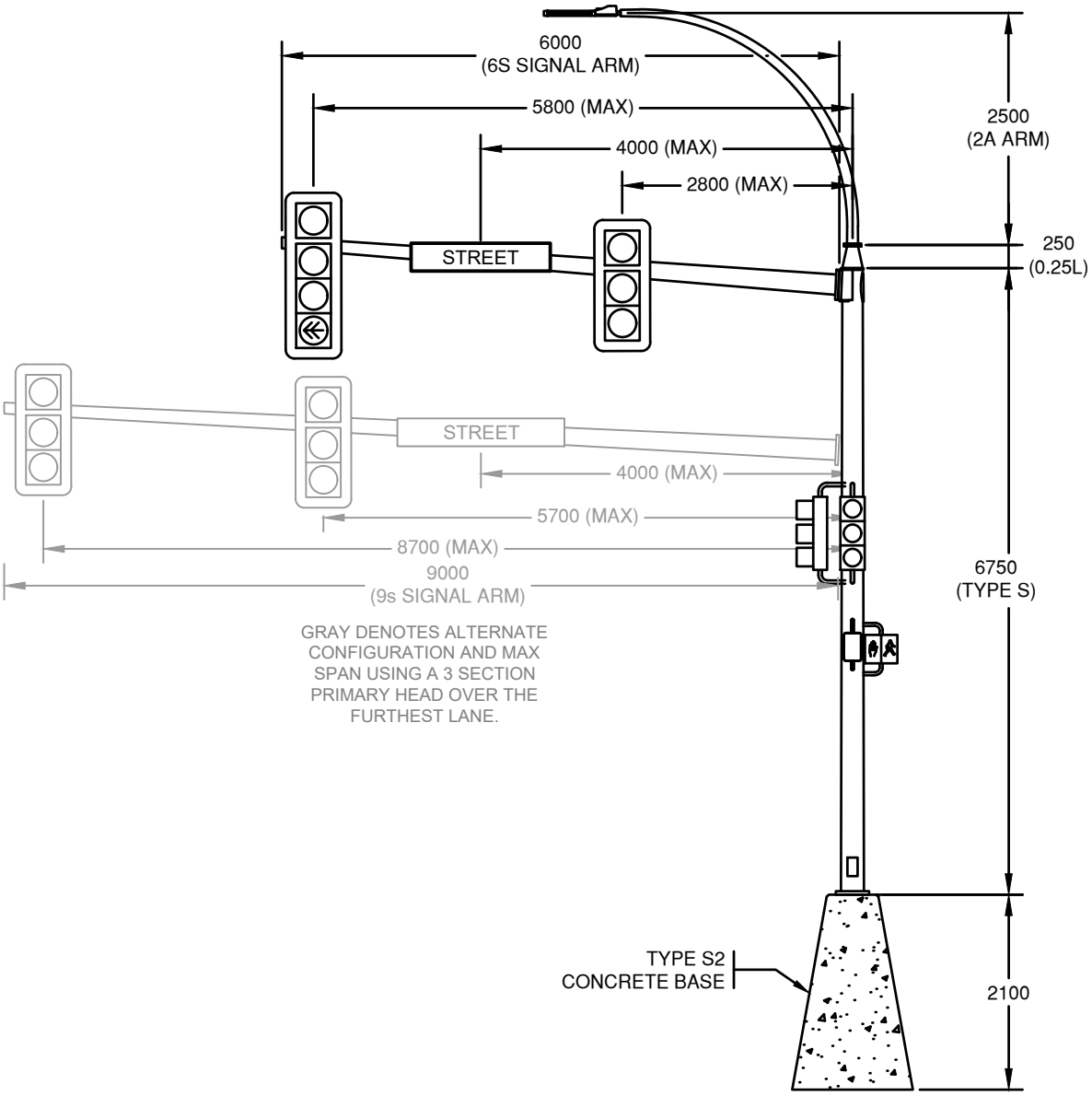
3. REFER TO MoTT ELECTRICAL AND TRAFFIC ENGINEERING MANUAL APPENDIX 500.1 - WIND PRESSURE TABLES FOR WIND LOADING

NOT TO SCALE

TYPICAL POLE ELEVATION - TYPE 7 POLE

Revision Date	Drawing Number
SEPT. 2025	SD E12.3

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

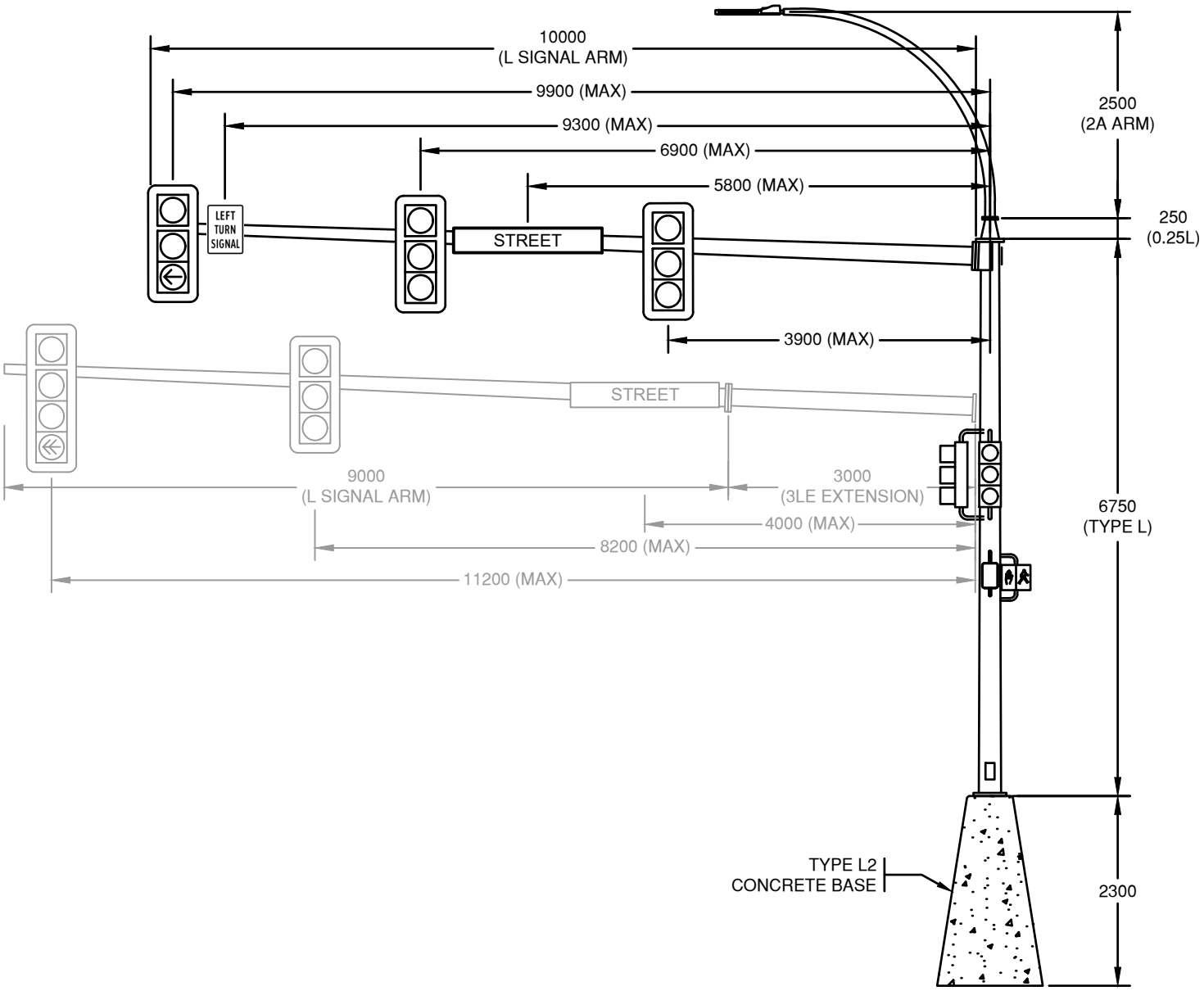
1. THIS DETAIL IS INTENDED FOR REFERENCE ONLY AND SHALL NOT BE RELIED UPON FOR DESIGN OR CONSTRUCTION OF SIGNAL POLES. CALCULATIONS ARE BASED ON THE MoTT POLE CAPACITY PROGRAM. FINAL POLE CONFIGURATIONS MUST BE VERIFIED BY THE POLE MANUFACTURER OR A STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
2. FOR THE DEVELOPMENT OF THESE DETAILS, SECONDARY AND PEDESTRIAN SIGNAL HEADS ARE NOT ACCOUNTED FOR IN POLE LOADING CALCULATIONS.
3. REFER TO MoTT ELECTRICAL AND TRAFFIC ENGINEERING MANUAL APPENDIX 500.1 - WIND PRESSURE TABLES FOR WIND LOADING.

NOT TO SCALE

TYPICAL POLE ELEVATION - TYPE S POLE

Revision Date	Drawing Number
SEPT. 2025	SD E12.4

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. THIS DETAIL IS INTENDED FOR REFERENCE ONLY AND SHALL NOT BE RELIED UPON FOR DESIGN OR CONSTRUCTION OF SIGNAL POLES. CALCULATIONS ARE BASED ON THE MoTT POLE CAPACITY PROGRAM. FINAL POLE CONFIGURATIONS MUST BE VERIFIED BY THE POLE MANUFACTURER OR A STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

2. FOR THE DEVELOPMENT OF THESE DETAILS, SECONDARY AND PEDESTRIAN SIGNAL HEADS ARE NOT ACCOUNTED FOR IN POLE LOADING CALCULATIONS.

3. REFER TO MoTT ELECTRICAL AND TRAFFIC ENGINEERING MANUAL APPENDIX 500.1 - WIND PRESSURE TABLES FOR WIND LOADING.

NOT TO SCALE

TYPICAL POLE ELEVATION - TYPE L POLE

Revision Date	Drawing Number
SEPT. 2025	SD E12.5

STRAIGHT THROUGH LANES		
No. OF LANES	No. OF PRIMARY HEADS	PLACEMENT OF PRIMARY HEADS
ONE	ONE	CENTERED OVER THROUGH LANE
TWO	TWO	CENTERED OVER EACH THROUGH LANE
THREE	TWO	CENTERED OVER LANE LINES

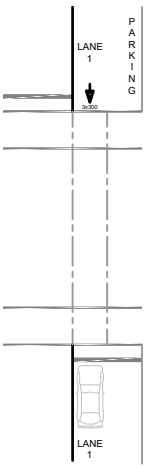
LEFT TURN LANES		
LEFT TURN TYPE	PRIMARY HEAD TYPE	PLACEMENT OF PRIMARY HEADS
PROTECTED/PERMISSIVE	4 SECTIONS WITH FLASHING GREEN ARROW AND STEADY YELLOW ARROW	CENTERED OVER LEFT-MOST THROUGH LANE
PROTECTED - SINGLE LEFT TURN LANE	3 SECTIONS WITH STEADY GREEN ARROW	CENTERED ON THE LEFT TURN LANE, EITHER POST MOUNTED IN MEDIAN 2.5m ABOVE ROADWAY OR MAST-ARM MOUNTED
PROTECTED - DUAL LEFT TURN LANES	3 SECTIONS WITH STEADY GREEN ARROW	CENTERED ON THE LANE LINE BETWEEN LEFT TURN LANES, EITHER POST MOUNTED IN MEDIAN OR MAST-ARM MOUNTED

NOTES:
1. REFER TO CITY OF VICTORIA SUPPLEMENTAL SPECIFICATION DRAWING SD E8.1a FOR WIRING DETAILS.

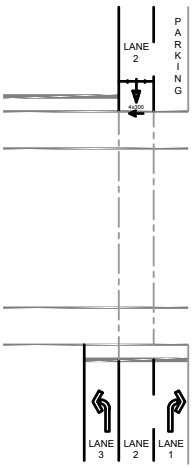
SIGNAL HEAD ALIGNMENT DETAIL FOR MULTIPLE LANE CONFIGURATIONS

Revision Date	Drawing Number
SEPT. 2025	SD E12.6

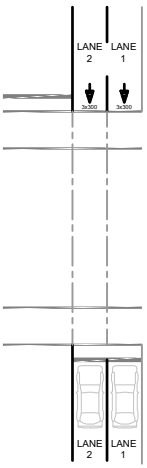
SUPPLEMENTARY STANDARD DETAIL DRAWING



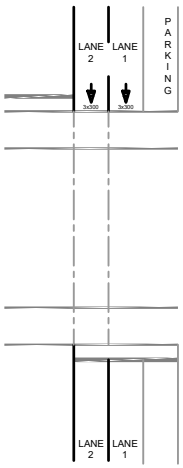
1 LANE



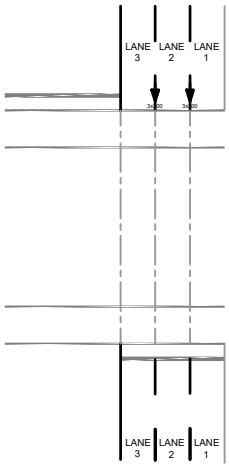
2 LANE WITH
PROTECTED/PERMISSIVE
LEFT TURN LANE AND PARKING



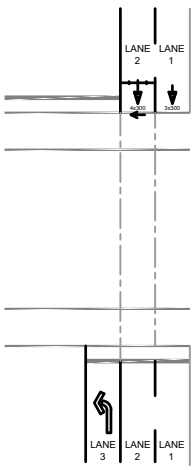
2 LANES



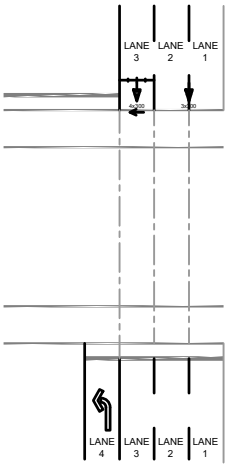
2 LANES + PARKING



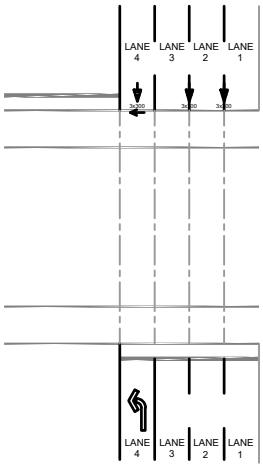
3 LANES



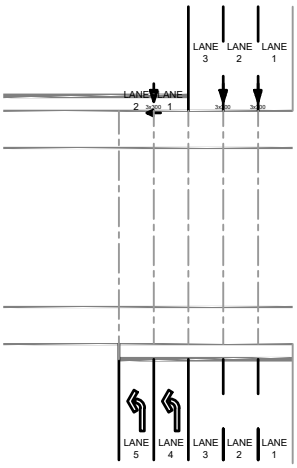
3 LANES WITH
PROTECTED/PERMISSIVE
LEFT TURN LANE



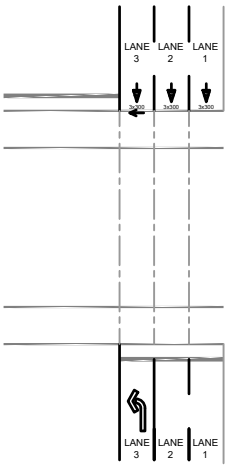
4 LANES WITH
PROTECTED/PERMISSIVE
LEFT TURN LANE



4 LANES WITH
1-PROTECTED ONLY
LEFT TURN LANE



5 LANES WITH
DUAL PROTECTED ONLY
LEFT TURN LANES



3 LANES WITH
1 - PROTECTED ONLY
LEFT TURN LANE

NOT TO SCALE

NOTES:

1. GENERAL GUIDELINE:
   - PRIMARY SIGNAL HEADS SHALL BE FULLY VISIBLE FROM DISTANCES LISTED IN THE TRANSPORTATION ASSOCIATION OF CANADA (TAC), MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CANADA (MUTCD).
2. A MINIMUM OF 3.0m DISTANCE SHALL BE PROVIDED BETWEEN ALL SIGNAL HEADS.

SIGNAL HEAD ALIGNMENT DETAIL FOR MULTIPLE LANE CONFIGURATIONS

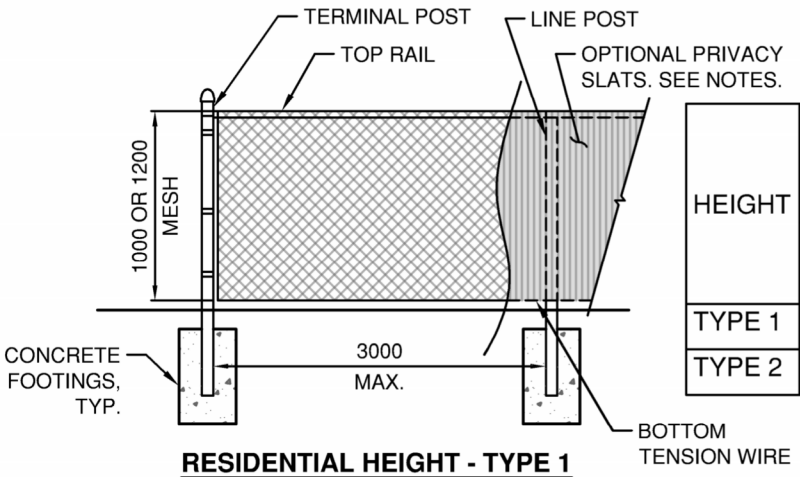
Revision Date	Drawing Number
SEPT. 2025	SD E12.7

8.3. Structures

The following MMCD 2019 Standard Detail Drawings are to be used or replaced as indicated below:

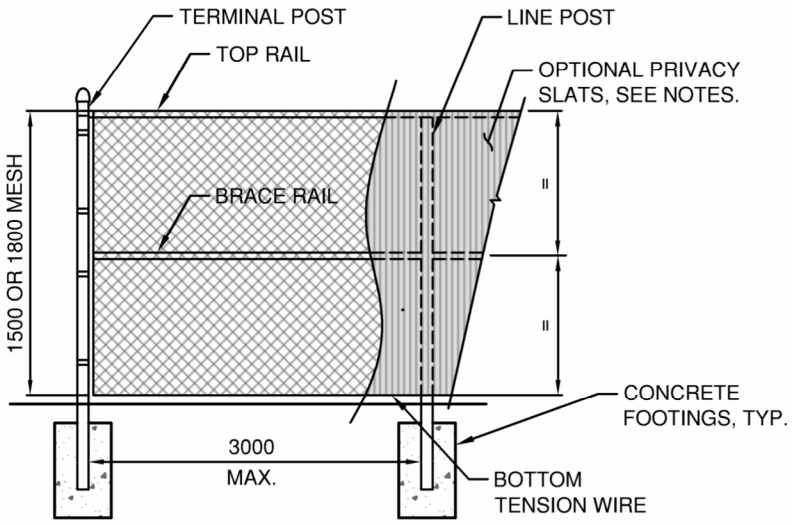
General Details Drawing Index				
MMCD		CoV	Title	Description
Retain	Delete	Replace/Add		
	C13	SD STR 1	Chain Link Fence	Replaces SD C13 in Bylaw No.12-042
	C14	SD STR 2	Typical Low-Risk Railing	
		SD STR 3	Typical High-Risk Railing	NEW
		SD STR 4	Typical Steel Bicycle Railing	NEW
		SD STR 5	Neighbourhoods and Villages Railing	NEW
		SD STR 6	Westsong Walkway Railing	NEW
		SD STR 7	David Foster Harbour Pathway Railing	NEW
		SD STR 8	Dallas Road Railing	NEW
		SD STR 9	Railing Criteria for Retaining Wall or Slope	NEW
		SD STR 10	Wood Privacy Fence	NEW
		SD STR 11	Mortared Rock Retaining Wall	NEW
		SD STR 12	Concrete Retaining Wall Under 1.2 Metres High	NEW
		SD STR 13	Typical Sidewalk Basement In-fill	NEW

SUPPLEMENTARY STANDARD DETAIL DRAWING



RESIDENTIAL HEIGHT - TYPE 1

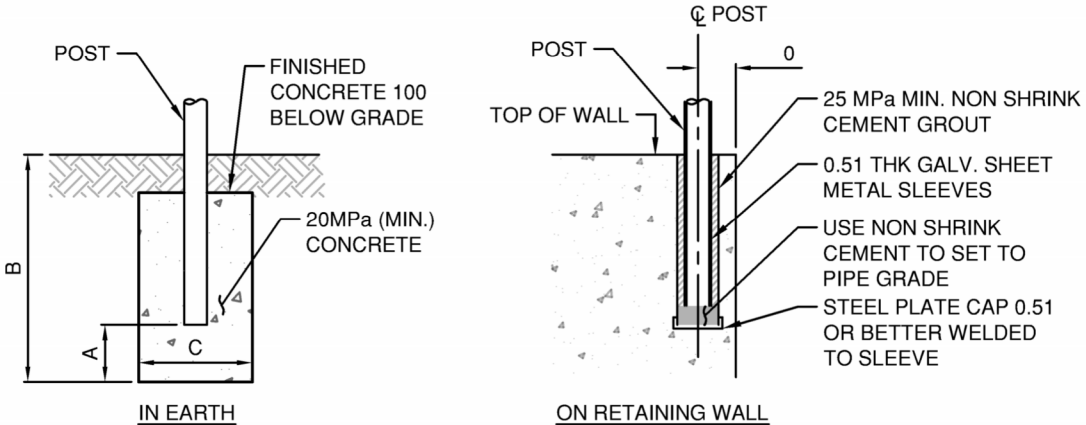
HEIGHT	CONCRETE FOOTING MINIMUM (mm)			PIPE SIZE O.D. MINIMUM / WALL THICKNESS MINIMUM (mm)		
	A	B	C	TERMINAL POST	LINE POST	BRACE/ TOP RAIL
TYPE 1	300	600	200	48 / 5.08	48 / 5.08	33 / 3.38
TYPE 2	300	900	300	60 / 5.54	48 / 5.08	33 / 3.38



STANDARD HEIGHT - TYPE 2

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. FOR PURPOSE OF CLARITY, DETAILS OF TENSION BARS, TENSION BANDS AND MISCELLANEOUS FITTINGS ARE NOT SHOWN.
4. ALL COMPONENTS TO BE POWDER COATED BLACK.
5. ALL PIPE TO BE TO ASTM A53 WEIGHT.
6. CHAIN LINK TO BE 3.55 (9 GAUGE) WOVEN TO 50 OPENINGS.
7. TENSION WIRE TO 4.5 (6 GAUGE).
8. TIE WIRE MAXIMUM SPACING:
   - -TOP RAIL: 300
   - -TENSION BANDS: 375
   - -LINE POSTS: 300
9. TENSION BANDS TO BE 3 X 20 AT 400 MAX. SPACING. POST TO BAR CLEARANCE 40+/- 25.
10. TENSION BAR TO BE 5 X 20 MINIMUM.
11. PRIVACY SLATS TO BE INSTALLED ONLY AS REQUIRED BY THE DIRECTOR OF ENGINEERING.



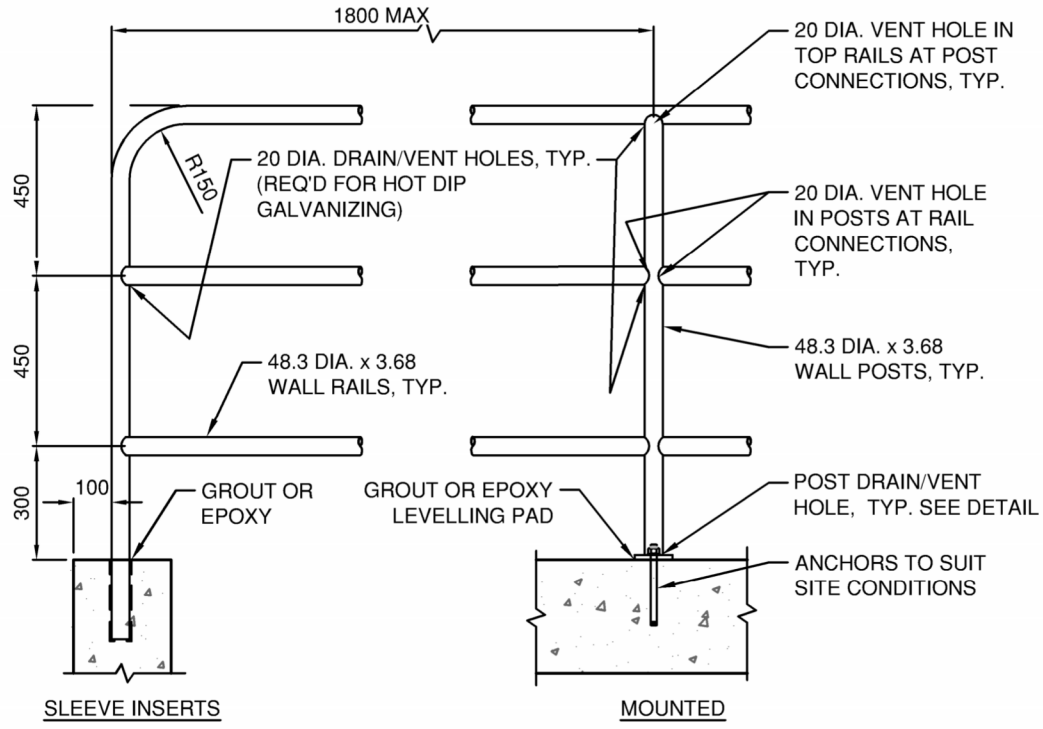
FOOTING DETAILS

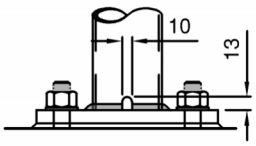
NOT TO SCALE

CHAIN LINK FENCE

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 1

SUPPLEMENTARY STANDARD DETAIL DRAWING



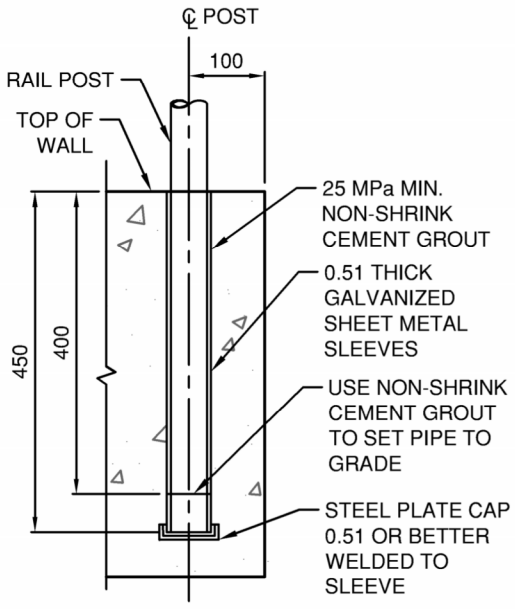


DRAIN/VENT HOLE DETAIL

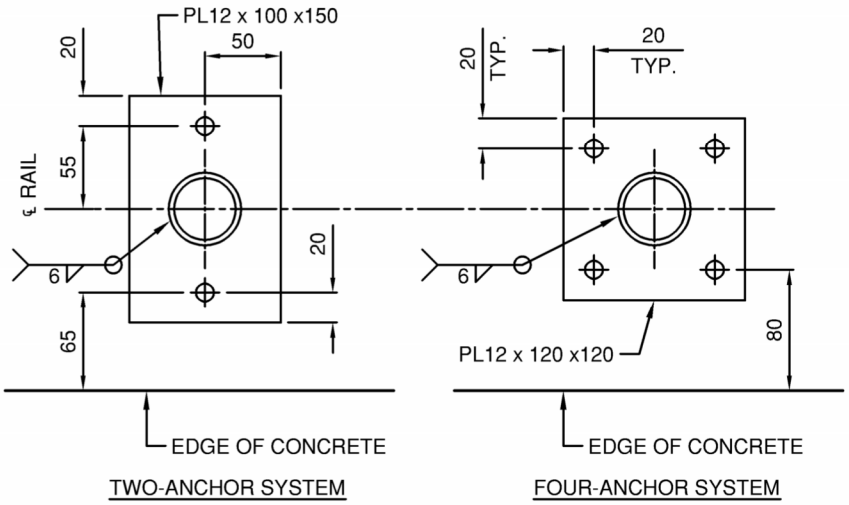
TYPICAL AT ENDS OF POSTS AND RAILS

RAILING LAYOUT

NOTE: CHAIN LINK FENCING ATTACHED TO THE RAILING MAY BE REQUESTED BY THE DIRECTOR OF ENGINEERING



EMBEDDED MOUNTING



MOUNTED ANCHOR DETAILS

NOTES:

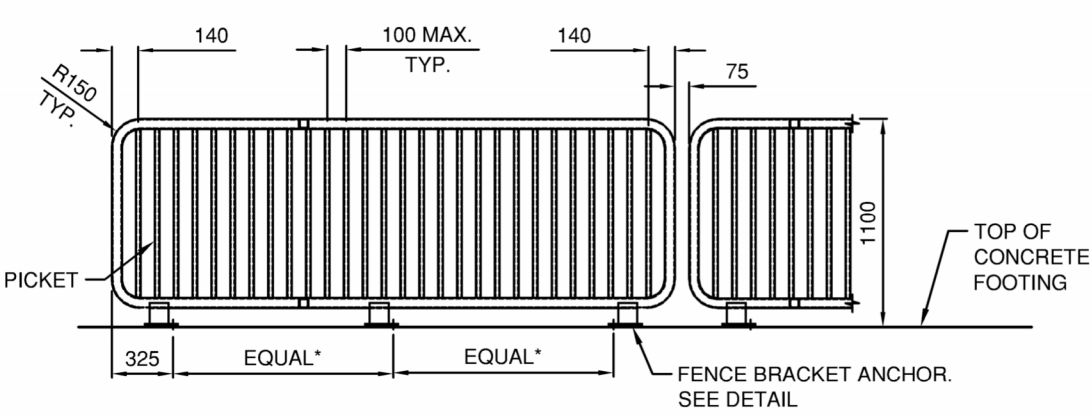
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL RAIL AND POSTS TO BE CSA G40.21 GRADE 350W OR ASTM A500 GRADE C. MISCELLANEOUS PLATE TO BE CSA G40.21 GRADE 300W.
4. ALL COMPONENTS TO BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

NOT TO SCALE

TYPICAL LOW-RISK RAILING

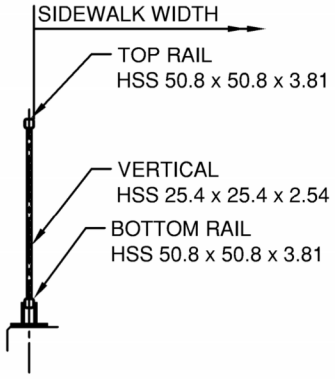
Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 2

SUPPLEMENTARY STANDARD
DETAIL DRAWING



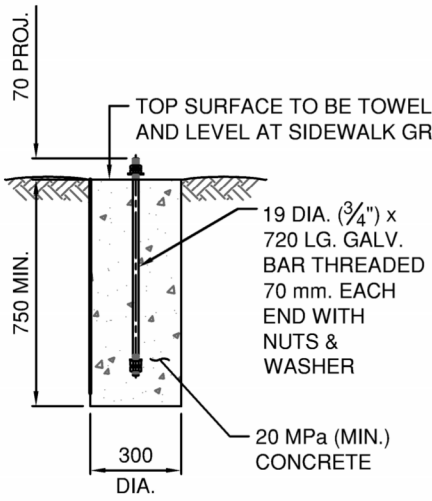
PANEL

* 1200 MIN TO 1500 MAX

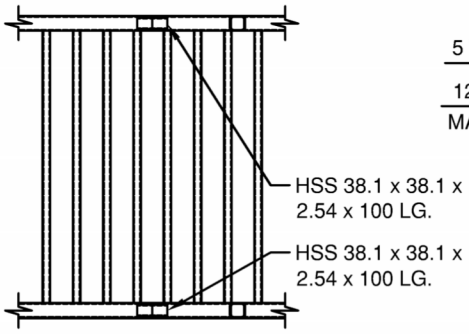


END PANEL

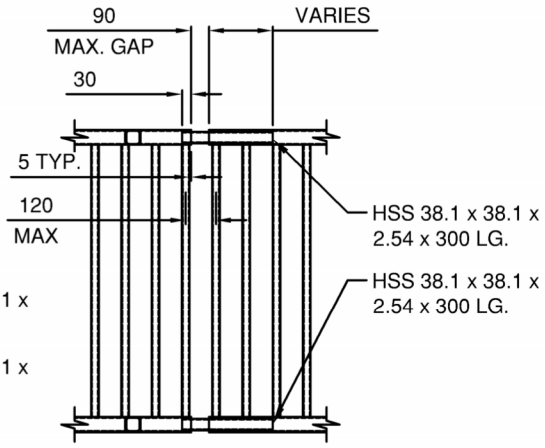
DETAILS



ANCHOR DETAIL



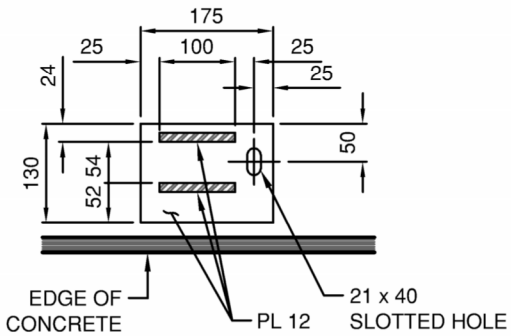
RAIL SPLICE



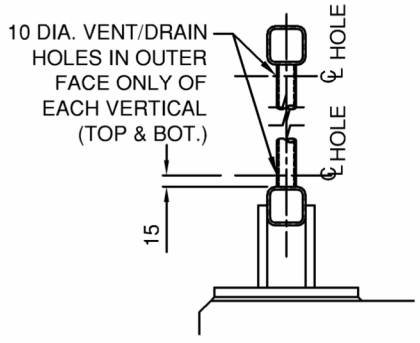
RAIL EXPANSION JOINT

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL STEELWORK TO BE HOT DIPPED GALVANIZED TO ASTM A123.
4. STEEL TUBING TO BE CSA G40.21, GRADE 350W OR ASTM A500, GRADE C. ALL OTHER STEEL TO BE G40.21, GRADE 300W.
5. FENCE BRACKETS TO BE INSTALLED ON A 5MM NOMINAL THICK THIXITROPIC EPOXY LEVELING COURSE FOR A COMPLETE BEARING SURFACE.
6. NOT TO BE USED AS VEHICLE BARRIER.



RAIL BRACKET



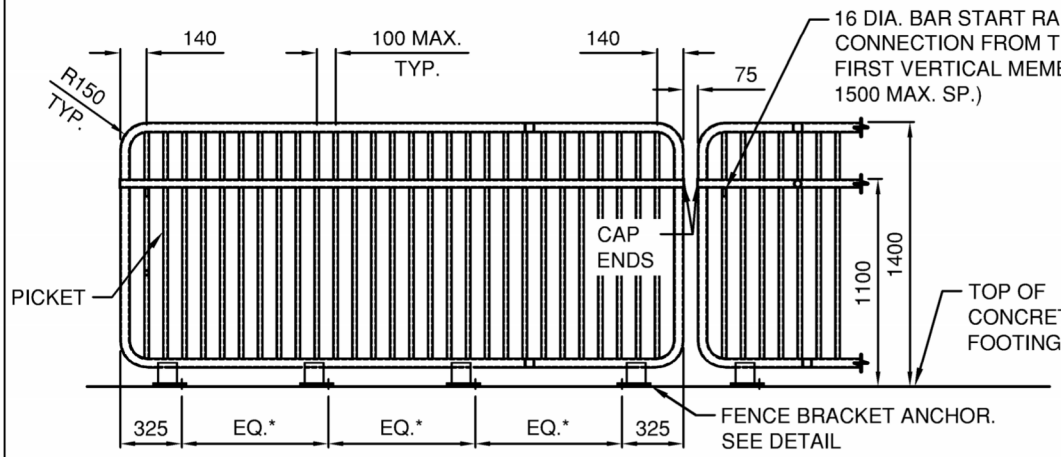
VENT/DRAIN HOLES IN VERTICALS

NOT TO SCALE

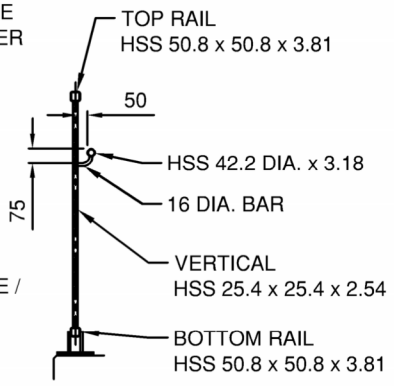
TYPICAL HIGH-RISK RAILING

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 3

SUPPLEMENTARY STANDARD
DETAIL DRAWING

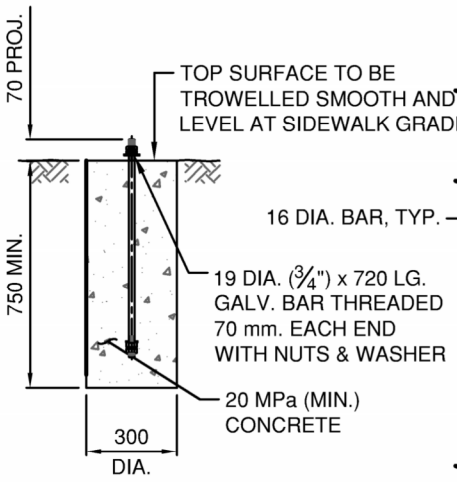


PANEL
* 1000 MAX

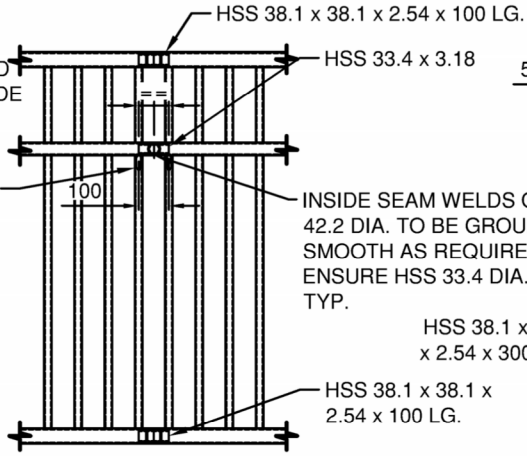


END PANEL

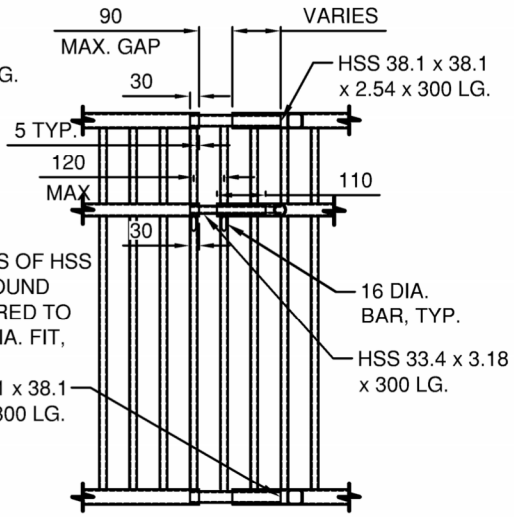
DETAILS



ANCHOR DETAIL

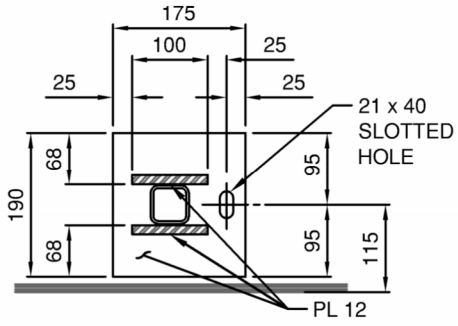


RAIL SPLICE

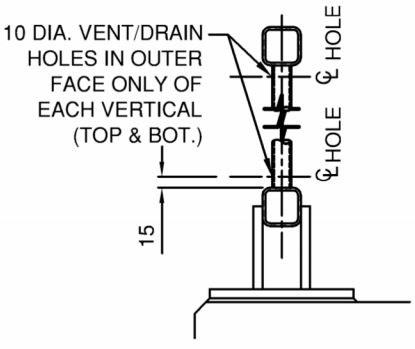


RAIL EXPANSION JOINT

NOTES:
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL STEELWORK TO BE HOT DIPPED GALVANIZED TO ASTM A123.
4. STEEL TUBING TO BE CSA G40.21, GRADE 350W OR ASTM A500, GRADE C. ALL OTHER STEEL TO BE G40.21, GRADE 300W.
5. RAIL BRACKETS TO BE INSTALLED ON A 5MM NOMINAL THICK THIXOTROPIC EPOXY LEVELING COURSE FOR A COMPLETE BEARING SURFACE.



RAIL BRACKET



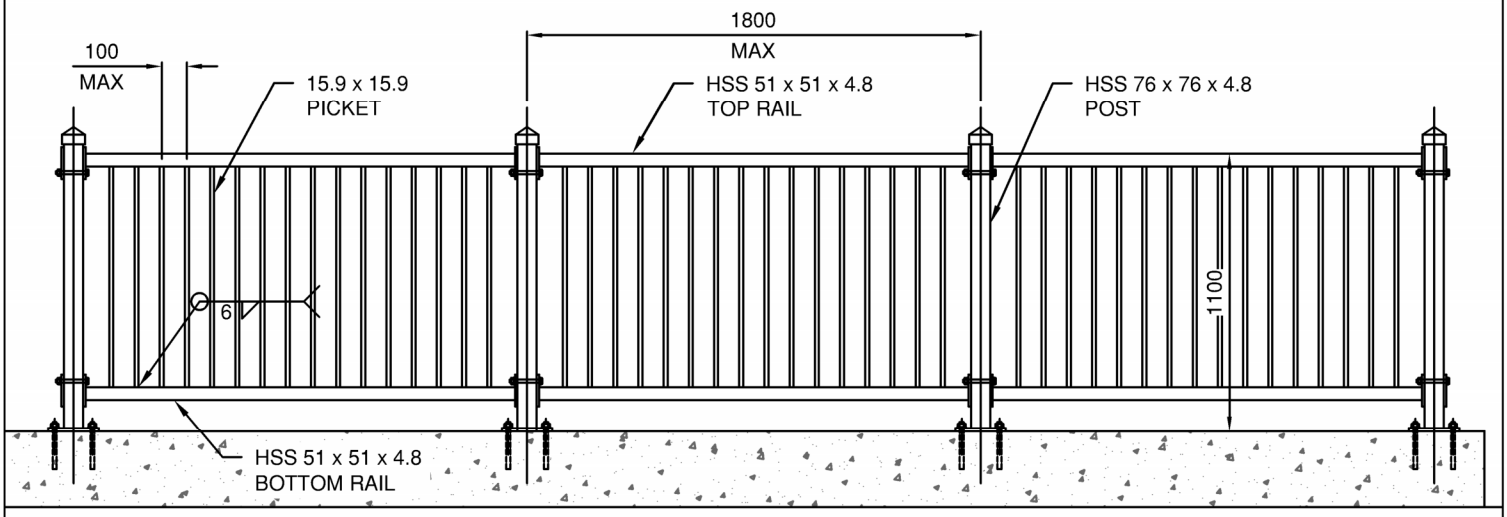
VENT/DRAIN HOLES IN VERTICALS

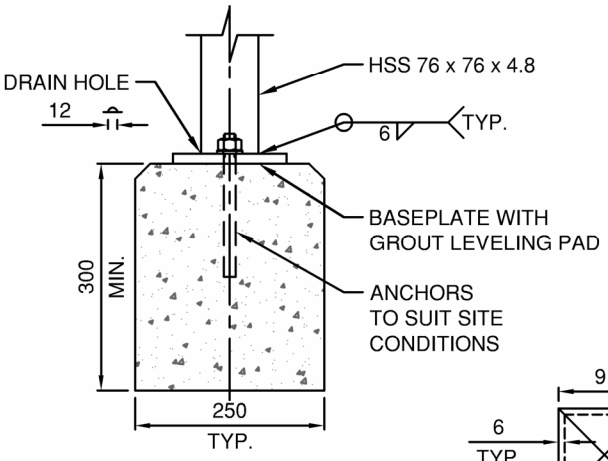
NOT TO SCALE

TYPICAL STEEL BICYCLE RAILING

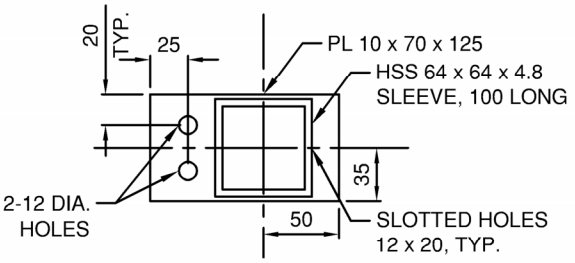
Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 4

SUPPLEMENTARY STANDARD DETAIL DRAWING

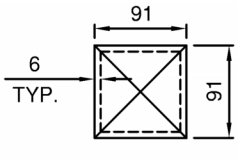




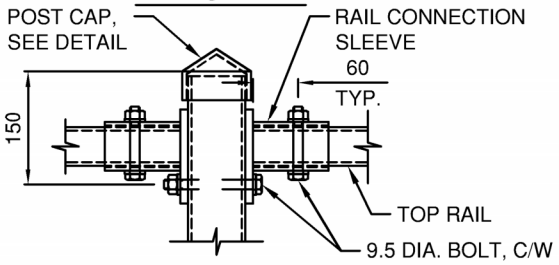
POST BASE CONNECTIONS

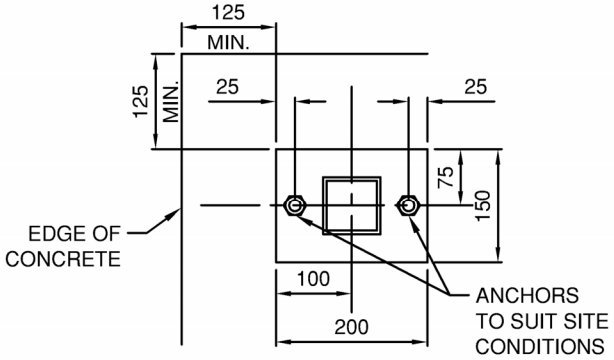


RAIL SLEEVE

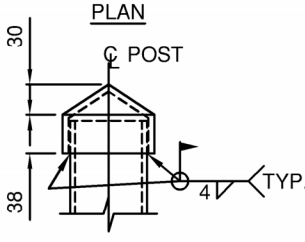


PLAN



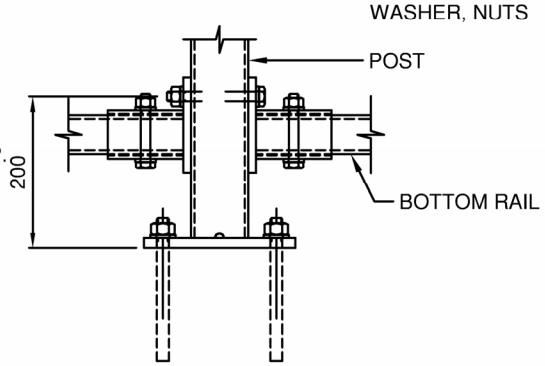


POST BASE DETAILS



ELEVATION

POST CAP



RAIL CONNECTIONS

NOTES:

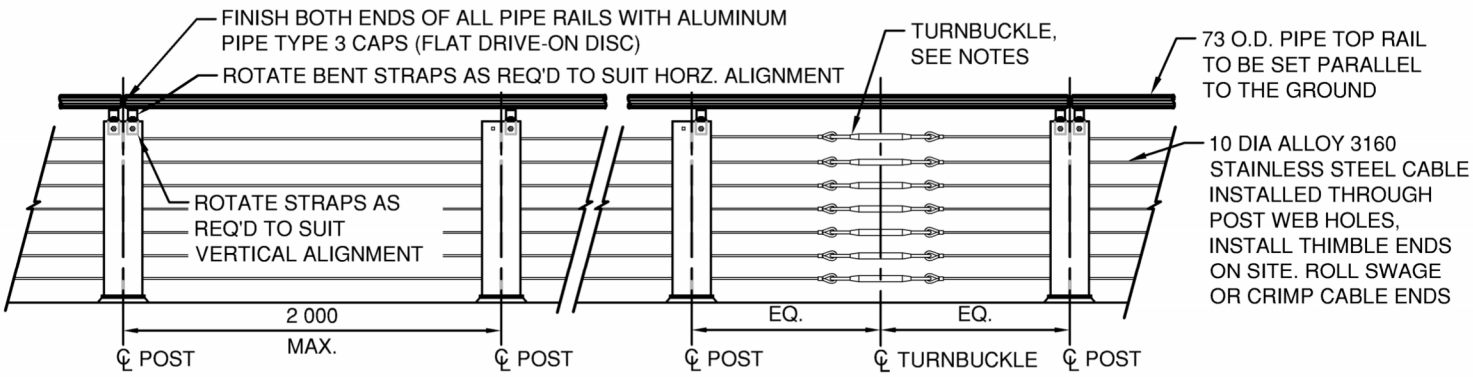
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL COMPONENTS TO BE POWDER COATED BLACK.
4. ALL RAILS AND POSTS TO BE CSA G40.21 GRADE 350W OR ASTM A500 GRADE C. ALL MISCELLANEOUS PLATE TO BE CSA G40.21 GRADE 300W.
5. POST ANCHORS TO BE A307 THREADED ROD, GALVANIZED TO ASTM A123/A123M, OR STAINLESS TYPE 316.
6. WELDING TO BE IN ACCORDANCE WITH CSA W59 BY COMPANIES AND WELDERS CERTIFIED TO CSA W47.1 BY CWB.
7. ALUMINUM MAY BE ACCEPTED BY THE DIRECTOR OF ENGINEERING. ALL DETAILS, COMPONENTS, CONNECTIONS, ANCHORS AND MATERIALS IN ACCORDANCE WITH NOTE 2.

NOT TO SCALE

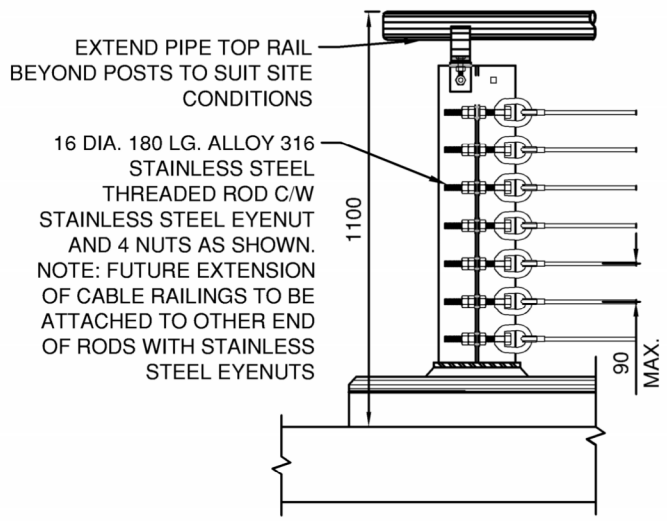
NEIGHBOURHOODS AND VILLAGES RAILING

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 5

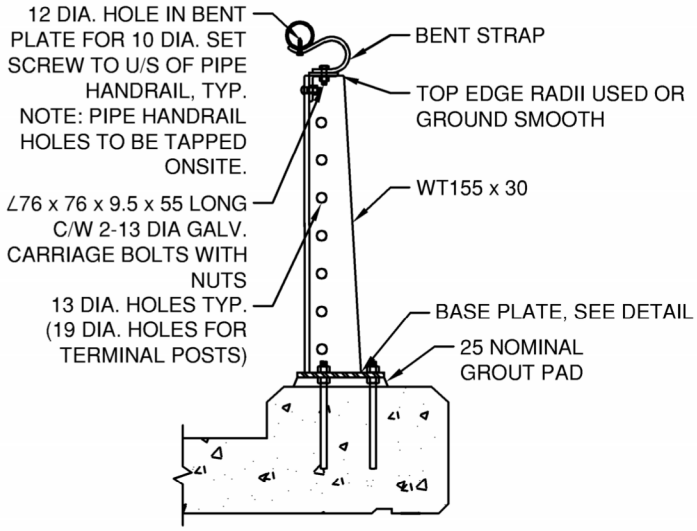
SUPPLEMENTARY STANDARD DETAIL DRAWING



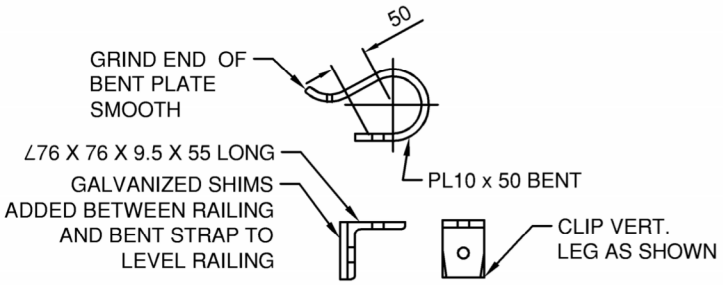
RAILING ELEVATION VIEW (INSIDE)



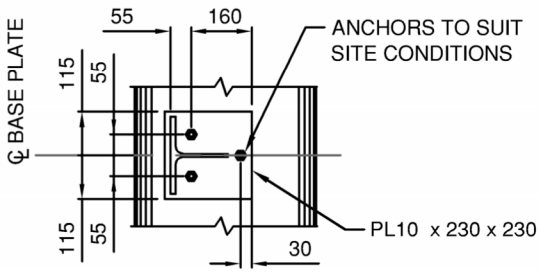
TERMINAL POST DETAIL



RAILING SECTION



BENT STRAP & CONNECTION DETAILS



BASE PLATE DETAIL

NOTES:

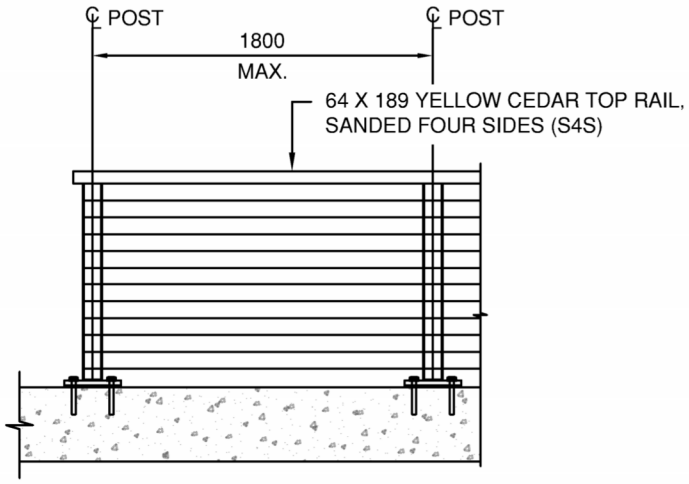
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL MISCELLANEOUS COMPONENTS INCLUDING, BUT NOT LIMITED TO, TURN BUCKLES, SWAGES, NUTS, AND WASHERS TO BE STAINLESS STEEL, TYPE 316.
4. RAILING CABLES TO BE TENSIONED SUCH THAT CABLE SAG DOES NOT EXCEED 5MM BETWEEN SUPPORTS UNDER DEAD LOAD OF THE CABLE.
5. WT SECTIONS TO BE CSA G40.21, GRADE 350W. PIPE SECTIONS TO BE ASTM A53. PLATES TO BE CSA G40.21 GRADE 300W. BOLTS TO BE ASTM F3125M, GRADE 325, TYPE 1.
6. ALL NON-STAINLESS STEEL COMPONENTS TO BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.

NOT TO SCALE

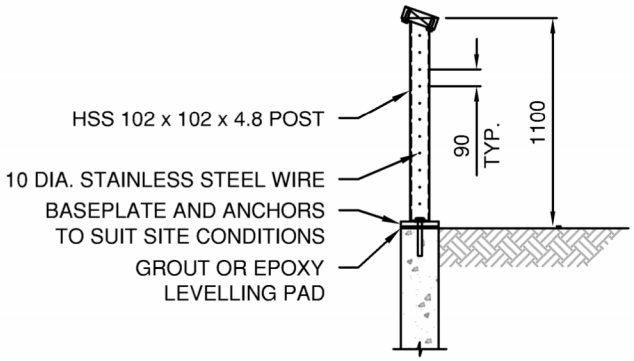
WESTSONG WALKWAY RAILING

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 6

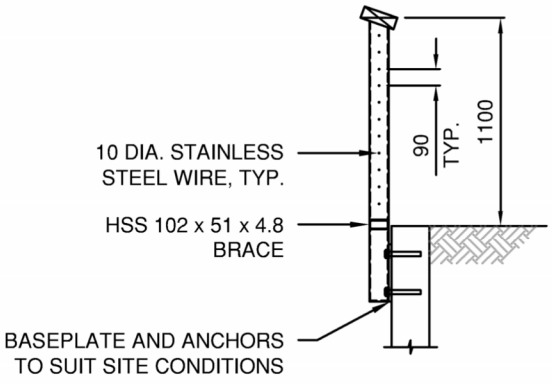
SUPPLEMENTARY STANDARD DETAIL DRAWING



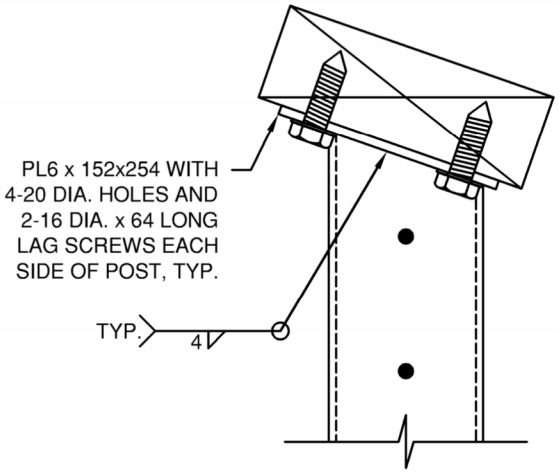
ELEVATION



TOP MOUNTED RAILING



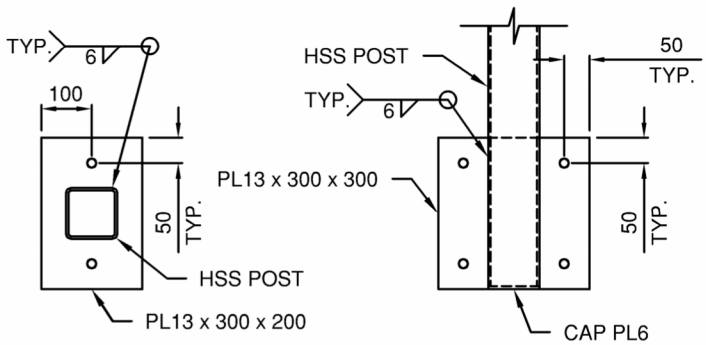
SIDE MOUNTED RAILING



TOP RAIL DETAIL

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. FOR PURPOSE OF CLARITY, DETAILS OF CABLE TERMINATIONS AT END POSTS, TURNBUCKLES, AND CONNECTIONS ARE NOT SHOWN.
4. ALL MISCELLANEOUS COMPONENTS INCLUDING, BUT NOT LIMITED TO, TURN BUCKLES, SWAGES, NUTS, AND WASHERS TO BE STAINLESS STEEL, TYPE 316.
5. RAILING CABLES TO BE TENSIONED SUCH THAT CABLE SAG DOES NOT EXCEED 5MM BETWEEN SUPPORTS UNDER DEAD LOAD OF THE CABLE.
6. HSS SECTIONS TO BE CSA G40.21, GRADE 350W. PLATES TO BE CSA G40.21 GRADE 300W.
7. ALL NON-STAINLESS STEEL COMPONENTS TO BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.



TOP MOUNTED SIDE MOUNTED

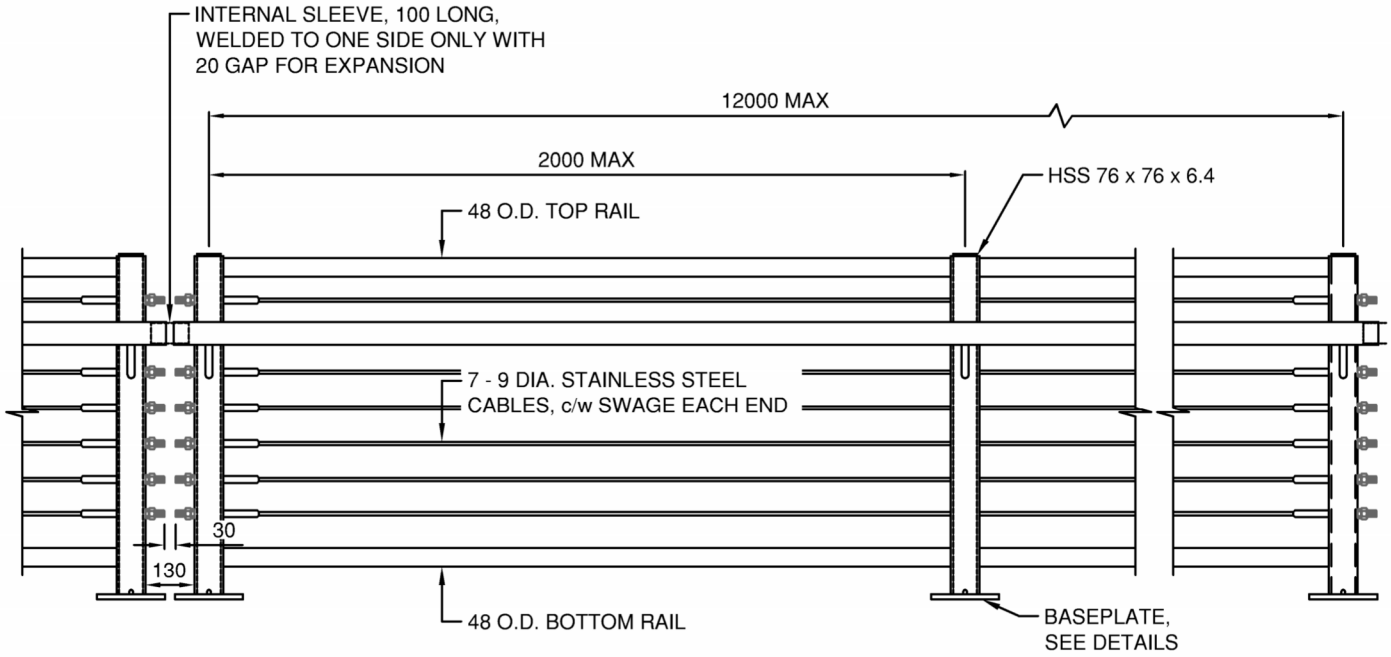
MOUNTED ANCHOR DETAILS

NOT TO SCALE

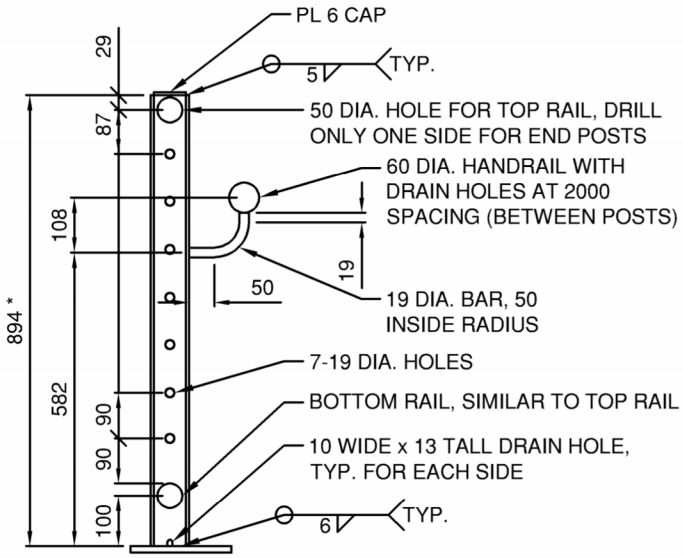
DAVID FOSTER HARBOUR PATHWAY RAILING

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 7

SUPPLEMENTARY STANDARD DETAIL DRAWING

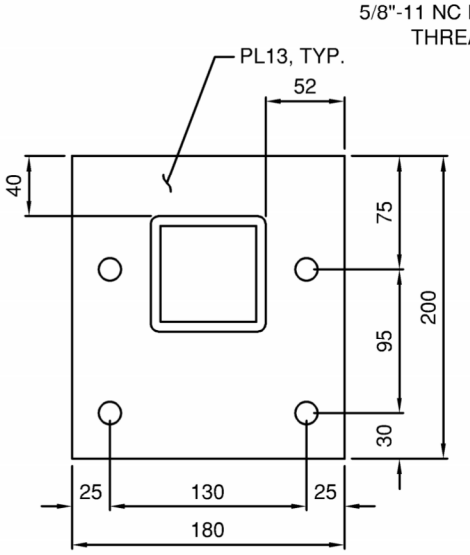


RAIL LAYOUT AND DIMENSIONS

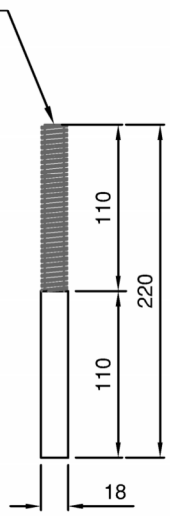


POST DETAIL

* EXISTING RAILING HEIGHT NOT TO CODE



BASEPLATE DETAIL



SWAGE

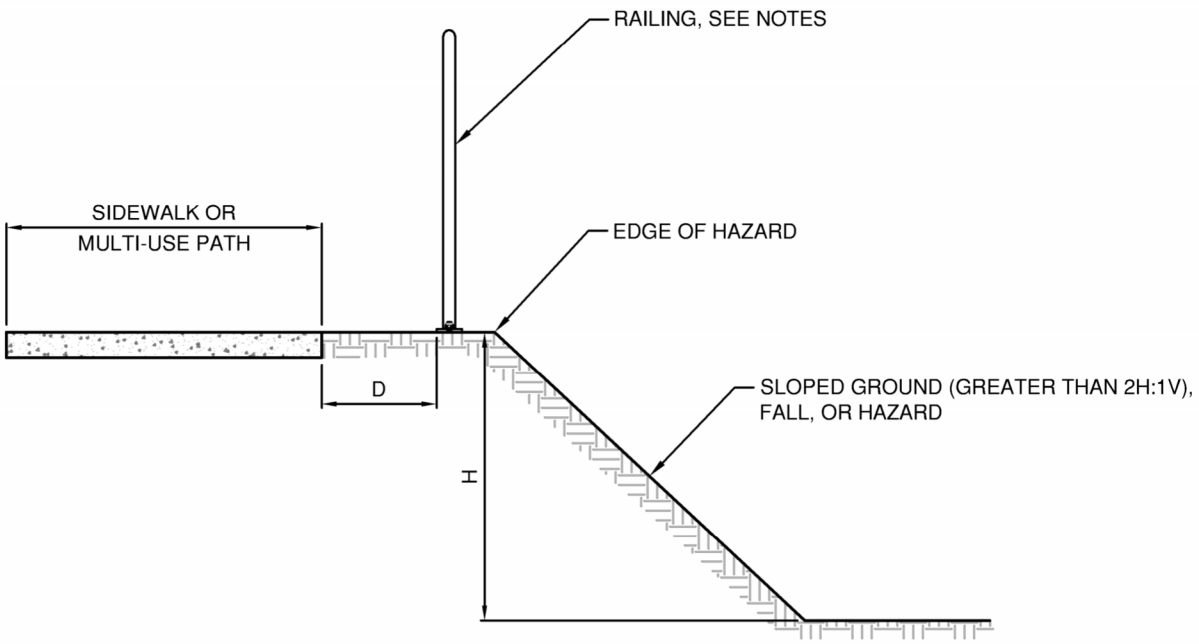
NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. WELDING TO BE IN ACCORDANCE WITH CSA W59 BY COMPANIES AND WELDERS CERTIFIED TO CSA W47.1 BY CWB.
4. ALUMINUM SHAPES TO BE GRADE 6061-T6, ALUMINUM PLATES MUST BE GRADE 5052.
5. STAINLESS STEEL CABLES, SWAGES, AND NUTS TO BE GRADE 316.
6. RAILING CABLES TO BE TENSIONED SUCH THAT CABLE SAG DOES NOTE EXCEED 5 mm BETWEEN SUPPORTS UNDER DEAD LOAD OF THE CABLE.
7. DEBURR WHERE HANDRAILS ARE DISCONTINUED, PROVIDE 6MM CAP PLATES WITH 3MM RADIUSED EDGES.
8. ANCHORAGE TO BE STAINLESS TYPE 316 TO ASTM A193 OR ASTM A307, ZINC PLATED AND TO BE DESIGNED TO SUIT SITE CONDITIONS.

NOT TO SCALE

DALLAS ROAD RAILING	Revision Date	Drawing Number
	SEPTEMBER 2025	SD STR 8

SUPPLEMENTARY STANDARD
DETAIL DRAWING



RAILING REQUIREMENTS FOR SLOPES, RETAINING WALLS, OR HAZARDS

TABLE 1: HAZARD WARRANT TABLE	
DISTANCE EDGE OF SIDEWALK OR MULTI-USE PATH, 'D' (m)	HEIGHT OF DROP 'H' (m)
D < 1.2	H > 0.6
1.2 ≤ D < 2.0	H > 1.0
2.0 ≤ D < 3.0	H > 2.0
D ≥ 3.0	H > 3.0

NOTES:

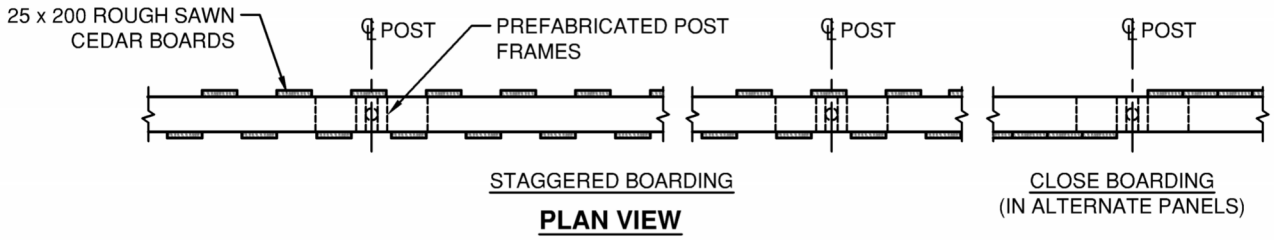
1. THIS DRAWING IS NOT TO BE USED FOR CONFIGURATIONS INCLUDING TRAFFIC. THE REFERENCED INFORMATION IS FOR PEDESTRIAN AND CYCLIST TRAFFIC ONLY. SYSTEMS INTEGRATING VEHICULAR TRAFFIC MUST BE DESIGNED BY A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC.
2. PROTECTION SYSTEMS ARE REQUIRED AT HAZARDS WHERE IDENTIFIED PEDESTRIAN TRAFFIC IS WITHIN SPECIFIED DISTANCES TO THE HAZARDS AS OUTLINED IN TABLE 1.
3. HAZARDS INCLUDE, BUT ARE NOT LIMITED TO, DROPS OVER 0.6M IN HEIGHT, BRIDGES, RETAINING WALLS, BEDROCK, NATURAL SLOPES, OR FILL SLOPES AT SLOPES STEEPER THAN 2H:1V.

NOT TO SCALE

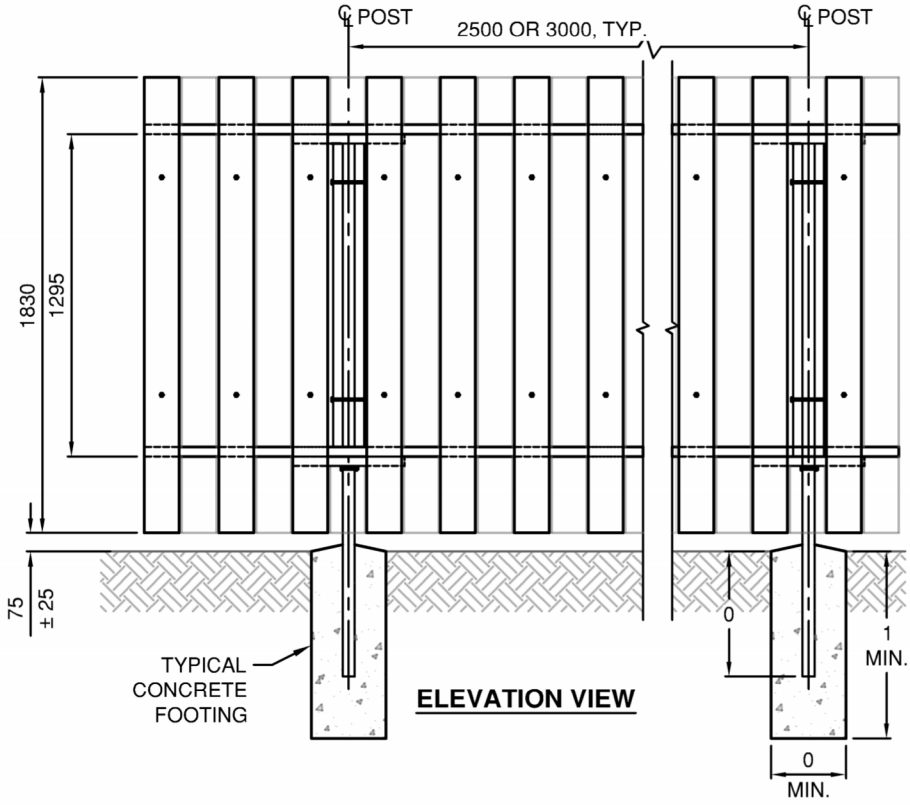
RAILING CRITERIA FOR RETAINING WALL OR SLOPE

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 9

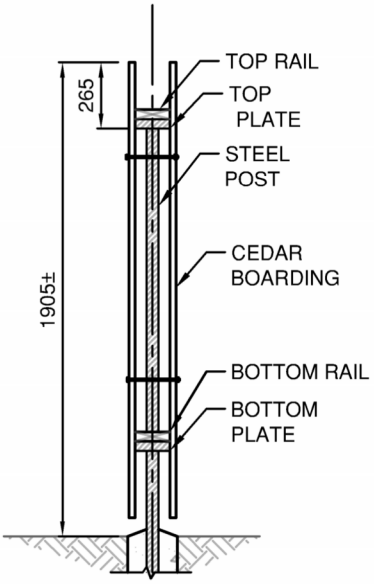
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN VIEW



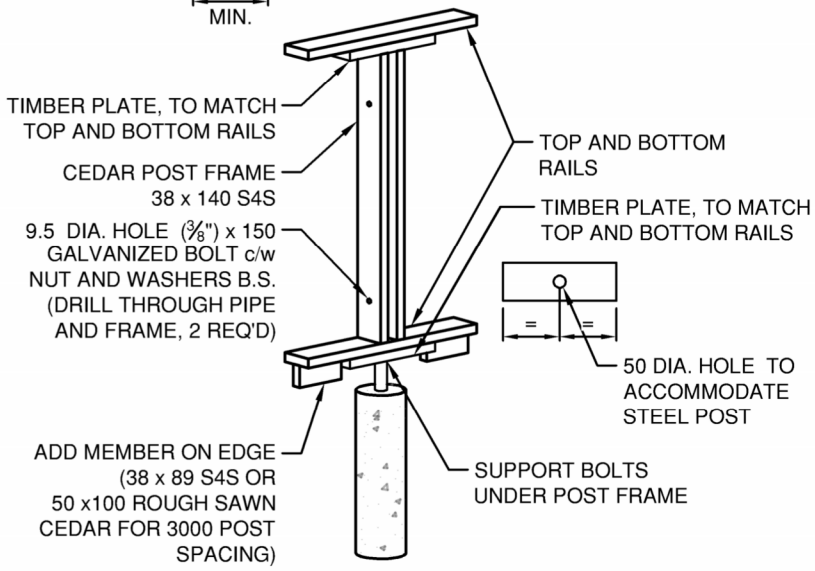
ELEVATION VIEW



SECTION

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL STEELWORK TO BE HOT DIPPED GALVANIZED TO ASTM A123.
4. STEEL TUBING TO BE ASTM A53, "STANDARD" WEIGHT. STEEL PLATE TO BE CSA G40.21, GRADE 300W.
5. ALL TOP AND BOTTOM RAIL TIMBER TO BE 38 x 140 SANDED FOUR SIDES (S4S) OR 50 x 150 ROUGH SAWN CEDAR AS REQUESTED BY CITY.



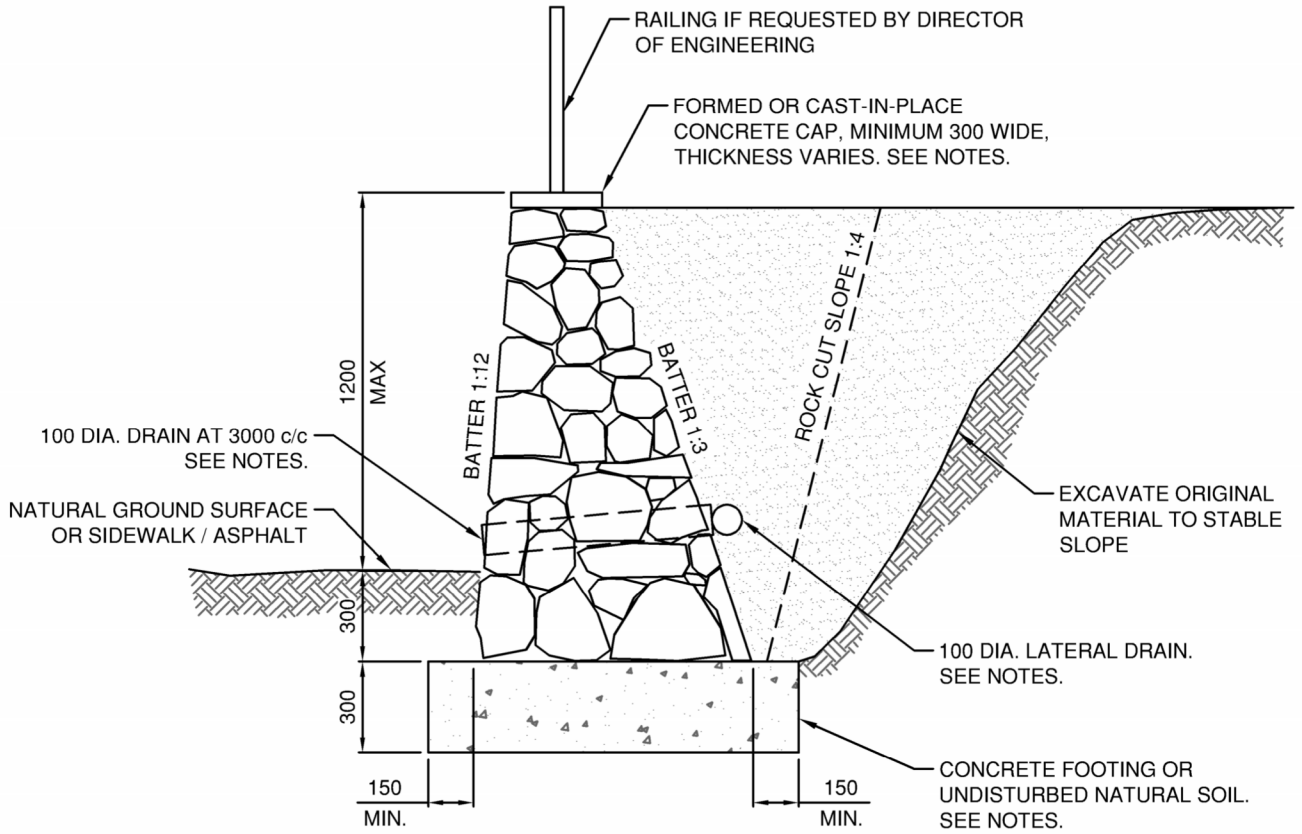
ISOMETRIC DETAIL

NOT TO SCALE

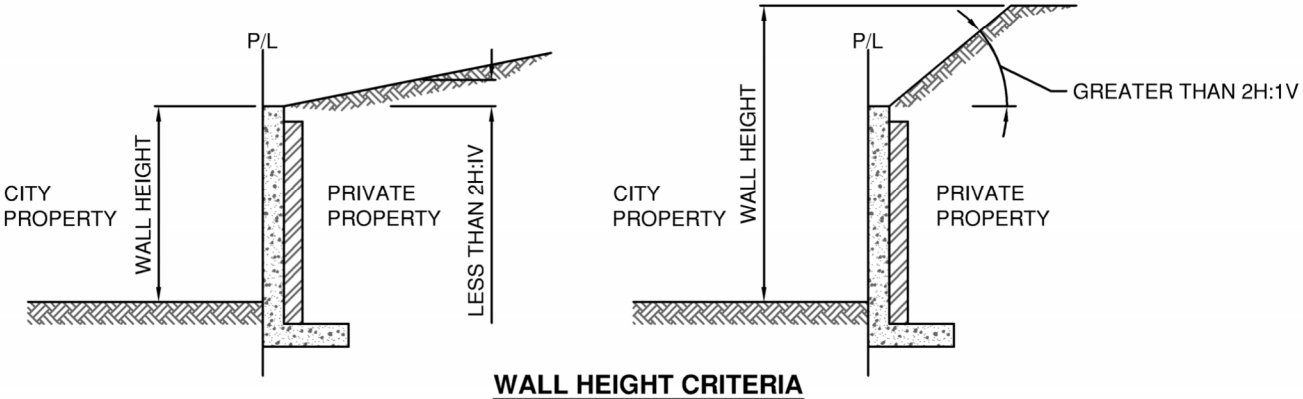
WOOD PRIVACY FENCE

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 10

SUPPLEMENTARY STANDARD DETAIL DRAWING



WALL SECTION



WALL HEIGHT CRITERIA

FOR WALLS DIRECTLY ADJACENT TO PRIVATE PROPERTY

NOTES:

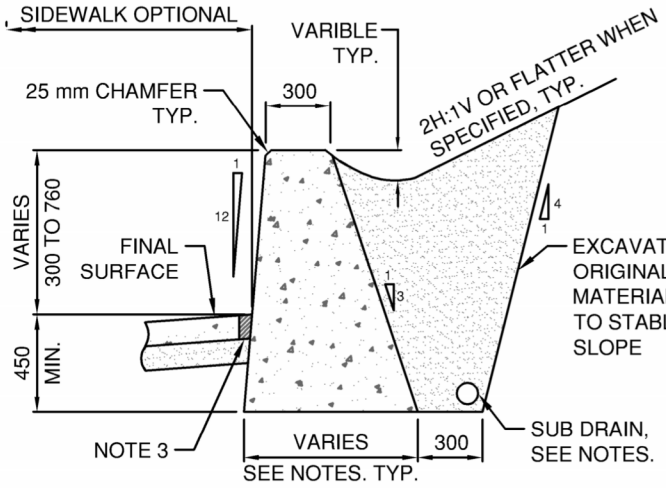
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. RETAINING WALL HEIGHT CRITERIA IS SHOWN ON THIS DRAWING. ADDITIONAL INFORMATION LOCATED IN EGBC'S RETAINING WALL GUIDELINE.
4. EXCAVATIONS AND SLOPE CUTS EXCEEDING WHAT IS SHOWN, AND NATURAL SOIL FOUNDATIONS, ARE TO BE APPROVED BY A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC.
5. RETAINING WALLS MUST NOT DRAIN ONTO ADJACENT PROPERTY. LATERAL DRAINS FOR PRIVATE PROPERTY WALLS TO BE TIED INTO EXISTING CITY STORM DRAIN SYSTEM, OR CONTAINED WITHIN THE PROPERTY. WALL DRAINS ARE NOT PERMITTED IN WALLS ADJACENT TO THE CITY PROPERTY LINE. ALL DRAINS TO BE MINIMUM 100 MM DIAMETER WRAPPED IN FILTER CLOTH.
6. FORMED CONCRETE CAPS TO BE DESIGNED TO ACCOMMODATE RAILING ANCHORAGE REQUIREMENTS. MINIMUM THICKNESS OF 50 mm.
7. MORTARED ROCK IS NOT PERMITTED FOR RETAINING WALLS CONSTRUCTED OVER 1.2 METRES HIGH. IF OVER 1.2 METRES HIGH, WALLS MUST BE CONCRETE AND DESIGNED BY A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC. IF THE WALL IS ON PRIVATE PROPERTY AND IS OVER 1.2 METRES HIGH, THE OWNER MUST APPLY FOR A BUILDING PERMIT WITH THE CITY.

NOT TO SCALE

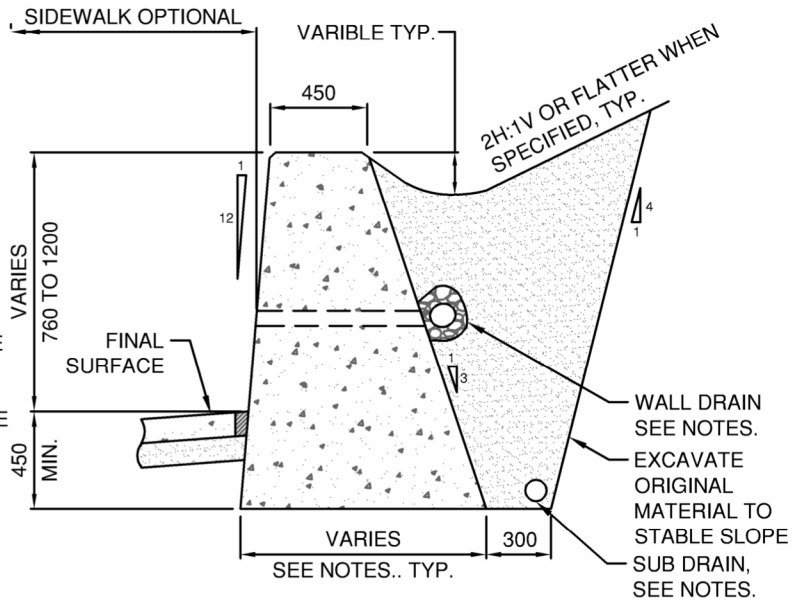
MORTARED ROCK RETAINING WALL

Revision Date	Drawing Number
SEPTEMBER 2025	SD STR 11

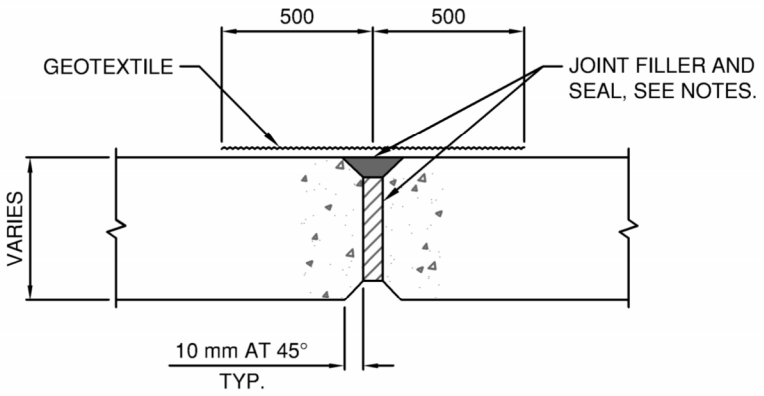
SUPPLEMENTARY STANDARD
DETAIL DRAWING



TYPE 1



TYPE 2



JOINT DETAIL

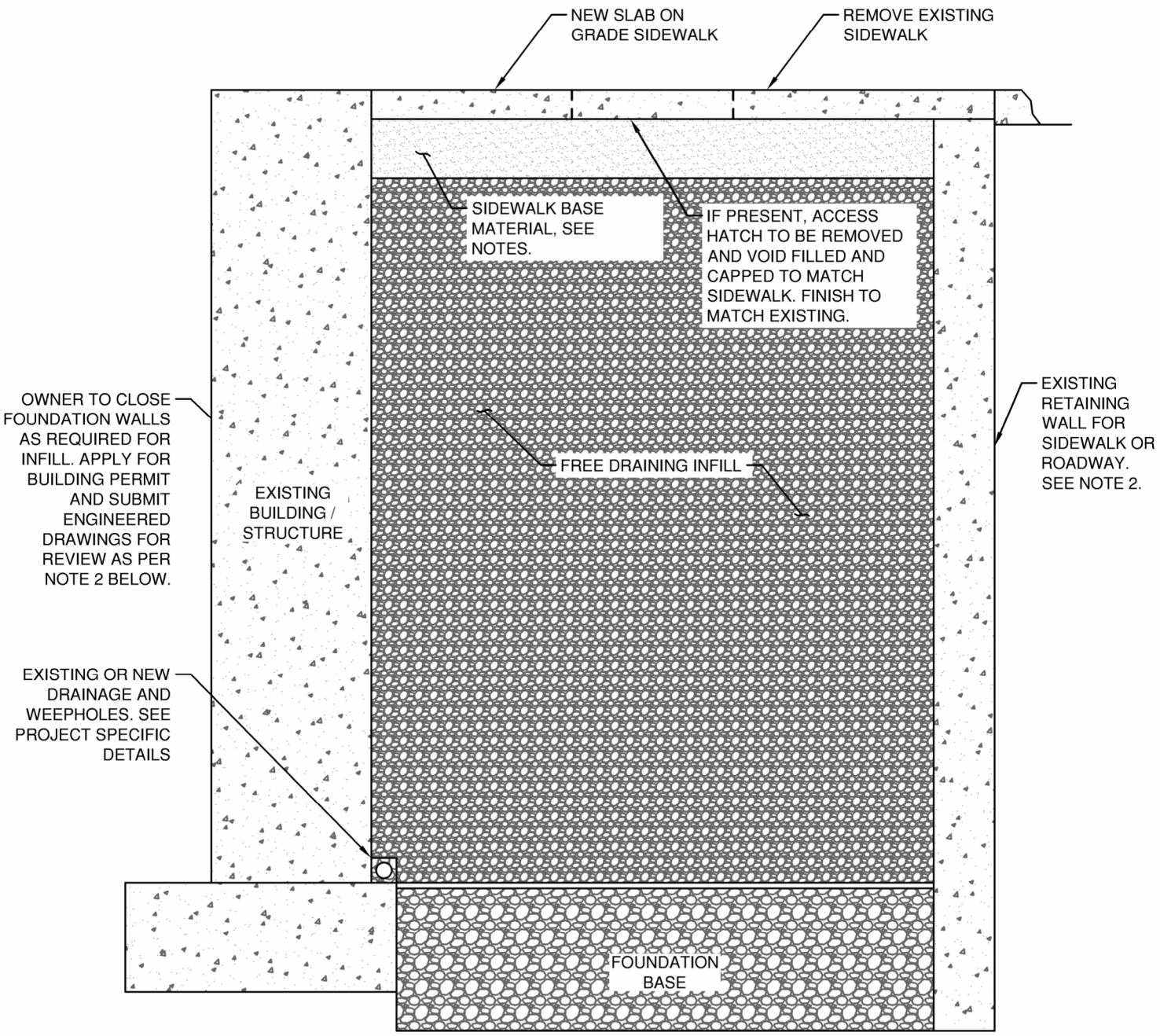
NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. RETAINING WALLS CONSTRUCTED OF OTHER MATERIALS OR OVER 1.2 METRES HIGH MUST BE DESIGNED BY A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC.
4. EXCAVATIONS AND SLOPE CUTS EXCEEDING WHAT IS SHOWN, AND NATURAL SOIL FOUNDATIONS, MUST BE APPROVED BY A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC. BACKFILL MUST BE FREE-DRAINING GRANULAR MATERIAL.
5. RETAINING WALLS MUST NOT DRAIN ONTO ADJACENT PROPERTY. LATERAL DRAINS FOR PRIVATE PROPERTY WALLS MUST BE TIED INTO EXISTING CITY STORM DRAIN SYSTEM, OR CONTAINED WITHIN THE PROPERTY. WALL DRAINS ARE NOT PERMITTED IN WALLS ADJACENT TO THE CITY PROPERTY LINE. ALL DRAINS TO BE MINIMUM 100 MM DIAMETER WRAPPED IN FILTER CLOTH.
6. JOINTS MUST BE SPACED AT 3.0 M AND CONSIST OF 10 MM PREFORMED JOINT FILLER (BITUMINOUS). JOINTS TO BE SEALED WITH COLD APPLIED RUBBER ASPHALT JOINT SEALING COMPOUND ON THE EARTH SIDE AND AN EXPOXY JOINT FILLER ON THE EXPOSED FACE.

NOT TO SCALE

CONCRETE RETAINING WALL UNDER 1.2 METRES HIGH	Revision Date	Drawing Number
	SEPTEMBER 2025	SD STR 12

SUPPLEMENTARY STANDARD
DETAIL DRAWING



NOTES:

1. SEE CONTRACT DRAWINGS AND SPECIFICATIONS FOR SITE SPECIFIC DETAILS.
2. ALL DETAILS SHOWN ARE TYPICAL. A QUALIFIED PROFESSIONAL REGISTERED WITH EGBC MUST CONFIRM THESE DETAILS AS APPROPRIATE FOR THE INTENDED APPLICATION AND BE PROFESSIONALLY RESPONSIBLE FOR THEIR USE AND AUTHENTICATION.
3. ALL CONNECTION, SUPPORTS, FOUNDATIONS, AND DESIGN MUST BE BY A QUALIFIED PROFESSIONAL REGISTERED BY EGBC. STABILITY OF EXISTING COMPONENTS MUST BE CONFIRMED DURING AND AFTER THE WORK.
4. DRAINAGE MUST BE PROVIDED TO TIE INTO EXISTING BUILDING DRAINAGE OR CITY STORM DRAIN SYSTEM.
5. ALL CONNECTIONS AND JOINTS MUST BE WATERPROOFED.
6. IF GLASS PRISMS ARE DISCOVERED DURING SIDEWALK REMOVAL, THEY ARE TO BE REMOVED, REFURBISHED AND/OR REPLICATED IF REQUESTED BY THE DIRECTOR OF ENGINEERING. NEW FRAMES MUST BE FABRICATED FOR THE PRISMS AND INSTALLED AS PART OF SIDEWALK REPLACEMENT. EXACT LOCATIONS TO BE DETERMINED AT BUILDING PERMIT STAGE.

NOT TO SCALE

TYPICAL SIDEWALK BASEMENT IN-FILL	Revision Date	Drawing Number
	SEPTEMBER 2025	SD STR 13

8.4. Sanitary Sewer and Storm Drain

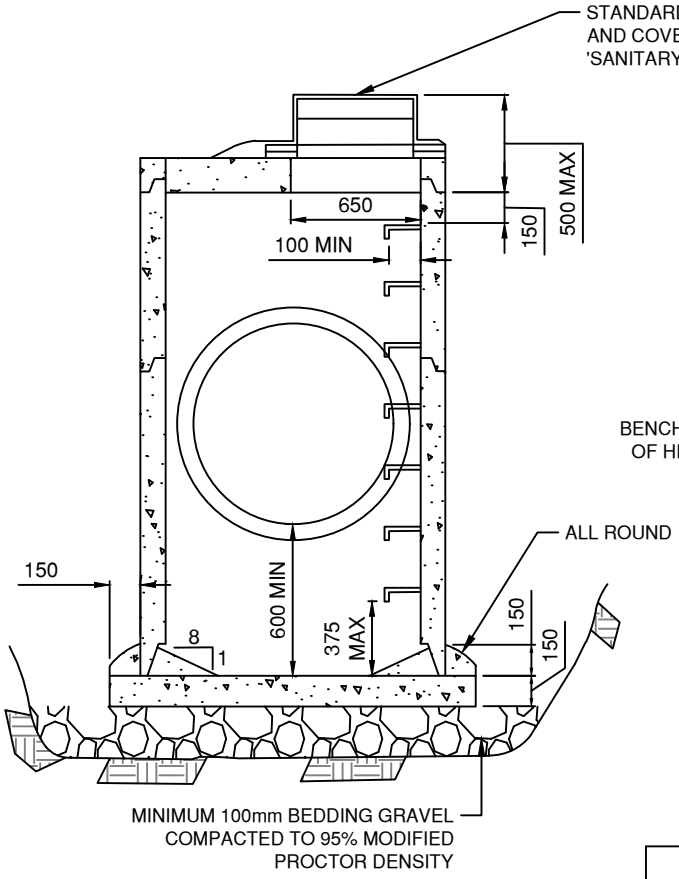
The following MMCD 2019 Standard Detail Drawings are to be used or replaced as indicated below:

SANITARY SEWER AND STORM DRAIN DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
S1	Standard and Sump Manholes		Do Not Use
		SD S1	Standard and Sump Manholes
S2	Standard Manhole Connection Details		Do Not Use
		SD S2	Standard Manhole Connection Details
S3	Manhole Connection Details - Drop and Ramp Type		Do Not Use
		SD S3	Manhole Connection Details - Drop and Ramp Type
S4	Inside Drop Manhole		Do Not Use
		SD S4	Inside Drop Manhole
S5	Precast Riser Manhole		Do Not Use
S6	Sewer Cleanout		Do Not Use
S7	Sanitary Sewer Service Connection		Do Not Use
		SD S7	Storm and Sanitary Sewer Service Connection
S8	Storm Sewer Service Connection		Do Not Use
		SD S8a	Brick Main Connection Detail
S9	Inspection Chamber for 100 to 200 Sanitary Sewer Connection		Do Not Use
		SD S9	Inspection Chamber for 100mm to 200mm Storm or Sanitary Sewer Connection

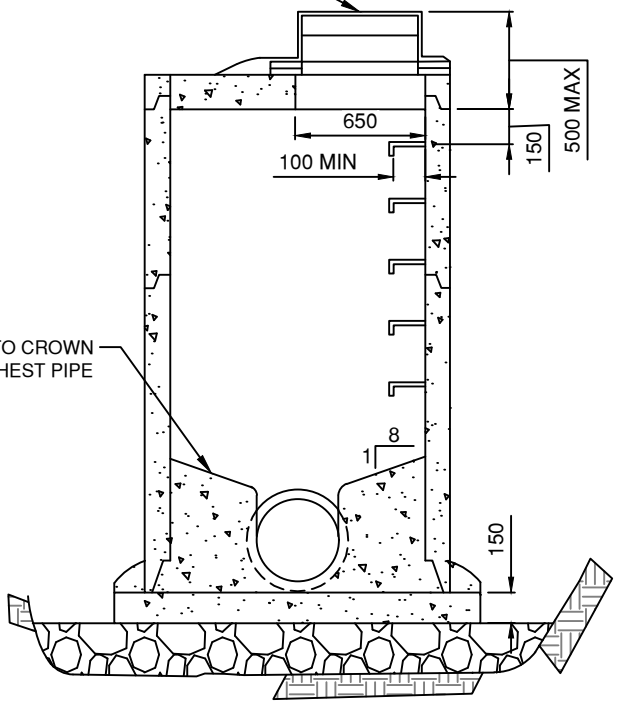
SANITARY SEWER AND STORM DRAIN DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
S10	Inspection Chamber for 250 to 375 Storm Sewer Connection		Do Not Use
S11	Top Inlet Catch basin		Do Not Use
		SD S11a	Standard Catch Basin Detail
		SD S11b	Standard Side Inlet Catch Basin Detail
		SD S11c	Standard Offset Catch Basin Detail
		SD S11d	Standard Offset Side Inlet Catch Basin Detail
S12	Lawn Drains		Do Not Use
		SD S12	Lawn Drains
S13	Storm Sewer Inlet with Safety Grillage		Do Not Use
		SD S13	Storm Sewer Inlet with Safety Grillage
S14	Concrete Block Endwall		Do Not Use
		SD S14	Concrete Block Endwall
S15	Driveway Culvert with Concrete Block End walls		Do Not Use
		SD S15	Driveway Culvert with Concrete Block Endwalls
S16	Asphalt Aprons for Catch Basins		Adopt MMCD Drawing
S17	Subdrain		Adopt MMCD Drawing
		SD S16	Manhole/Catch Basin Frame and Cover Detail
		SD S17	Typical Cleanout Frame and Cover
		SD S19	Gutter Catch Basin Frame & Cover

SANITARY SEWER AND STORM DRAIN DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
		SD S20	Typical Side Inlet Catch Basin Curb Hood
		SD S21	Typical Sump Catch Basin Frame and Cover

SUPPLEMENTARY STANDARD DETAIL DRAWING

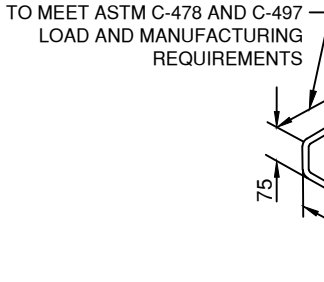


MANHOLE WITH SUMP

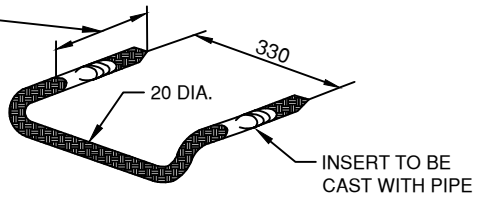


STANDARD 1050mm MANHOLE

INSIDE PIPE DIAMETER	INSIDE MANHOLE DIAMETER
450mm AND LESS	1050
525 AND 600	1200
675 AND 750	1350
900 AND 1050	1500
1200 AND OVER	RISER MANHOLE



GALVANIZED LADDER RUNG TO BE CAST WITH PIPE



GALVANIZED, ALUMINUM OR POLYENCASED LADDER RUNG

NOTES:

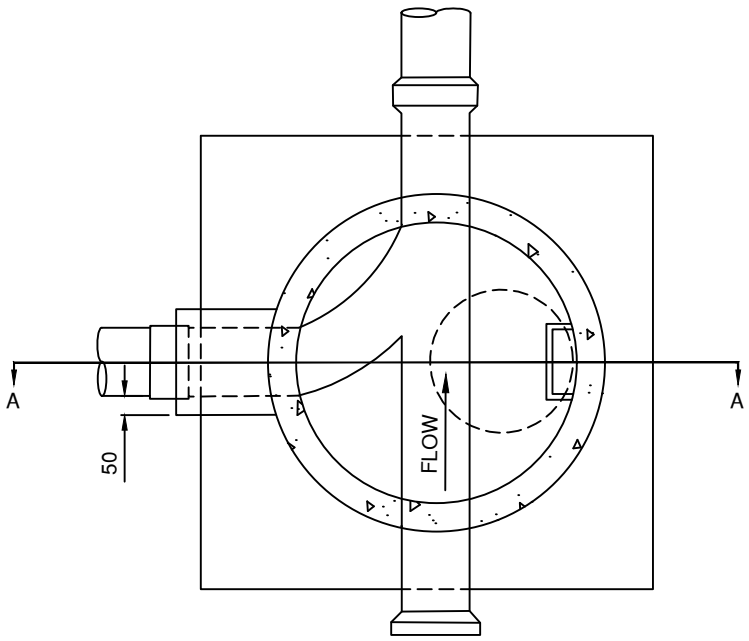
1. DETAILS ARE DRAWN FOR PRECAST RISERS ON CAST-IN-PLACE BASE. PRECAST BASES APPROVED BY CONTRACT ADMINISTRATOR ARE ACCEPTABLE.
2. MAXIMUM DEPTH TO FIRST RUNG IS 500mm. WHEN HANDHOLD IS INSTALLED BETWEEN TOP AND FIRST RUNG, MAXIMUM DEPTH MAY BE INCREASED TO 660mm.
3. FOR MANHOLES OVER 1200mm DIA. BASE THICKNESS TO BE 200mm.
4. REFER TO DRAWING SD S2 FOR CONNECTION DETAILS.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

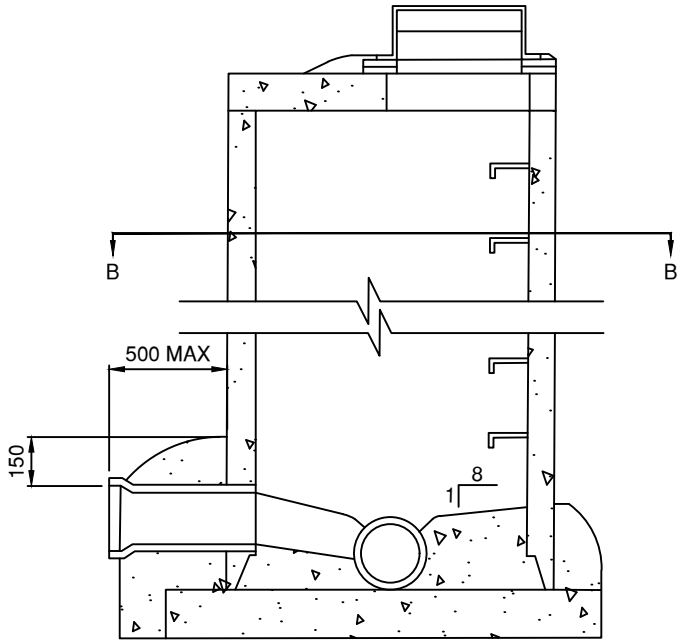
STANDARD AND SUMP MANHOLES

Revision Date	Drawing Number
JULY 2025	SD S1

SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION B-B



SECTION A-A

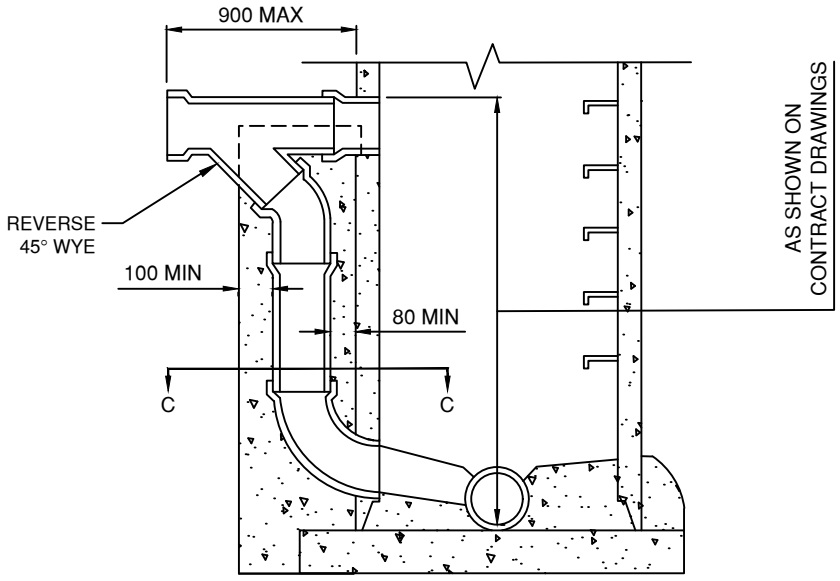
NOTES:

1. THIS DRAWING SHOWS CONNECTION DETAILS ONLY, REFER TO DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS AND INSTALLATION.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

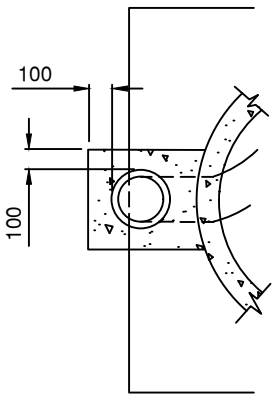
NOT TO SCALE

STANDARD MANHOLE CONNECTION DETAILS	Revision Date	Drawing Number
	JULY 2025	SD S2

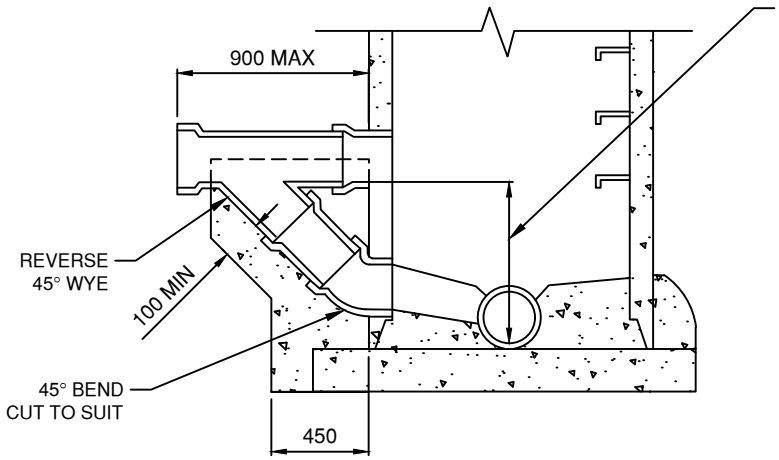
SUPPLEMENTARY STANDARD DETAIL DRAWING



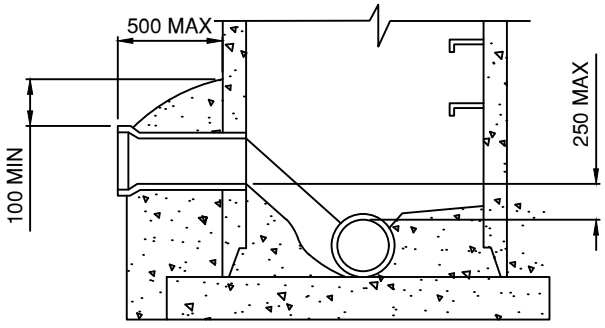
OUTSIDE DROP TYPE



SECTION C-C



OUTSIDE RAMP TYPE



INSIDE RAMP TYPE

NOTES:

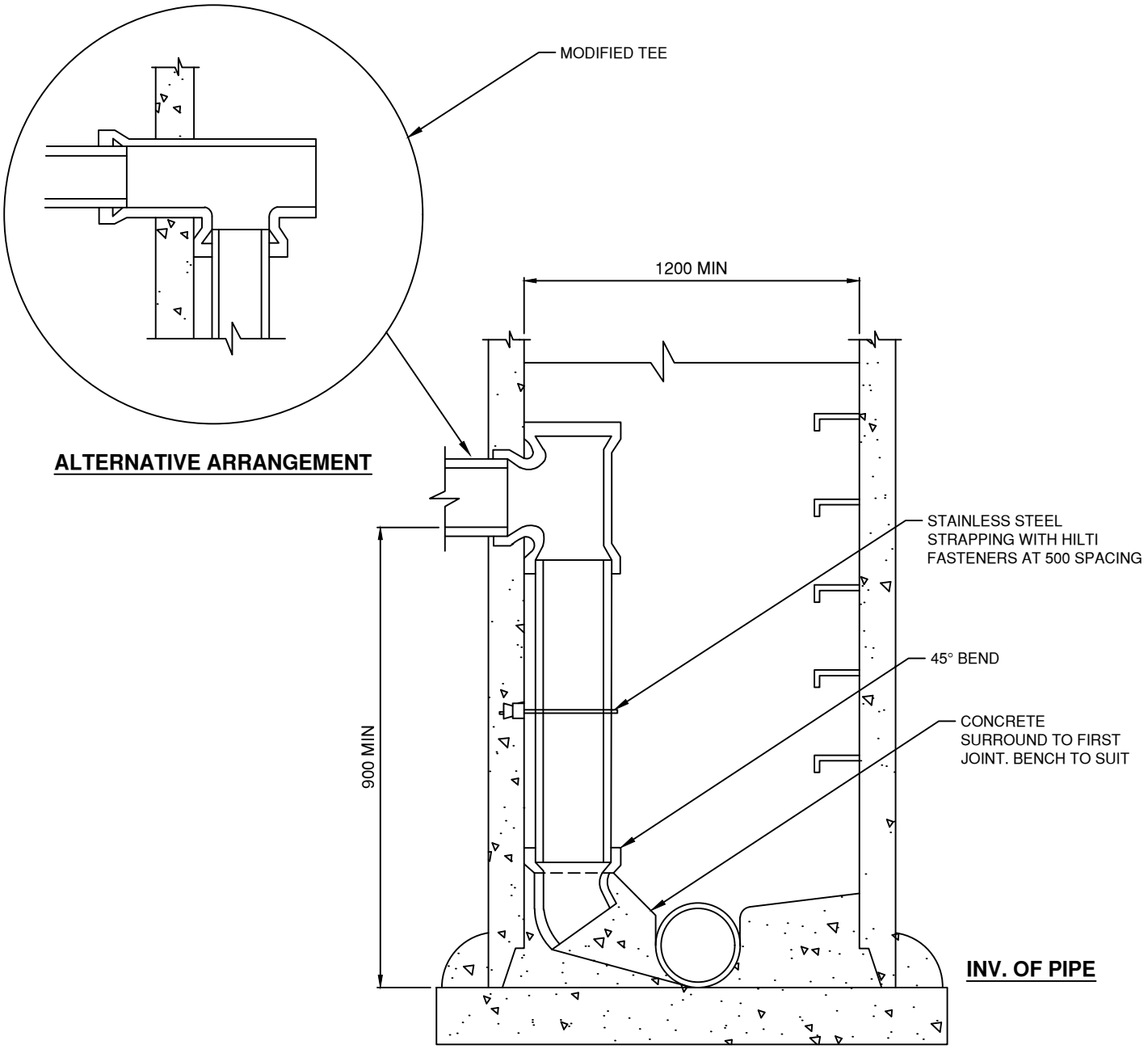
1. THIS DRAWING SHOWS CONNECTION DETAILS ONLY, REFER TO DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS AND INSTALLATION.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

MANHOLE CONNECTION DETAILS DROP AND RAMP TYPE

Revision Date	Drawing Number
JULY 2025	SD S3

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

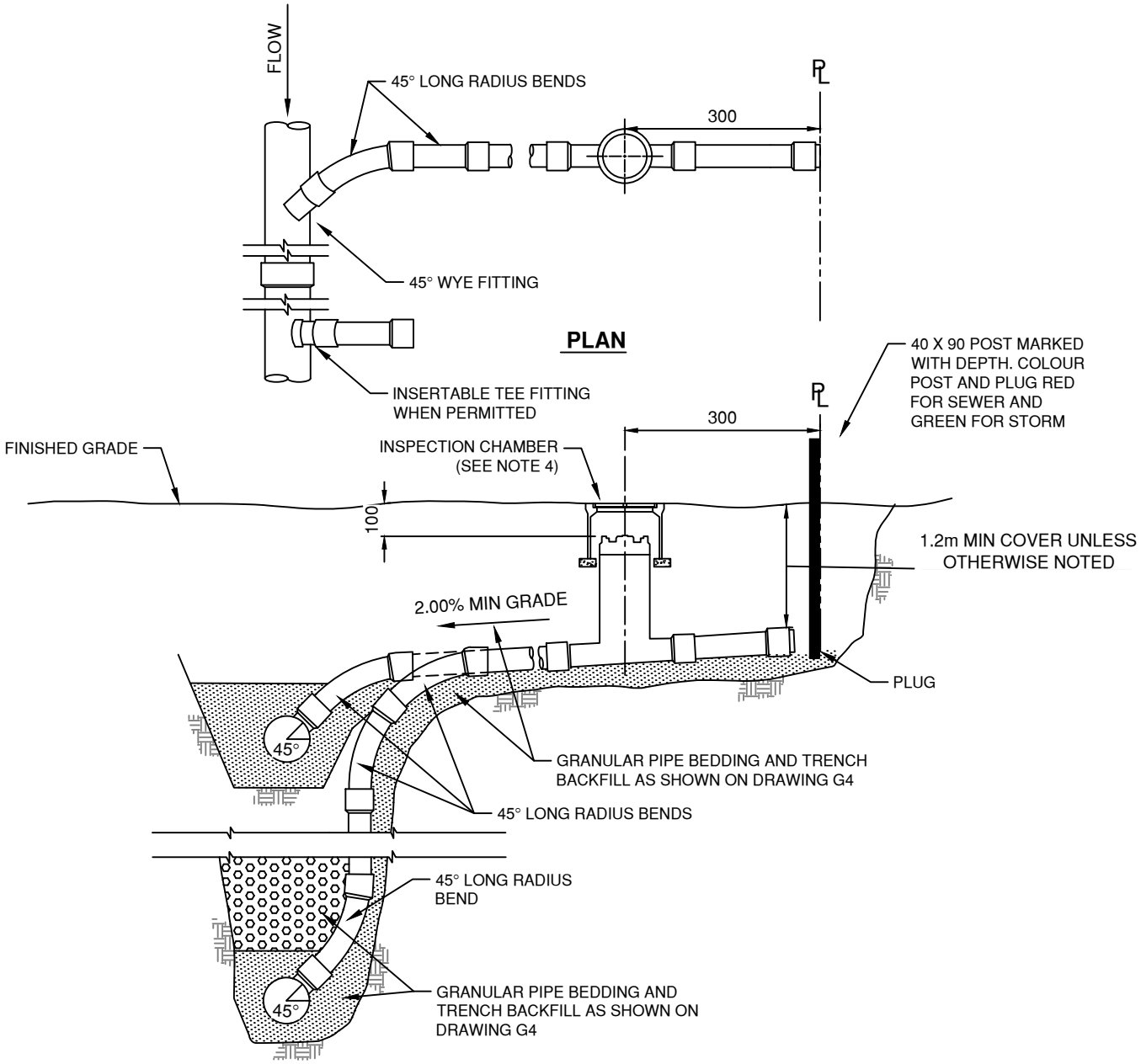
1. INSIDE DROP TO BE USED ONLY WHERE SPECIFIED BY CONTRACT ADMINISTRATOR.
2. ALL INSIDE PIPE AND FITTINGS PVC DR 28/35.
3. THIS DRAWING SHOWS INSIDE DROP ONLY. SEE DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

INSIDE DROP MANHOLE

Revision Date	Drawing Number
JULY 2025	SD S4

SUPPLEMENTARY STANDARD DETAIL DRAWING



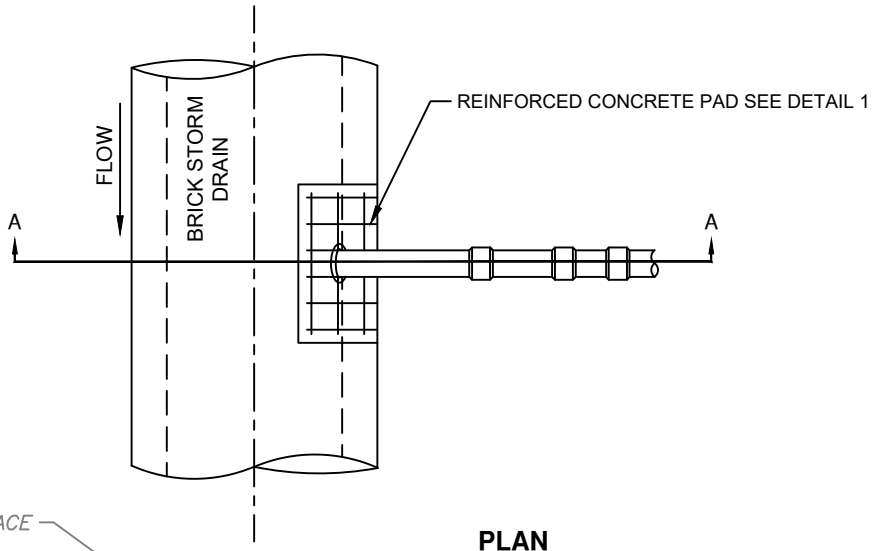
NOTES:

1. CONNECTIONS TO BE 100 OR AS SPECIFIED ON CONTRACT DRAWINGS.
2. RISER TYPE SERVICE TO BE USED ONLY WHEN SERVICE IS MORE THAN 2.4m ABOVE WYE INVERT OR AS DIRECTED BY CONTRACT ADMINISTRATOR.
3. LOCATION OF SERVICE AND MARKER AS SHOWN ON CONTRACT DRAWINGS.
4. SEE DRAWING S9 FOR DETAILS OF INSPECTION CHAMBER AND INSTALLATION REQUIREMENTS.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

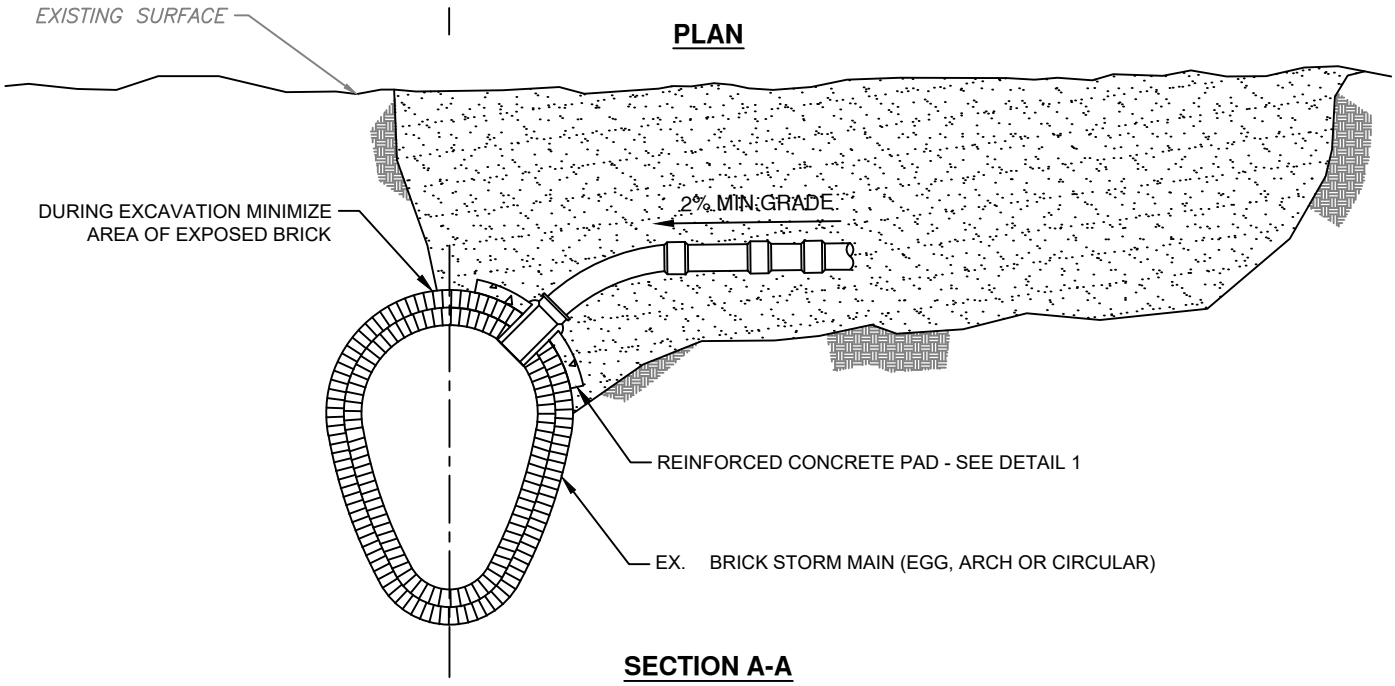
NOT TO SCALE

STORM & SANITARY SEWER SERVICE CONNECTION	Revision Date	Drawing Number
	JULY 2025	SD S7

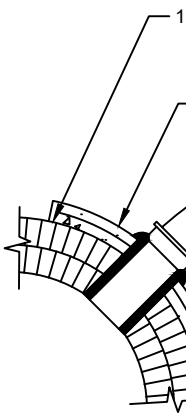
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION A-A



1. CLEAN BRICK SURFACE REMOVING ALL LOOSE MATERIAL & CONTAMINATES. APPLY ASTM C881 TYPE 1 EPOXY RESIN-BASED BONDING SYSTEM FOR CONCRETE. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR SURFACE PREPARATION & APPLICATION.
2. PLACE MIN 75mm THICK CONCRETE PAD CENTERED ON CONNECTION LOCATION. REINFORCE WITH 150x150mm 10/10 WIRE MESH. ALLOW 24 hr. MIN CURING BEFORE CORE DRILLING. CORE DRILL HOLE 25mm LARGER THAN O.D. OF PIPE TO BE INSERTED.
3. INSTALL DR35 PVC BELL END INTO OPENING. END OF SPIGOT TO BE FLUSH WITH INSIDE OF BRICK MAIN.
4. GROUT ANNULUS WITH NON-SHRINK CEMENTITIOUS GROUT.

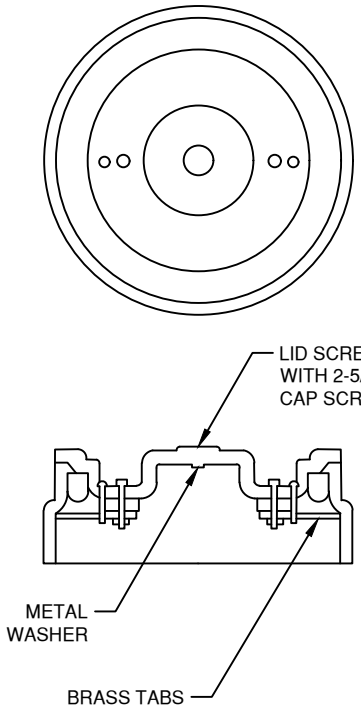
DETAIL 1

NOT TO SCALE

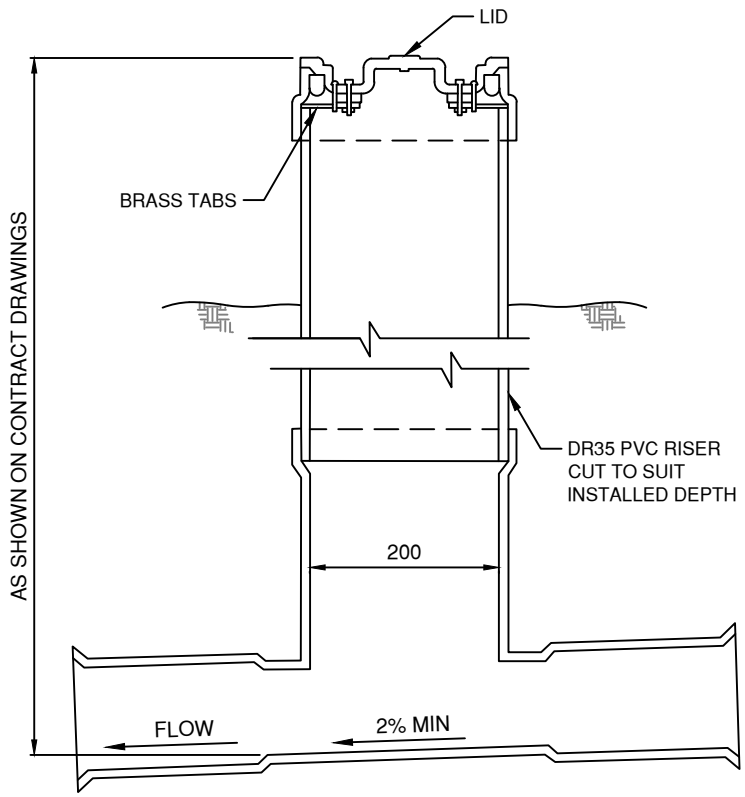
BRICK MAIN CONNECTION DETAIL

Revision Date	Drawing Number
JULY 2025	SD S8a

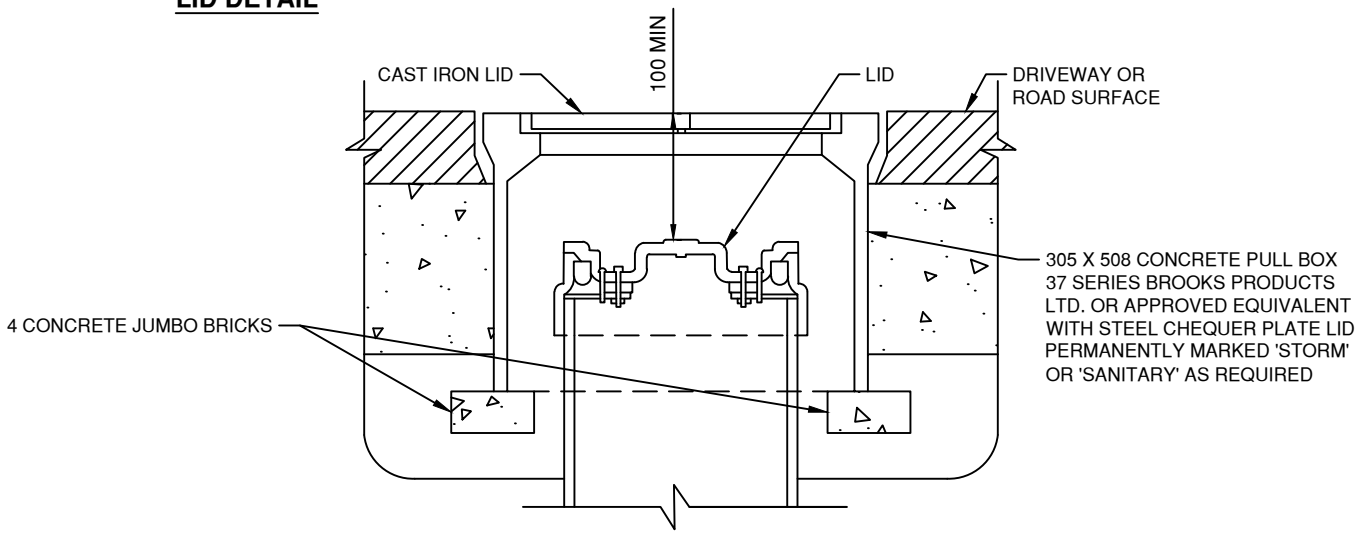
SUPPLEMENTARY STANDARD DETAIL DRAWING



LID DETAIL



INSTALLATION IN BOULEVARD



INSTALLATION IN DRIVEWAY, BOULEVARD AND ROAD

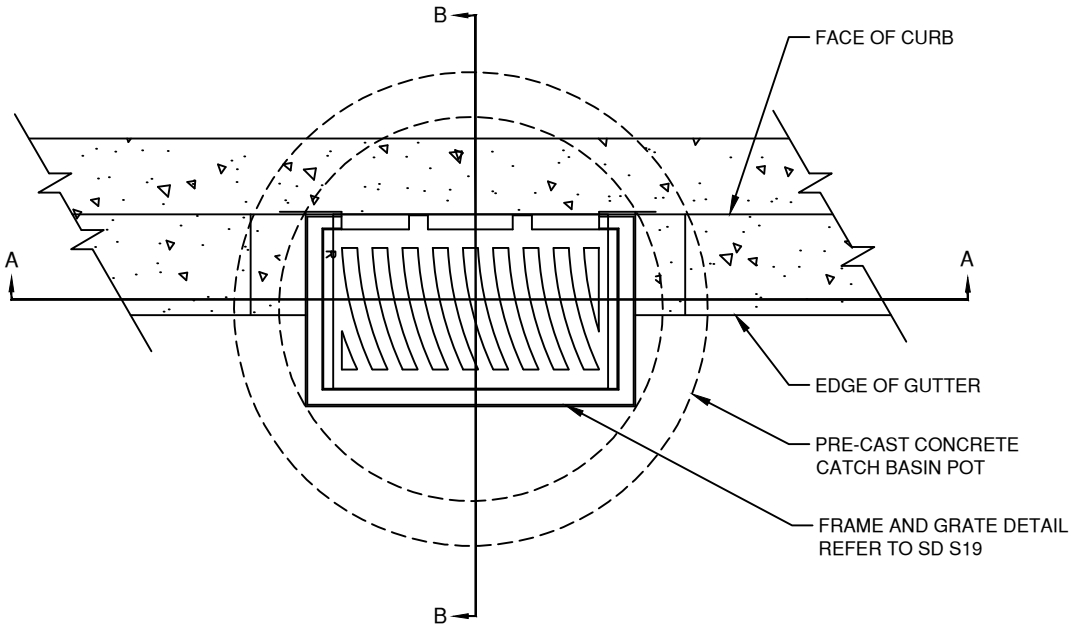
NOTES:

1. REFER TO DRAWING S7 FOR INSTALLATION REQUIREMENTS.
2. INSPECTION CHAMBER TO BE APPROVED MANUFACTURED FITTING.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. FOR SERVICE CONNECTION GREATER THAN 250 USE TERMINAL MANHOLE.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

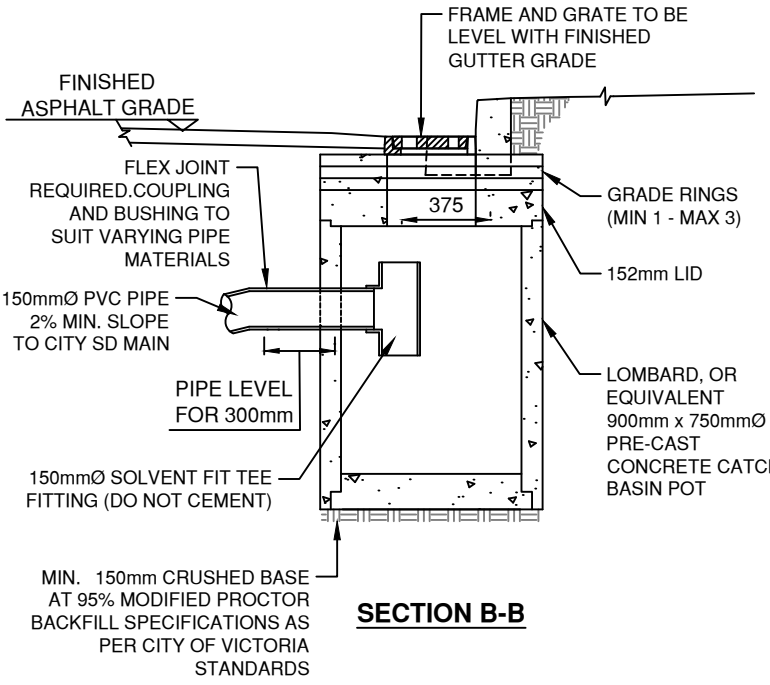
NOT TO SCALE

INSPECTION CHAMBER FOR 100 TO 200 STORM OR SANITARY SEWER CONNECTION	Revision Date	Drawing Number
	AUG. 2025	SD S9

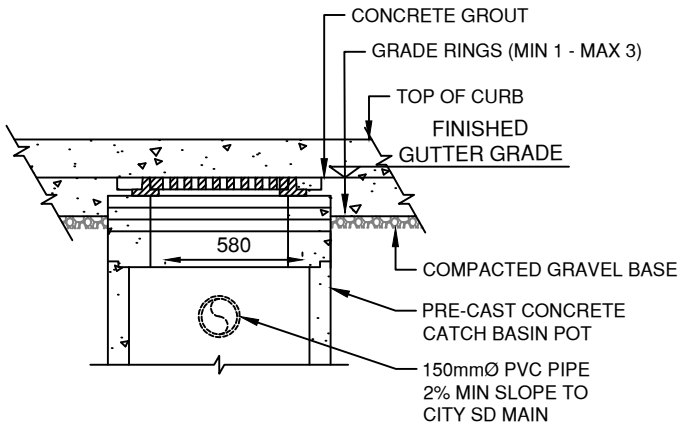
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION B-B



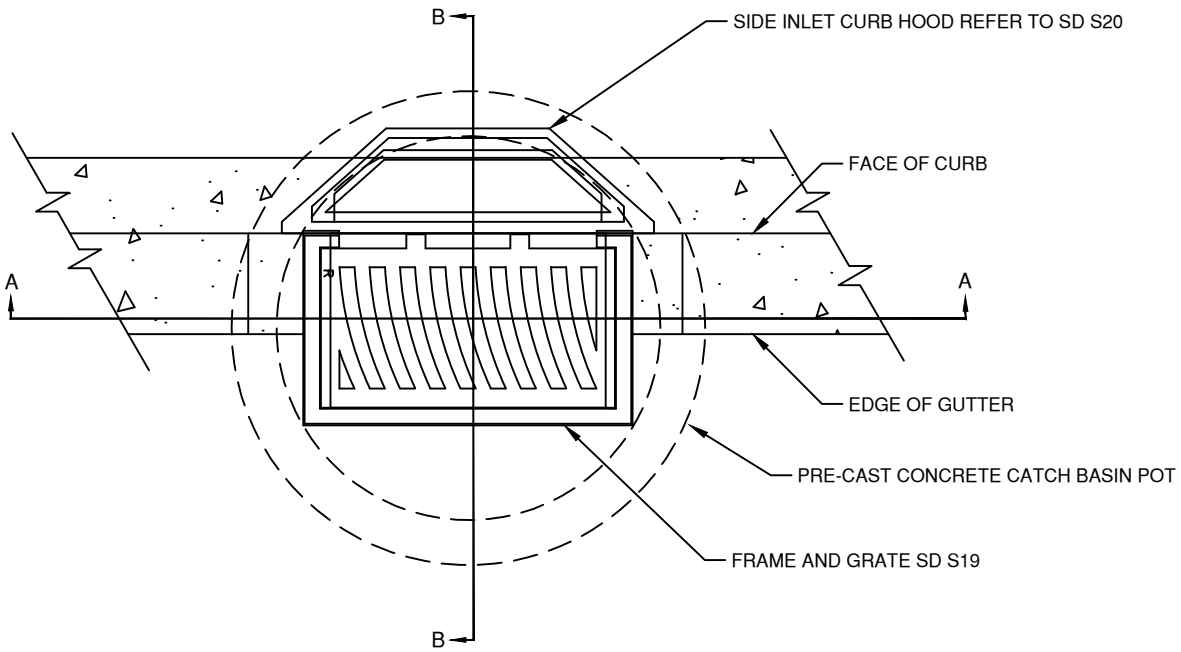
SECTION A-A

NOT TO SCALE

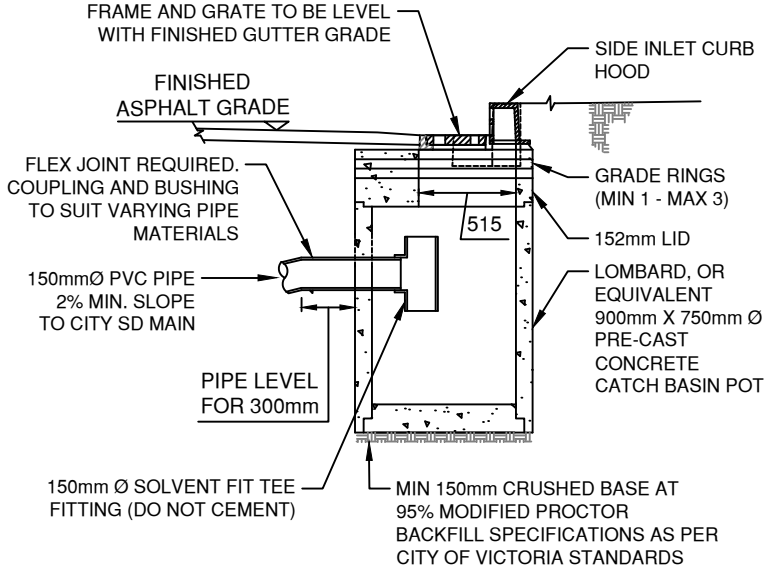
STANDARD CATCHBASIN DETAIL

Revision Date	Drawing Number
JULY 2025	SD S11a

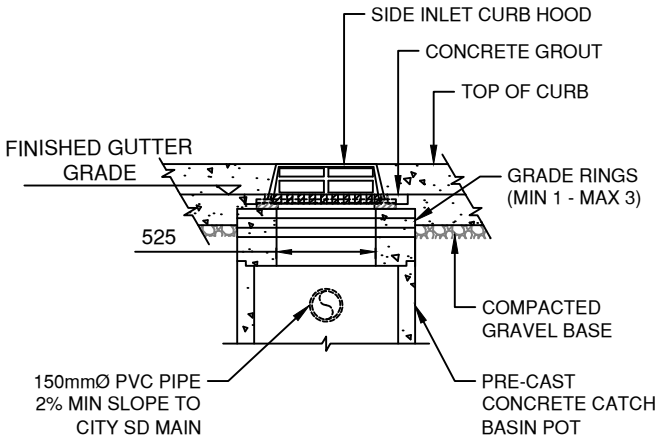
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION B-B



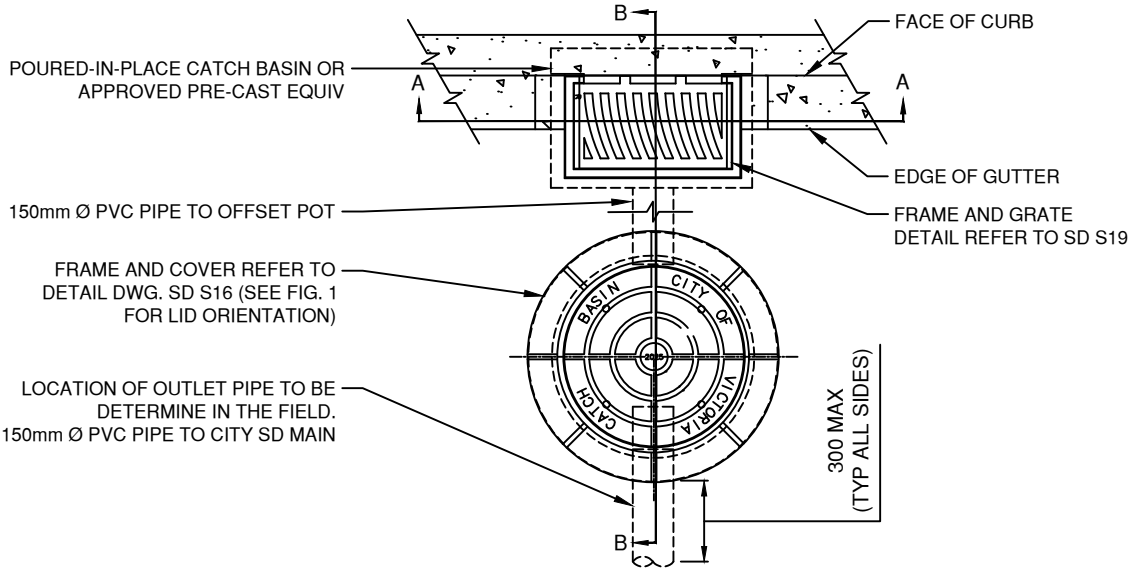
SECTION A-A

NOT TO SCALE

STANDARD SIDE INLET CATCHBASIN DETAIL

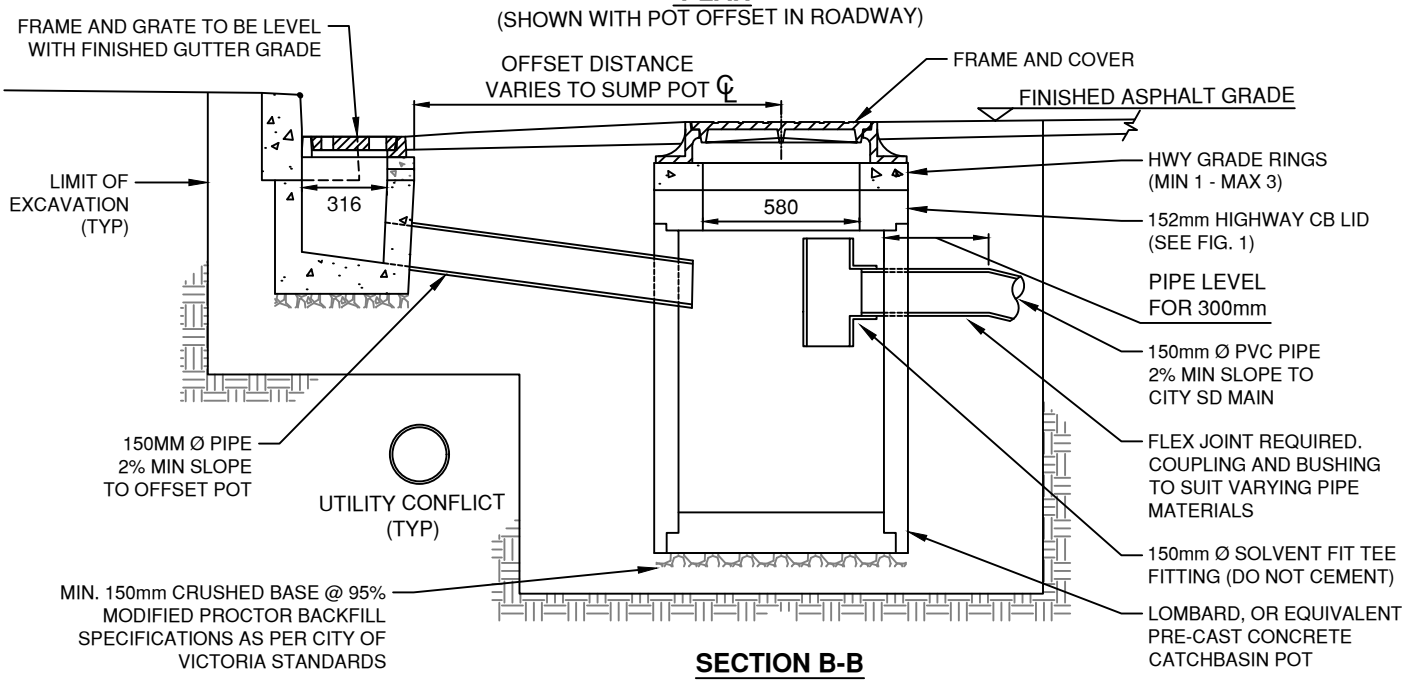
Revision Date	Drawing Number
JULY 2025	SD S11b

SUPPLEMENTARY STANDARD DETAIL DRAWING

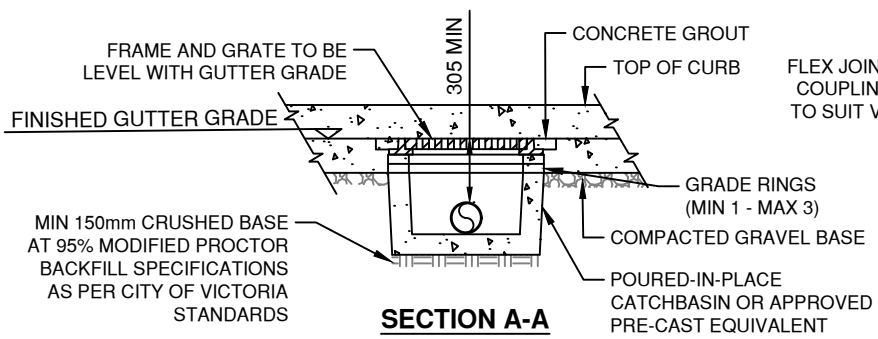


PLAN

(SHOWN WITH POT OFFSET IN ROADWAY)



SECTION B-B



SECTION A-A

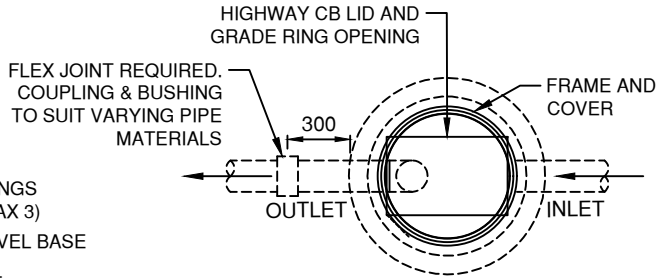


FIG. 1

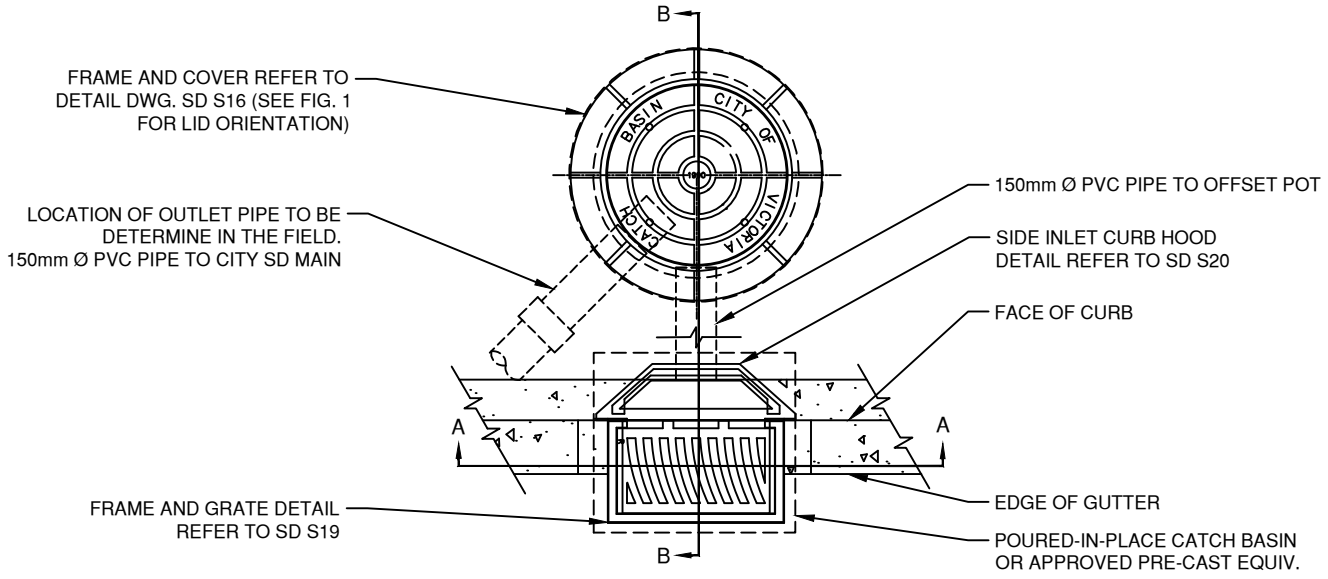
OFFSET SUMP LID ORIENTATION
HIGHWAY GRADE RINGS ARE AVAILABLE IN 50mm AND 100mm THICKNESS

NOT TO SCALE

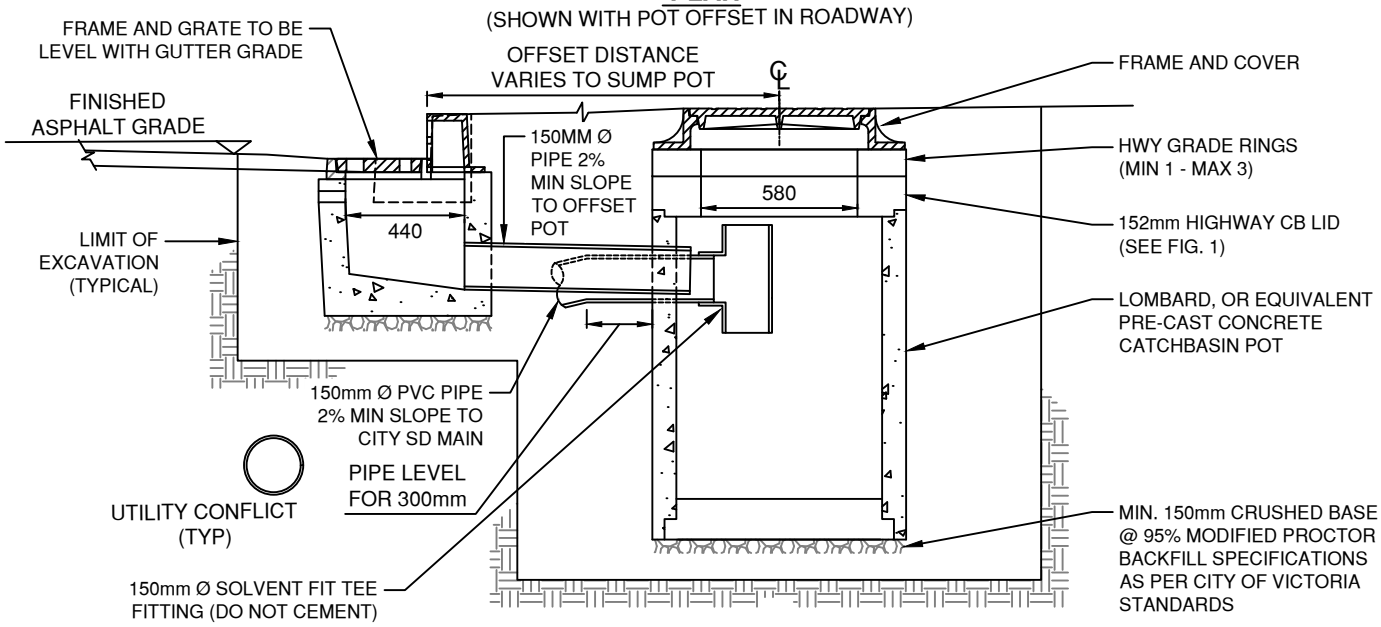
STANDARD OFFSET CATCHBASIN DETAIL

Revision Date	Drawing Number
JULY 2025	SD S11c

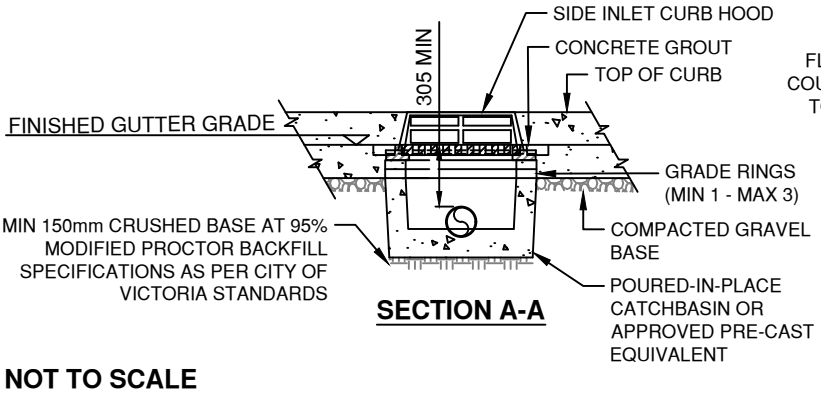
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN
(SHOWN WITH POT OFFSET IN ROADWAY)



SECTION B-B



SECTION A-A

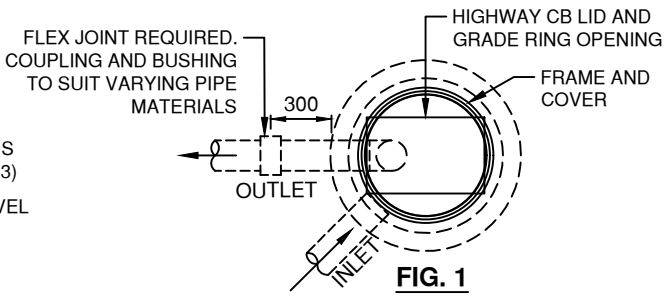


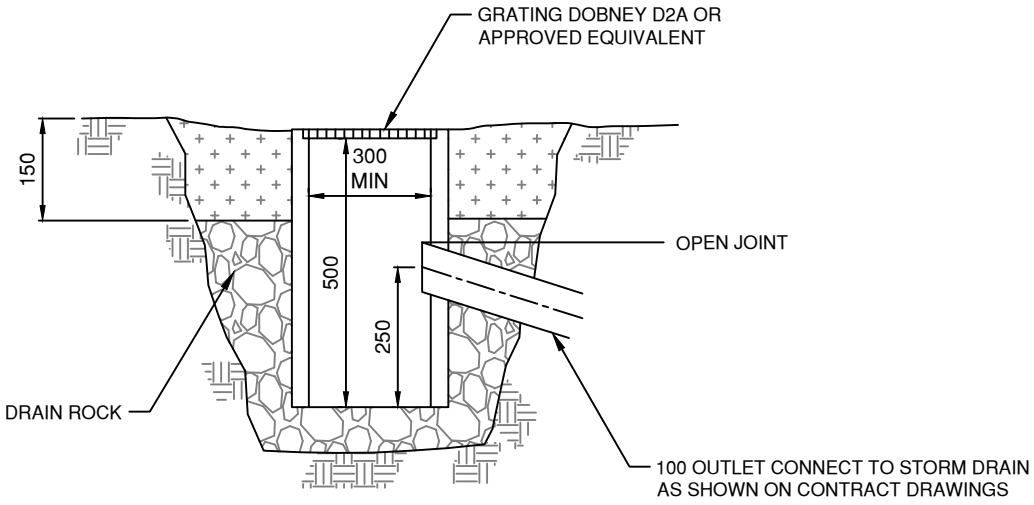
FIG. 1
OFFSET SUMP LID ORIENTATION
HIGHWAY GRADE RINGS ARE AVAILABLE IN 50mm AND 100mm THICKNESS

NOT TO SCALE

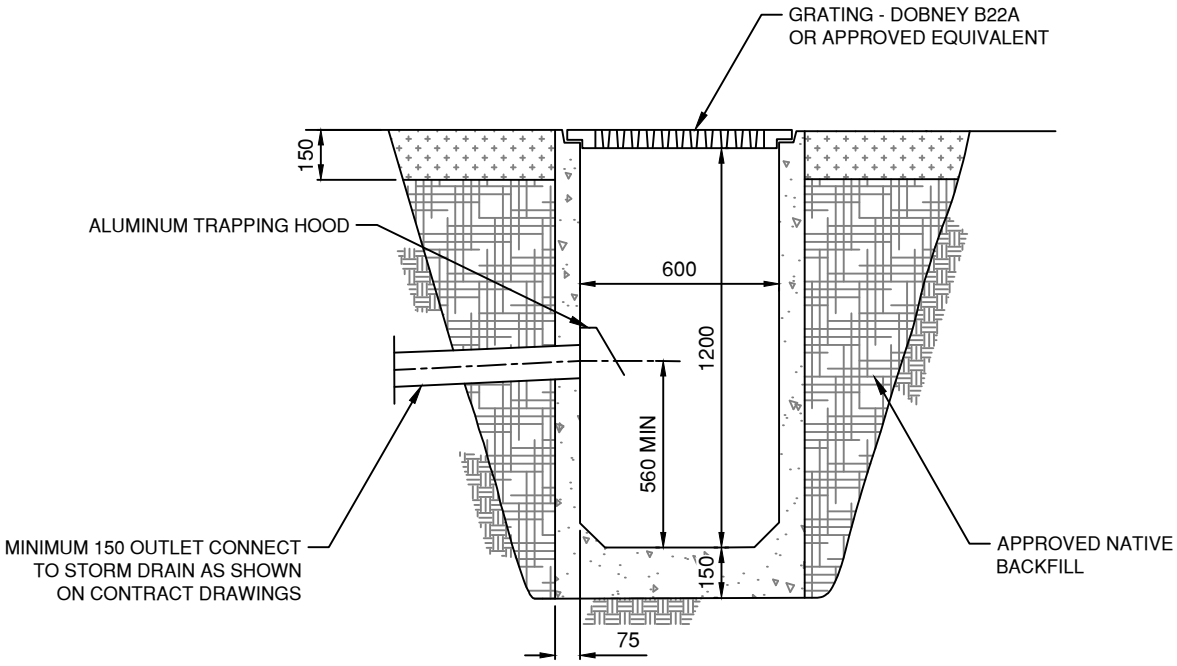
STANDARD OFFSET SIDE INLET CATCHBASIN DETAIL

Revision Date	Drawing Number
JULY 2025	SD S11d

SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPE 1



TYPE 2

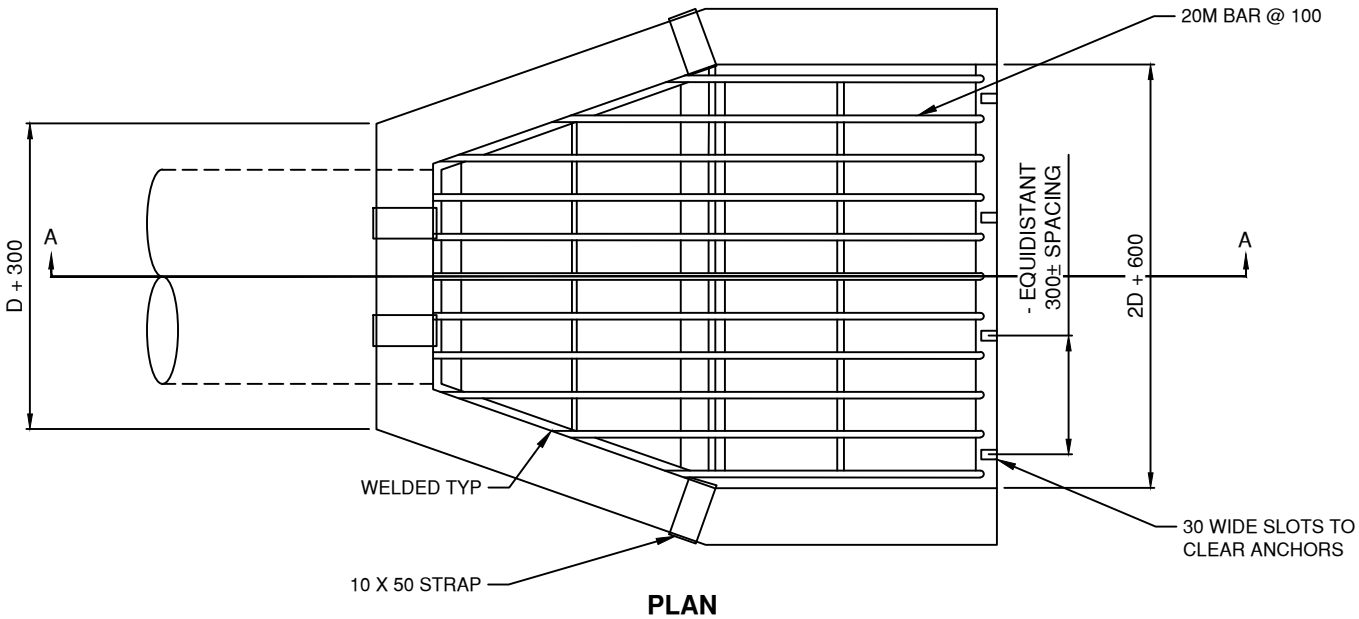
NOTES:

1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

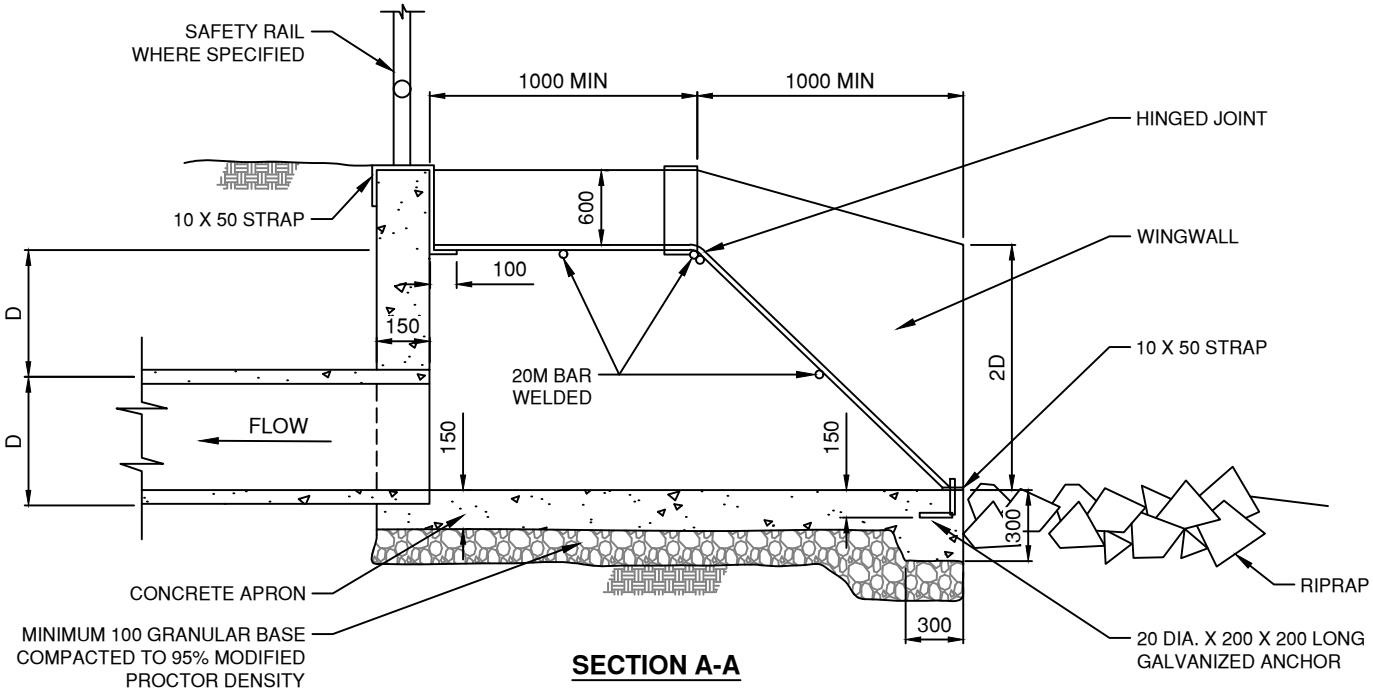
NOT TO SCALE

LAWN DRAINS	Revision Date	Drawing Number
	JULY 2025	SD S12

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION A-A

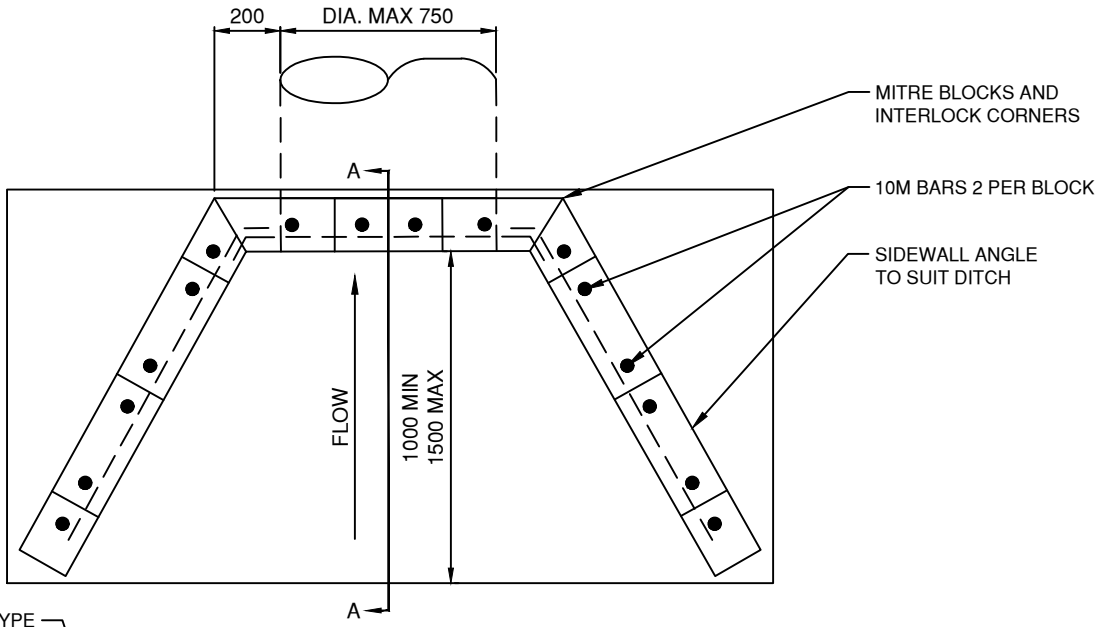
NOTES:

1. INSTALL SAFETY HANDRAIL IF SPECIFIED ON CONTRACT DRAWINGS.
2. PRECAST UNIT MAY BE PROVIDED AS ALTERNATIVE WITH CONTRACT ADMINISTRATOR'S PRIOR APPROVAL.
3. ALL STEEL COMPONENTS TO BE HOT DIPPED GALVANIZED AFTER FABRICATION .
4. SAFETY GRILLAGE TO BE WELDED AT ALL JOINTS AND CONNECTIONS EXCEPT AT ANCHOR BOLTS.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

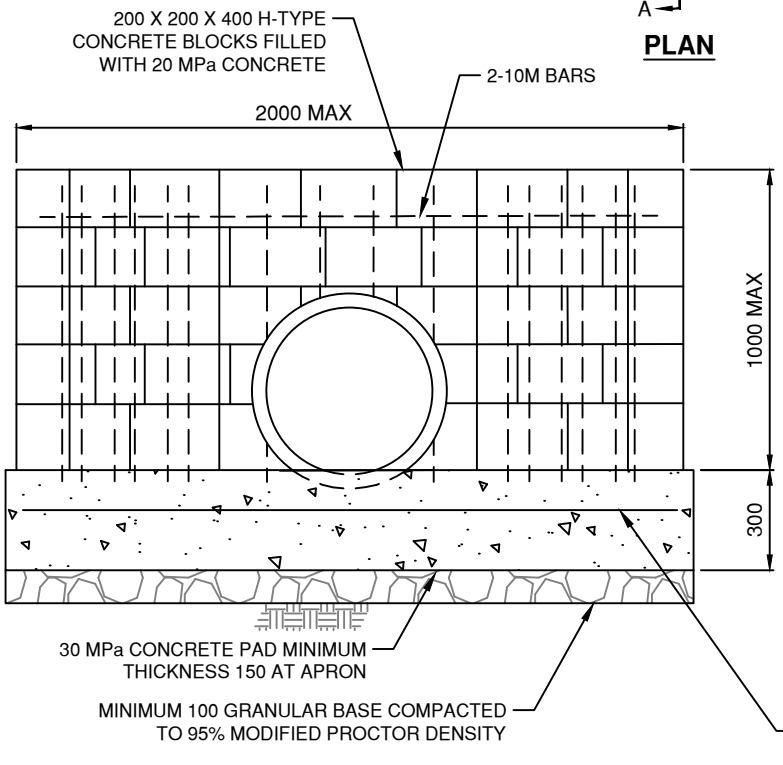
NOT TO SCALE

STORM SEWER INLET WITH SAFETY GRILLAGE	Revision Date	Drawing Number
	JULY 2025	SD S13

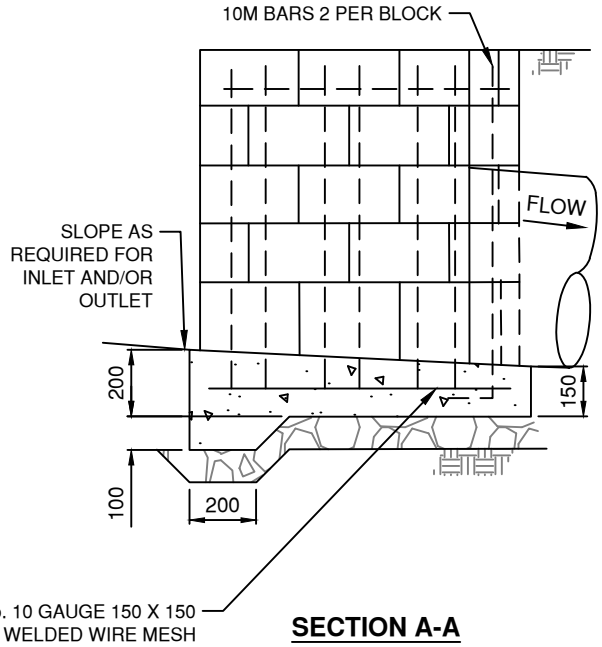
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



FRONT ELEVATION



SECTION A-A

NOTES:

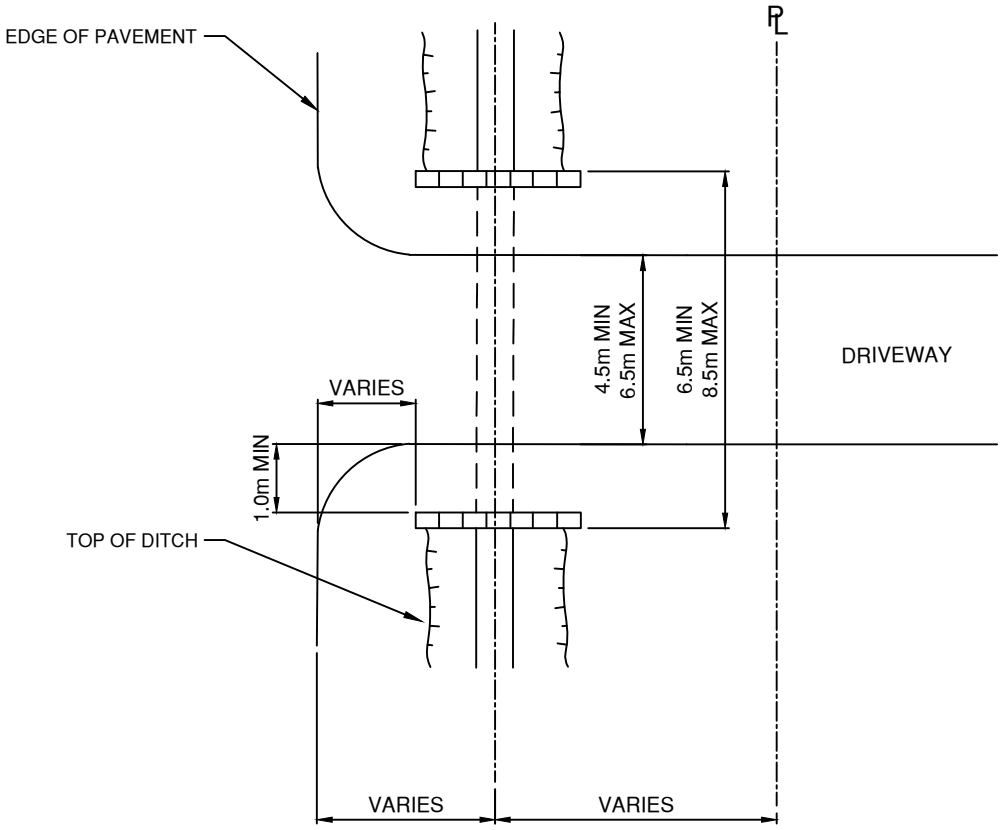
1. PRECAST UNIT MAY BE PROVIDED AS ALTERNATIVE WITH CONTRACT ADMINISTRATOR'S PRIOR APPROVAL.
2. INSTALL SAFETY HANDRAIL AND/OR SAFETY GRILLAGE IF SPECIFIED ON CONTRACT DRAWINGS.
3. DETAIL MAY BE MODIFIED FOR USE AS OUTLET STRUCTURE.
4. WHEN SAFETY GRILLAGE IS SPECIFIED INSTALL SIMILAR TO DRAWING S13.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

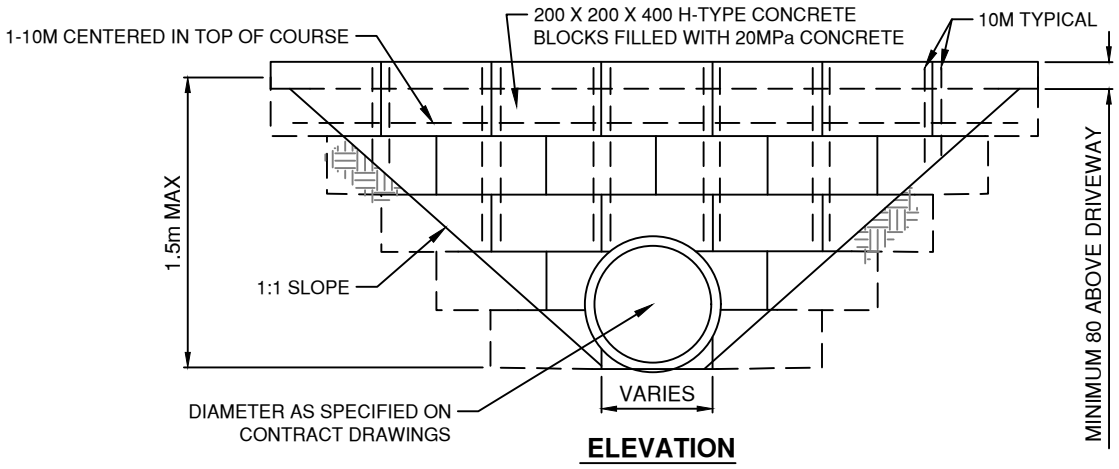
CONCRETE BLOCK ENDWALL

Revision Date	Drawing Number
JULY 2025	SD S14

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



ELEVATION

NOTES:

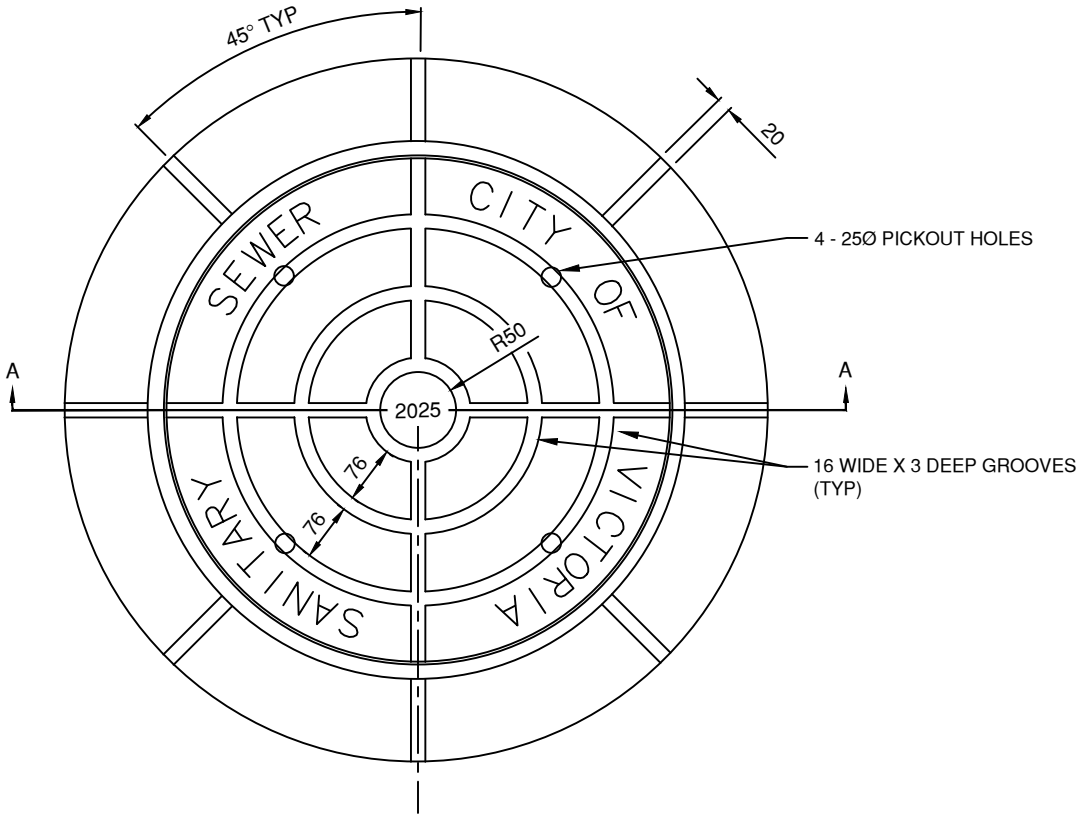
1. FILL BETWEEN ENDWALLS TO BE IMPORTED GRANULAR BACKFILL OR APPROVED NATIVE BACKFILL. WITH 150mm GRANULAR BASE SURFACE.
2. SPIGOT END OF PIPE (WHERE APPLICABLE) TO FACE DOWNSTREAM AND TO BE CLEAR OF ENDWALLS.
3. ENDWALLS MAY BE CAST IN PLACE USING 20 MPa CONCRETE WITH REINFORCING OF 10M @ 200 BOTH WAYS.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

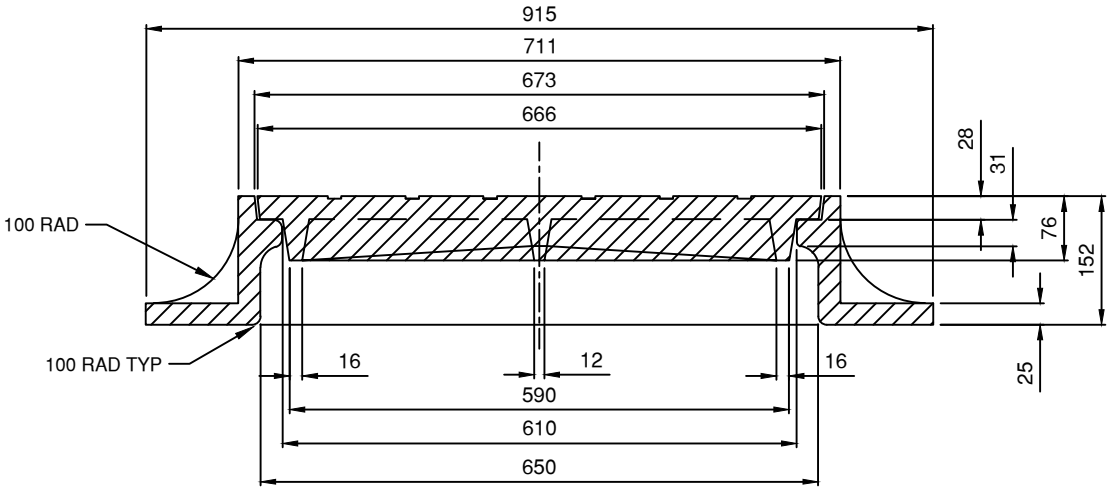
DRIVEWAY CULVERT WITH CONCRETE BLOCK ENDWALLS

Revision Date	Drawing Number
JULY 2025	SD S15

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME AND COVER



SECTION A-A

NOTES:

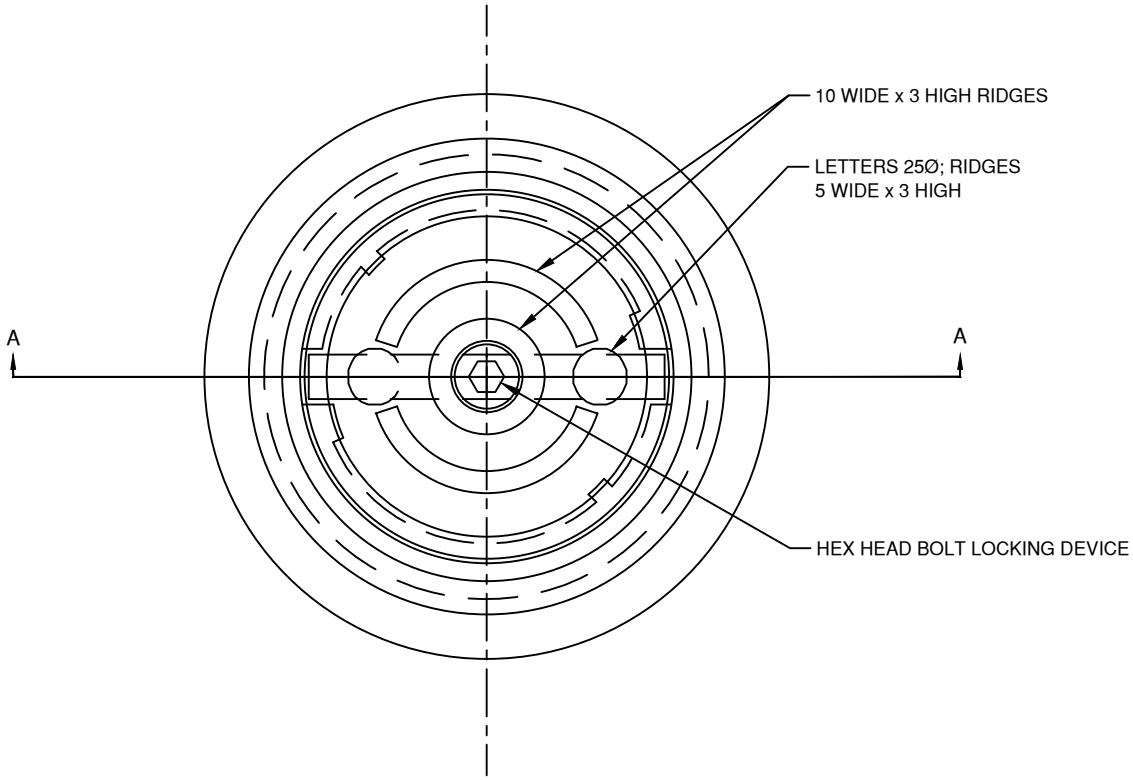
1. CASTING SHALL HAVE A DESIGN LOAD STRENGTH IN ACCORDANCE WITH ASHTO H20 LOADING.
2. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO INSURE GOOD SEATING.
3. YEAR OF DATE MANUFACTURED ON COVER.
4. FURNISH WHEN SPECIFIED: COVER TO BE IDENTIFIED EITHER 'STORM DRAIN', 'SANITARY SEWER', 'WATER' REFER TO SD W12 FOR DETAILS, OR 'CATCH BASIN' AS SHOWN IN DRAWING.
5. INSIDE EDGES OF RING TO BE ROUNDED TO 10mm RADIUS.
6. DIMENSIONS ARE BASED ON GRAY IRON CASTINGS.
7. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

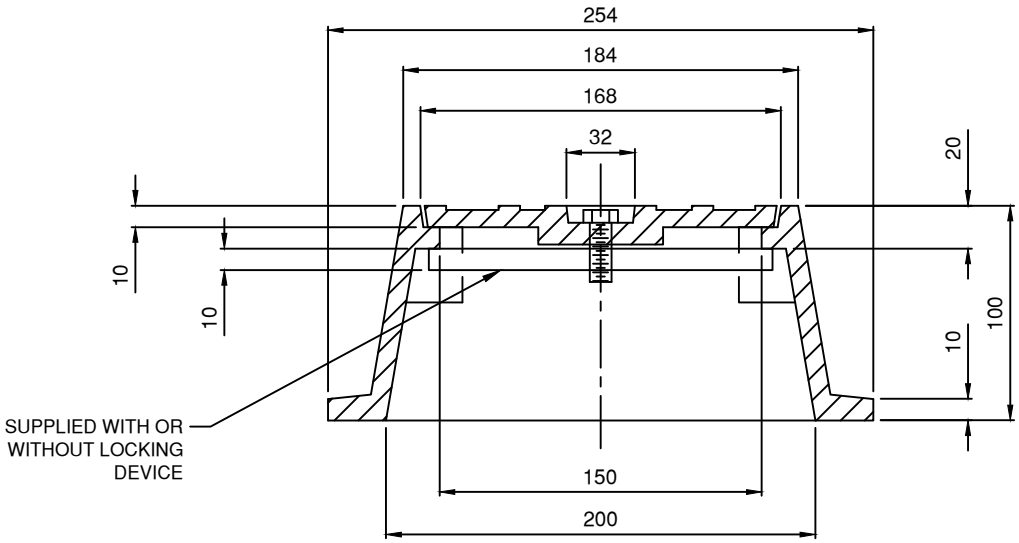
MANHOLE/CATCH BASIN FRAME & COVER DETAIL

Revision Date	Drawing Number
JULY 2025	SD S16

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME AND COVER



SECTION A-A

NOTES:

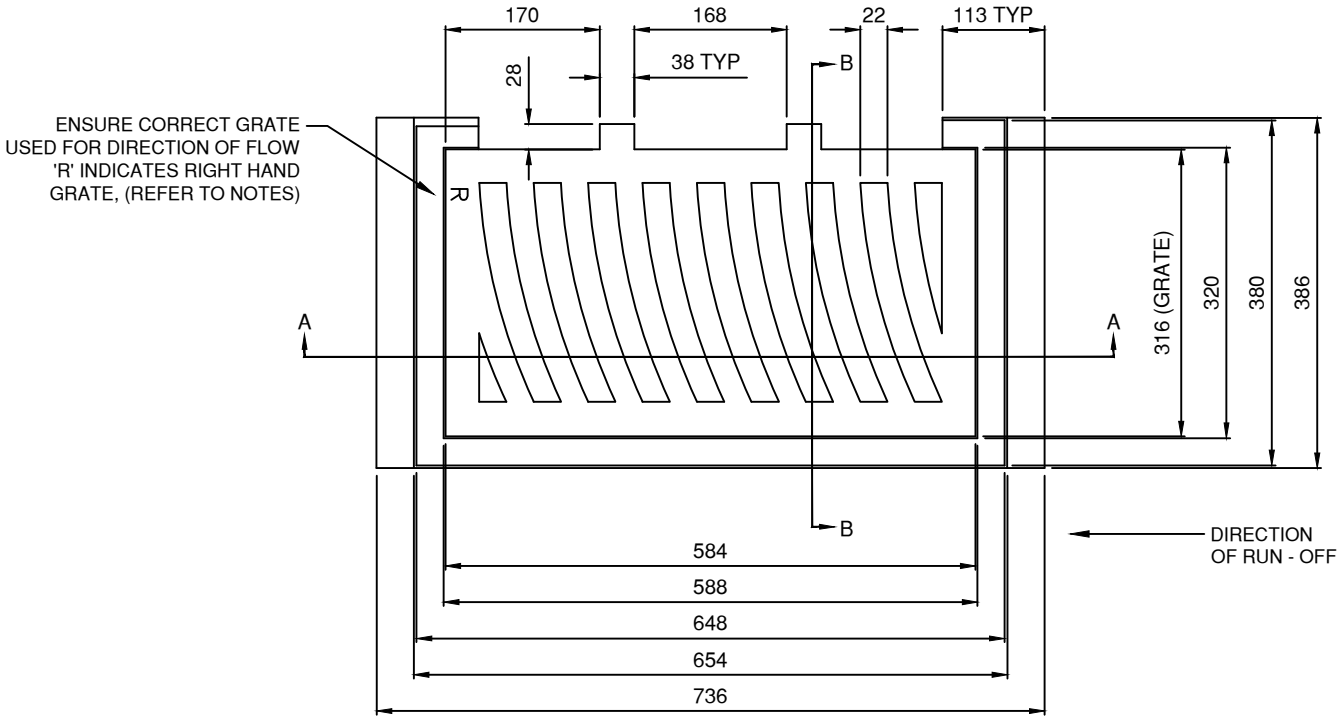
1. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE GOOD SEATING.
2. FURNISH WHEN SPECIFIED: COVER LOCKING DEVICE AS SHOWN IN DRAWING.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

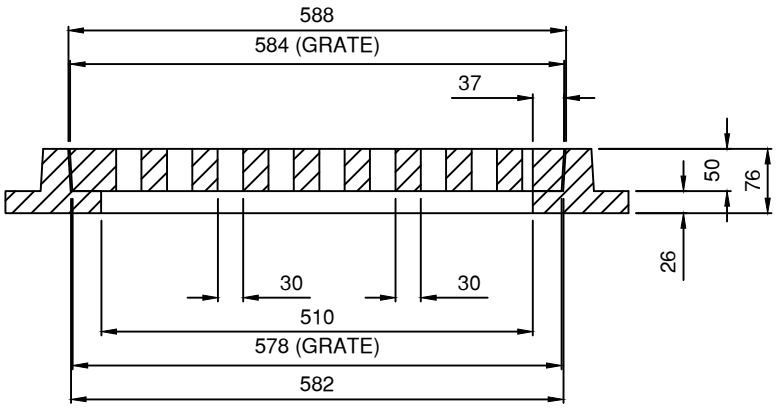
TYPICAL CLEANOUT FRAME & COVER

Revision Date	Drawing Number
JULY 2025	SD S17

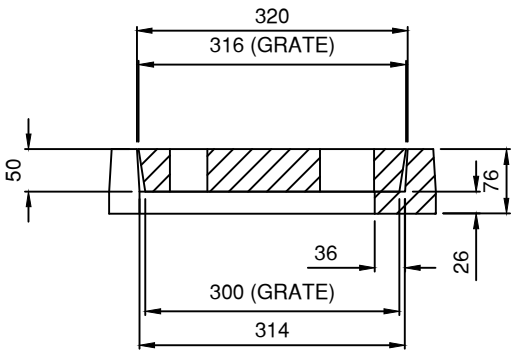
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME AND GRATE



SECTION A-A



SECTION B-B

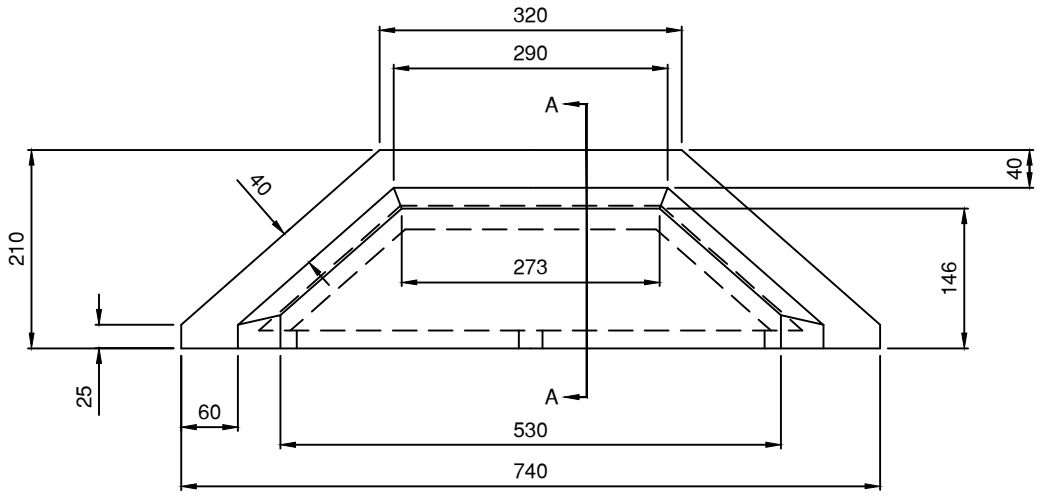
NOTES:

1. ALL METAL BEARING SURFACES BETWEEN FRAME AND GRATE MACHINED TO ENSURE GOOD SEATING.
2. FURNISHED WHEN SPECIFIED: GRATES IN RIGHT AND LEFT HAND CASTINGS (UNIT SHOWN IN DWG IS RIGHT HAND).
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

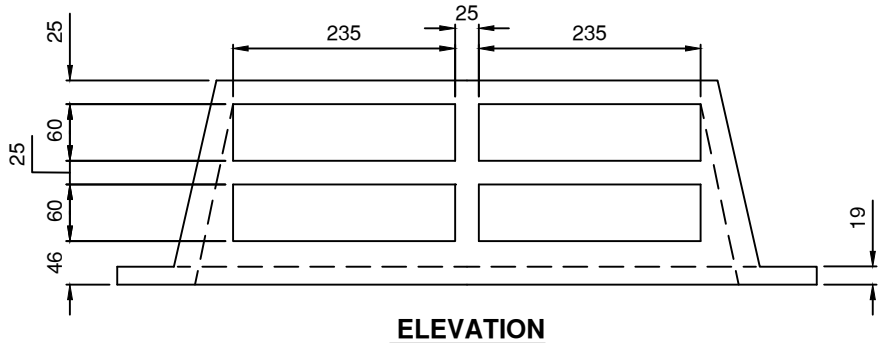
NOT TO SCALE

GUTTER CATCHBASIN FRAME AND COVER	Revision Date	Drawing Number
	JULY 2025	SD S19

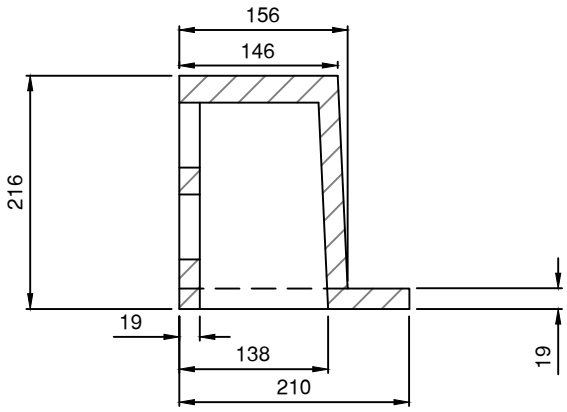
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



ELEVATION



SECTION A-A

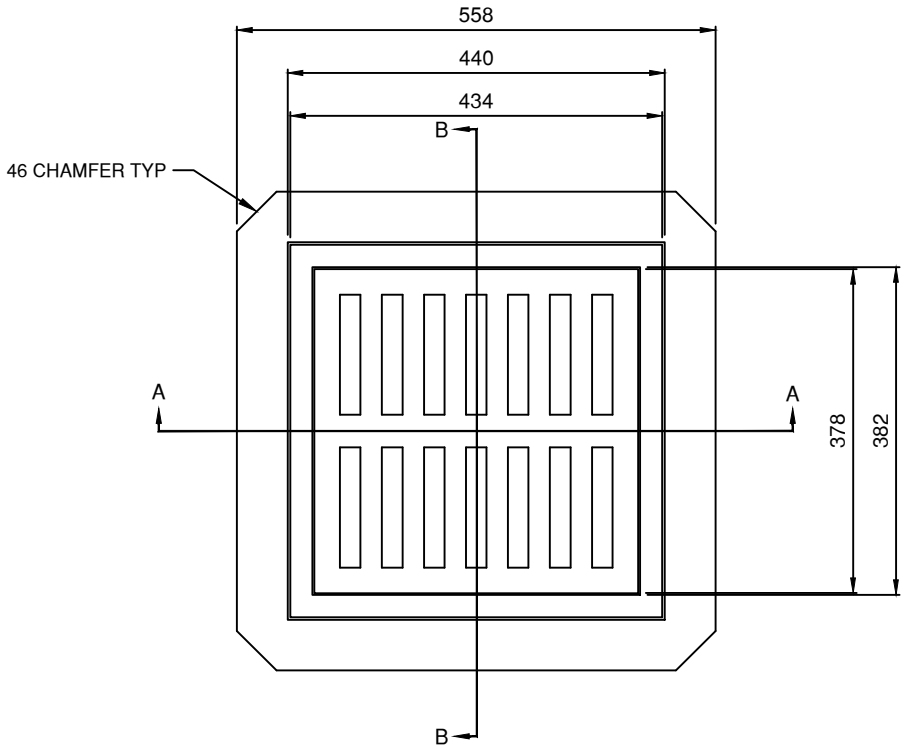
NOTES:

1. DIMENSIONS ARE BASED ON GRAY IRON CASTINGS.
2. STANDARD TOLERANCES +/- 1mm.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

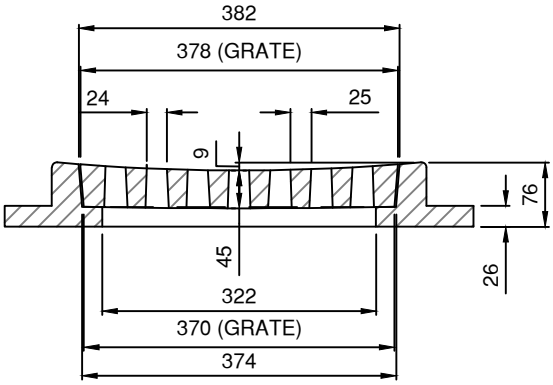
NOT TO SCALE

TYPICAL SIDE INLET CATCHBASIN CURB HOOD	Revision Date	Drawing Number
	JULY 2025	SD S20

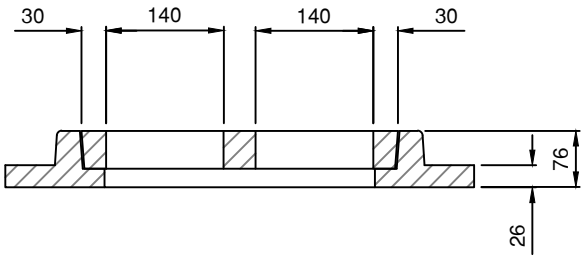
SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME AND COVER



SECTION A-A



SECTION B-B

NOTES:

1. ALL METAL BEARING SURFACES BETWEEN FRAME AND GRATING MACHINED TO ENSURE GOOD SEATING.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

TYPICAL SUMP CATCHBASIN FRAME & COVER	Revision Date	Drawing Number
	JULY 2025	SD S21

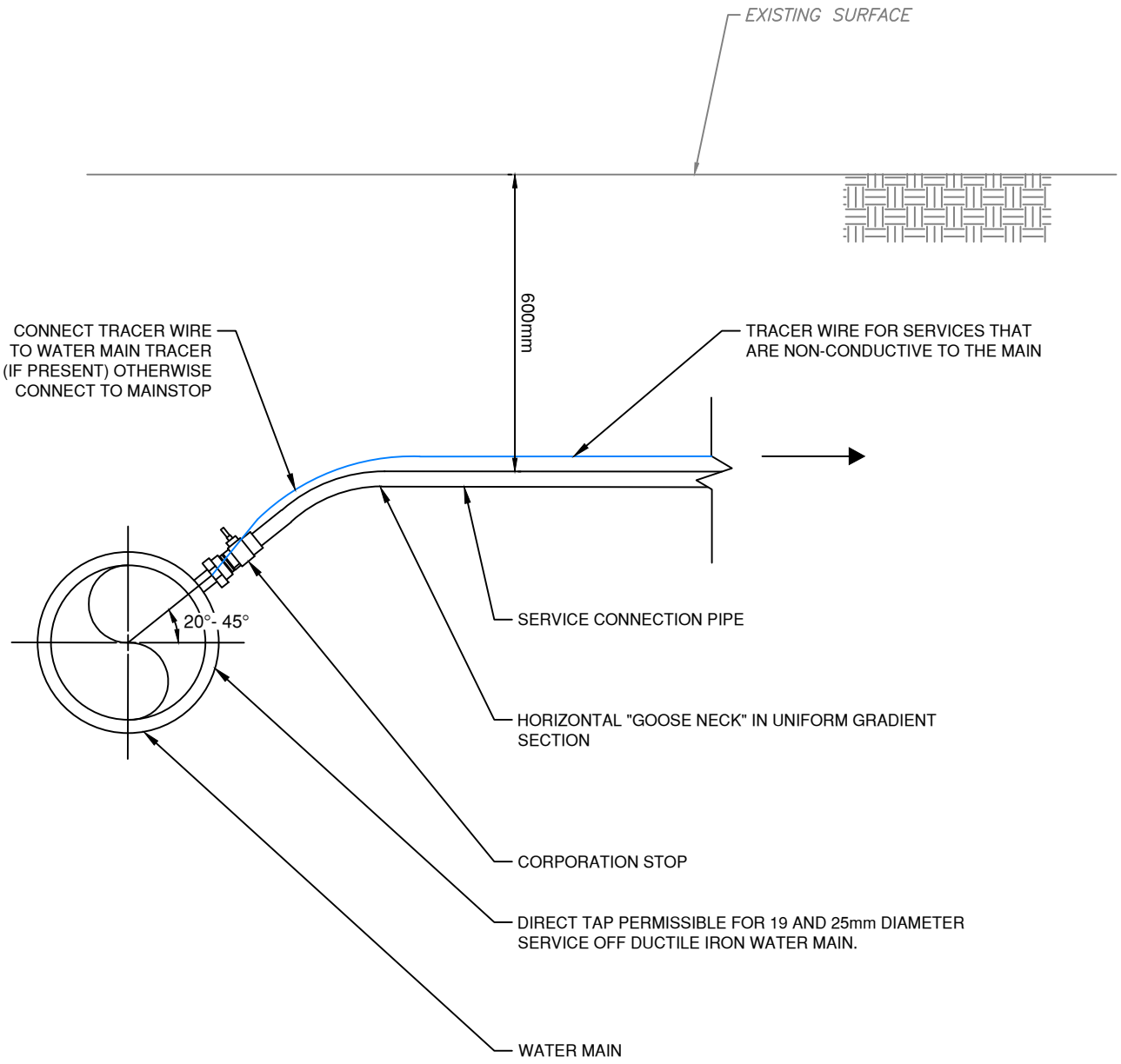
8.5. Waterworks

The following 2019 MMCD Standard Detail Drawings are to be used or replaced as indicated below:

WATERWORKS DETAILS			
MMCD STANDARD DETAIL DRAWING		**CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS**	
W1	Typical Thrust Block Arrangements		Adopt MMCD Drawing
W2a	Water Service Connection - Service Box		Do Not Use
		SD W2a	Water Service Connection for 19mm to 25mm
W2b	Water Service Connection – Valve Box		Do Not Use
		SD W2b	Water Service Connection for 38mm to 50 mm
W2c	Meter Installation for 19mm and 25mm Services.		Do Not Use
		SD W2c	Meter Installation for 19mm and 25mm Water Service Connections
W2d	Meter Installation for 38mm and 50mm Service Connection		Do Not Use
		SD W2d	Meter Installation for 38mm and 50mm Water Service Connections
		SD W2f	100mm to 200mm Domestic Service and 75mm to 200mm Water Meter
		SD W2g	Fire Service with Domestic Service and Water Meter 50mm or Smaller
		SD W2h	Fire Service with Domestic Service and Water Meter Larger Than 50mm
		SD W2i	Fire Service 25mm to 50mm
		SD W2j	Fire Service 75mm or Larger
W3	Gate Valve Installation	SD W3	Adopt MMCD Drawing
W4	Fire Hydrant Installation	SD W4	Adopt MMCD Drawing
W5	Test Point Installation		Do Not Use

WATERWORKS DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
W6	Air Valve Assembly - 25mm and 50mm Valves		Do Not Use
		SD W6	Air Valve Assembly – 25mm to 50mm Valves
W7	Air Valve Assembly - 100mm Valve		Use MMCD Drawing with Manhole Cover SD12 and No Vent Installation
W8	Blow-off for Water main		Do Not Use
		SD W8	Blow-off for Water main – End of Main
		SD W8a	Blow-off for Watermain – Side of Main
W9	Blow - Down Chamber		Do Not Use
W10	Waterworks Chamber Drain		Do Not Use
		SD W11a	Square Valve Box Frame and Cover for Services 38mm to 50mm
		SD W11b	Round Valve Box Frame and Cover for Services Larger than 50mm

SUPPLEMENTARY STANDARD DETAIL DRAWING



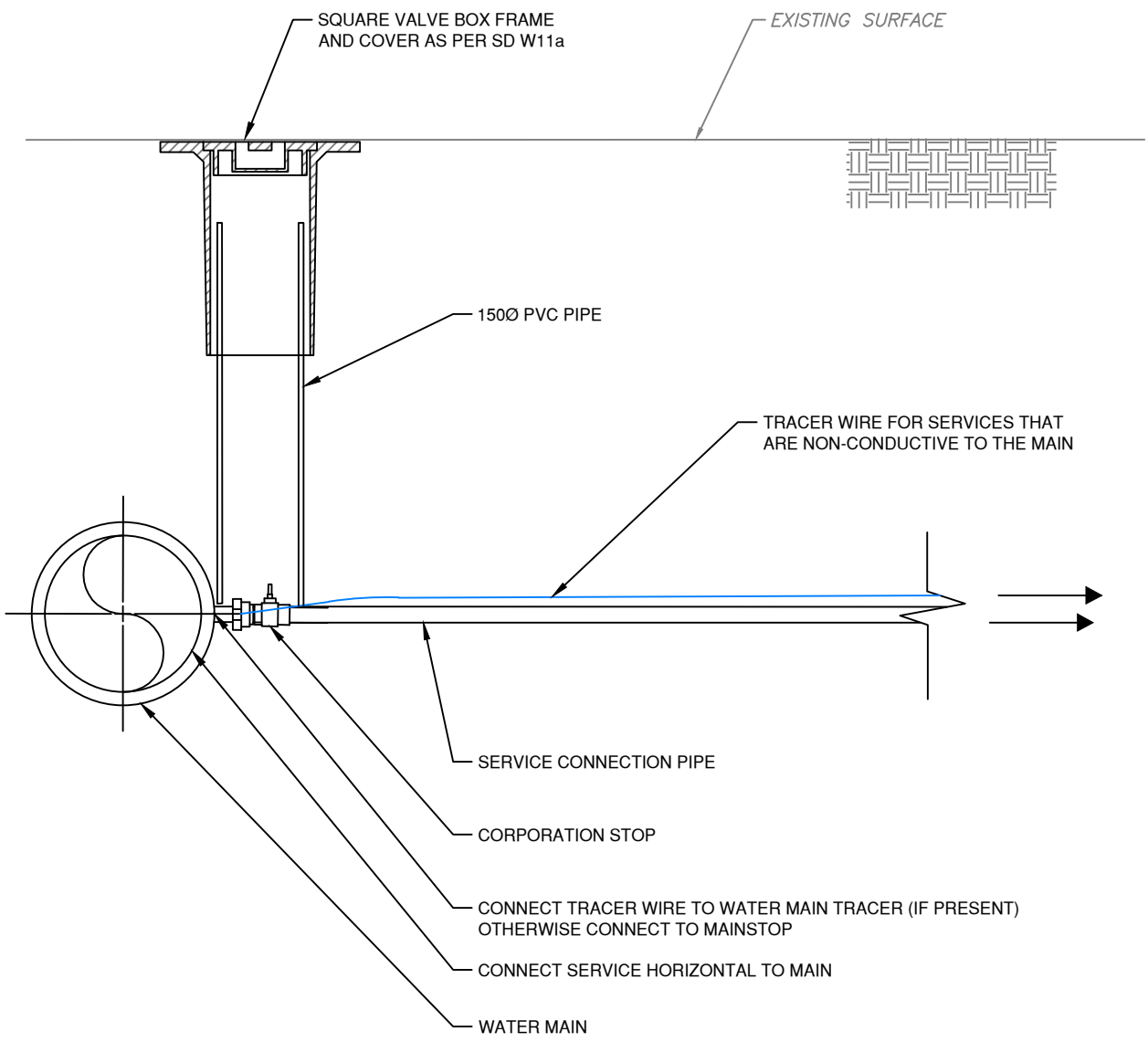
NOTES:

1. THIS DETAIL FOR SERVICES 19-25mm ONLY.
2. PVC SADDLES AS PER THE APPROVED PRODUCT LIST.
3. INSTALL SERVICE PIPE WITH "GOOSE NECK" IN HORIZONTAL POSITION.
4. MIN. 100mm BEDDING TO BE USED UNDER SERVICE PIPE (NO ROCK). MIN. 150mm BEDDING TO BE USED UNDER SERVICE PIPE (ROCK).

NOT TO SCALE

WATER SERVICE CONNECTION FOR 19mm TO 25mm	Revision Date	Drawing Number
	JULY 2025	SD W2a

SUPPLEMENTARY STANDARD DETAIL DRAWING



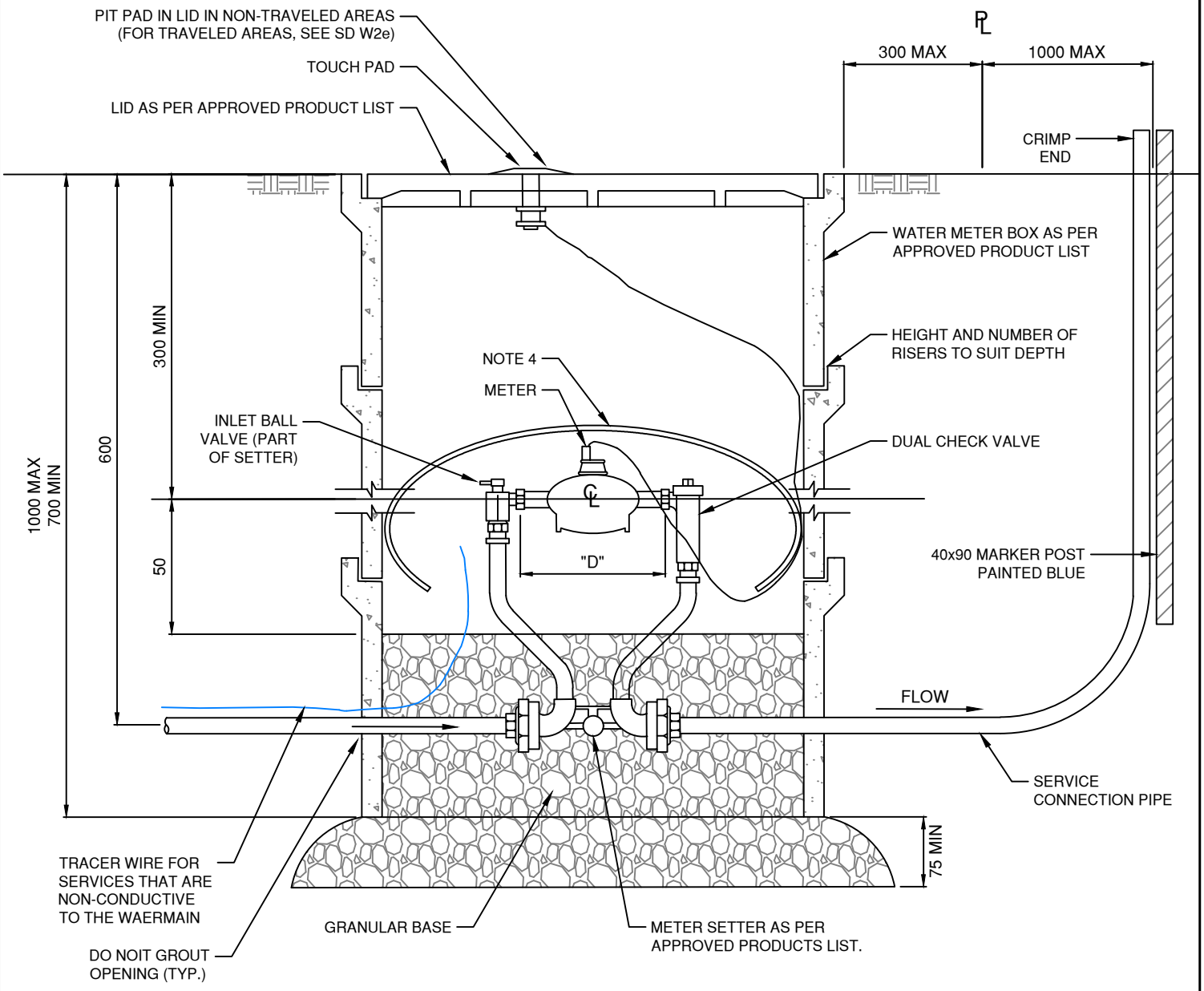
NOTES:

1. THIS DETAIL FOR SERVICES 38-50mm ONLY.
2. PVC SADDLES AS PER THE APPROVED PRODUCT LIST.
3. SERVICE CAN BE BROGHT UP TO 0.6m COVER, ONCE CLEAR OF MAIN CONNECTION (UNLESS OTHERWISE SPECIFIED).
4. MIN. 100mm BEDDING TO BE USED UNDER SERVICE PIPE (NO ROCK). MIN. 150mm BEDDING TO BE USED UNDER SERVICE PIPE (ROCK).

NOT TO SCALE

WATER SERVICE CONNECTION FOR 38mm TO 50mm	Revision Date	Drawing Number
	JULY 2025	SD W2b

SUPPLEMENTARY STANDARD DETAIL DRAWING



METER SIZE	'D' (mm)
16x19	191
19	229
25	273

NOTES:

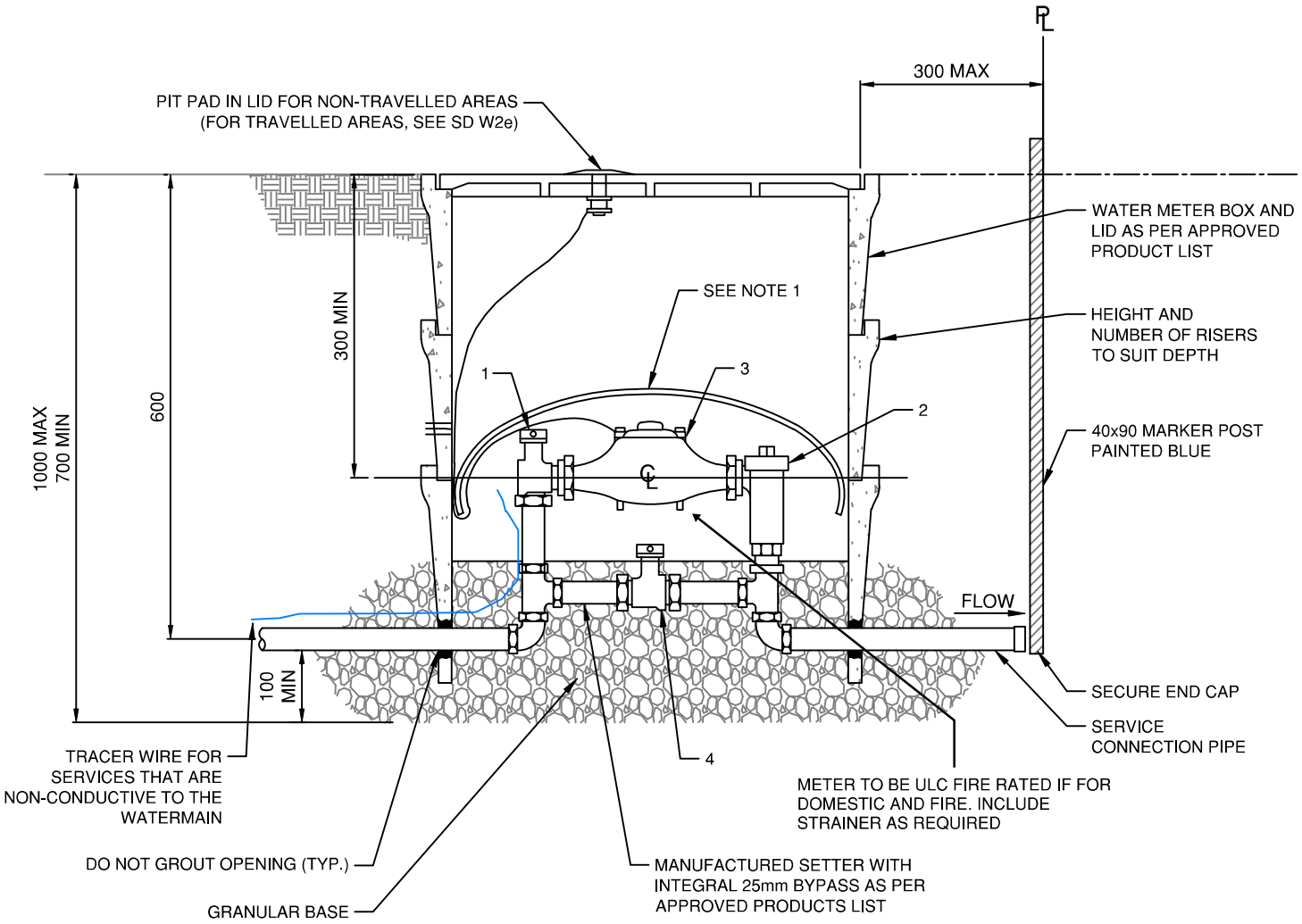
1. FOR 38mm AND 50mm DIA SERVICE REFER TO DRAWING SD W2d.
2. REFER TO CONTACT DRAWINGS, SECTION 33 11 01 FOR DETAILED SPECIFICATIONS.
3. REFER TO DRAWING NUMBER SD W2a FOR DETAIL OF SERVICE CONNECTION TO WATER MAIN.
4. AIR DOUBLE REFLECTIVE POLYETHYLENE INSULATION OR EQUIVALENT.

NOT TO SCALE

METER INSTALLATION FOR 19mm AND 25mm WATER SERVICE CONNECTIONS

Revision Date	Drawing Number
JULY 2025	SD W2c

SUPPLEMENTARY STANDARD DETAIL DRAWING



No.	DESCRIPTION
1	STOP WITH LOCKING
2	DUAL CHECK VALVE
3	METER AS PER APPROVED PRODUCTS LIST
4	BYPASS STOP WITH LOCKING

NOTES:

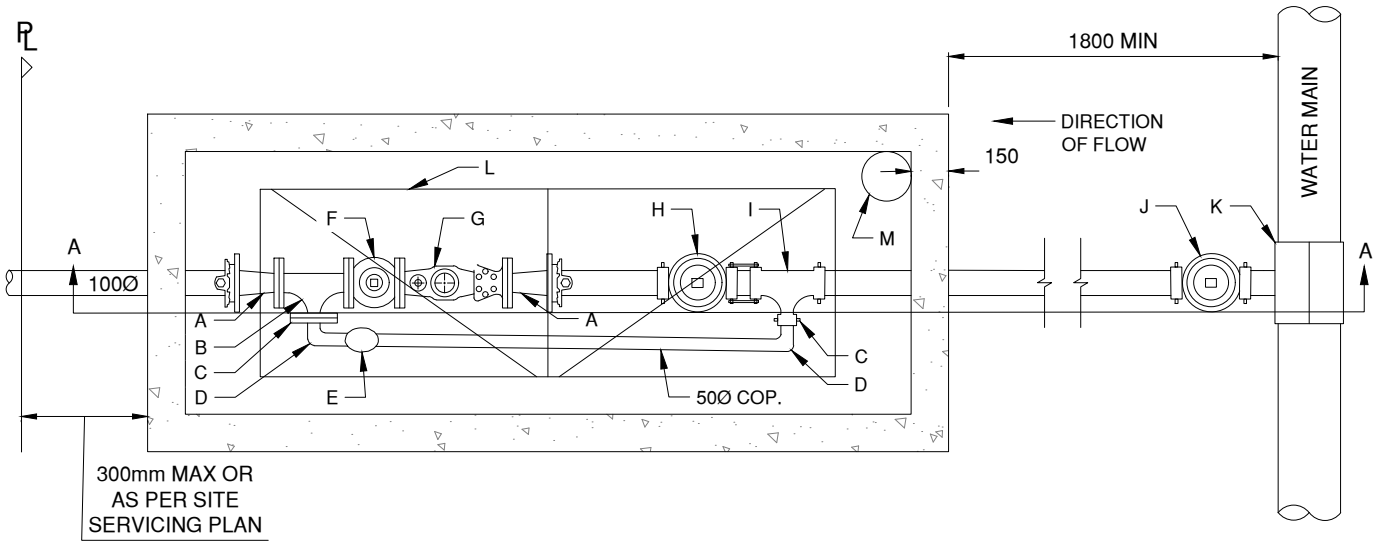
1. FOR 38mm AND 50mm DIA SERVICE REFER TO DRAWING SD W2b.
2. REFER TO CONTACT DRAWINGS, SECTION 33 11 01 FOR DETAILED SPECIFICATIONS.
3. REFER TO DRAWING NUMBER SD W2b FOR DETAIL OF SERVICE CONNECTION TO WATER MAIN.
4. AIR DOUBLE REFLETIVE POLYETHYLENE INSULATION OR EQUIVALENT.

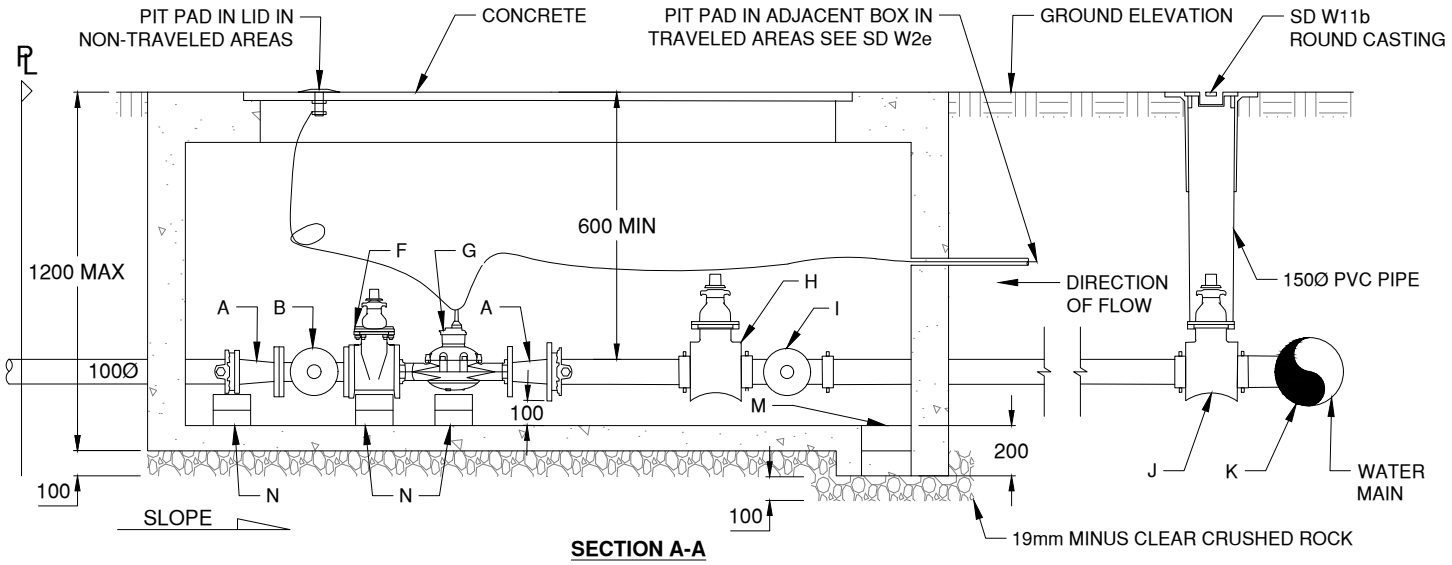
NOT TO SCALE

METER INSTALLATION FOR 38mm AND 50mm WATER SERVICE CONNECTIONS

Revision Date	Drawing Number
AUG. 2025	SD W2d

SUPPLEMENTARY STANDARD DETAIL DRAWING





SECTION A-A

A)	100 X 75 CONCENTRIC REDUCER	H)	100mm VALVE
B)	75 X 75 X 50mm FL TEE (TAP PERMITTED)	I)	100 X 100 X 50mm PO TEE
C)	50mm FL X FIP BLIND FLANGE	J)	100mm PO VALVE
D)	50mm STREET ELBOW	K)	100mm SADDLE OR TEE
E)	50mm LOCKING BALL VALVE	L)	HATCH: ROAD-TI4S10 6070AV; SIDEWALK-TI3S106070AV
F)	75mm FL X FL GATE VALVE	M)	200mmØ PVC SUMP THRU FLOOR
G)	75mm METER	N)	2-200 X 100 X 50mm CONCRETE BLOCK

NOTES:

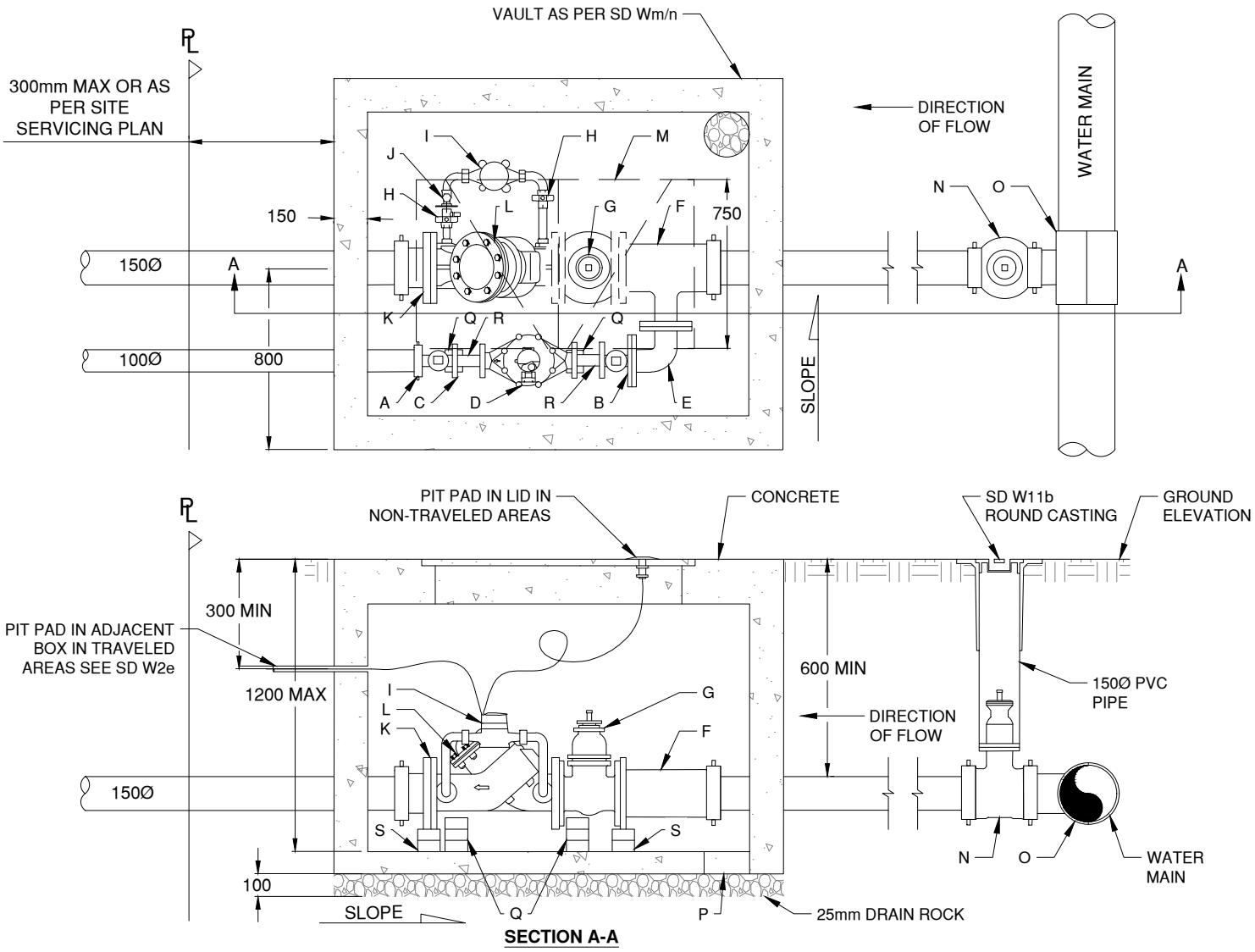
1. ALL PIPES, JOINTS AND FITTINGS TO BE PIPE RESTRAINED.
2. THE OWNER SHALL CONNECT TO THE CITY PIPE AT PROPERTY LINE.
3. WHERE PIPE IS IN CONTACT WITH CONCRETE ENSURE THERE IS A BARRIER OF POLY.
4. FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN.
5. PUSH ON JOINTS ACCEPTABLE WITH COV APPROVAL.
6. TAPPING SADDLE ACCEPTABLE WITH COV APPROVAL.
7. MIN 300mm WORKING ROOM REQUIRED LATERALLY (TO ALL SIDES) AND VERTICALLY ABOVE SYSTEM WITHIN VAULT.
8. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

100-200mm DOMESTIC SERVICE AND 75-200mm WATER METER

Revision Date	Drawing Number
AUG. 2025	SD W2f

SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION A-A

A) 100 X 50 mm PO END CAP
B) 100 FL X 50 FIP mm BLIND FLANGE
C) 50mm METER SETTER C/W 2-50 mm FIP BRASS MALE ADAPTORS
D) 50mm METER
E) 100mm FL X FL 90° BEND
F) 150 PO X 150 MJ X 100mm FL TEE
G) 150mm FL X FL STANDARD GATE VALVE
H) 19mm BALL VALVE
I) 19mm METER
J) 19mm CHECK VALVE
K) 150mm ADAPTOR
L) 150mm FL DETECTOR CHECK VALVE
M) HATCH: ROAD-TI4S106070AV; SIDEWALK-TI3S106070AV
N) 150mm VALVE
O) 150mm SADDLE OR TEE
P) 200mmØ PVC SUMP
Q) 3- 200 X 100 X 50mm CONCRETE BLOCKS FOR METER SETTER
R) MIP X MIPS NIPPLE
S) 2- 200 X 100 X 50mm CONCRETE BLOCKS FOR 150mm SERVICE PIPE

NOTES:

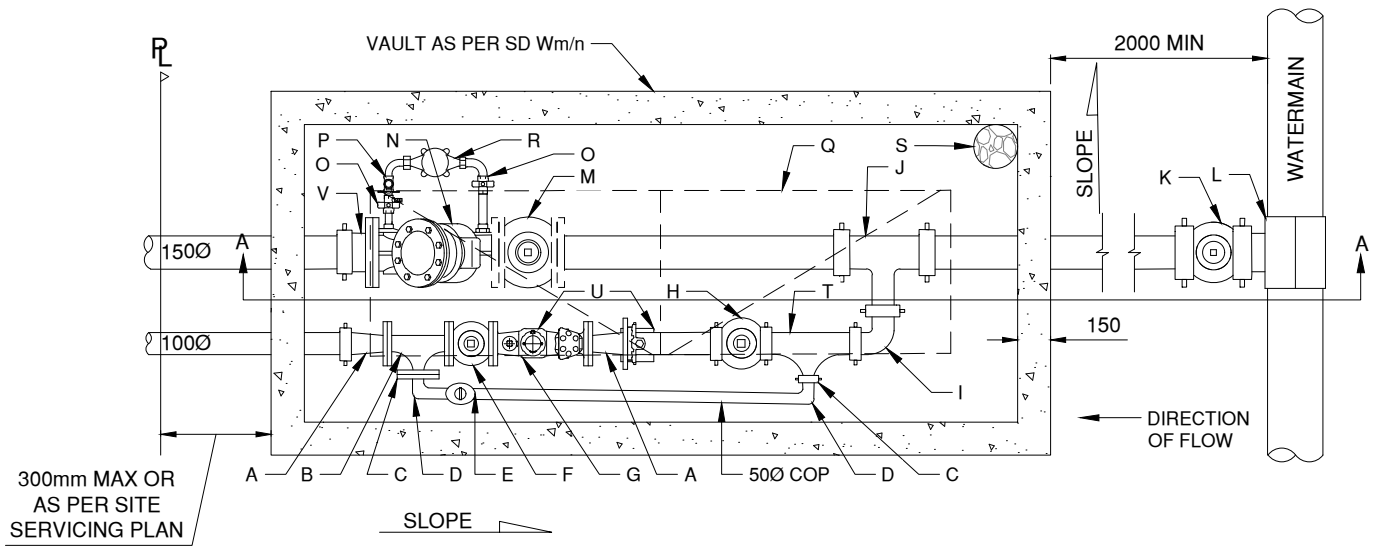
1. ALL PIPES, JOINTS AND FITTINGS TO BE PIPE RESTRAINED.
2. THE OWNER SHALL CONNECT TO THE CITY PIPE AT PROPERTY LINE.
3. FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN.
4. 75mm OR GREATER FIRE SERVICE.
5. PUSH ON JOINTS ACCEPTABLE WITH COV APPROVAL.
6. TAPPING SADDLE ACCEPTABLE WITH COV APPROVAL.
7. MIN 300mm WORKING ROOM REQUIRED LATERALLY (TO ALL SIDES) AND VERTICALLY ABOVE SYSTEM WITHIN VAULT.
8. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

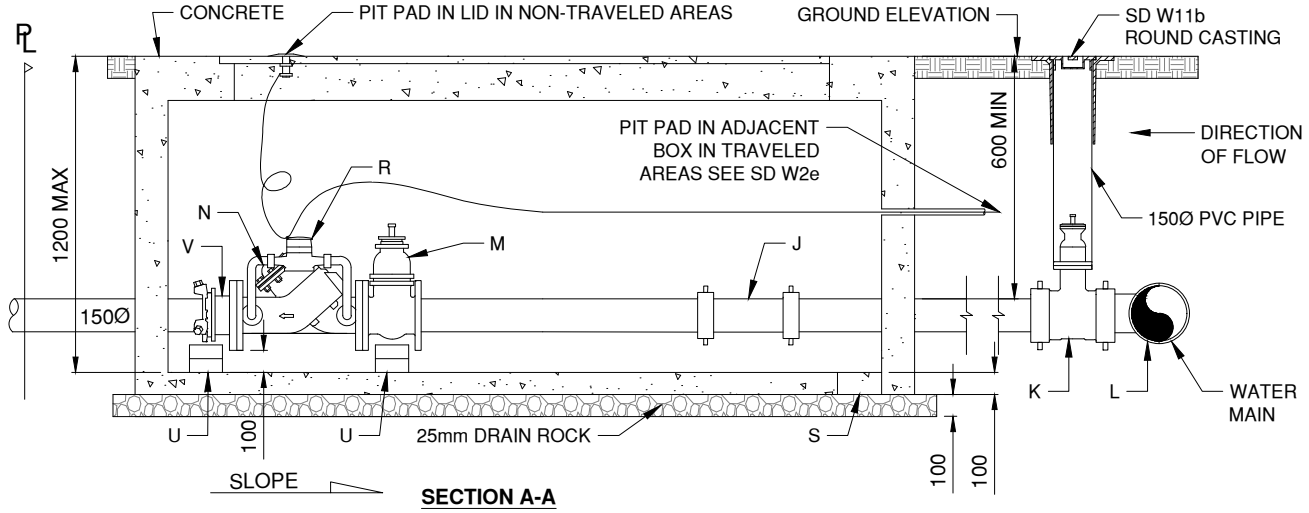
NOT TO SCALE

FIRE SERVICE C/W DOMESTIC SERVICE & WATER METER 50mm OR SMALLER

Revision Date	Drawing Number
JULY 2025	SD W2g

SUPPLEMENTARY STANDARD DETAIL DRAWING





SECTION A-A

A)	100 X 75 CONCENTRIC REDUCER	L)	150mm SADDLE OR TEE
B)	75 X 75 X 50mm FL TEE (TAP PERMITTED)	M)	150mm WHEEL GATE VALVE
C)	50mm FL X FIP BLIND FLANGE	N)	150mm FL DETECTOR CHECK VALVE
D)	50mm STREET ELBOW	O)	19mm BALL VALVE
E)	50mm LOCKING BALL VALVE	P)	19mm CHECK VALVE
F)	75mm FL X FL GATE VALVE	Q)	HATCH: ROAD-TI4S106070AV; SIDEWALK-TI3S106070AV
G)	75mm METER	R)	19mm METER
H)	100mm VALVE	S)	200mmØ PVC SUMP THRU FLOOR
I)	100mm PO X PO 90° BEND	T)	100 X 100 X 50mm PO TEE
J)	150 X 150 X 100mm PO TEE	U)	2-200 X 100 X 50mm CONCRETE BLOCK
K)	150mm VALVE	V)	150mm ADAPTOR

NOTES:

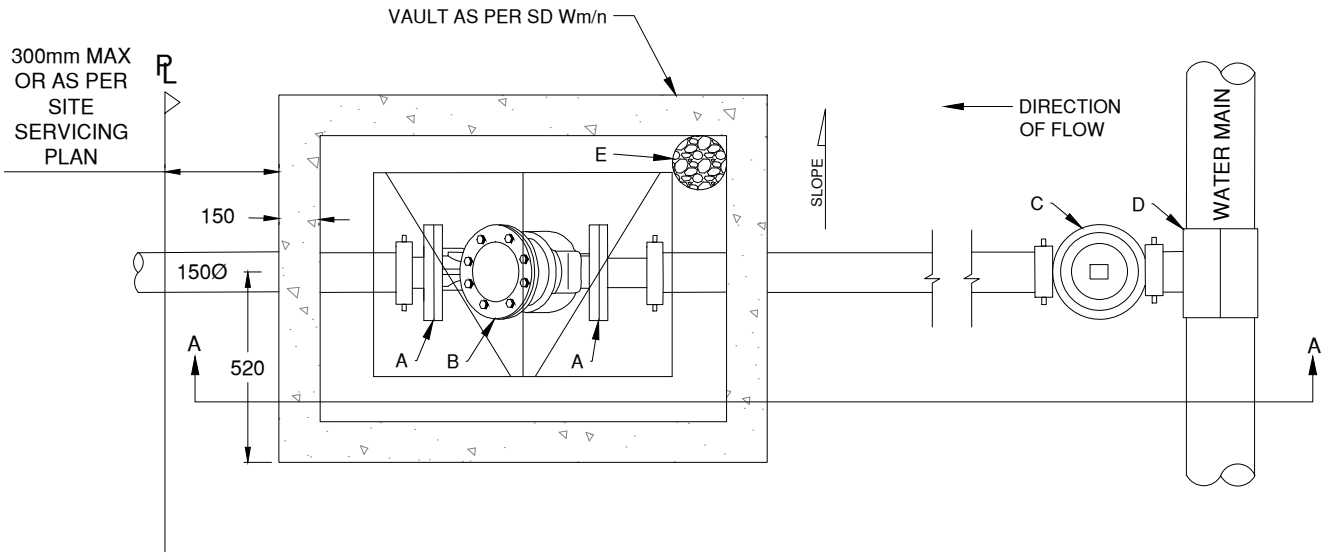
1. ALL PIPE AND FITTINGS TO BE PIPE RESTRAINED.
2. THE OWNER SHALL CONNECT TO THE CITY PIPE AT PROPERTY LINE.
3. WHERE PIPE IS IN CONTACT WITH CONCRETE ENSURE THERE IS A BARRIER OF POLY.
4. FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN.
5. 75mm OR GREATER FIRE SERVICE.
6. PUSH ON JOINTS ACCEPTABLE WITH COV APPROVAL.
7. TAPPING SADDLE ACCEPTABLE WITH COV APPROVAL.
8. MIN 300mm WORKING ROOM REQUIRED LATERALLY (TO ALL SIDES) AND VERTICALLY ABOVE SYSTEM WITHIN VAULT.
9. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED

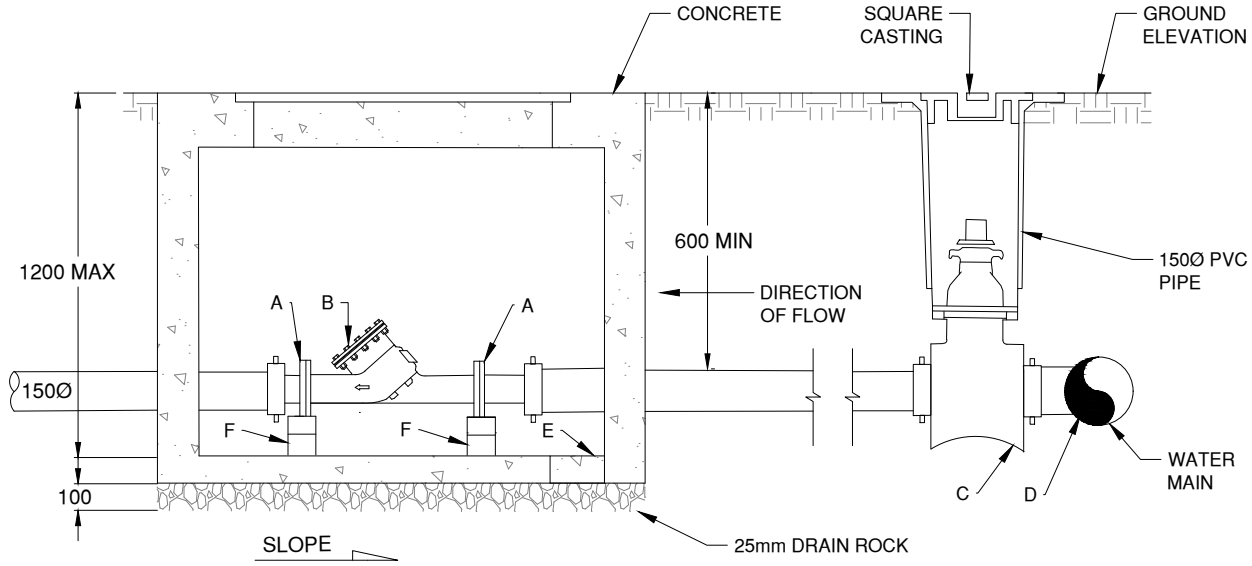
NOT TO SCALE

FIRE SERVICE C/W DOMESTIC SERVICE & WATER METER LARGER THAN 50mm

Revision Date	Drawing Number
AUG. 2025	SD W2h

SUPPLEMENTARY STANDARD DETAIL DRAWING





SECTION A-A

A) 50mm ADAPTOR
B) 50mm FL DETECTOR CHECK VALVE
C) 150mm VALVE
D) 150mm SADDLE OR TEE
E) 200mmØ PVC SUMP
F) 2- 200 X 100 X 50mm CONCRETE BLOCKS

NOTES:

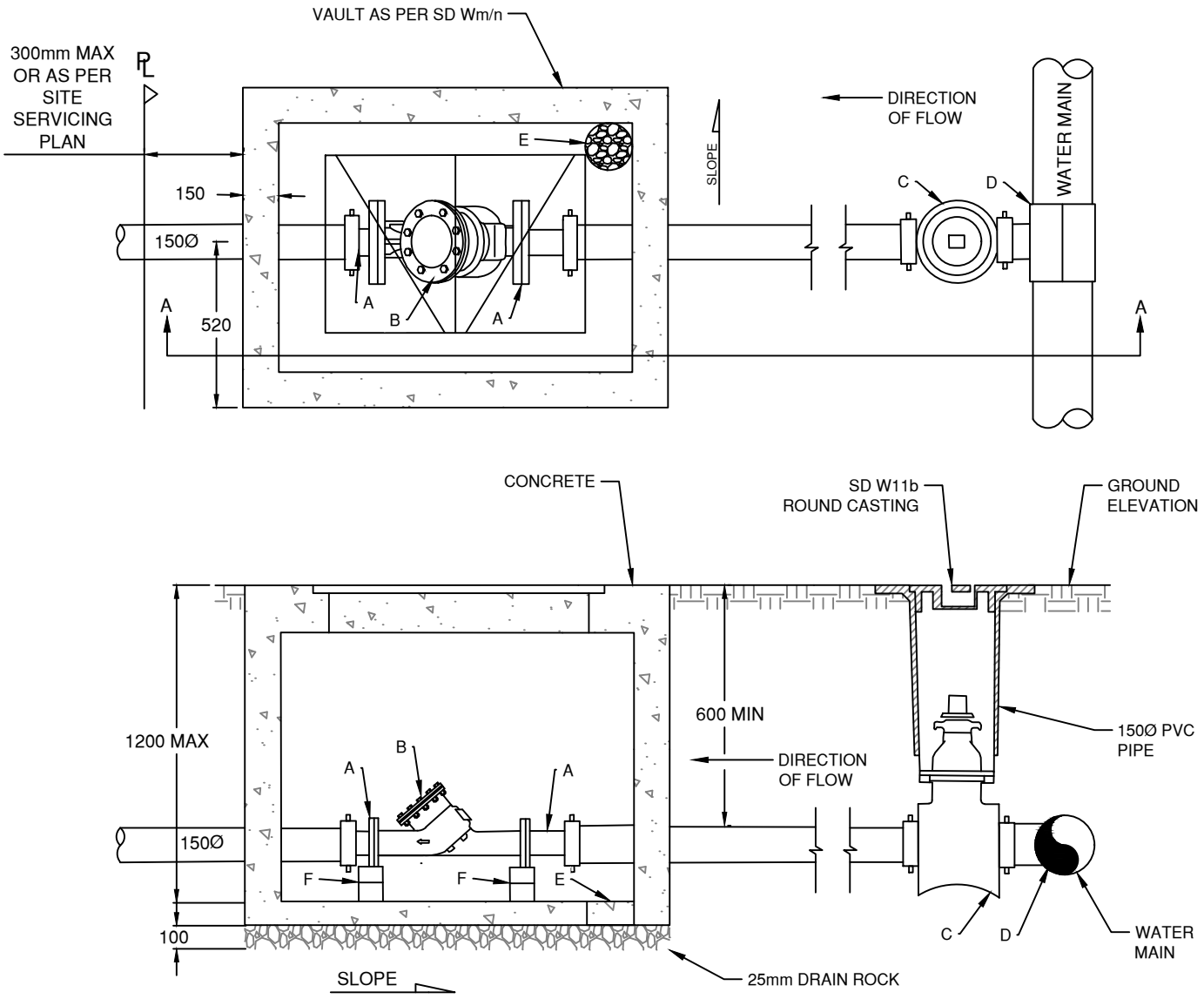
1. ALL PIPES, JOINTS AND FITTINGS TO BE PIPE RESTRAINED.
2. FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN.
3. PUSH ON JOINTS ACCEPTABLE WITH COV APPROVAL.
4. TAPPING SADDLE ACCEPTABLE WITH COV APPROVAL.
5. MIN 300mm WORKING ROOM REQUIRED ALONG PRINCIPAL AXES WITHIN VAULT.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

FIRE SERVICE 25-50mm

Revision Date	Drawing Number
APR. 2025	SD W2i

SUPPLEMENTARY STANDARD DETAIL DRAWING



SECTION A-A

A)	100mm ADAPTOR	D)	150mm SADDLE OR TEE
B)	100mm FL DETECTOR CHECK VALVE	E)	200mmØ PVC SUMP
C)	150mm VALVE	F)	2- 200 X 100 X 50mm CONCRETE BLOCKS

NOTES:

1. ALL PIPES, JOINTS AND FITTINGS TO BE PIPE RESTRAINED.
2. FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN.
3. PUSH ON JOINTS ACCEPTABLE WITH COV APPROVAL.
4. TAPPING SADDLE ACCEPTABLE WITH COV APPROVAL.
5. MIN 300mm WORKING ROOM REQUIRED ALONG PRINCIPAL AXES WITHIN VAULT.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

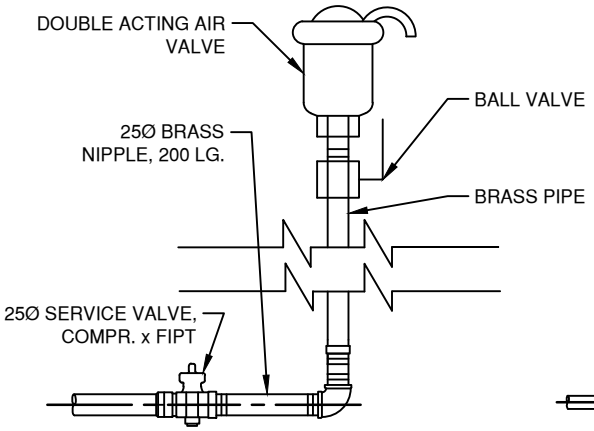
NOT TO SCALE

FIRE SERVICE 75mm - LARGER

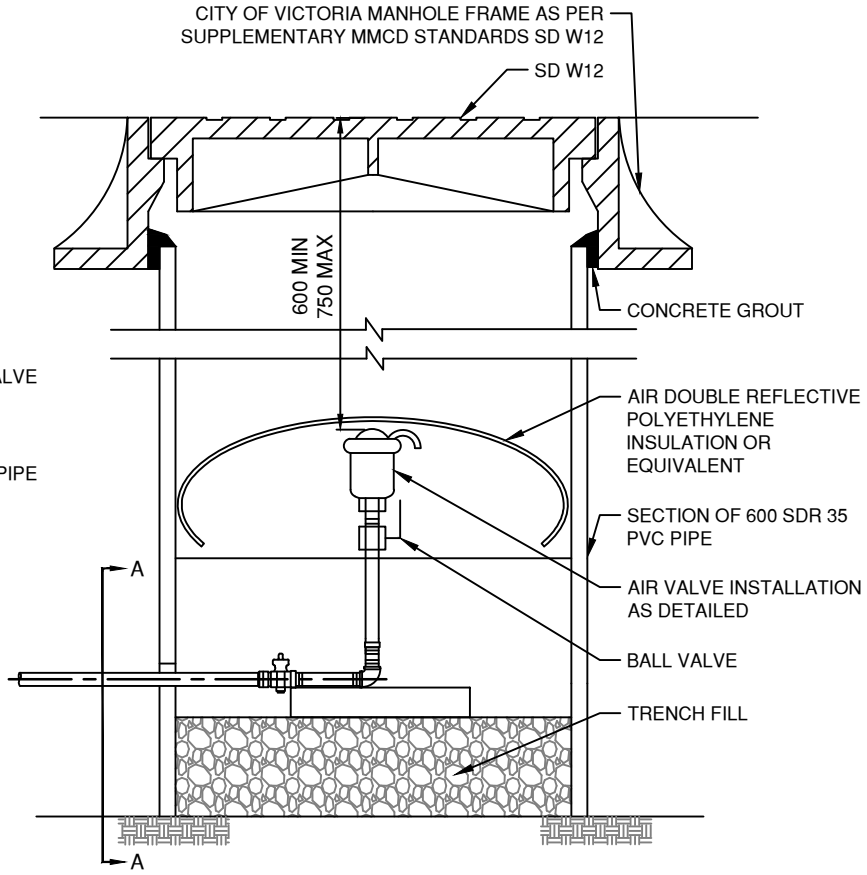
Revision Date	Drawing Number
JULY 2025	SD W2j

SUPPLEMENTARY STANDARD DETAIL DRAWING

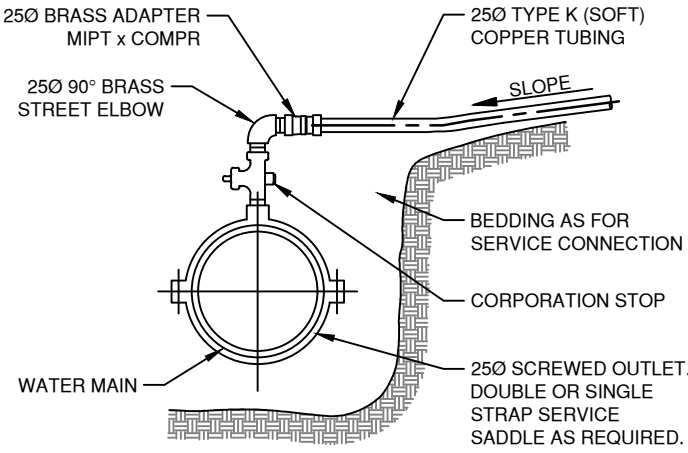
AIR VALVE SIZE	CORPORATION STOP SIZE
25mm	25mm
50mm	40mm



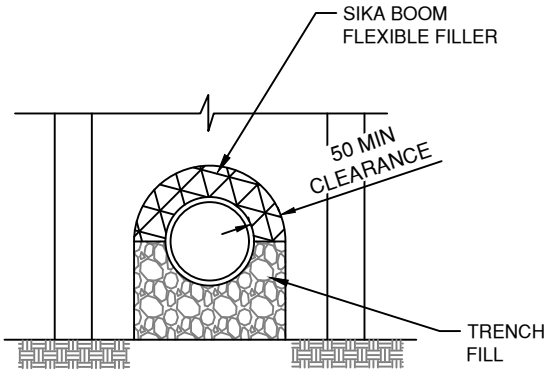
AIR VALVE ASSEMBLY DETAIL



CHAMBER DETAIL



CONNECTION TO MAIN



SECTION A-A

NOTES:

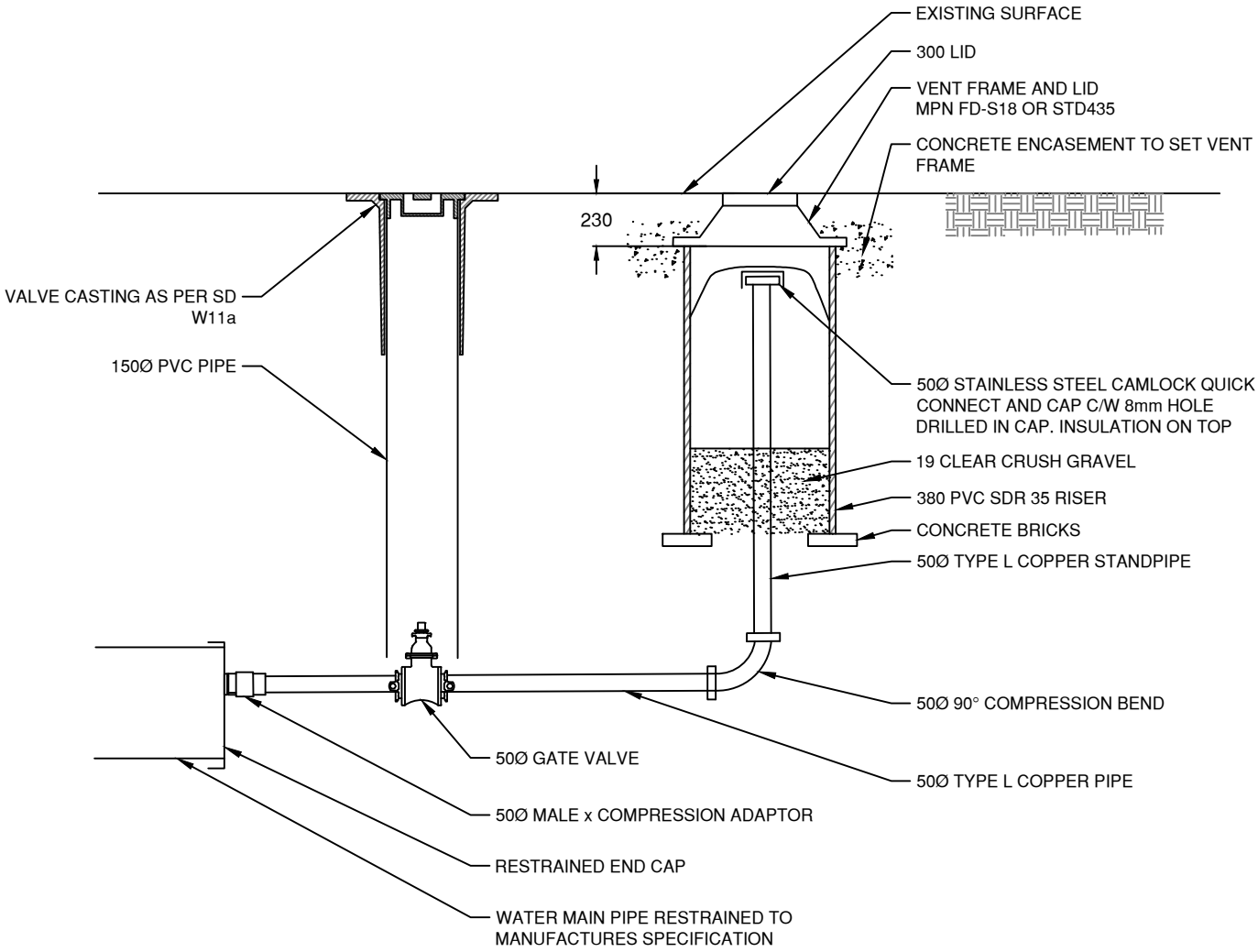
1. FOR 25mm AND 50mm AIR VALVES.
2. REFER TO CONTRACT DRAWINGS FOR DETAILED SPECIFICATIONS.
3. THREADED FITTINGS ONLY.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

AIR VALVE ASSEMBLY - 25mm and 50mm VALVES

Revision Date	Drawing Number
AUG. 2025	SD W6

SUPPLEMENTARY STANDARD DETAIL DRAWING



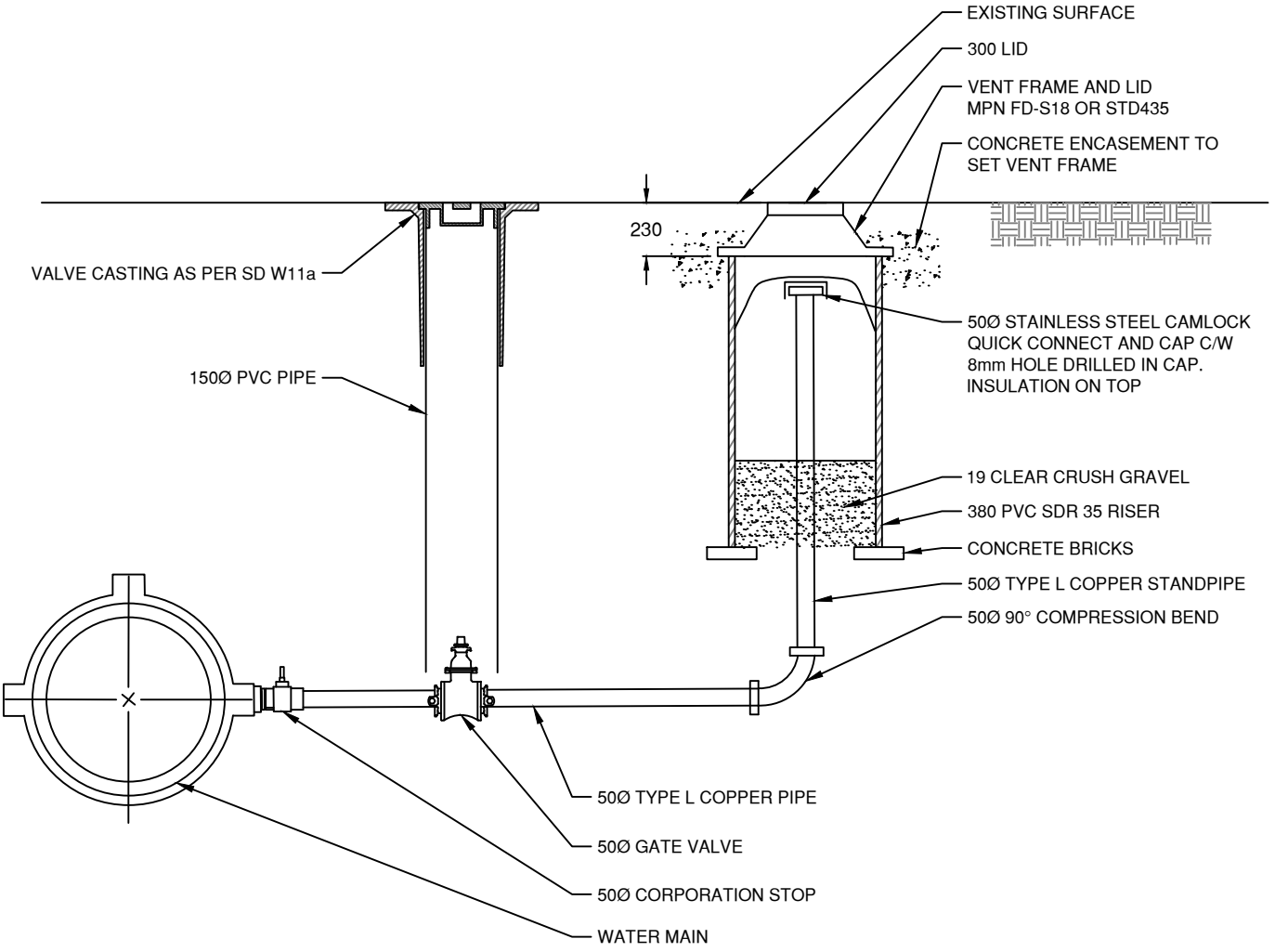
NOTES:

1. ALL NEW PIPE INSTALLATION USE PIPE RESTRAINTS ONLY.
2. FOR EXISTING PIPE INSTALLATION USE THRUST BLOCKS.
3. 50Ø BLOW OFF TO BE INSTALLED ON 100Ø AND 150Ø WATER MAINS ONLY. LARGER DIAMETER WATER MAINS TO BE DESIGNED.
4. USE THREADED FITTINGS.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

BLOW-OFF FOR WATERMAIN - END OF MAIN	Revision Date	Drawing Number
	JULY 2025	SD W8

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

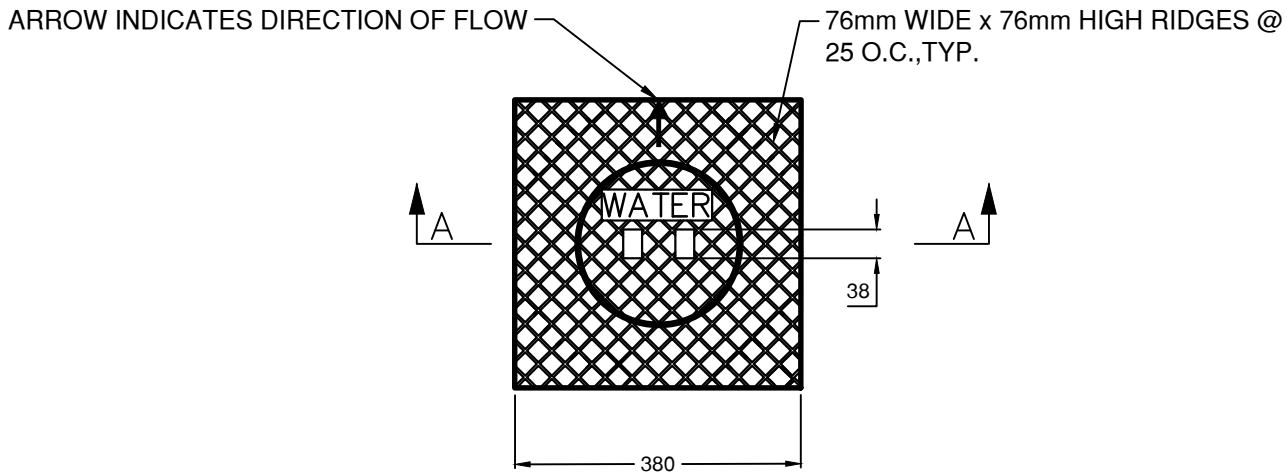
1. IF LOCATED IN A DRIVEWAY OR SIDEWALK, A BROOKS BOX REQUIRED.
2. CAMLOCK SHOULD BE LOCATED OUTSIDE THE DRIVEWAY.
3. LOCATION OF BLOW OFF TO BE DOWNSTREAM OF LAST SERVICE ON STREET.
4. MINIMUM DISTANCE OF TAP TO BE 900mm FROM END OF WATER MAIN.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

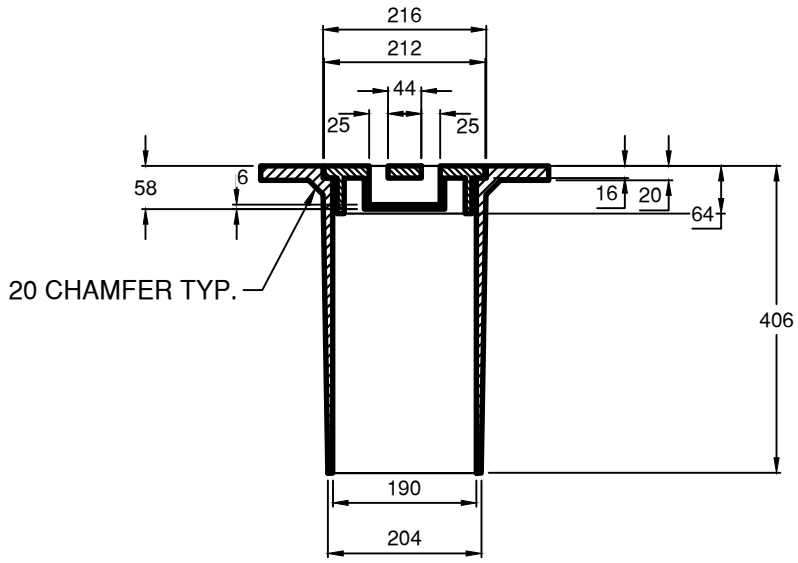
BLOW-OFF FOR WATER MAIN - SIDE OF MAIN

Revision Date	Drawing Number
JULY 2025	SD W8a

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME & COVER



SECTION A-A

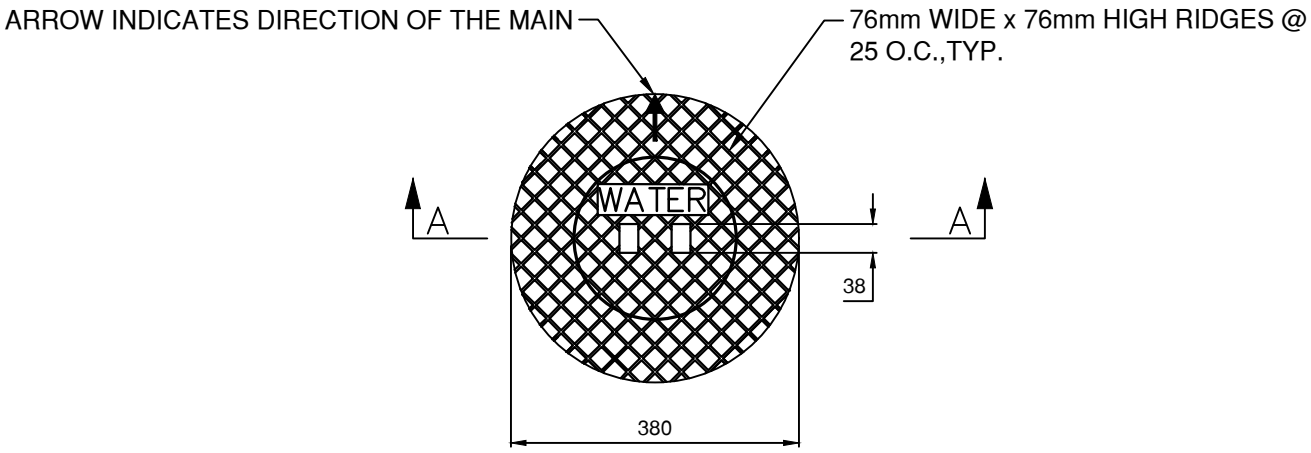
NOTES:

1. CONCRETE BOX FRAME TO BE WRAPPED WITH TAR PAPER FOR CONCRETE OR CONCRETE ROAD BASE INSTALLATIONS.
2. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE GOOD SEATING.
3. MAINTAIN MINIMUM CLEARANCE OF 25mm OR GREATER BETWEEN BASE OF BOX FRAME AND VALVE BODY.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

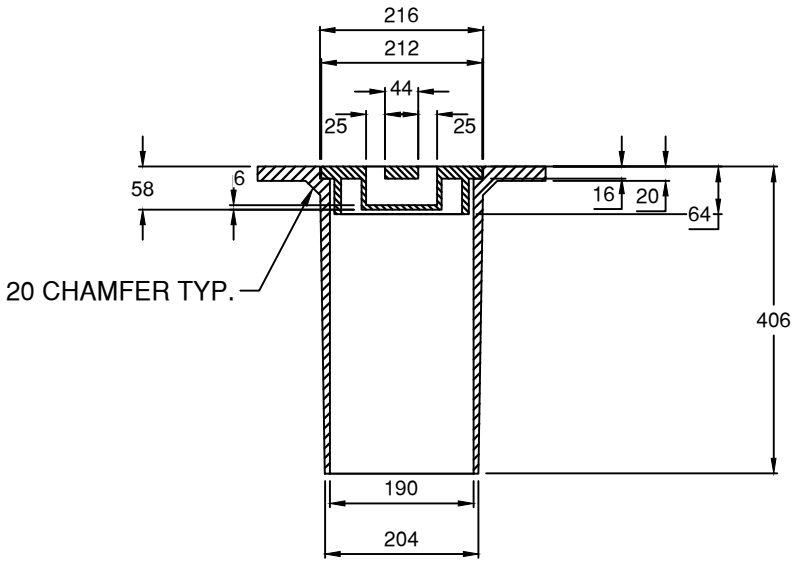
NOT TO SCALE

SQUARE VALVE BOX FRAME & COVER FOR SERVICES 38-50mm	Revision Date	Drawing Number
	JULY 2025	SD W11a

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN - FRAME & COVER



SECTION A-A

NOTES:

1. CONCRETE BOX FRAME TO BE WRAPPED WITH TAR PAPER FOR CONCRETE OR CONCRETE ROAD BASE INSTALLATIONS.
2. ALL METAL BEARING SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE GOOD SEATING.
3. MAINTAIN MINIMUM CLEARANCE OF 25mm OR GREATER BETWEEN BASE OF BOX FRAME AND VALVE BODY.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

NOT TO SCALE

ROUND VALVE BOX FRAME & COVER FOR SERVICES LARGER THAN 50mm	Revision Date	Drawing Number
	JUNE 2025	SD W11b

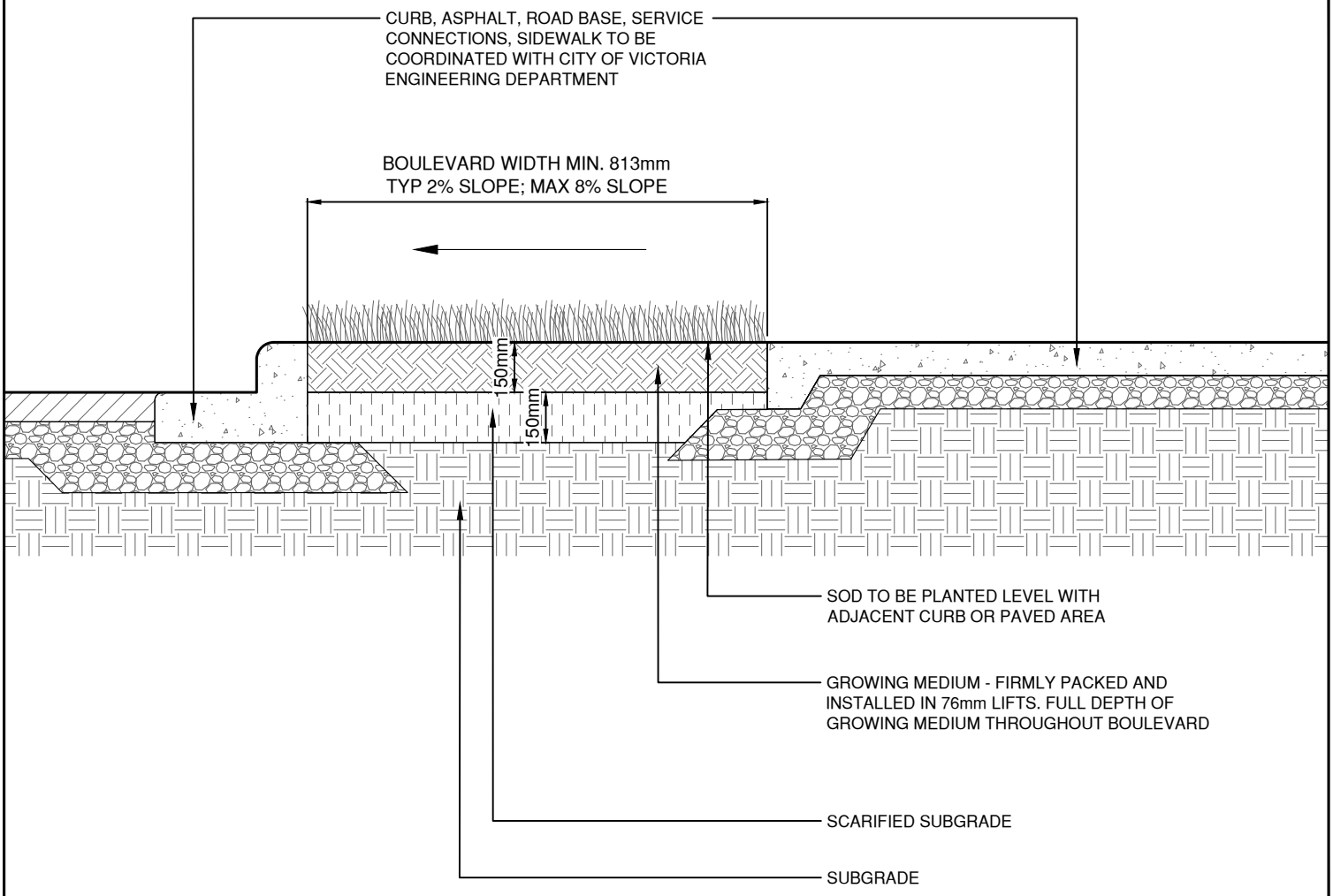
8.6. Trees and Landscape

The following MMCD 2019 Standard Detail Drawings are to be used or replaced as indicated below:

TREES AND LANDSCAPE DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
		SD PH1	Sod - (Grass Boulevard)
		SD PH2	Shrub Planting - Softscape
		SD PH3	Groundcover Planting
		SD PH4	Plug Planting
		SD PH 5	Meadow Planting
		SD P1.1	Chain Link Fence
		SD P1.2	Chain Link Fence Gate
		SD PI1	TBOS Controller Assembly
		SD PI2	Quick Coupler
		SD PI3	Backflow Preventor
		SD PI4	Tree Drip Kit
		SD PI5	Tree Drip Ring
		SD PI6	Rotor Spray Head
		SD PI7	Pop-Up Spray Head
		SD PI8	Valve PGA Series
		SD PI9	TBOS BT Battery Valve
		SD PI10	Irrigating Trees in Soil Cells
		SD PI11	Approved Irrigation Materials List
		SD PT1	Structural Soil - Adjacent Softscape
		SD PT2	Tree Planting - Continuous Softscape

TREES AND LANDSCAPE DETAILS			
MMCD STANDARD DETAIL DRAWING		CITY OF VICTORIA SUPPLEMENTARY STANDARD DETAIL DRAWINGS	
		SD PT3.1	Tree Planting in Median - Softscape
		SD PT3.2	Tree Planting in Median - Long Section
		SD PT4	Structural Soil - Adjacent Hardscape
		SD PT5.1	Tree Planting - CIP Concrete and Soil Cells -Cross Section
		SD PT5.2	Tree Planting - CIP Concrete and Soil Cells - Plan View
		SD PT6.1	Tree Planting - CIP Concrete and Soil Cells on one Side -Cross Section
		SD PT6.2	Tree Planting - CIP Concrete and Soil Cells on one Side -Plan View
		SD PT7	Tree Planting - Planting Bed or Grass Area and Soil Cells - Cross Section
		SD PT8.1	Tree Planting - Unit Pavers and Soil Cells - Cross Section
		SD PT8.2	Tree Planting - Unit Pavers and Soil Cells on one Side - Cross Section
		SD PT9	Tree planting - Soil Cells Under Parking Stall or Bike Lane
		SD PT10	Tree Planting and Projection Setbacks - Awnings
		SD PT11	Floating Hardscape Over Tree Roots
		SD PT12	Boulevard Root Protection
		SD PT13.1	Tree Protection Fencing
		SD PT13.2	Tree Protection Area Sign

SUPPLEMENTARY STANDARD DETAIL DRAWING



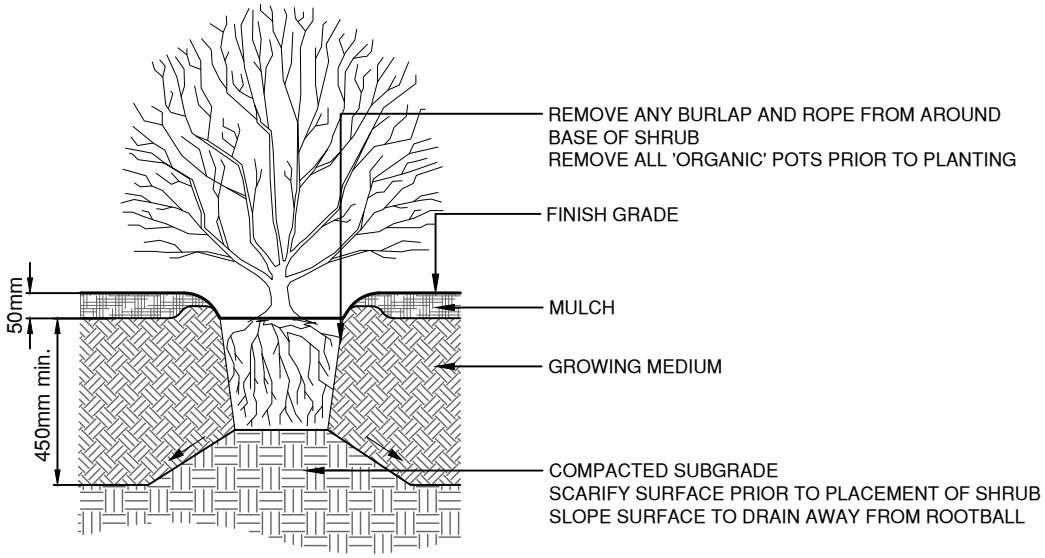
NOTES:

1. APPROVED, COMPACTED GROWING MEDIUM PLACED AS PER MMCD AND CITY OF VICTORIA SUPPLEMENTARY STANDARDS
2. FOR CURB, SIDEWALK, ASPHALT, UTILITIES AND ROAD BASE, REFER TO MMCD AND CITY OF VICTORIA SUPPLEMENTARY STANDARDS
3. APPROVED SUBGRADE TO MMCD AND CITY OF VICTORIA SUPPLEMENTARY STANDARDS
4. SOD TO MMCD AND CITY OF VICTORIA SUPPLEMENTARY STANDARDS - THIS INCLUDES REQUIREMENTS FOR MAINTENANCE DURING ESTABLISHMENT PERIOD (WATERING, WEEDING, MOWING)
5. SOD NOT TO BE REINFORCED WITH MESH
6. MINIMUM SOIL VOLUMES MUST BE ACHIEVED FOR TREES AS PER THE ESS BYLAW AND DRAWINGS SD PT1, SD PT2, SD PT3.1 AND SD PT3.2

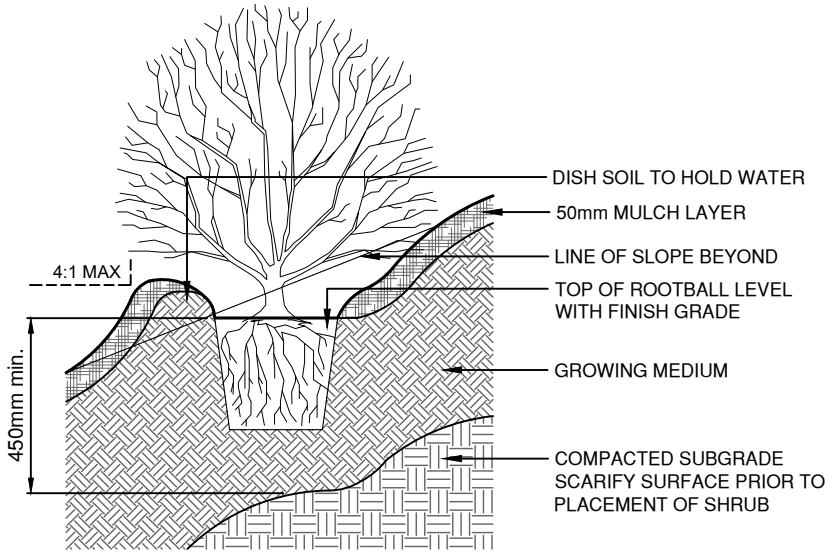
SOD - (GRASS BOULEVARD)

Revision Date	Drawing Number
SEPTEMBER 2025	SD PH1

SUPPLEMENTARY STANDARD DETAIL DRAWING



SHRUB PLANTING ON FLAT AREA

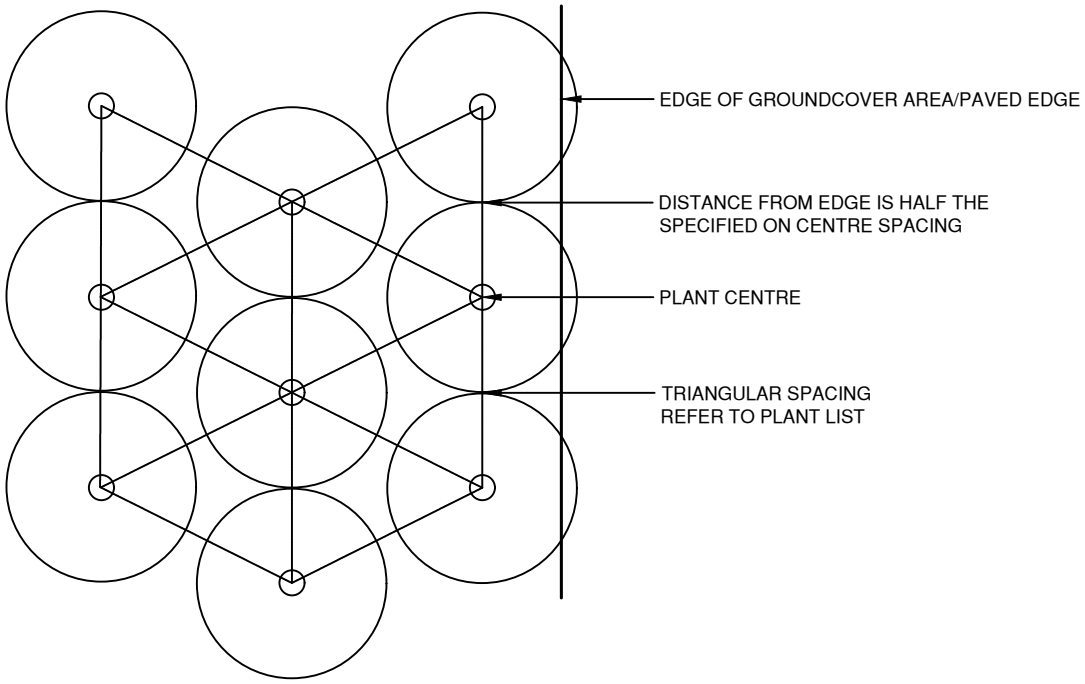


SHRUB PLANTING ON SLOPE

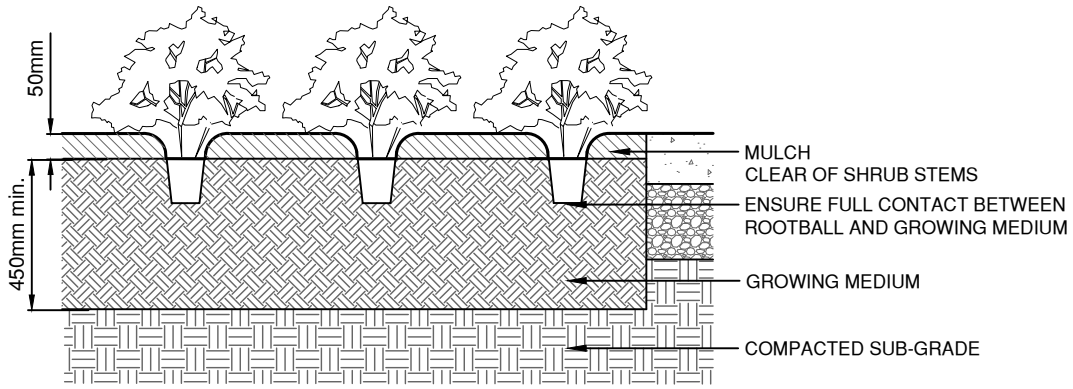
NOTES:

1. SHRUB TO BE PLANTED WITH ELEVATION OF TOP OF ROOTBALL OR POT LEVEL WITH FINISH GRADE OF GROWING MEDIUM
2. COMPOSTED BARK MULCH AT 50mm DEPTH TO BE KEPT AT LEAST 50mm AWAY FROM STEMS OF SHRUB
3. PLANTING PIT MUST BE FREE DRAINING
4. PRUNE ANY BROKEN OR DAMAGED BRANCHES USING APPROVED PRUNING TOOLS AND STANDARD I.S.A. PRUNING PRACTICES

SHRUB PLANTING - SOFTSCAPE	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PH2



PLAN



SECTION

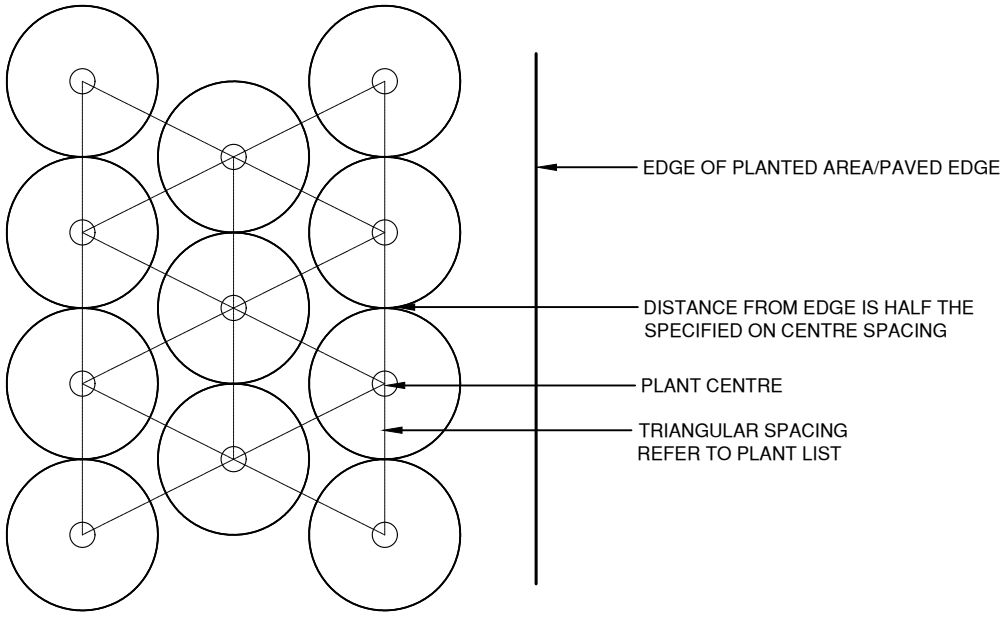
NOTES:

1. PLANT TO BE PLANTED WITH TOP OF ROOTBALL LEVEL WITH FINISH GRADE
2. COMPOSTED BARK MULCH TO BE KEPT AT LEAST 50mm AWAY FROM STEMS
3. A REPRESENTATIVE AREA OF EACH PLANT SPECIES IS TO BE LAID OUT AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANTING

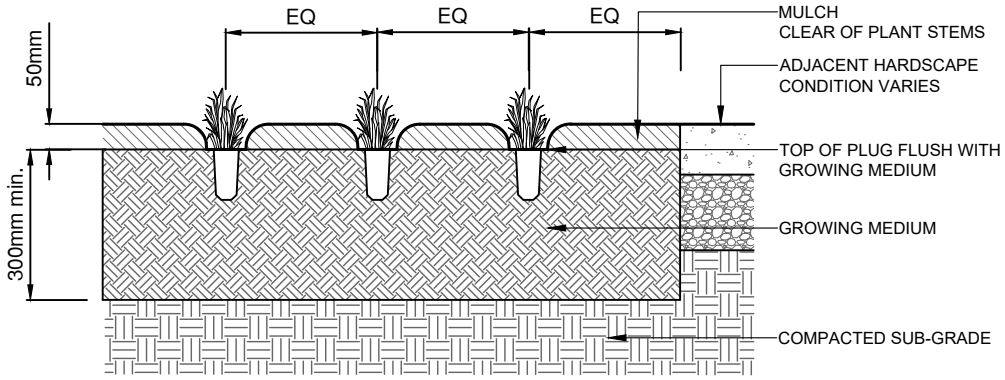
GROUNDCOVER PLANTING

Revision Date	Drawing Number
SEPTEMBER 2025	SD PH3

SUPPLEMENTARY STANDARD DETAIL DRAWING



PLAN



SECTION

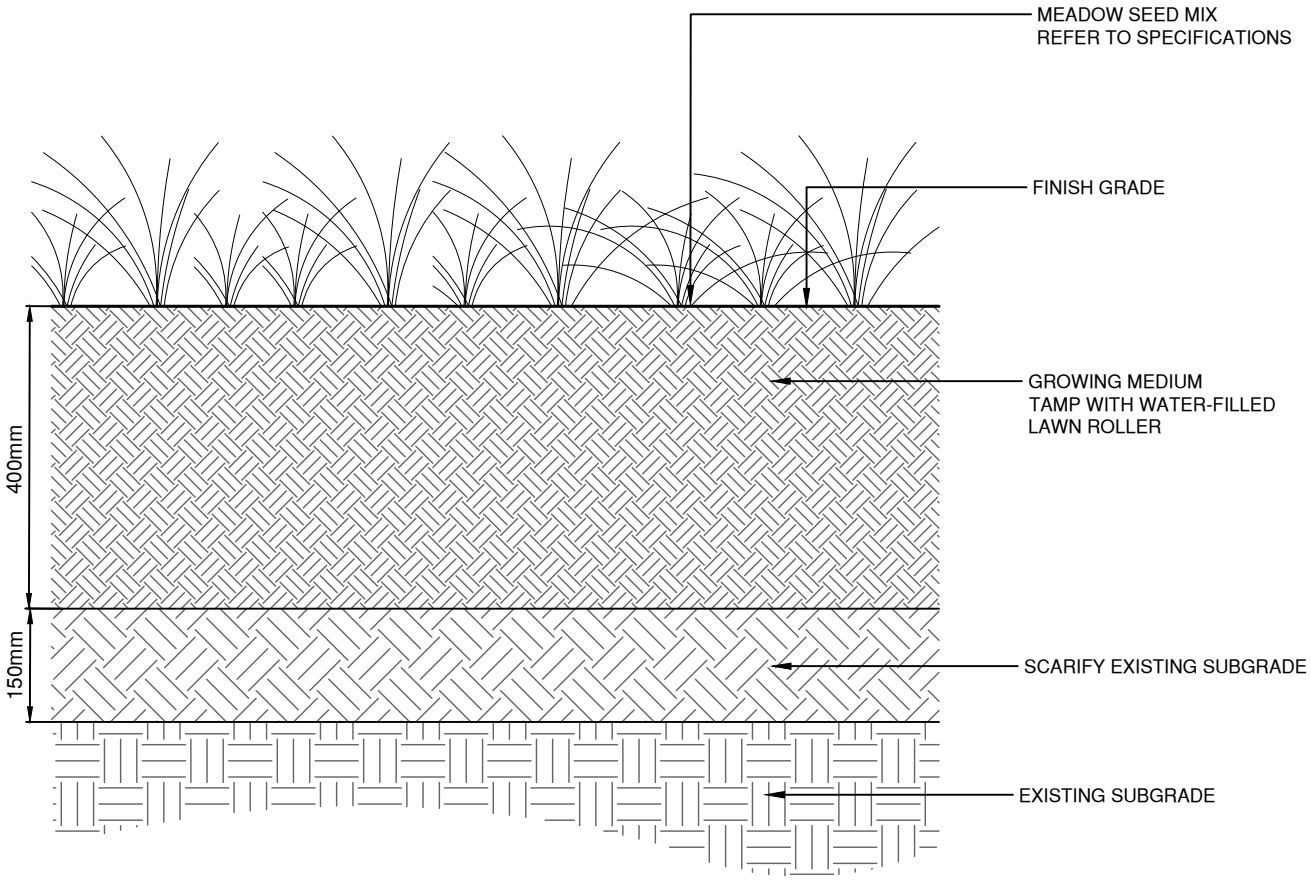
NOTES:

1. PLANT TO BE PLANTED WITH TOP OF PLUG LEVEL WITH FINISH GRADE
2. COMPOSTED BARK MULCH TO BE KEPT AT LEAST 50mm AWAY FROM STEMS
3. A REPRESENTATIVE AREA OF EACH PLANT SPECIES IS TO BE LAID OUT AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANTING

PLUG PLANTING

Revision Date	Drawing Number
SEPTEMBER 2025	SD PH4

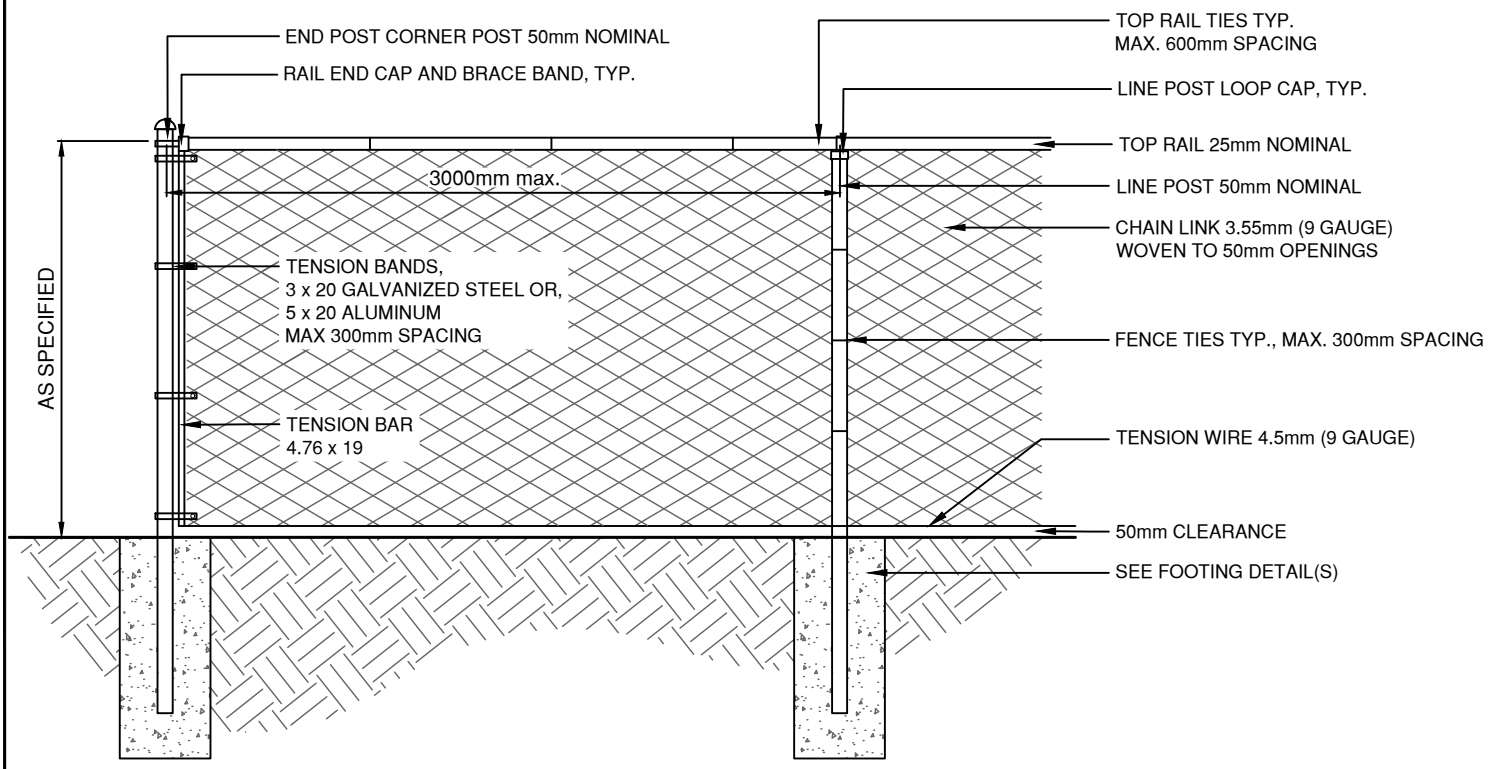
SUPPLEMENTARY STANDARD DETAIL DRAWING



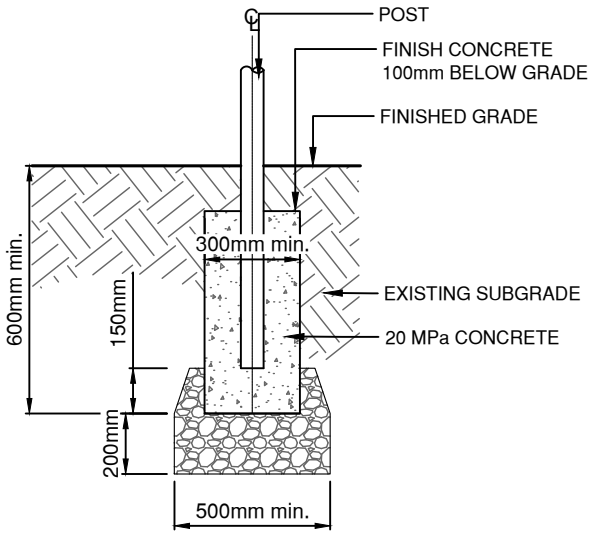
MEADOW PLANTING

Revision Date	Drawing Number
SEPTEMBER 2025	SD PH5

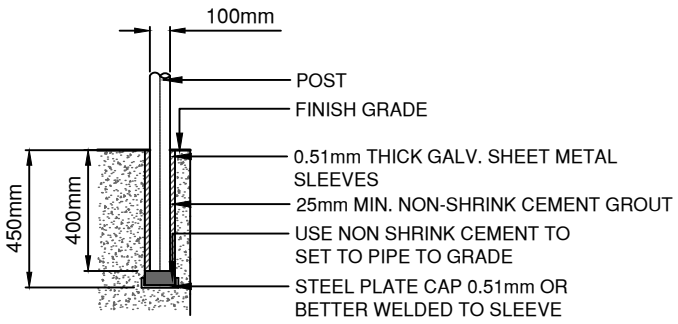
SUPPLEMENTARY STANDARD DETAIL DRAWING



GENERAL ARRANGEMENT



IN EARTH



ON RETAINING WALL

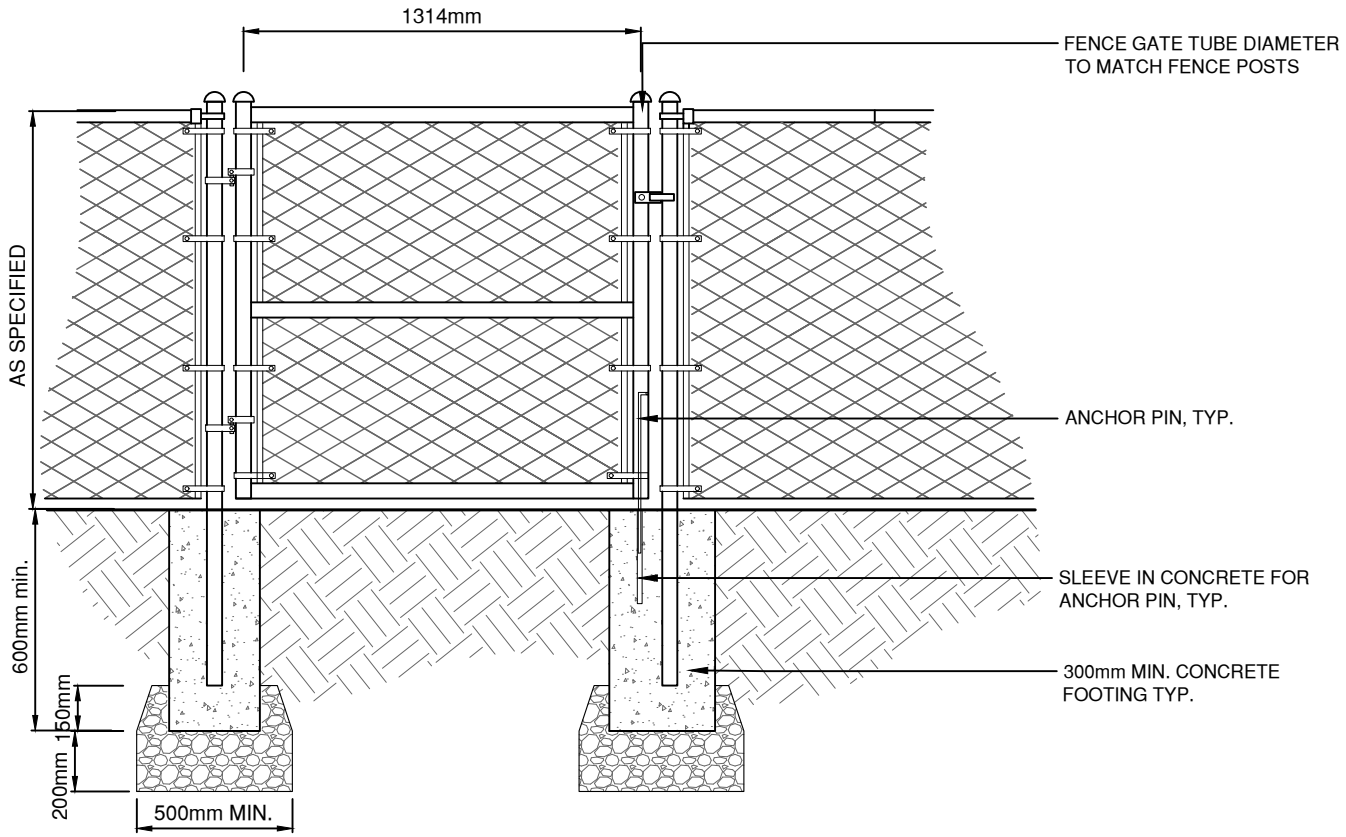
NOTES:

1. FOR PURPOSE OF CLARITY, DETAILS OF TENSION BARS, TENSION BANDS AND MISC. FITTINGS ARE NOT SHOWN ON DRAWING
2. ALL RAILS AND POSTS SCHEDULE 40 PIPE
3. GATE POSTS AS SPECIFIED (50mm NOMINAL MINIMUM)
4. REFER TO CONTRACT DRAWINGS, SECTIONS 32 31 13 FOR DETAILED SPECIFICATIONS

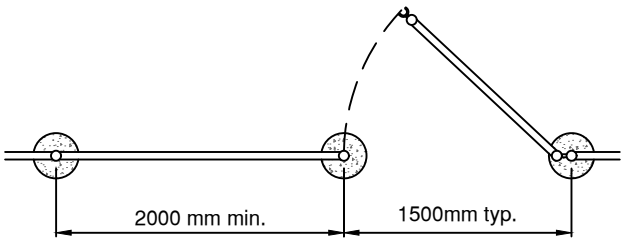
CHAIN LINK FENCE

Revision Date	Drawing Number
SEPTEMBER 2025	SD P1.1

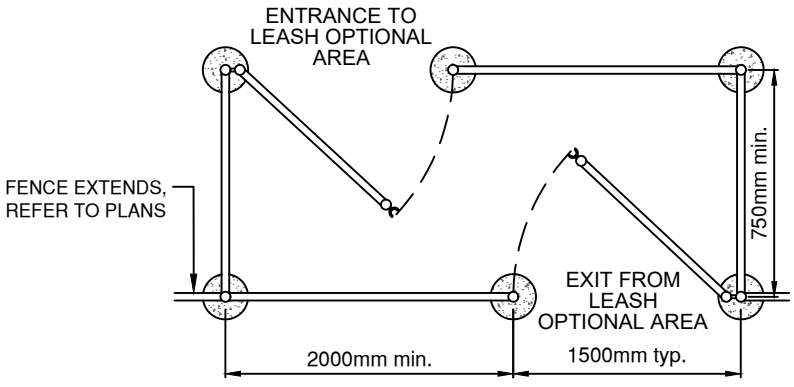
SUPPLEMENTARY STANDARD DETAIL DRAWING



TYPICAL CHAINLINK FENCE GATE SECTION



SINGLE GATE LAYOUT



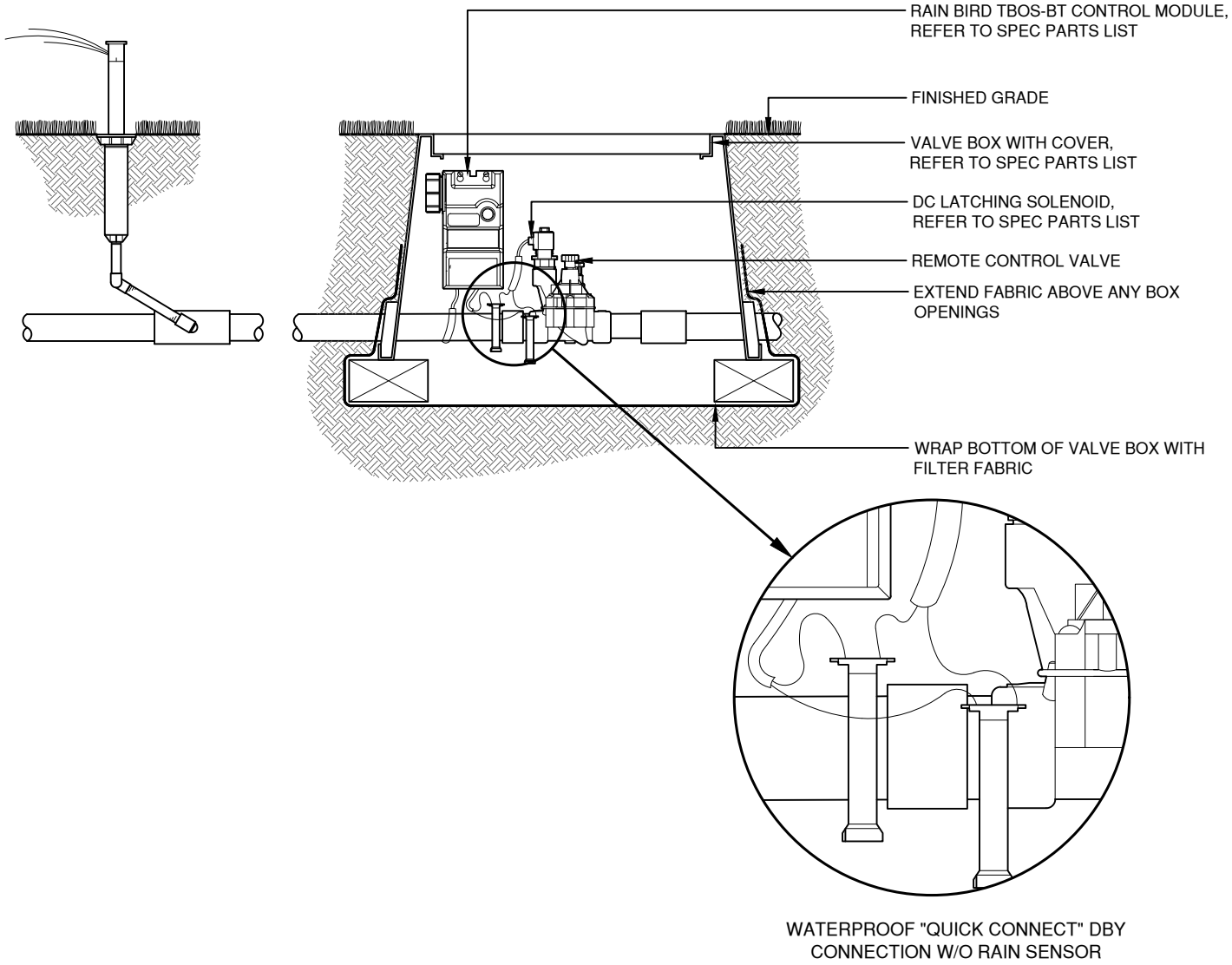
DOUBLE GATE LAYOUT AT LEASH OPTIONAL AREA

NOTES:

1. FOR PURPOSE OF CLARITY, DETAILS OF TENSION BARS, TENSION BANDS AND MISC. FITTINGS ARE NOT SHOWN ON DRAWING
2. ALL RAILS AND POSTS SCHEDULE 40 PIPE
3. GATE POSTS AS SPECIFIED (50mm NOMINAL MINIMUM)
4. REFER TO CONTRACT DRAWINGS, SECTIONS 32 31 13 FOR DETAILED SPECIFICATIONS

CHAIN LINK FENCE GATE	Revision Date	Drawing Number
	SEPTEMBER 2025	SD P1.2

SUPPLEMENTARY STANDARD DETAIL DRAWING



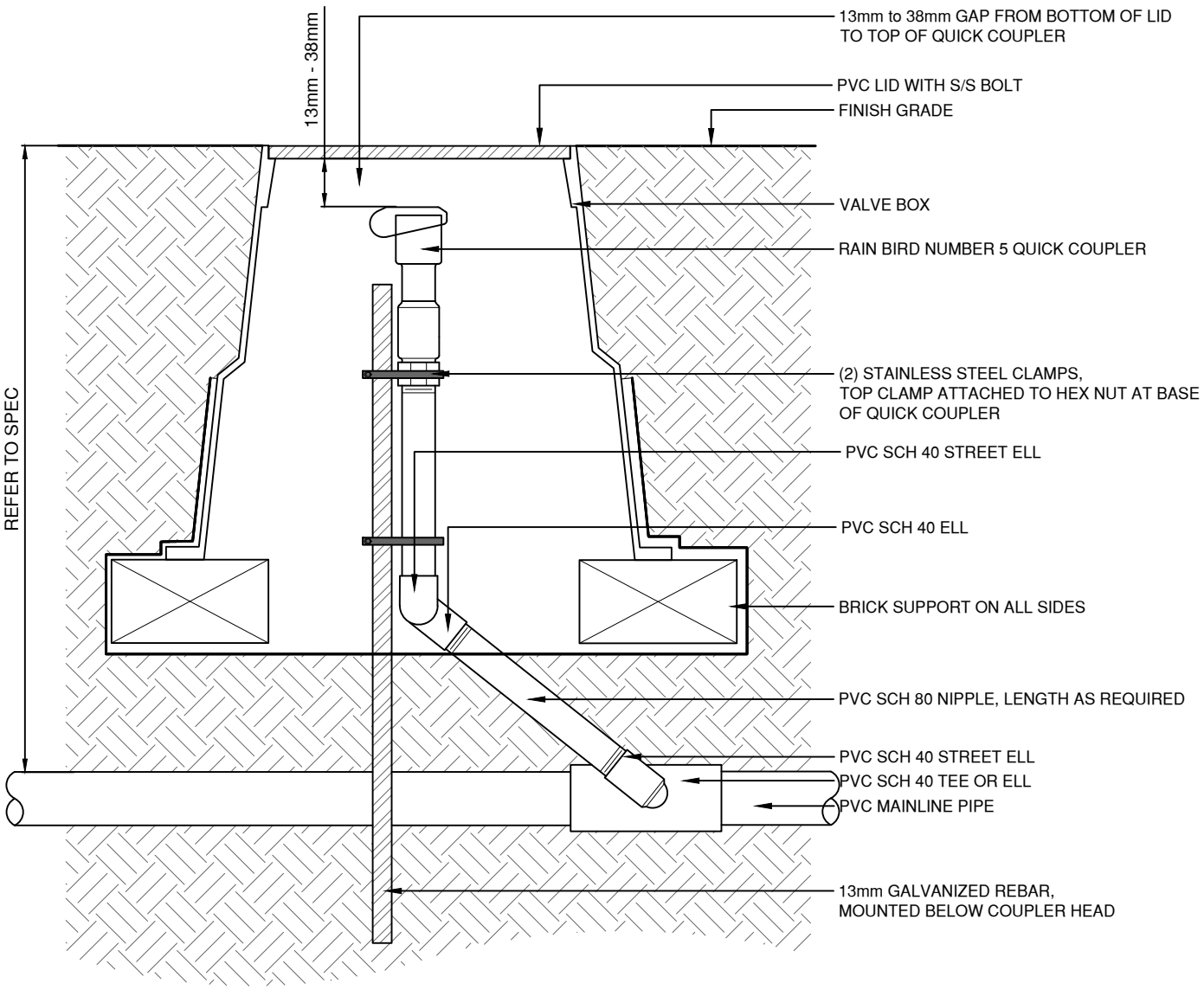
NOTES:

1. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION AND ADJUSTMENT INFO
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
3. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION

TBOS CONTROLLER ASSEMBLY

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI1

SUPPLEMENTARY STANDARD DETAIL DRAWING

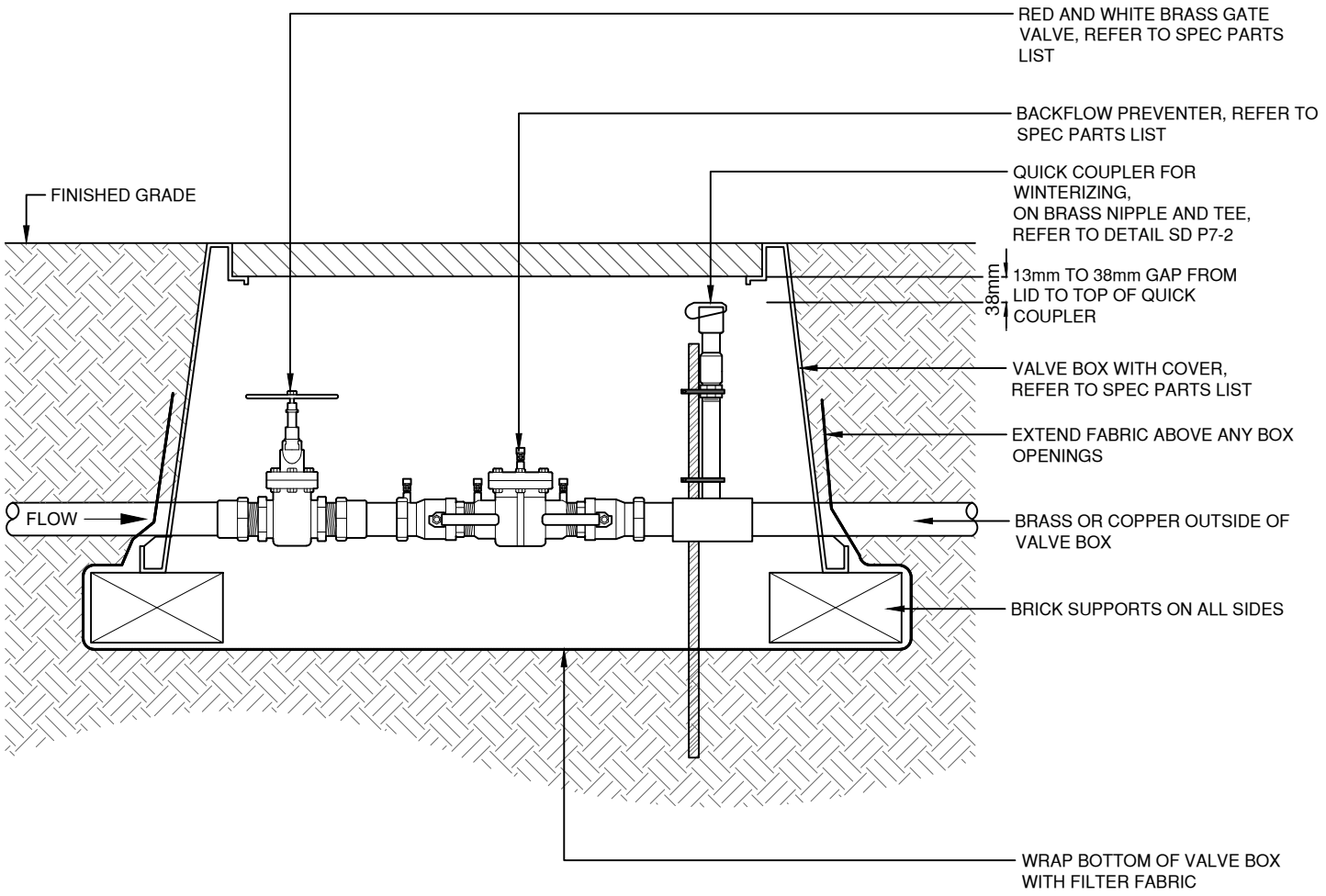


NOTES:

1. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION AND ADJUSTMENT INFO
2. TEFLON TAPE ALL THREADED JOINTS
3. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
4. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION

QUICK COUPLER	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PI2

SUPPLEMENTARY STANDARD DETAIL DRAWING

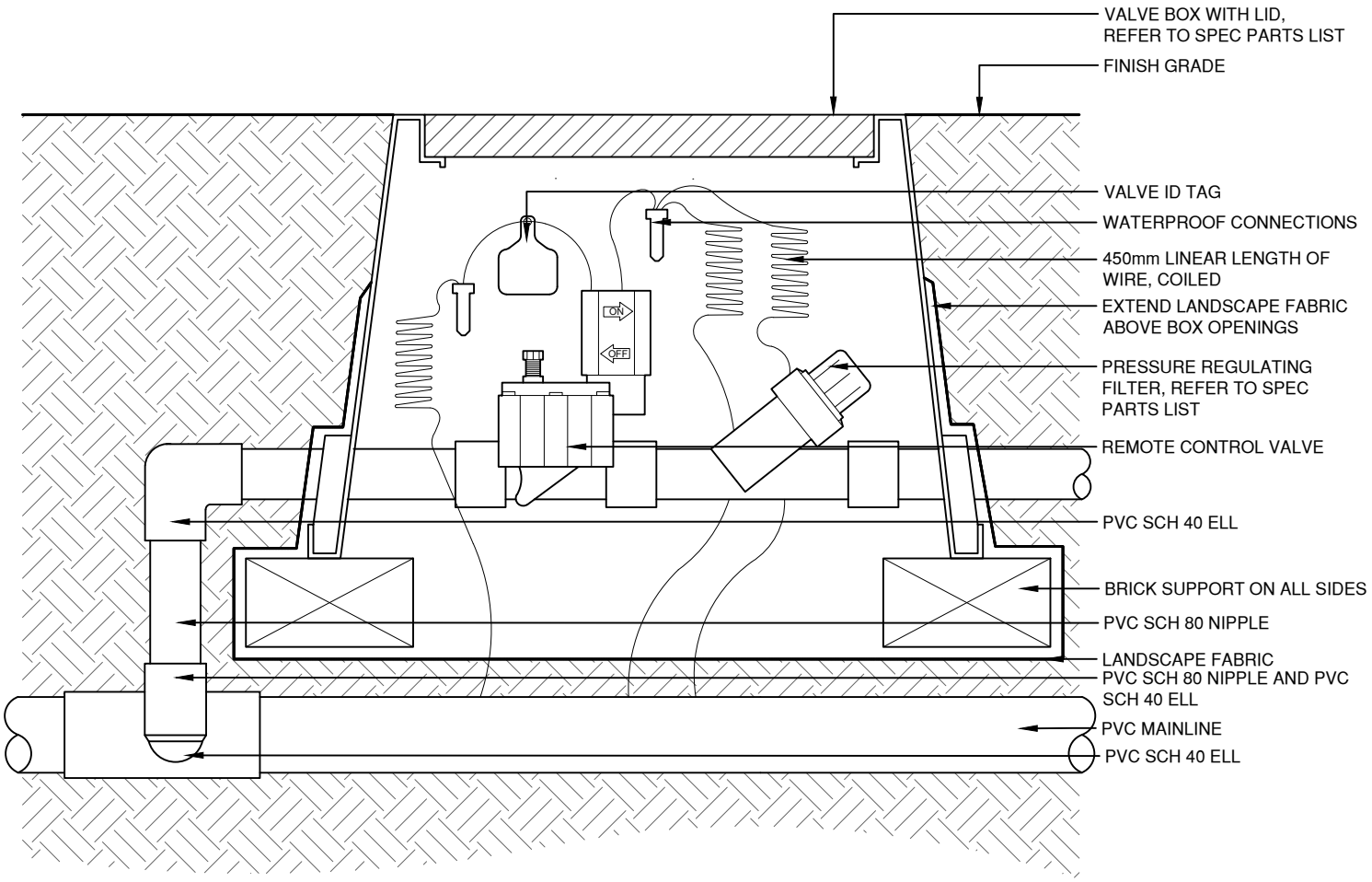


NOTES:

1. ENSURE ALL DIMENSIONS AND CLEARANCES COMPLY WITH MANUFACTURER'S INSTALLATION RECOMMENDATIONS
2. INSTALLATION MUST BE APPROVED BY LOCAL PLUMBING INSPECTOR
3. ALL MATERIALS TO BE IN ACCORDANCE WITH CURRENT BC PLUMBING CODES
4. UTILITY BOX SHOWN FOR BACKFLOW PREVENTOR IS DIAGRAMMATIC
5. PROVISIONS FOR FREEZING WINTER CONDITIONS ARE NOT SHOWN. WHERE CLIMATE REQUIRES, THEY SHALL BE ADDED TO MEET THE REQUIREMENTS OF THE CITY ENGINEER
6. INCLUDE WATTS PRESSURE REDUCING VALVE FOR 25mm LINE
7. RISERS (IF NEEDED, BY AE CONCRETE OR PRE-APPROVED EQUAL)

BACKFLOW PREVENTOR	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PI3

SUPPLEMENTARY STANDARD DETAIL DRAWING

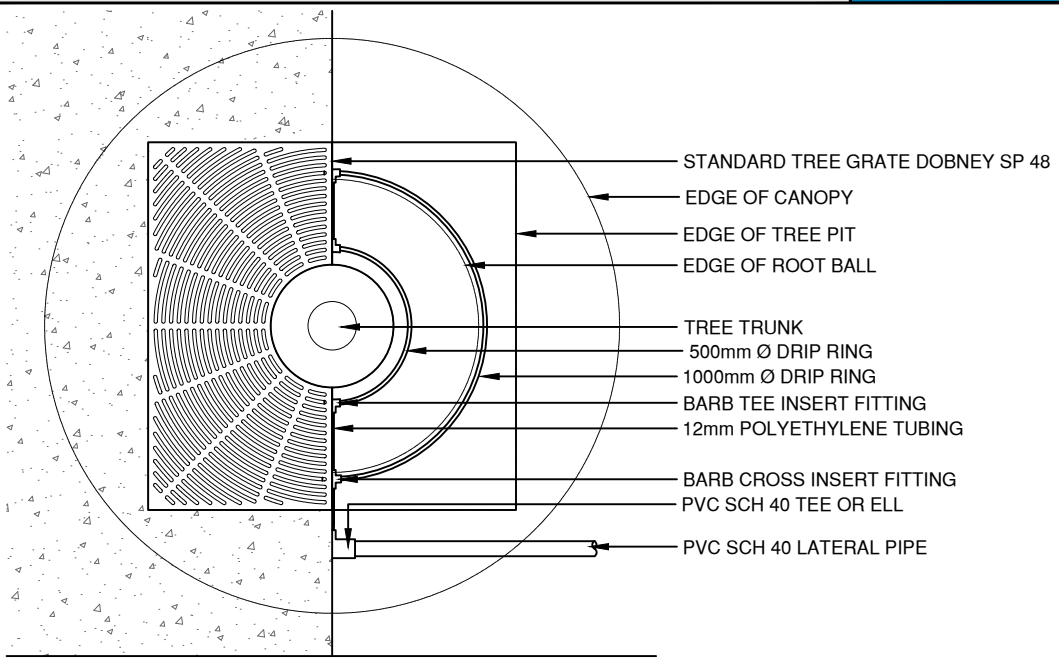


NOTES:

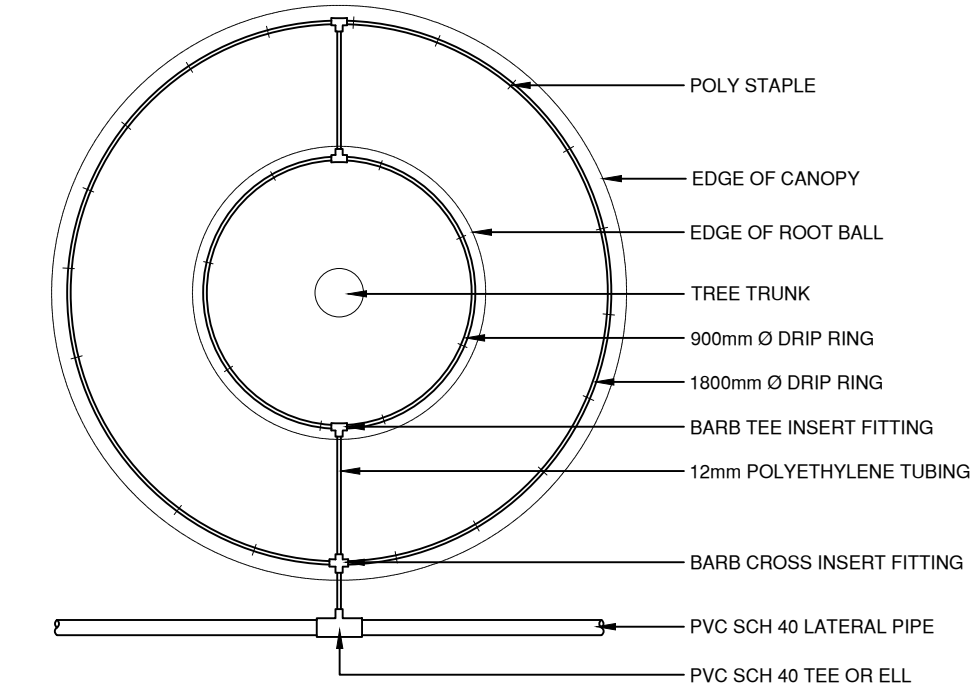
1. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION AND ADJUSTMENT INFO
2. TEFLON TAPE ALL THREADED JOINTS
3. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
4. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION

TREE DRIP KIT	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PI4

SUPPLEMENTARY STANDARD DETAIL DRAWING



DRIP RING BELOW TREE GRATE



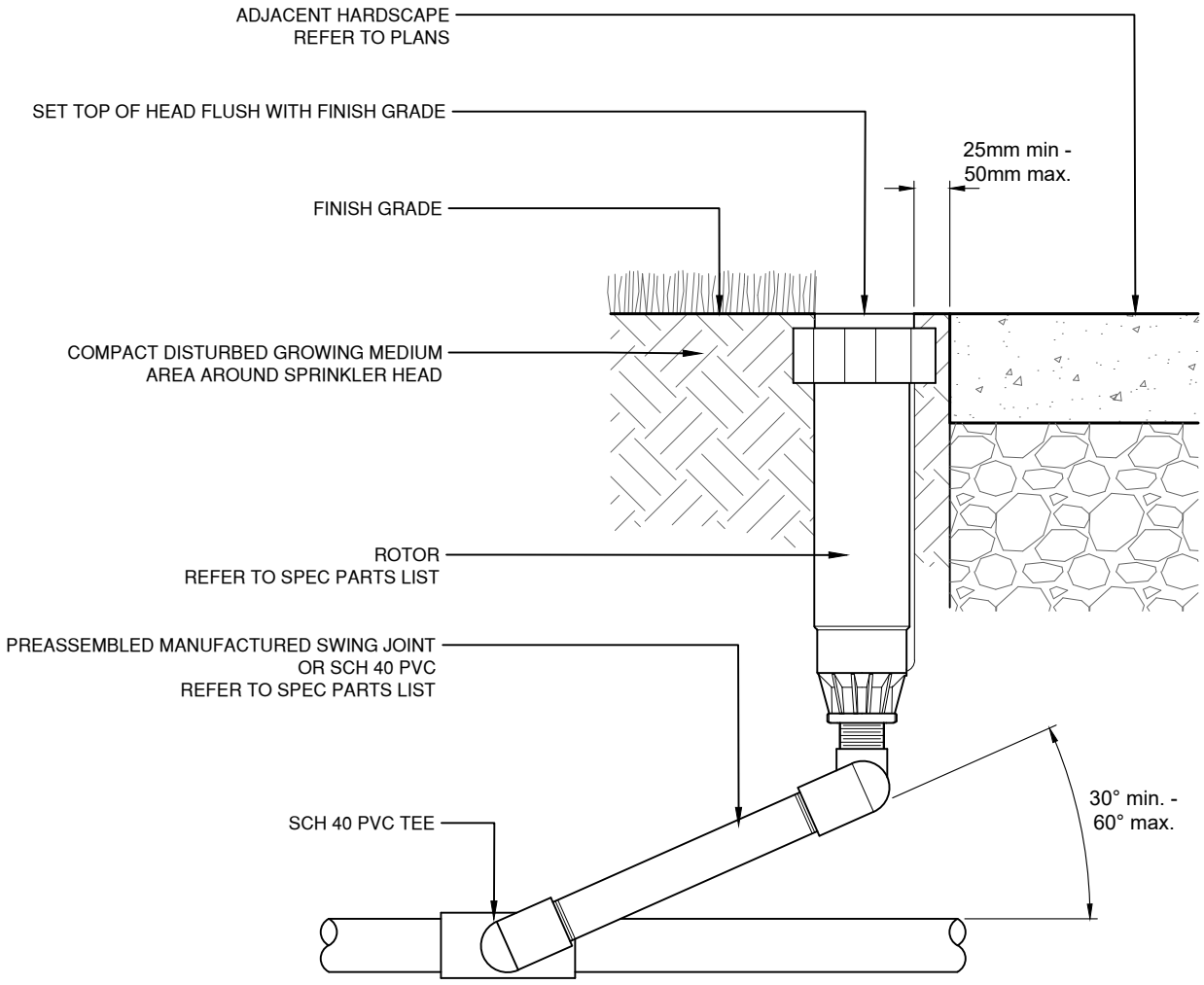
DRIP RING IN SOFTSCAPE

NOTES:

1. DISTANCE BETWEEN LATERAL RINGS AND EMITTER SPACING TO BE BASED ON SOIL TYPE AND TREE CANOPY. SEE INSTALLATION SPECIFICATION ON SUPPLIER WEBSITE.
2. PLACE TIE-DOWN STAKES EVERY 0.91m O.C. IN SAND, 1.21m O.C. IN LOAM, AND 1.52m O.C. IN CLAY SOILS
3. AT FITTINGS WHERE THERE IS A CHANGE OF DIRECTION SUCH AS TEES OR ELBOWS, USE TIE-DOWN STAKES ON EACH LEG OF THE CHANGE OF DIRECTION.

TREE DRIP RING	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PI5

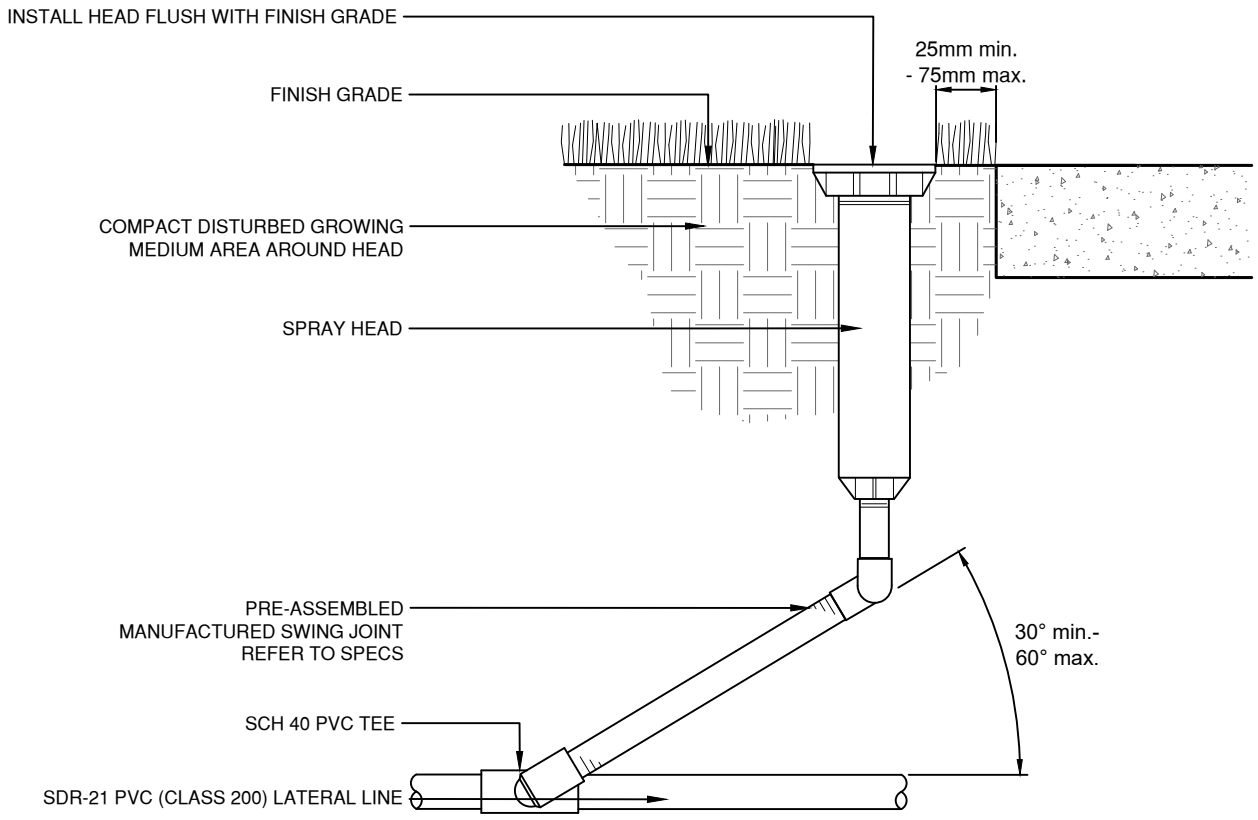
SUPPLEMENTARY STANDARD DETAIL DRAWING



ROTOR SPRAY HEAD

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI6

SUPPLEMENTARY STANDARD DETAIL DRAWING



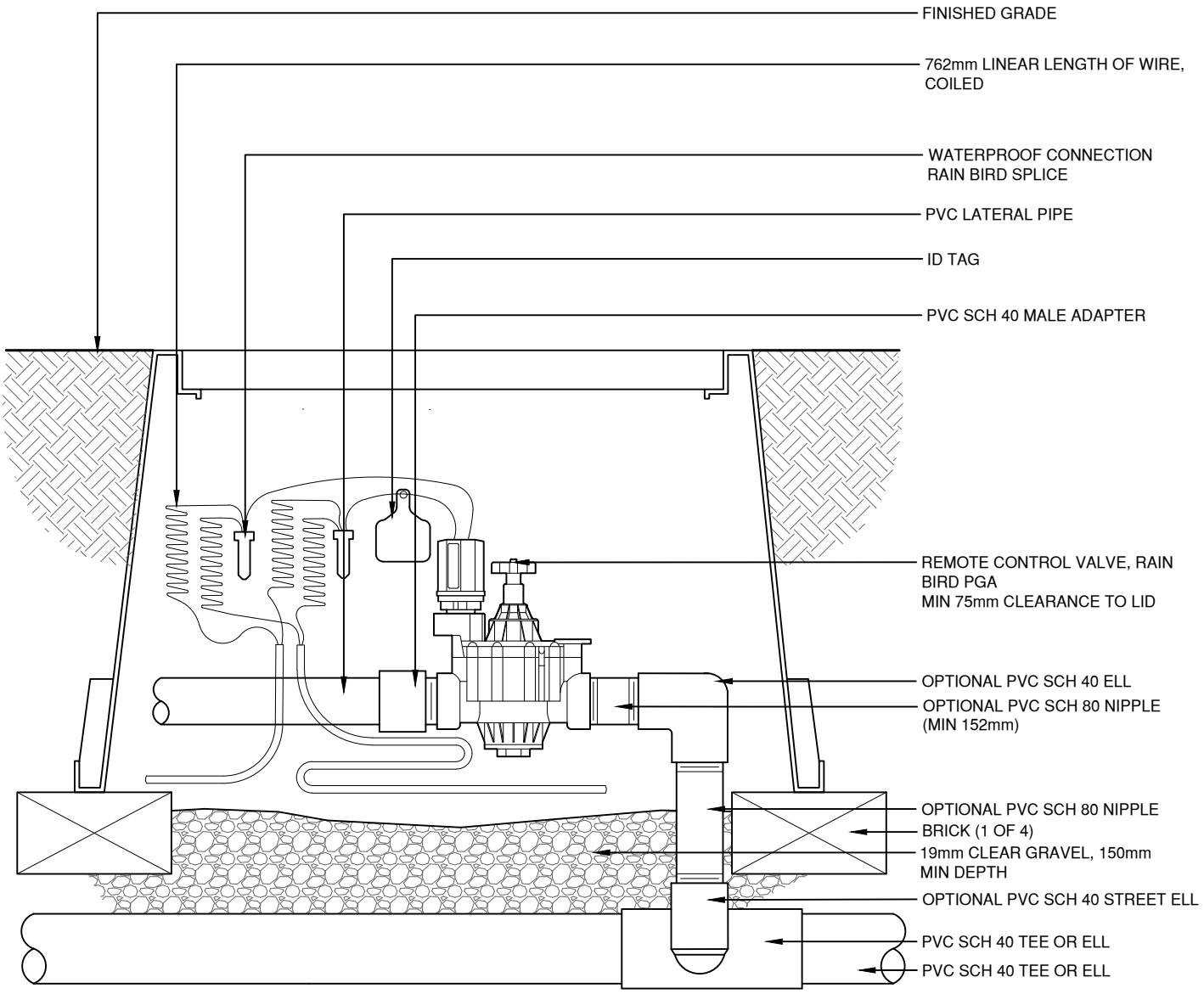
NOTE]:

1. STREET ELBOW SIZE TO INLET OF SPRAY HEAD

POP-UP SPRAY HEAD

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI7

SUPPLEMENTARY STANDARD DETAIL DRAWING



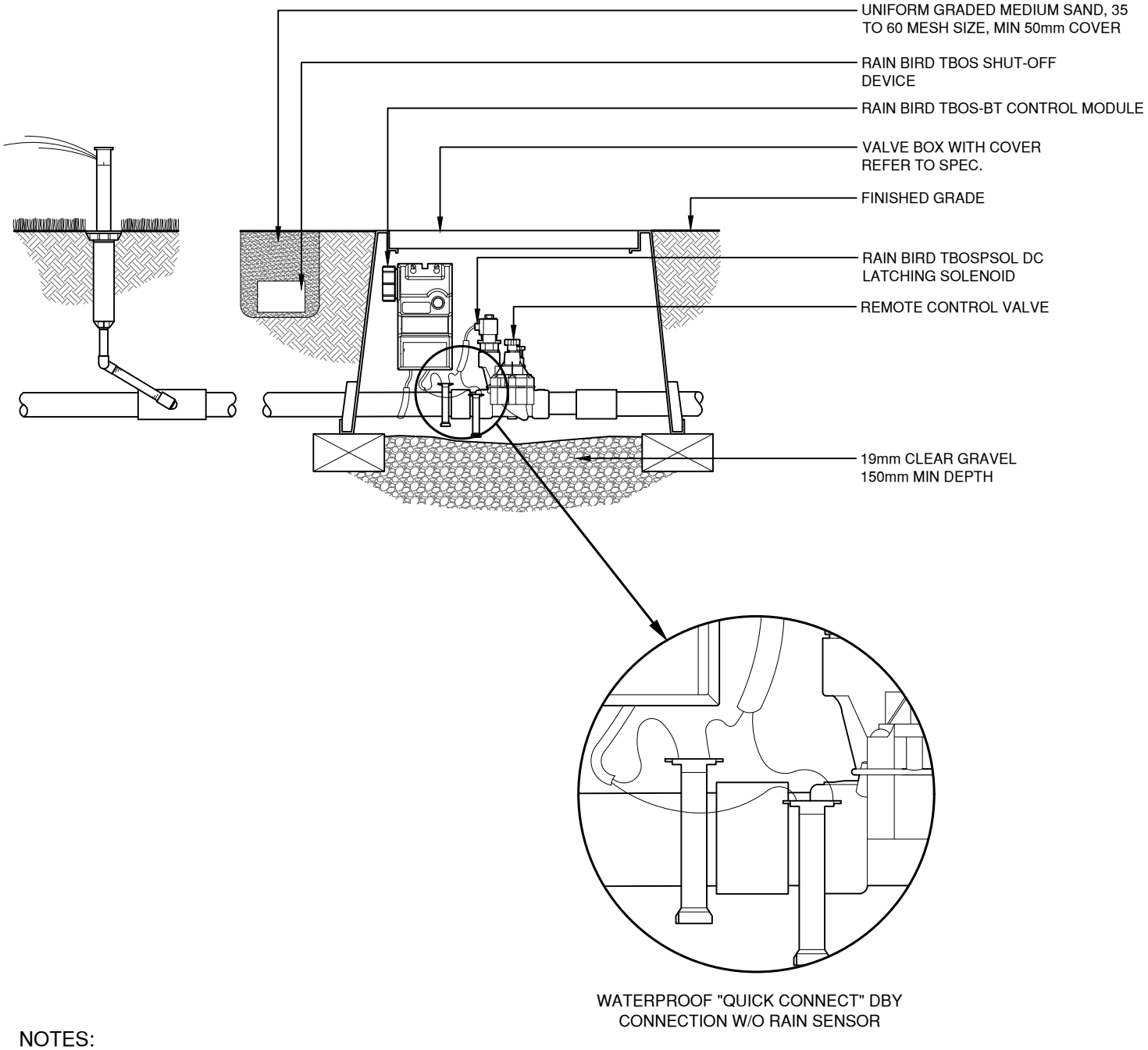
NOTES:

1. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION AND ADJUSTMENT INFO
2. TEFLON TAPE ALL THREADED JOINTS
3. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
4. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION

VALVE - PGA SERIES

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI8

SUPPLEMENTARY STANDARD DETAIL DRAWING



WATERPROOF "QUICK CONNECT" DBY CONNECTION W/O RAIN SENSOR

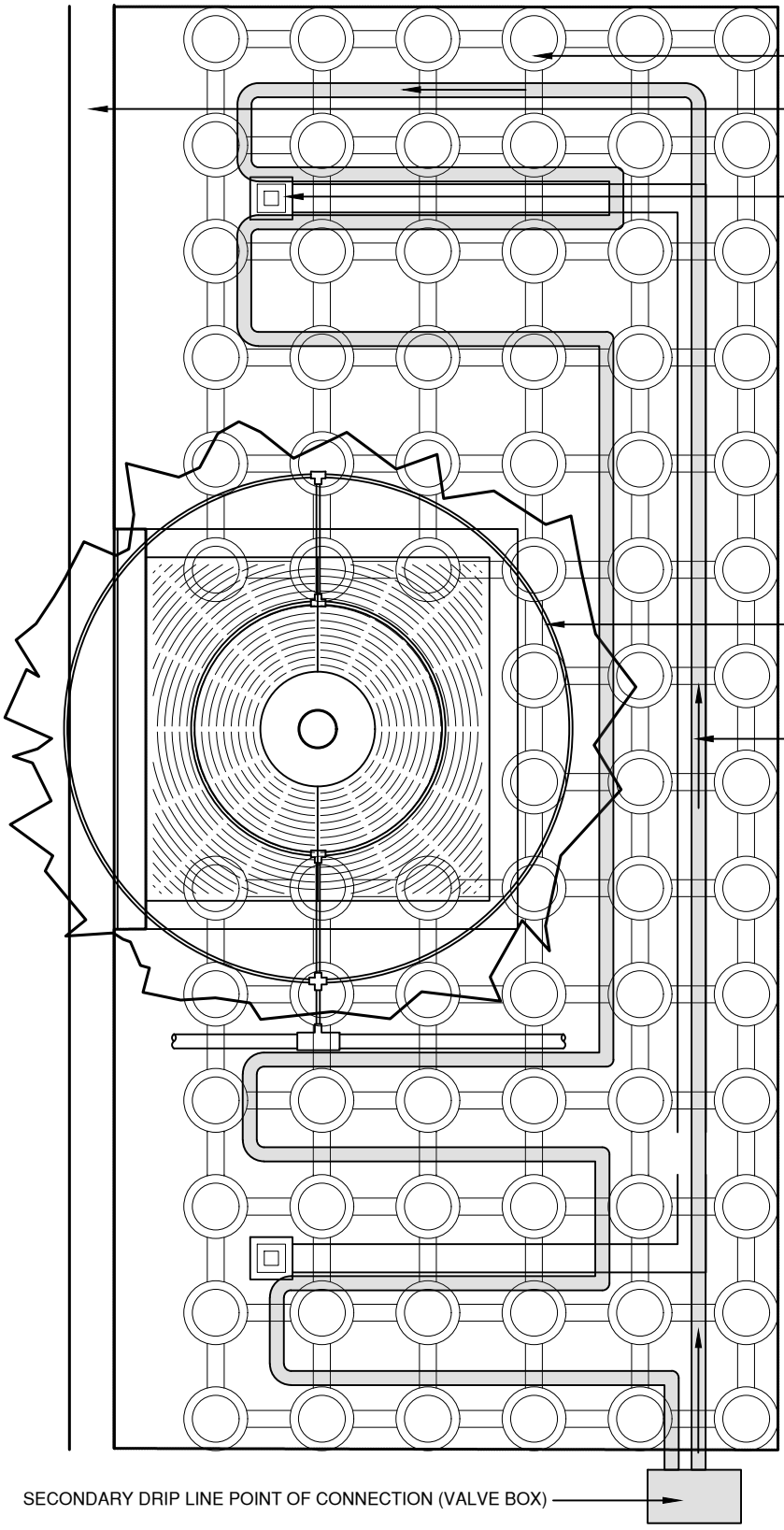
NOTES:

1. REFER TO PRODUCT LITERATURE FOR ADDITIONAL INSTALLATION AND ADJUSTMENT INFO
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
3. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION

TBOS BT BATTERY VALVE

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI9

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. THE PRIMARY IRRIGATION ZONE WILL BE A DRIP RING ASSEMBLY AS IN DETAIL SD P7.5
2. THE SECONDARY DRIP LINE IS TO RUN LONGITUDINALLY OF THE SOIL CELL STRUCTURE WITHIN THE SOIL CELL AREA
3. THE DRIP LINE IS TO HAVE A SEPARATE VALVE BOX, WHERE THE PVC LATERAL CONNECTS TO THE DRIPLINE
4. THE VALVE BOX MUST BE AS FAR FROM THE TRUNK AS POSSIBLE, OUTSIDE OF THE SOIL CELL STRUCTURE
5. THE DRIP TUBE LAYOUT FOR THE SECONDARY SYSTEM MUST PROVIDE A MAXIMUM NUMBER OF DISTRIBUTION ROWS (REFER TO LANDSCAPE ARCHITECT/SOIL CELL MANUFACTURER FOR ACCEPTABLE DISTRIBUTION PIPE LAYOUT)
6. DRIP TUBE TO TERMINATE IN VALVE BOX WITH A FLUSH VALVE AT THE END OF THE LINE
7. FLUSH VALVE PART NUMBER: RAINBIRD ARV050 AIR RELIEF VALVE KIT

IRRIGATING TREES IN SOIL CELLS

Revision Date	Drawing Number
SEPTEMBER 2025	SD PI10

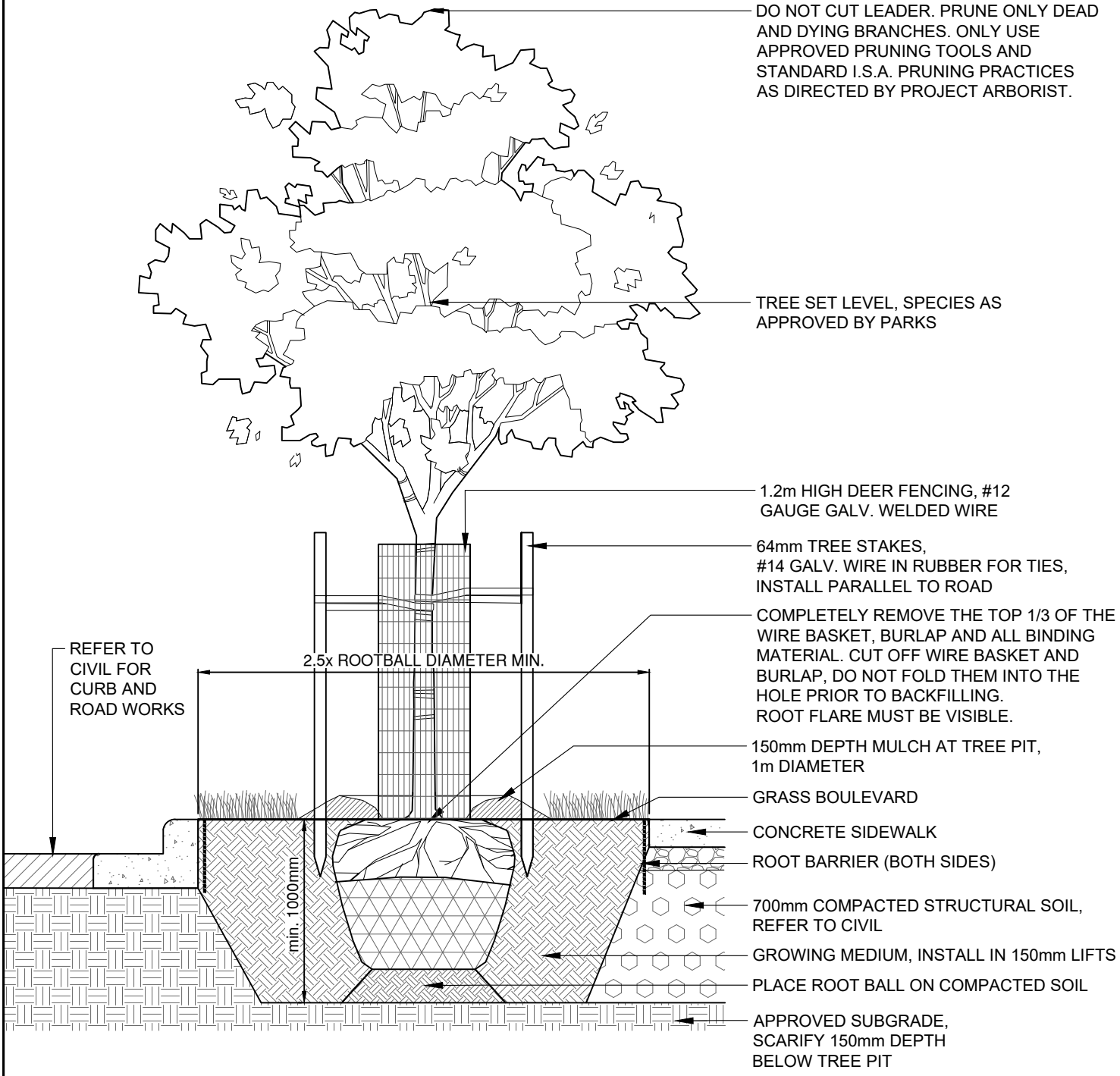
ITEM	MANUFACTURER	APPROVED MODEL	RESTRICTIONS / ADDITIONAL SPECIFICATIONS
IRRIGATION PIPE - LATERALS		SDR 21 200 SERIES PVC	COMPLY WITH CSA B137.3 LATERAL LINES
IRRIGATION PIPE - MAINLINE		SCHEDULE 40 PVC	COMPLY WITH CSA B137.3 PRESSURIZED LINES
SLEEVING		SDR 35 SCHEDULE 40	100mm MINIMUM
GATE VALVE	R&W VALVES	BRASS 206 SERIES	COMPLIANT WITH AB1953 AND NSF/ANSI 61 & 372
BACKFLOW PREVENTION DEVICE	WATTS	MODEL 007QT	
VALVE BOXES		CARSON INDUSTRIES	SOFTSCAPE - GREEN IN COLOUR
VALVE BOXES		NDS	SOFTSCAPE - GREEN IN COLOUR
VALVE BOXES		DFW	HARDSCAPE - GREY IN COLOUR
ELECTRONIC CONTROL VALVE	RAINBIRD	PGA SERIES	LATCHING SOLENOID
AUTOMATIC CONTROLLER - BLUETOOTH BATTERY OPERATED STAND ALONE CONTROLLERS	RAINBIRD	TBOS - BT 9 VOLT ESP - BAT - BT	
IRRIGATION HEADS	RAINBIRD	POPUPS 1800 SERIES	
IRRIGATION HEADS	RAINBIRD	ROTORS - ENCLOSED GEAR SERIES SUITED FOR APPLICATION	
SWING ASSEMBLIES	RAINBIRD	SA SERIES	
TREE DRIP VALVE	RAINBIRD	DRIP KIT XCZLF - 100 - PRF - LOW FLOW	0.2 - 10 GPM
TREE DRIP LINE	NDS / AGRIFIM, RAINBIRD	DURA-FLO PC, XFS - CV	DRIPLINE, AT A MINIMUM, SHOULD HAVE THE FOLLOWING ATTRIBUTES: ROOT BARRIER, PRESSURE REGULATED EMITTERS, CHECK VALVE
QUICK COUPLER	RAINBIRD	#5RC	25mm

APPROVED IRRIGATION MATERIALS LIST

Revision Date
SEPTEMBER 2025

Drawing Number
SD PI11

SUPPLEMENTARY STANDARD DETAIL DRAWING

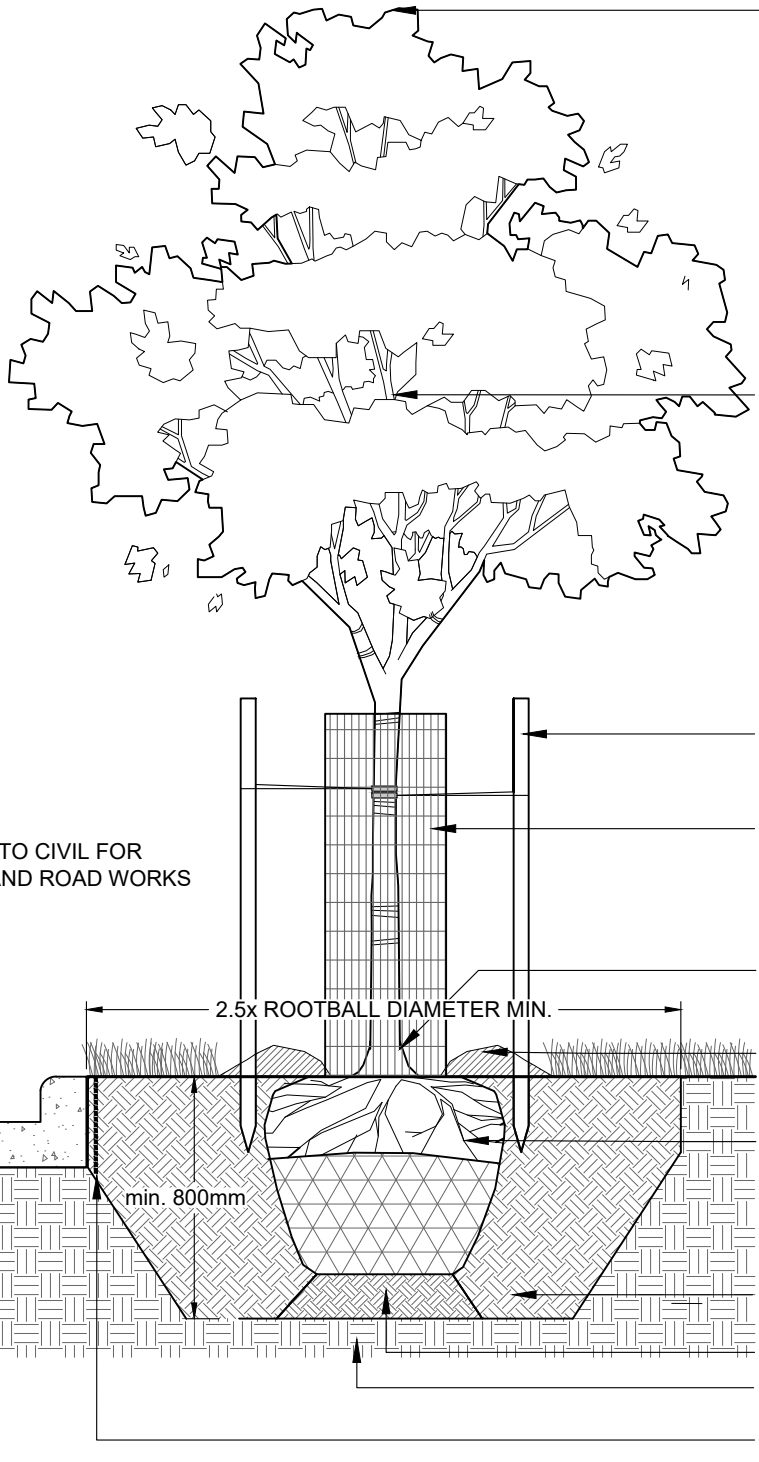


NOTES:

1. EXTENT OF STRUCTURAL SOIL (IN PLAN VIEW) IS TO BE SHOWN ON CIVIL DRAWINGS
2. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
3. PLANTING PIT MUST BE FREE DRAINING
4. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
5. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM

STRUCTURAL SOIL - ADJACENT SOFTSCAPE	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PT1

SUPPLEMENTARY STANDARD DETAIL DRAWING



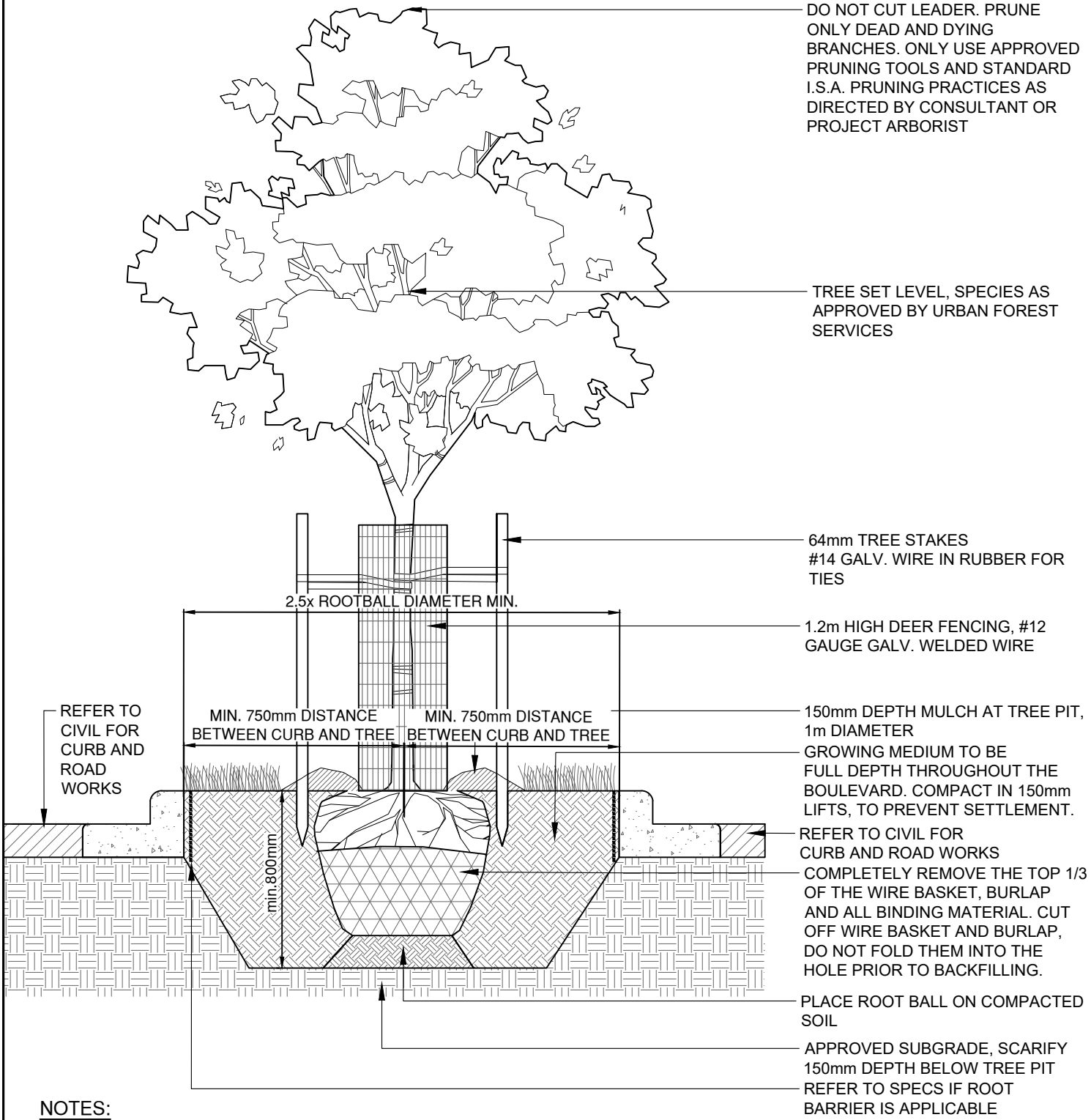
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM

TREE PLANTING - CONTINUOUS SOFTSCAPE

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT2

SUPPLEMENTARY STANDARD DETAIL DRAWING



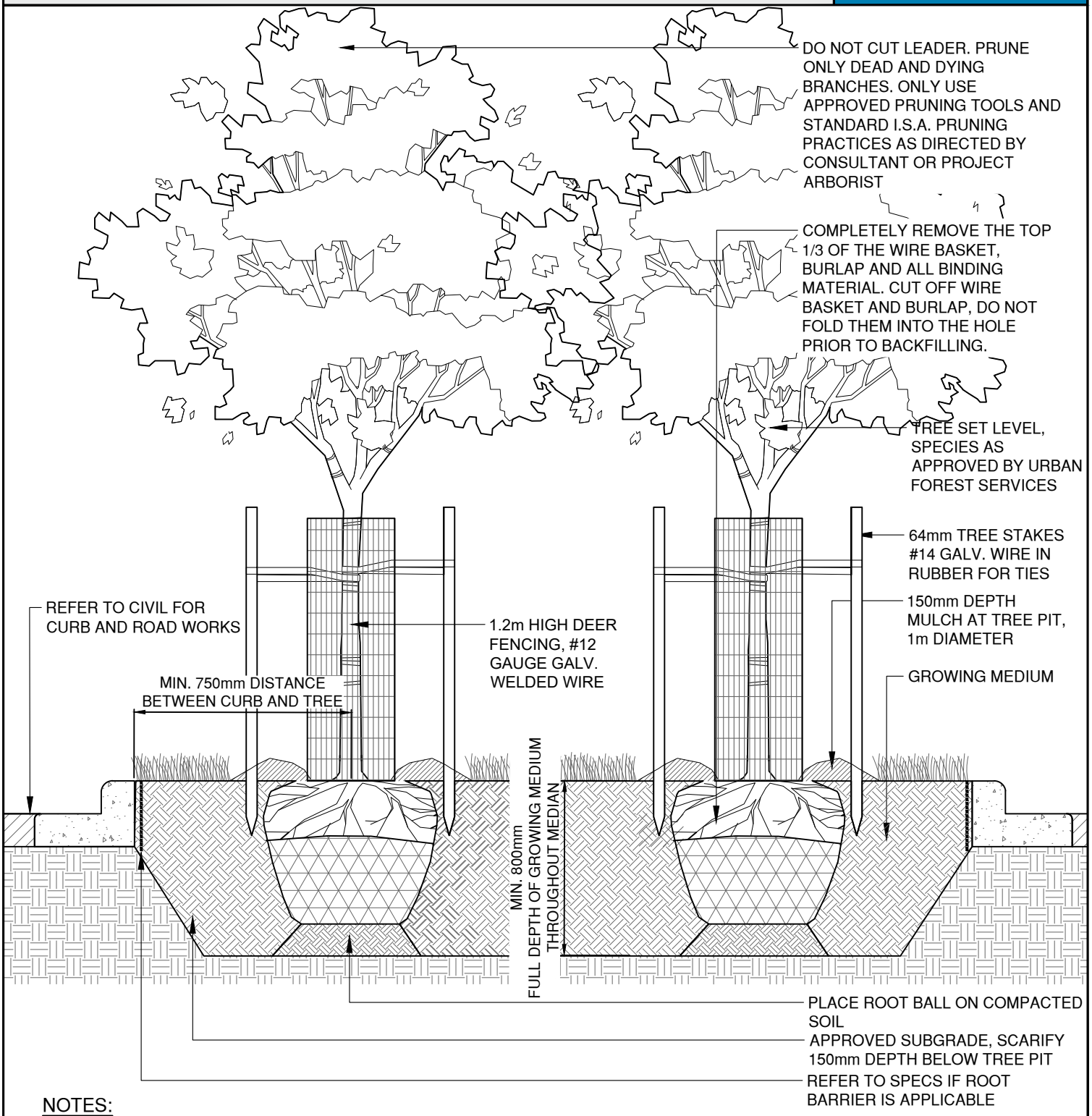
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. SCARIFY BOTTOM OF PLANTING PIT
3. PLANTING PIT MUST BE FREE DRAINING
4. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS

TREE PLANTING IN MEDIAN - SOFTSCAPE

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT3.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



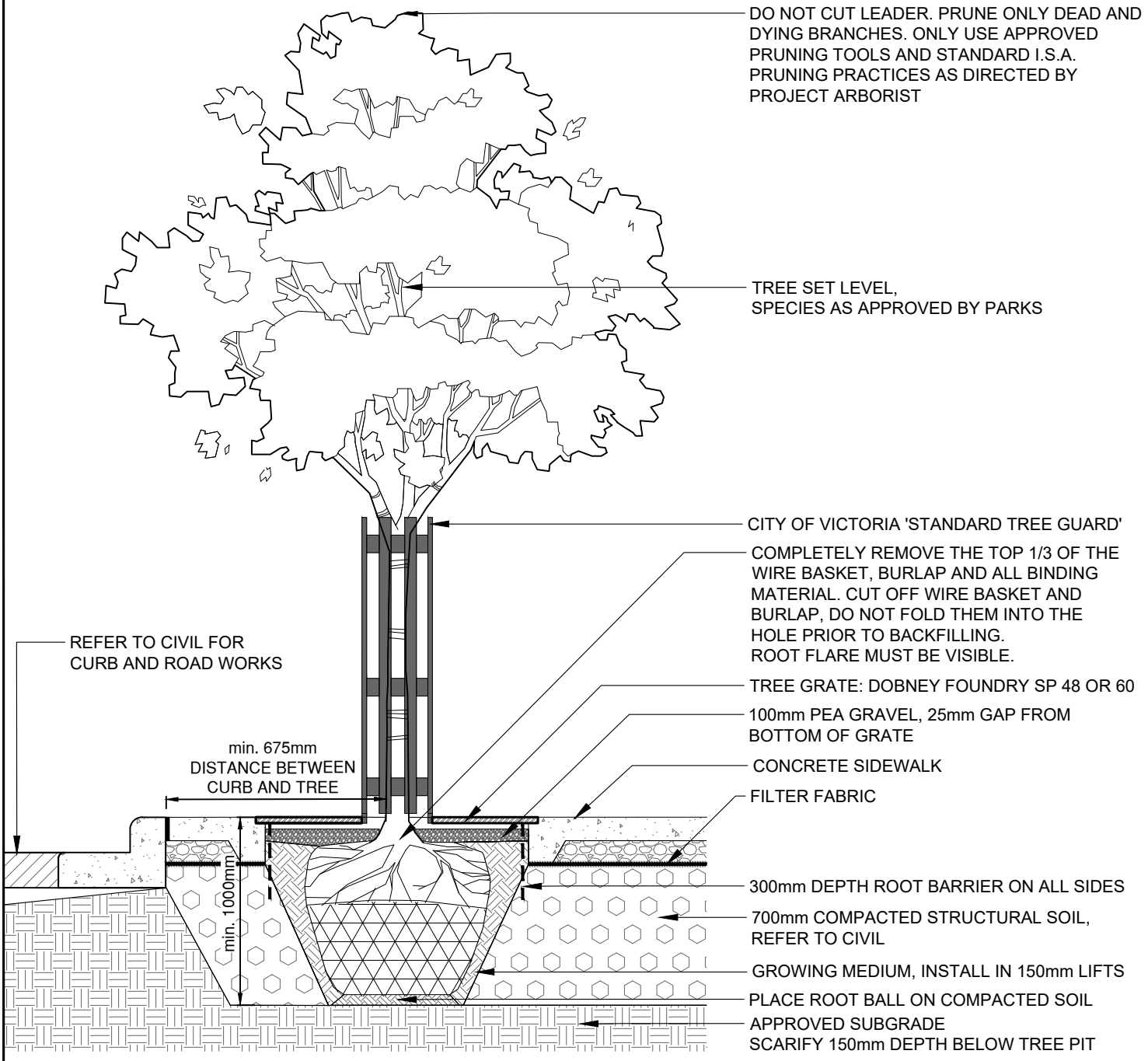
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. SCARIFY BOTTOM OF PLANTING PIT
3. PLANTING PIT MUST BE FREE DRAINING
4. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS

TREE PLANTING IN MEDIAN - LONG SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT3.2

SUPPLEMENTARY STANDARD DETAIL DRAWING

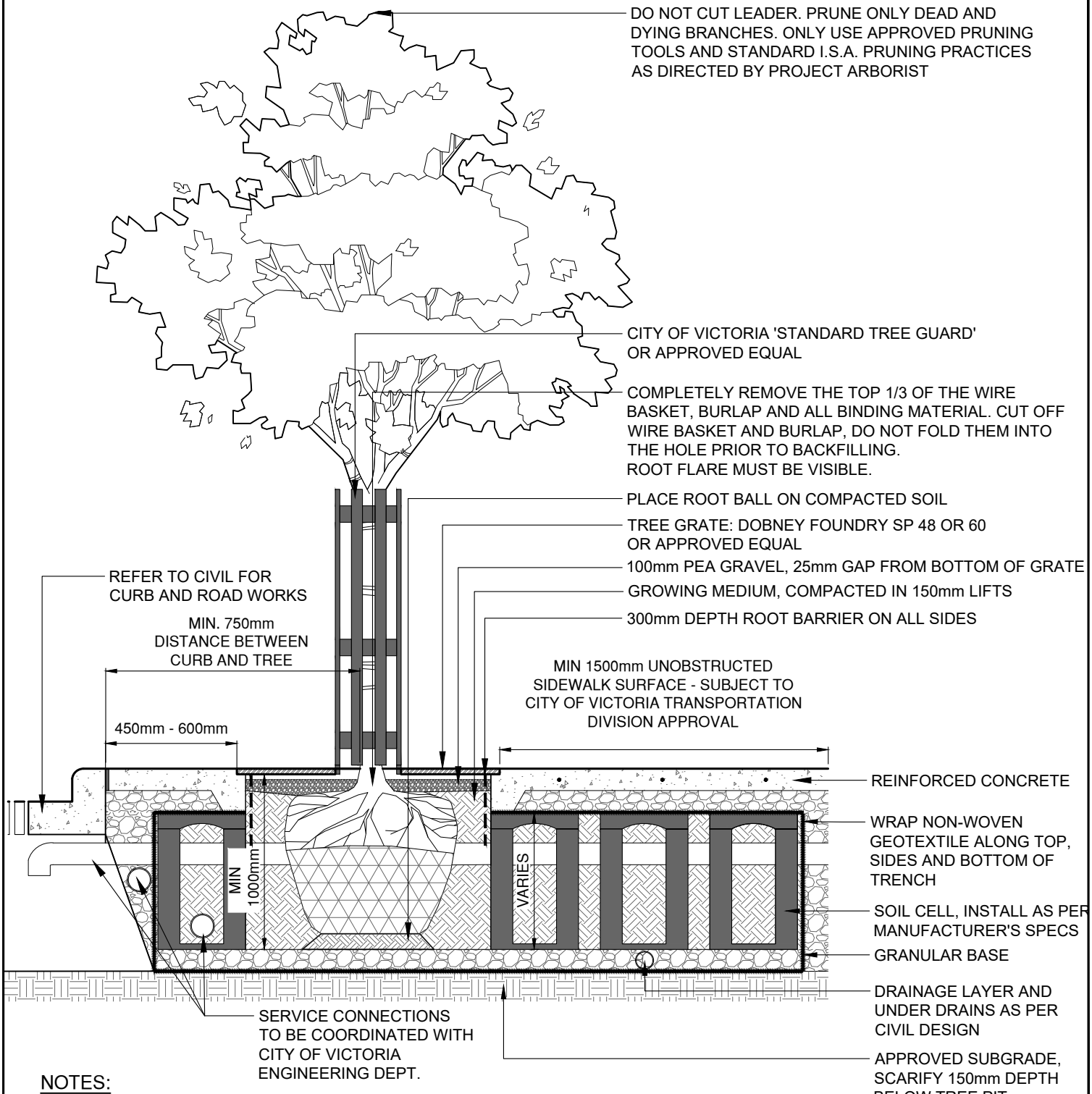


NOTES:

1. EXTENT OF STRUCTURAL SOIL (IN PLAN VIEW) IS TO BE SHOWN ON CIVIL DRAWINGS
2. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
3. PLANTING PIT MUST BE FREE DRAINING
4. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
5. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM

STRUCTURAL SOIL - ADJACENT HARDSCAPE	Revision Date	Drawing Number
	SEPTEMBER 2025	SD PT4

SUPPLEMENTARY STANDARD DETAIL DRAWING



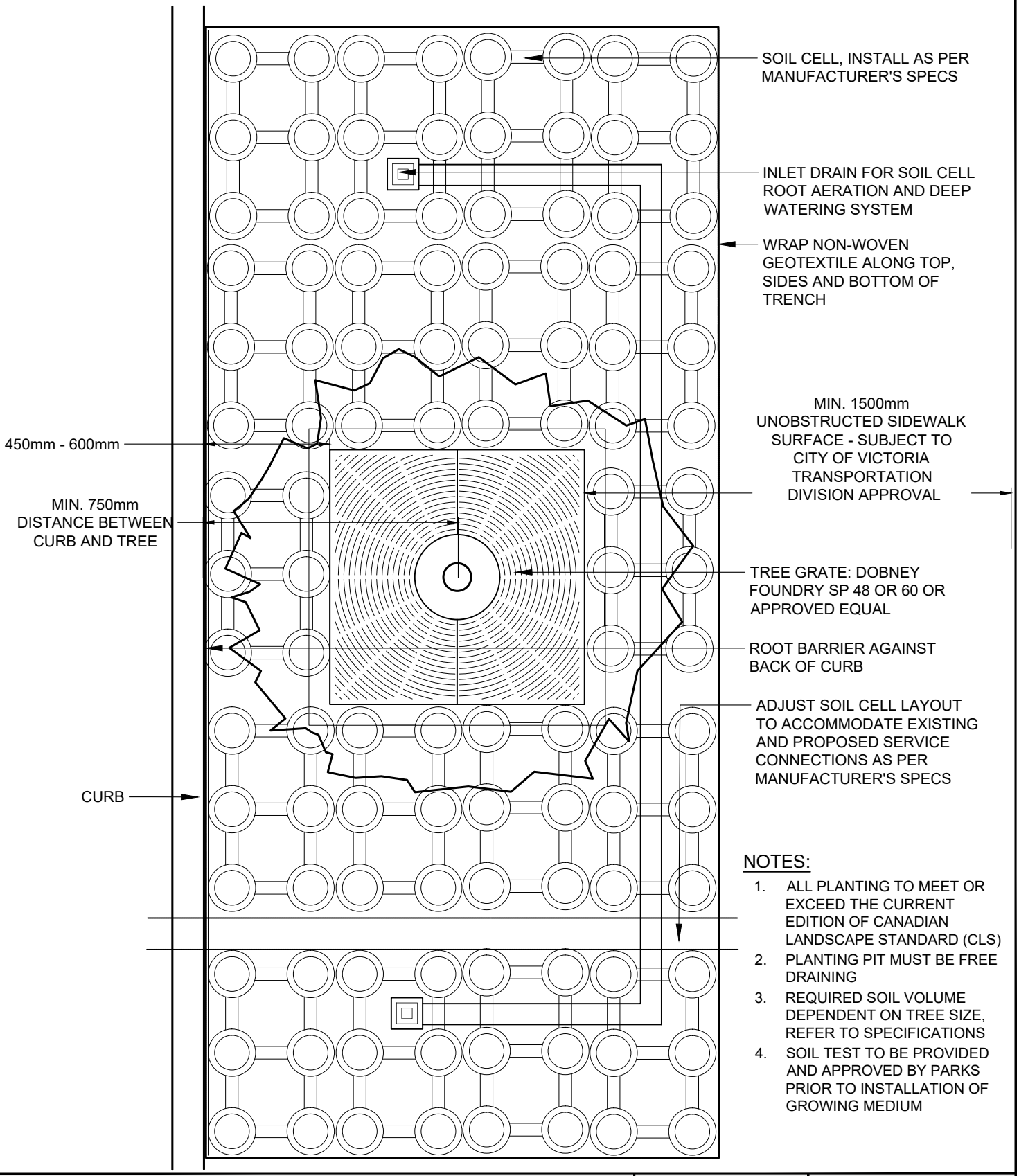
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - CIP CONCRETE AND SOIL CELLS - CROSS SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT5.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



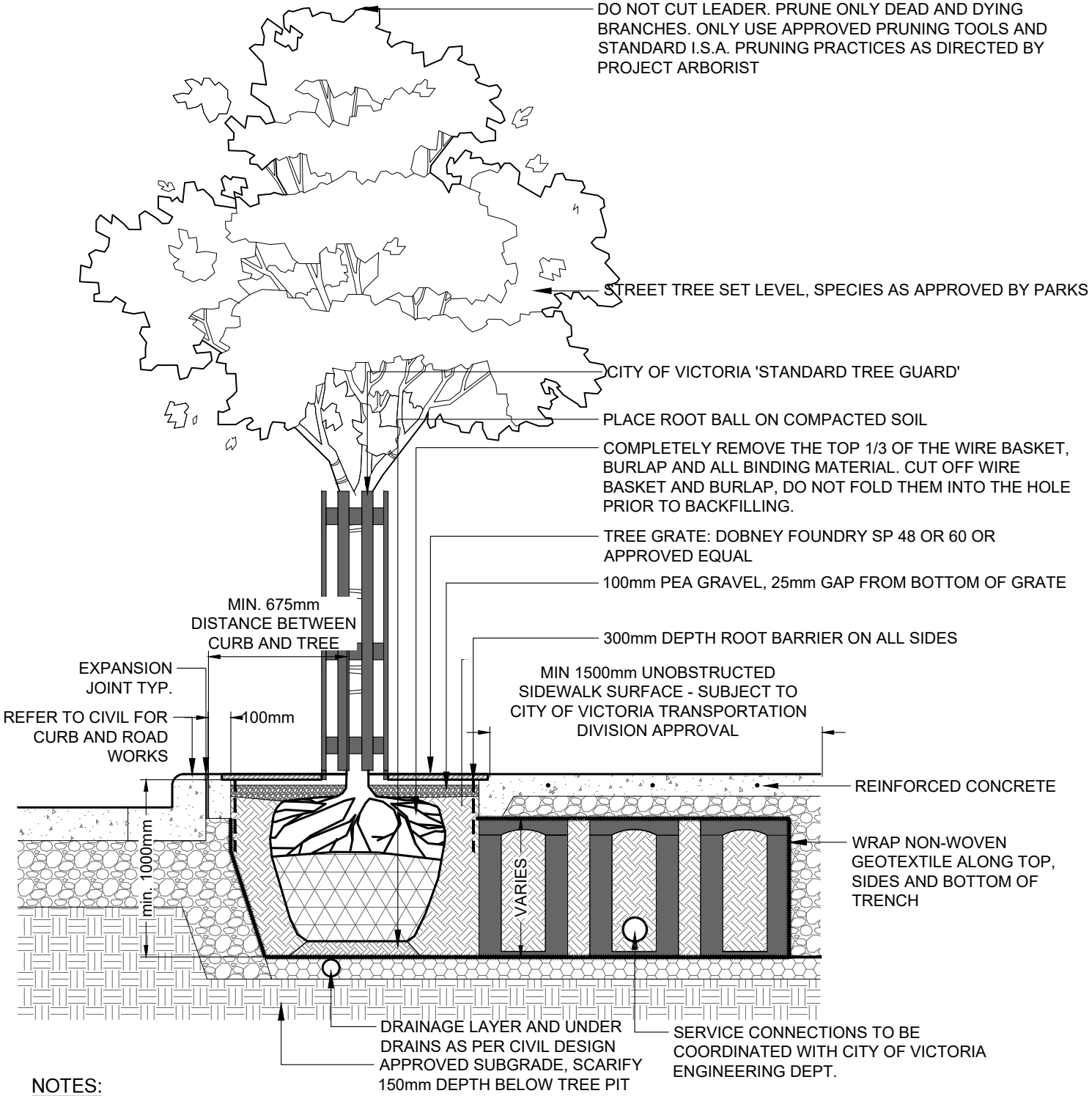
NOTES:

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2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM

TREE PLANTING - CIP CONCRETE AND SOIL CELLS - PLAN VIEW

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT5.2

SUPPLEMENTARY STANDARD DETAIL DRAWING



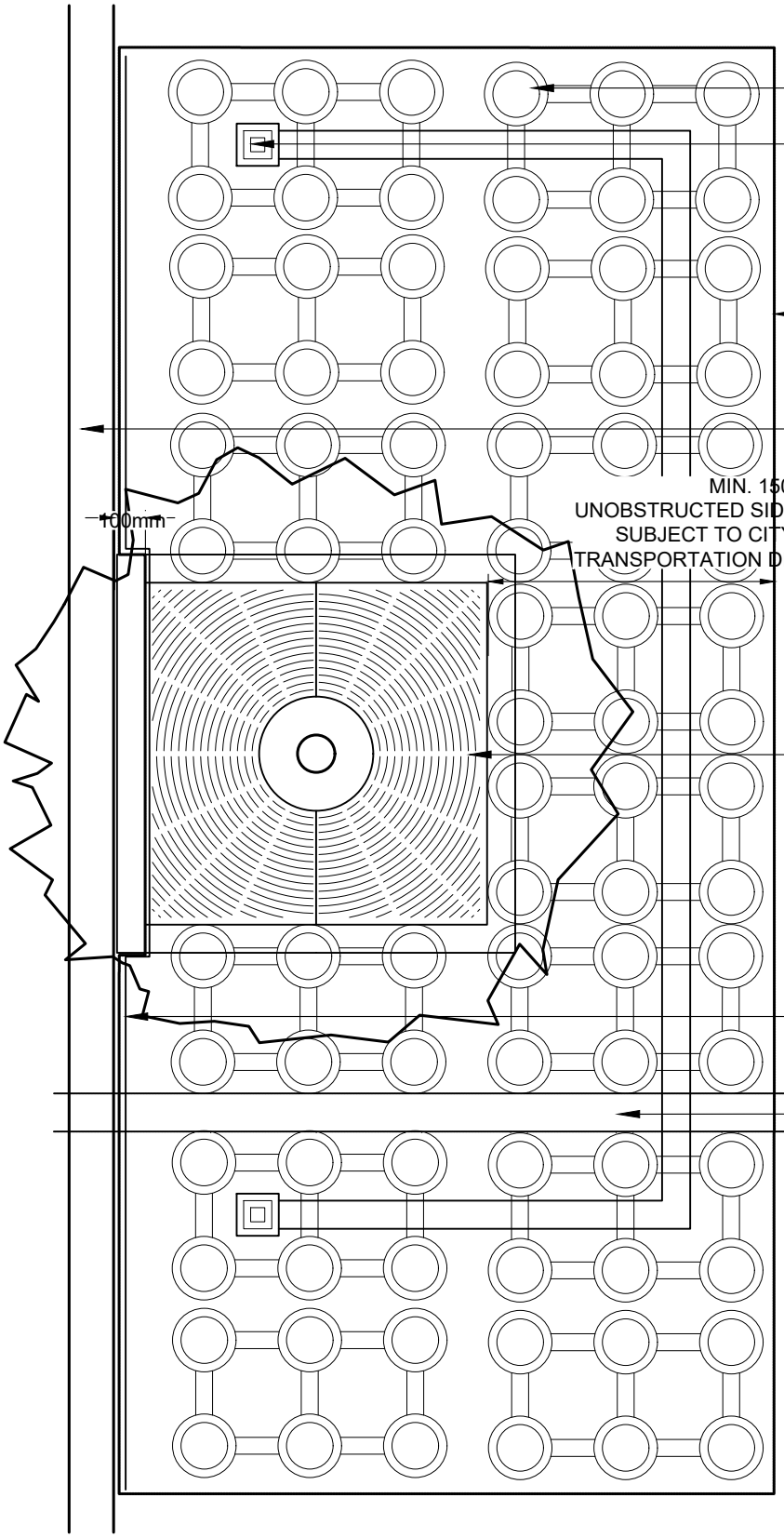
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - CIP CONCRETE AND SOIL CELLS ON ONE SIDE - CROSS SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT6.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



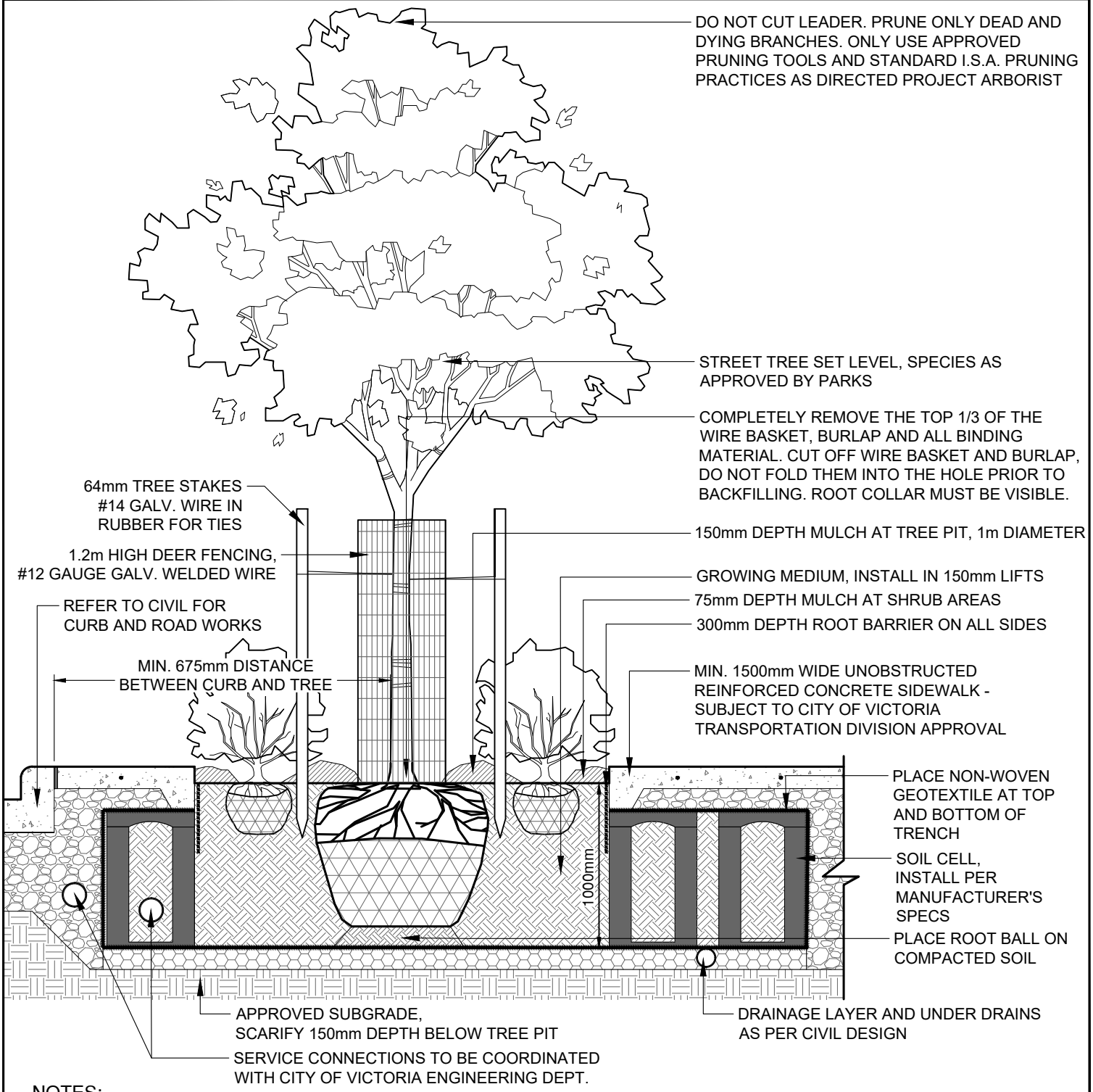
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM

TREE PLANTING - CIP CONCRETE AND SOIL CELLS ON ONE SIDE - PLAN VIEW

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT6.2

SUPPLEMENTARY STANDARD DETAIL DRAWING



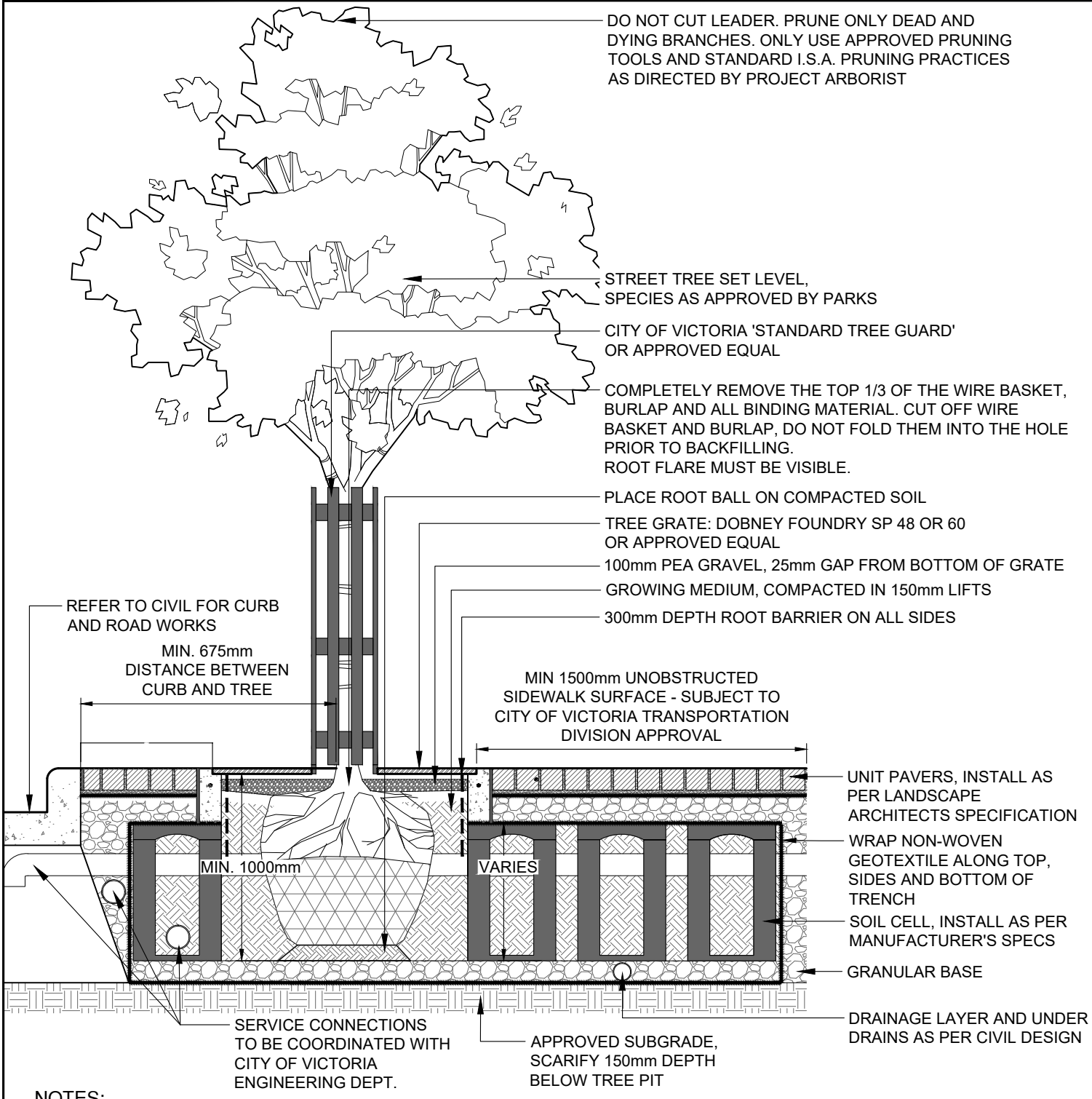
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - PLANTING BED OR GRASS AREA AND SOIL CELLS - CROSS SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT7

SUPPLEMENTARY STANDARD DETAIL DRAWING



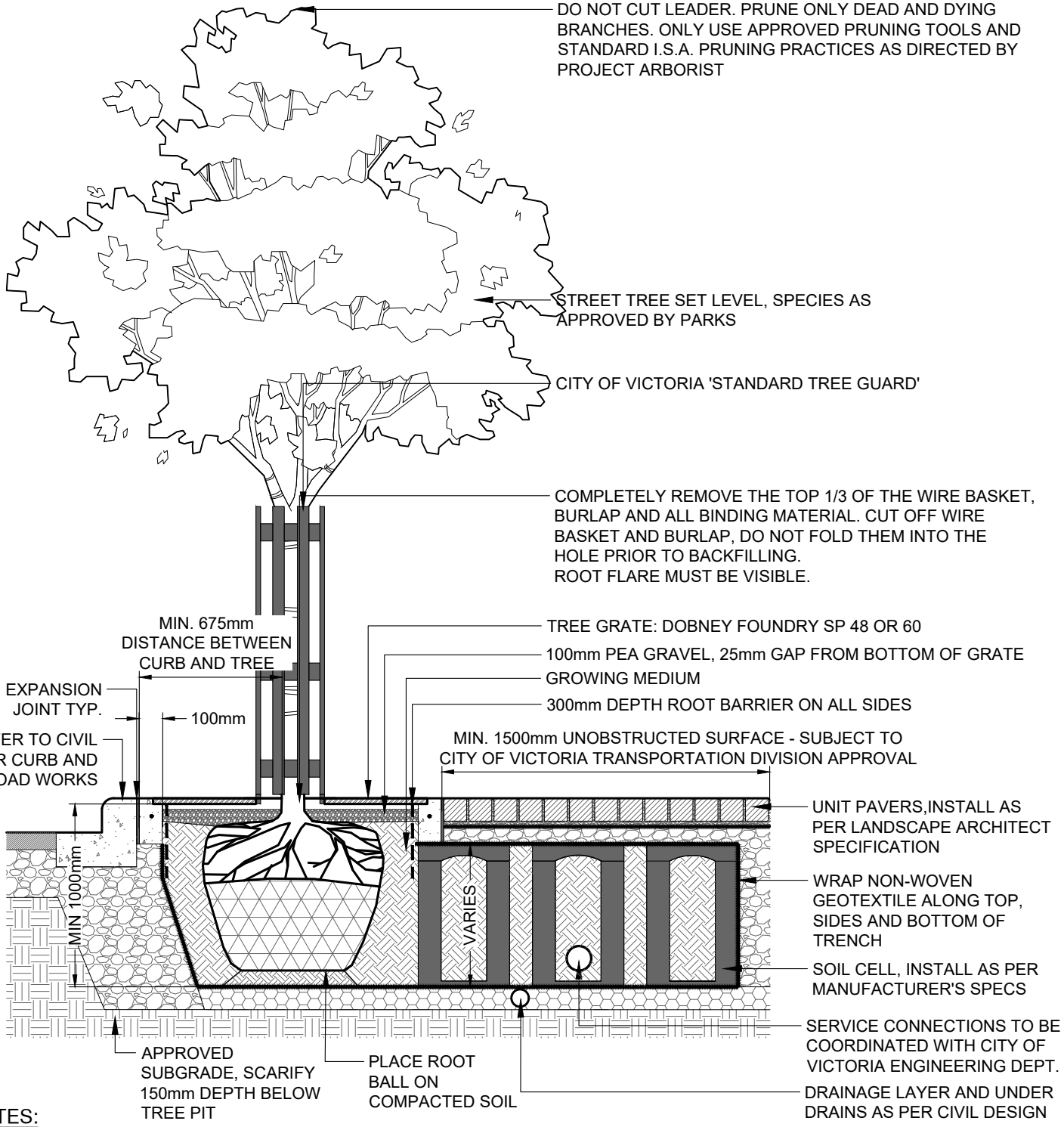
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - UNIT PAVERS AND SOIL CELLS - CROSS SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT8.1

SUPPLEMENTARY STANDARD DETAIL DRAWING



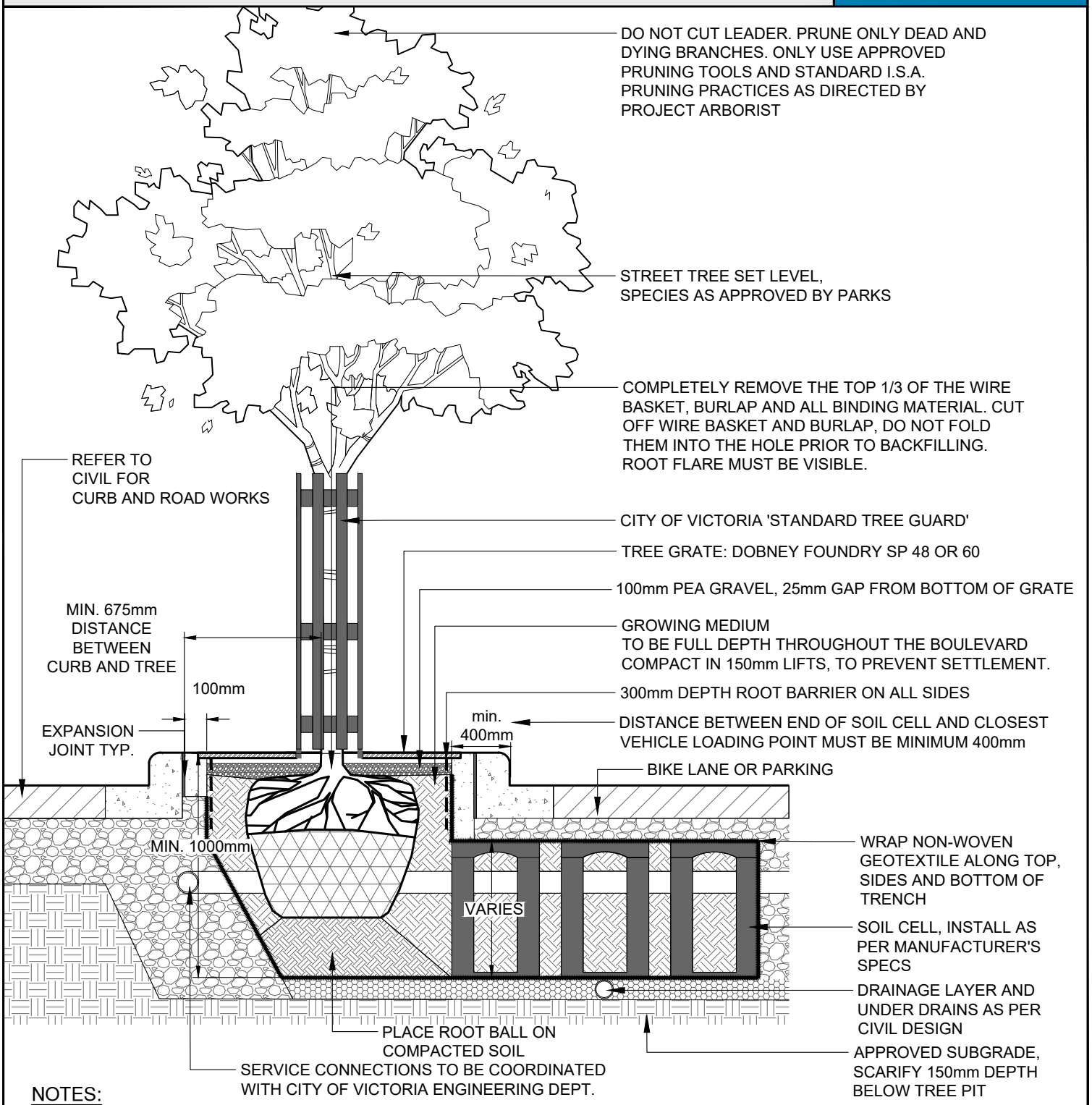
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - UNIT PAVERS AND SOIL CELLS ON ONE SIDE - CROSS SECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT8.2

SUPPLEMENTARY STANDARD DETAIL DRAWING



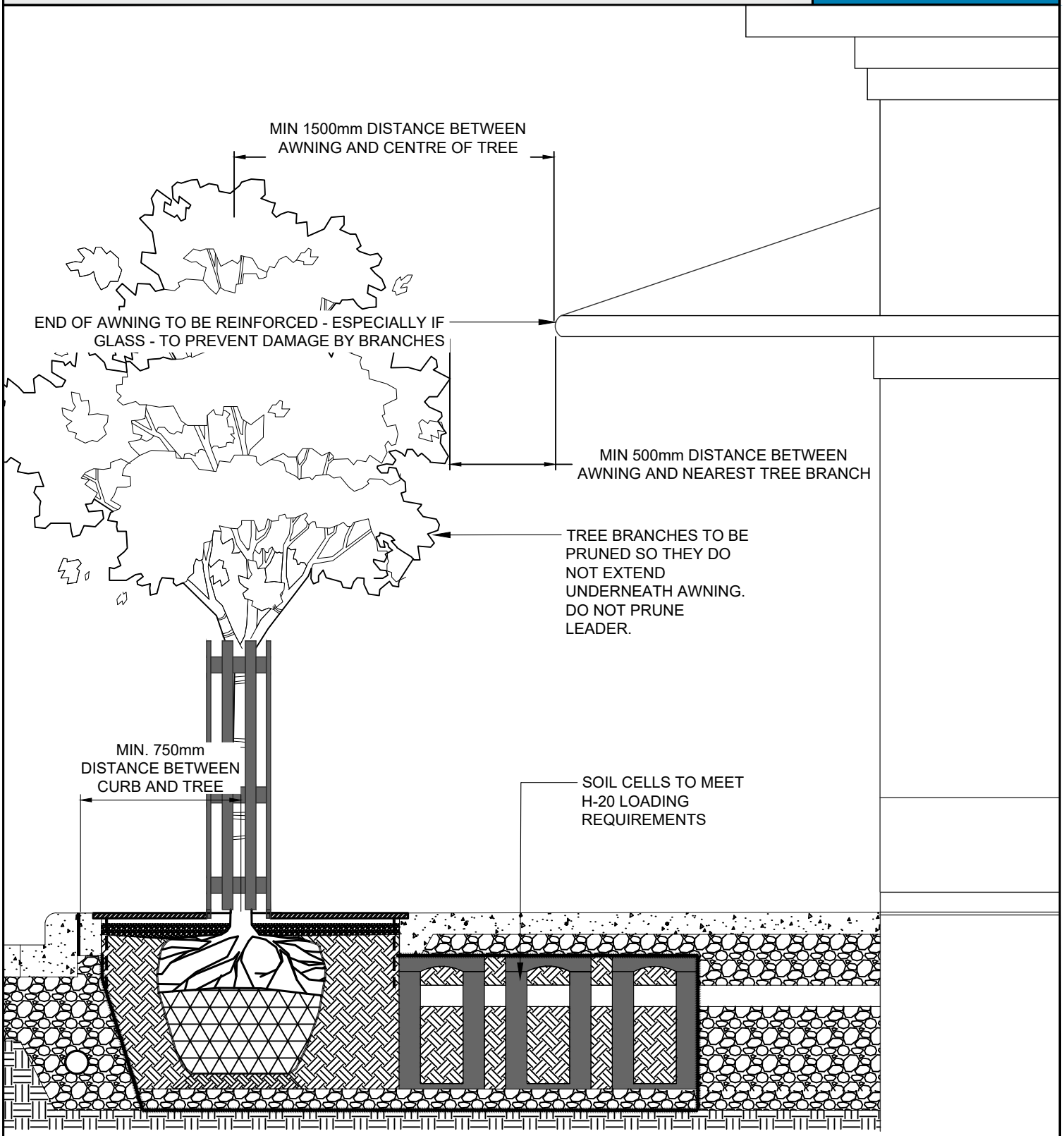
NOTES:

1. ALL PLANTING TO MEET OR EXCEED THE CURRENT EDITION OF CANADIAN LANDSCAPE STANDARD (CLS)
2. PLANTING PIT MUST BE FREE DRAINING
3. REQUIRED SOIL VOLUME DEPENDENT ON TREE SIZE, REFER TO SPECIFICATIONS
4. SOIL TEST TO BE PROVIDED AND APPROVED BY PARKS PRIOR TO INSTALLATION OF GROWING MEDIUM
5. SOIL CELLS TO MEET H-20 LOADING REQUIREMENTS

TREE PLANTING - SOIL CELLS UNDER PARKING STALL OR BIKE LANE

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT9

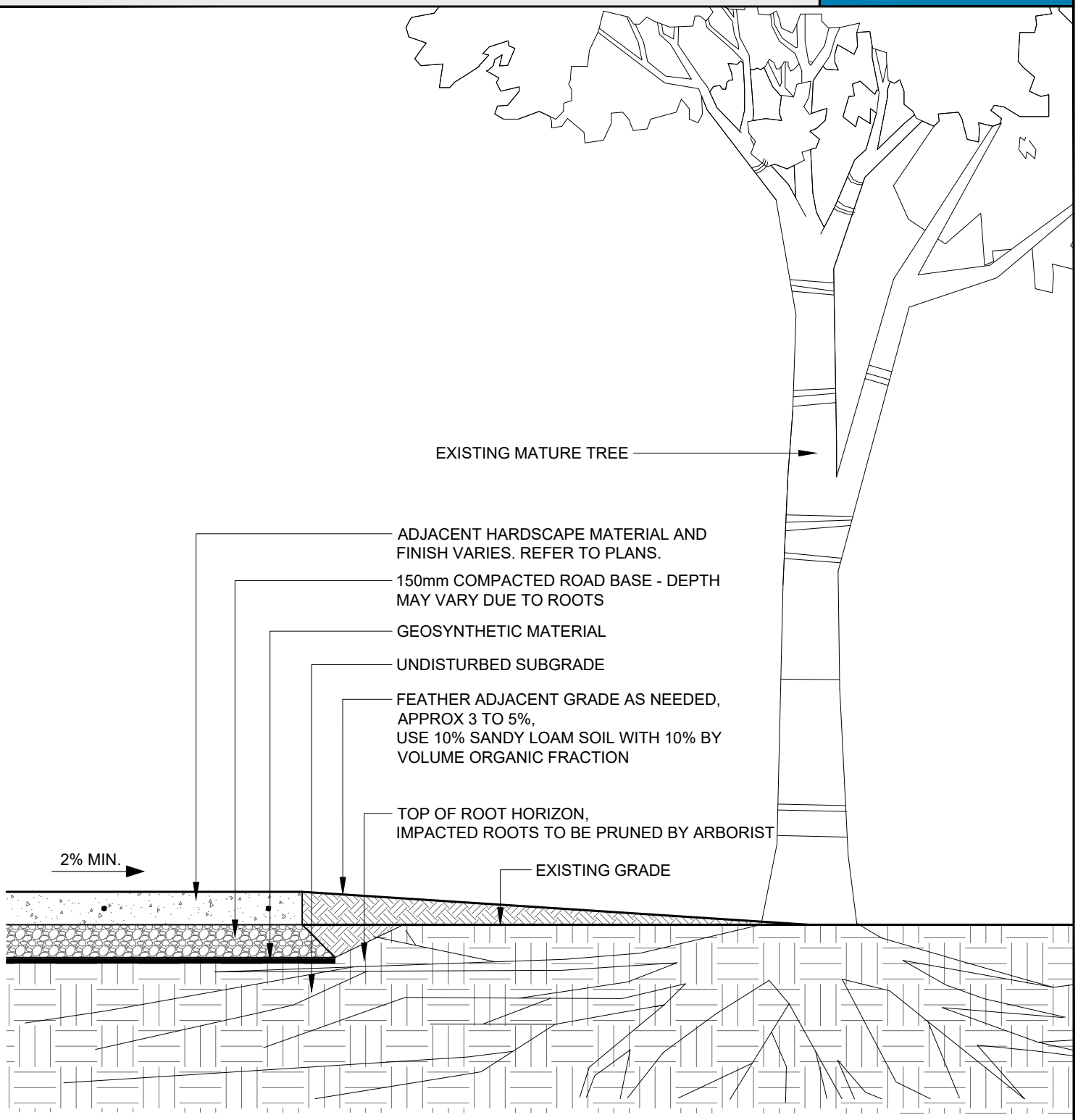
SUPPLEMENTARY STANDARD DETAIL DRAWING



TREE PLANTING AND PROJECTION SETBACKS - AWNINGS

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT10

SUPPLEMENTARY STANDARD DETAIL DRAWING



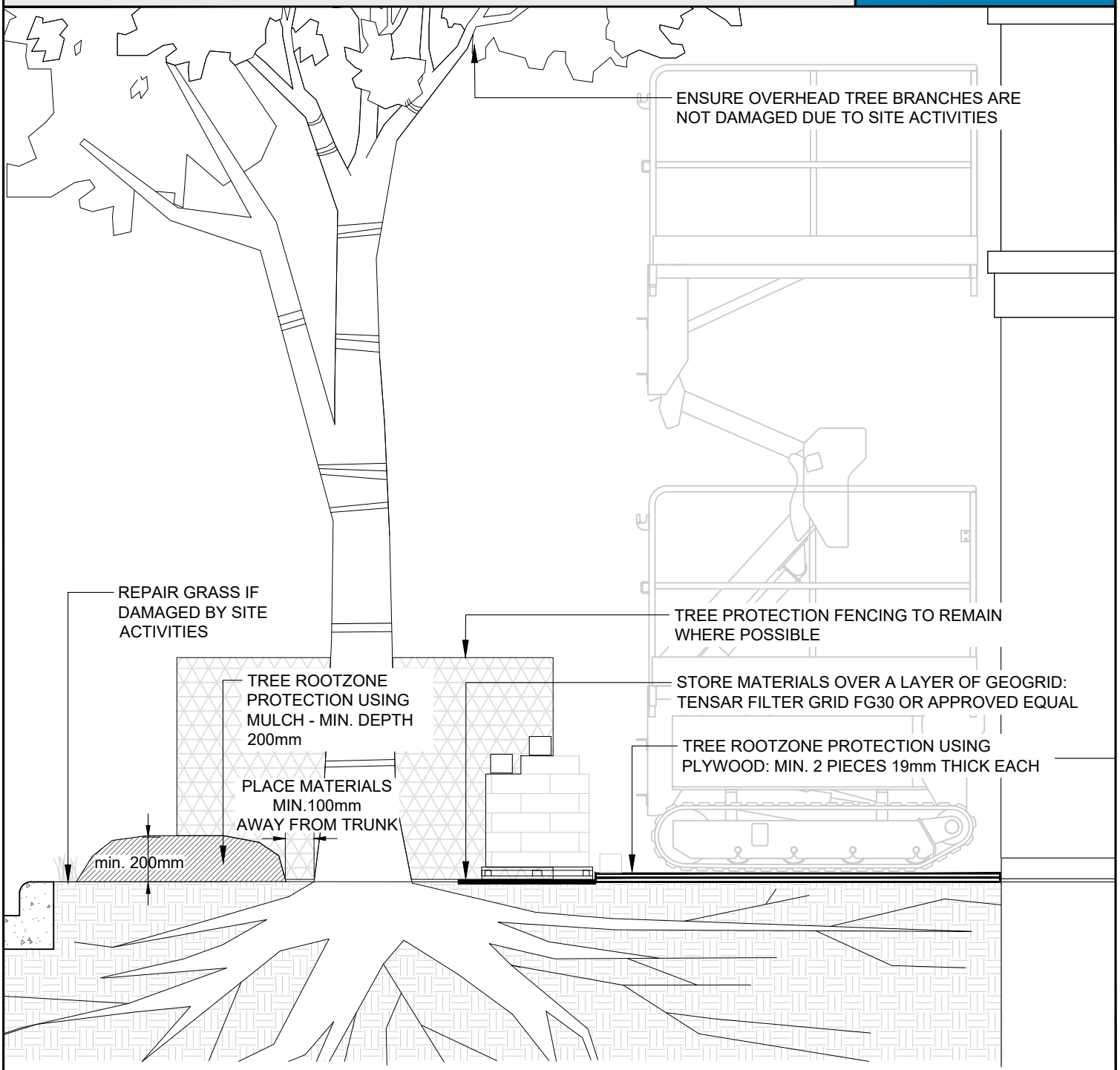
NOTES:

1. PROJECT ARBORIST MUST BE IN ATTENDANCE BEFORE COMMENCING ANY GRADING ACTIVITY WITHIN ROOT PROTECTION ZONE
2. MODIFY EXCAVATION TECHNIQUES AS DIRECTED BY PROJECT ARBORIST WHERE REQUIRED (AIR SPADE OR HYDRO-VAC)

FLOATING HARDSCAPE OVER TREE ROOTS

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT11

SUPPLEMENTARY STANDARD DETAIL DRAWING



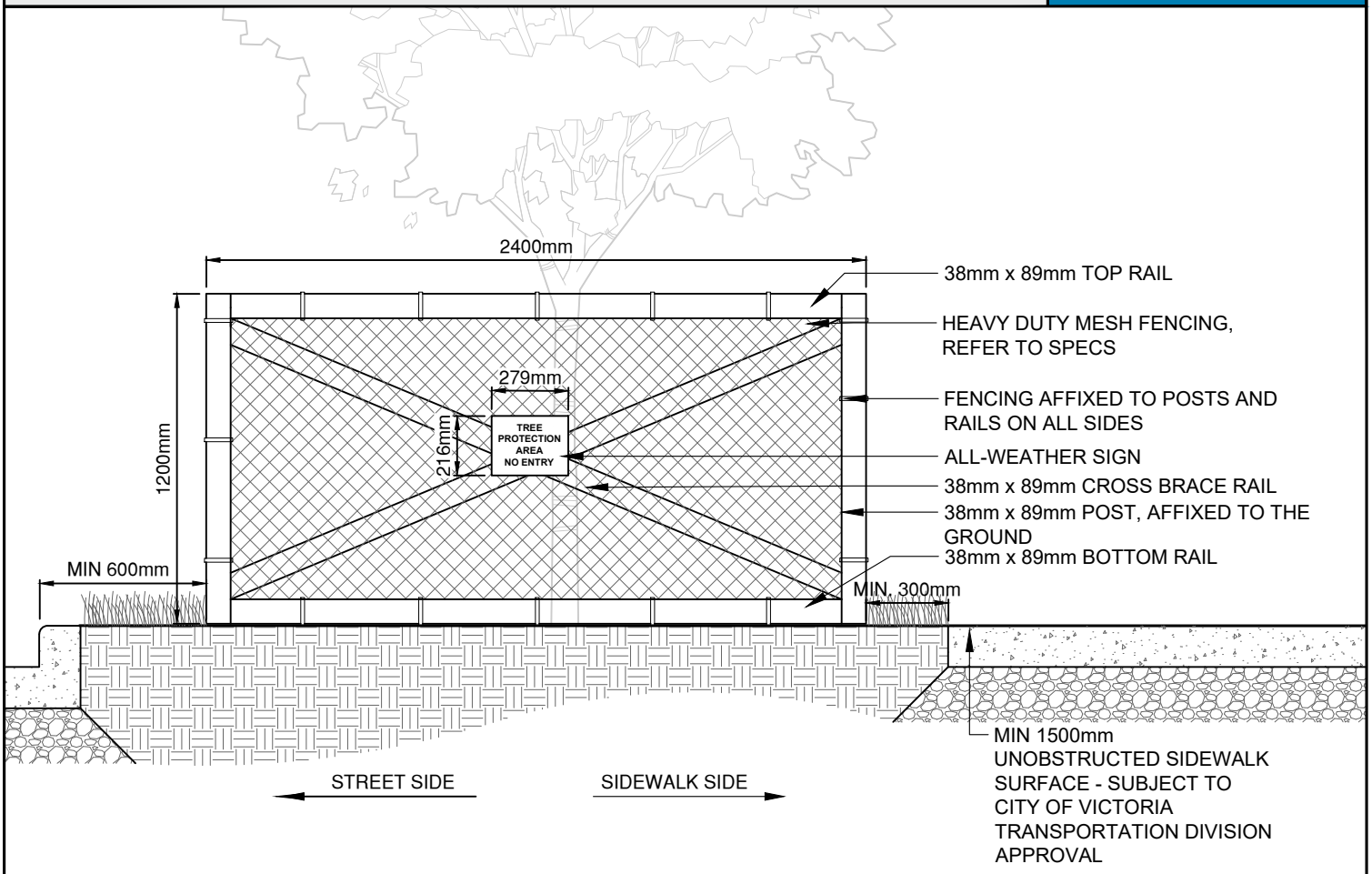
NOTES:

1. FOLLOW THIS DETAIL TO MINIMIZE SOIL COMPACTION WITHIN THE ROOTZONE OF A TREE WHEN ACCESS IS REQUIRED TO THAT AREA. EXAMPLES WHERE ACCESS IS NECESSARY INCLUDE UTILITY INSPECTIONS AND UNLOADING MATERIALS FOR CONSTRUCTION WHEN NO OTHER ACCESS POINTS ARE AN OPTION.
2. MATERIAL TO USE TO PROTECT THE ROOTZONE (MULCH OR PLYWOOD) VARIES DEPENDING ON THE WEIGHT LOAD
3. STORING MATERIALS IN THE BOULEVARD IS DISCOURAGED. IF TEMPORARY STORAGE IS NECESSARY, USE GEOSYNTHETIC MATERIAL AS THE PROTECTIVE MATERIAL.
4. SUPPLEMENTAL WATERING AND TREE MAINTENANCE MAY BE REQUIRED; REFER TO SPECIFICATIONS

BOULEVARD ROOT PROTECTION

Revision Date	Drawing Number
SEPTEMBER 2025	SD PT12

SUPPLEMENTARY STANDARD DETAIL DRAWING



NOTES:

1. ALTERNATIVE CONSTRUCTION MUST BE PRE-APPROVED BY PARKS
2. FENCING MUST BE FIXED TO THE GROUND
3. FENCE TO BE CONSTRUCTED USING 38mm x 89mm WOOD FRAME AND HEAVY DUTY CONSTRUCTION FENCING SECURED BY GALVANIZED STAPLES OR ZIP TIES
4. TREE PROTECTION FENCING TO BE INSTALLED PRIOR TO ANY LAND DISTURBANCE ON SITE
5. NO STORAGE OF SOIL, BUILDING MATERIALS WITHIN OR AGAINST FENCING
6. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE CITY OF VICTORIA ARBORIST
7. SIGN TO BE AFFIXED ON EVERY FENCE OR MIN. ONCE PER 10 LINEAR METERS
8. FENCE TO BE MINIMUM 300mm FROM ADJACENT SIDEWALK
9. FENCE TO BE MINIMUM 600mm FROM EDGE OF CURB
10. FENCE TO BE MONITORED WEEKLY AND MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION. ANY UNSECURED FENCING MUST BE REPAIRED IMMEDIATELY BY THE PERMIT HOLDER UNTIL ALL WORK IS COMPLETE (INCLUDING LANDSCAPING). REMOVAL AND DISPOSAL OF THE FENCING MATERIALS TO BE DONE BY THE PERMIT HOLDER.

FENCE DISTANCING REQUIREMENTS:

FENCE DISTANCE TO TREE TRUNK TO BE MINIMUM 12x DIAMETER AT BREAST HEIGHT (MEASURED 1.4m FROM GRADE) UNLESS OTHERWISE SPECIFIED BY A CERTIFIED ARBORIST AND APPROVED BY CITY OF VICTORIA PARKS.

TREE PROTECTION DISTANCE TABLE	
TRUNK DIAMETER	MINIMUM DISTANCE FROM TRUNK
CM	METERS
<15	2.0
20	2.4
30	3.6
40	4.8
50	6.0
60	7.2
70	8.4
80	9.6
90	10.8
100	12.0

TREE PROTECTION FENCING

Revision Date
SEPTEMBER 2025

Drawing Number
SD PT13.1

TREE PROTECTION AREA NO ENTRY

SD PT13.2


CITY OF
VICTORIA

Works and Services Bylaw

Schedule B

Limited Exemptions for Development

1. For the purposes of the Table on the following page of this Schedule:

   (a) The following words have the meaning ascribed in the Zoning Regulation Bylaw: “dwelling unit”; “garden suite”; “house conversion”; and “secondary suite”; and

   (b) “primary dwelling unit” does not include a garden suite, secondary suite, or a dwelling unit within a house conversion.

SCHEDULE B: LIMITED EXEMPTIONS FOR DEVELOPMENT

Column A		Column B												
		Underground City Services				Stormwater		Street Trees & Boulevard						
Application Type	Circumstances/Uses	Sanitary	Water	Storm Drain	Fire Underwriters Survey Submission	Meet Onsite Rainwater Management Requirement	Green Stormwater Infrastructure within the Right-of-way	Street Trees (in Boulevard or within tree grates)	Grass	Irrigation	Frontage Works [4,5]	Paving to Centerline	Street Furnishing [6] and/or Pedestrian Lighting [5]	Transit Shelter [7]
Subdivision	**Strata Title Conversion Residential / Commercial**	✓ [8]	✓	✓ [9]										
Building Permit [1]	**Minor Building Permit [2]**													
	Interior Renovation [3]													
	New Secondary Suite													
	House Conversion													
	Garden Suite	✓ [8]	✓	✓ [9]		✓ [10]								
	Residential creating 1-3 **new primary dwelling units**	✓ [8]	✓	✓ [9]				✓	✓	✓	✓			
	Residential creating 4-12 **new primary dwelling units**	✓	✓	✓ [9]	✓	✓ [10]	✓ [11]	✓	✓	✓	✓	✓		
	Residential creating 13 + **new primary dwelling units**	✓	✓	✓ [9]	✓	✓ [10]	✓ [11]	✓	✓	✓	✓	✓	✓	✓

Notes:	**A checkmark in Column B indicates the works are required, subject to the additional notations. No checkmark indicates the works are not required.**
1	Where development impacts existing city infrastructure, repair is the responsibility of the Developer. All works and servicing is to be replaced to and meet bylaw standards. - Retaining walls that are adjacent to municipal assets, or lands as otherwise defined in the Works and Services Bylaw will require submissions as noted in the Works and Services Bylaw, Schedule A
2	Limited to accessory non-occupied buildings of 10 sqm or less in area, deck, patios, retaining walls.
3	Limited to renovations where there is no increase in density.
4	Frontage works referes to transportation and electrical works unless otherwise noted in this table. - Dedicated cycling infrastructure is only required on cycling routes. - Where development fronts bus stop, a passenger boarding/alighting area is required to accomodate transit shelter.
5	Lighting works may be limited to electrical conduit and junction boxes only, where additional lighting is not required. See Schedule A for public realm areas.
6	Street furnishing includes waste recepticals, bike racks and bike parking, benches and chairs.
7	Transit shelter and associated infrastructure required when a development fronts a BC Transit stop on the transit priority network.
8	An application for Testing existing service connections may occur as per the Sanitary Sewer and Stormwater Utilities Bylaw. For those permits below the threshold in the Sanitary Sewer and Stormwater Utilities Bylaw, re-use of existing services may be permitted
9	Storm drain connection requirements as per the Sanitary Sewer and Stormwater Utilities Bylaw.
10	Onsite Rainwater Management Requirements are reduced as per Schedule A, Stormwater Management Section.
11	Green Stormwater Infrastructure improvements within public right-of-way may be required as per Schedule A, Stormwater Management Section

Works and Services Bylaw

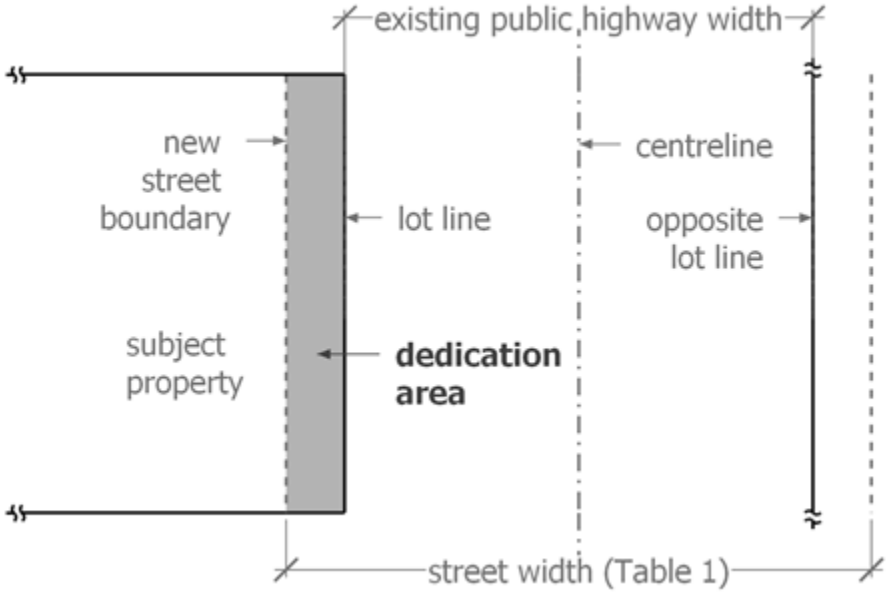
Schedule C
Highway Dedication Policies

Definitions

1. For the purposes of this Schedule:

   (a) the following words have the meaning ascribed in the Zoning Bylaw 2018: “lot”; “lot line”; and “street”; and

   (b) “public highway width” means the distance measured across the street from the lot line to the opposite lot line common to the lot directly across the street and its abutting lots as illustrated in the figure below:



Highway Dedication Area Measurements and Sizes

2. A highway dedication of a portion of the lot along the entire lot line abutting a street should be measured as follows:

   (a) If the public highway width of the abutting street is less than that identified in Table 1, the highway dedication area should be determined by taking 50% of the required street width pursuant to Table 1 and measuring that distance from the centre line of the public highway toward the lot line and into the lot, if applicable, along the length of the lot line abutting a street.

   (b) If the lot has more than one abutting street deficient in width pursuant to subsection (a), the highway dedication area should include all collective areas calculated in accordance with subsection (a).

3. For the purposes of Table 1, the desired street width applicable to a lot should be determined by the street classification of the abutting street, unless otherwise specified in sections 4, 5 or the Street Exceptions Map below.

Table 1

Street Classification	Street width (metres)
Arterial A	30.00
Arterial B	25.00
Collector A	23.00
Collector B & Collector C	20.00
Local A	18.00
Local B	16.00
Local C	12.50
City Lane, as defined by the *Streets and Traffic Bylaw*	6.0

4. Notwithstanding the contents of Table 1:

a. If the lot line is on Shelbourne Street between Myrtle Avenue and Bay Street, and the public highway width is less than 27.12 metres, then the highway dedication area should be measured:

i. from a line parallel to and 25.12 metres from the easterly boundary of such public highway allowance; and

ii. From a line parallel to and 22.12 metres from the western boundary of such public highway allowance.

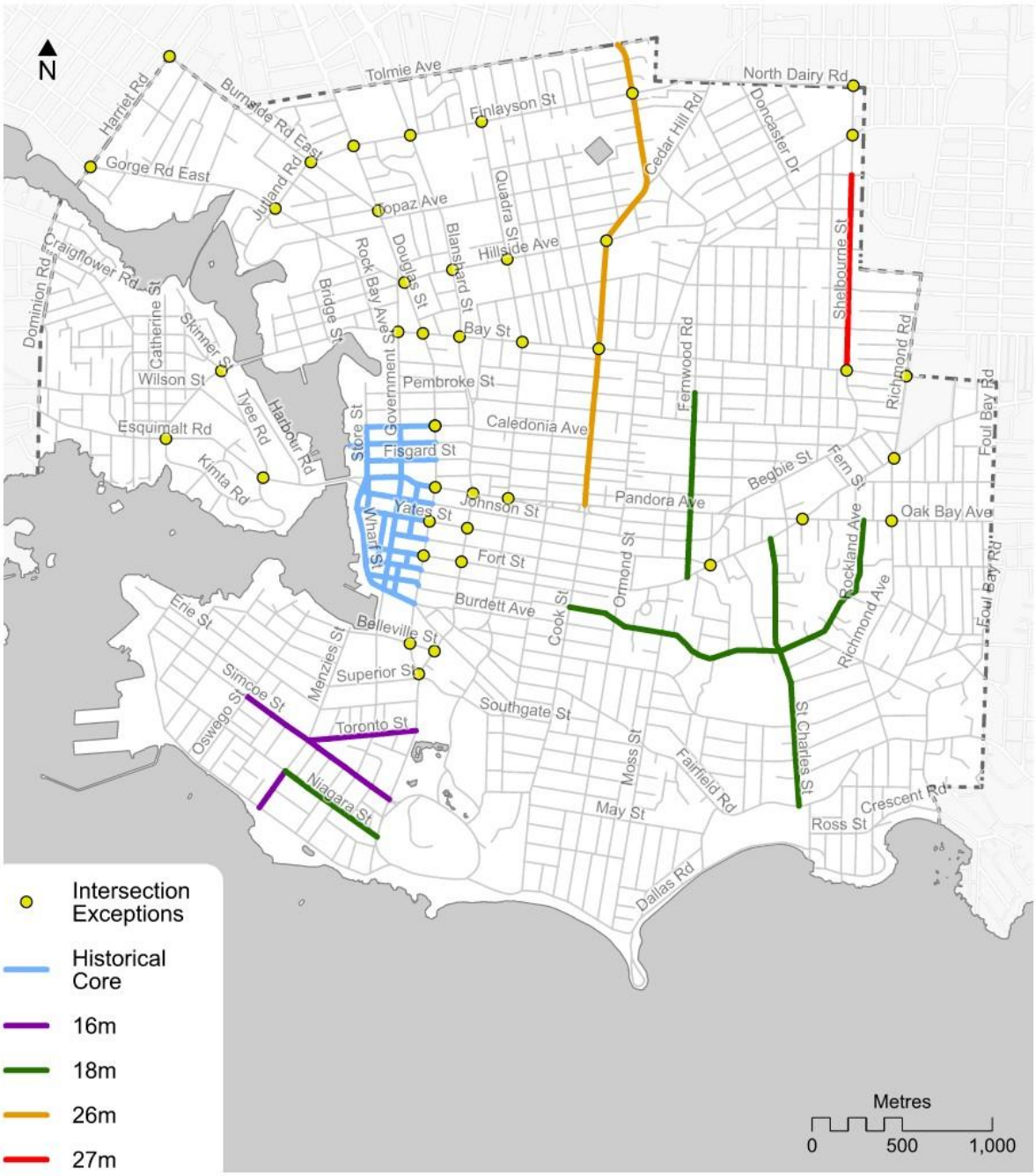
b. Additional highway dedication areas should be considered at or near intersections to provide:

i. sufficient space for landing areas on sidewalks for pedestrians and signal equipment. Standard corner cuts at intersections are 3.0 m by 3.0 m at 90 degree intersections; and

ii. additional space within 45 m of the intersections identified in the Street Exceptions Map below to address road safety and transportation needs.

c. If the width of the highway dedication area does not exceed 0.25 metres in any location along the lot line, or the lot does not abut a street, then no highway dedication should be required.

Street Exceptions Map



Conditions That May Vary Highway Dedication Areas

5. Minor variations to no more than 30% of the width of the required highway dedication area may be considered if the Approving Officer or the Servicing Officer is satisfied that at least one of the following conditions applies and that such condition cannot reasonably be remediated in order to utilize the full dedication area:

a. terrain with a steep grade or rock outcrops in, or in immediate vicinity of, the highway dedication area,

b. retaining wall supporting existing roadway in, or in immediate vicinity of, the highway dedication area,

c. existing tree not planted to the standards established in this bylaw (including, but not limited to, species, condition, planting standard) in, or in the immediate vicinity of, the highway dedication area,

d. heritage designated building or rock wall in, or in the immediate vicinity of, a highway dedication area,

e. archaeological features in, or in immediate vicinity of, a highway dedication area,

f. environmental conditions such as soil contamination in, or in the immediate vicinity of, a highway dedication area, or

g. the segment of street abutting the highway dedication area makes dedication impractical or undesirable, and space for sustainable design features and transportation that supports walking, bicycling, public transit or other alternative forms of transportation is sufficient for City standards.

6. If, after conducting a risk and condition assessment of the required dedication area, the Approving Officer or the Servicing Officer is satisfied that at least one of the conditions listed in section 5 applies and that such condition cannot reasonably be remediated through a minor variation, then no highway dedication should be required.

Works and Services Bylaw

Schedule D

Fees and Deposits

The following fees and deposits are payable prior to the issuance of a building permit or approval of a subdivision.

Fee or Deposit	**Type**	**Fee or Deposit Amount**	**Notes**
Fee	Street occupancy permit	Per Streets & Traffic Bylaw	See section 37
Fee	Contractors permit	$50.00	See section 38
Deposit	City-supplied works deposit	10% of engineer's estimate	See section 40
Damage Deposit	For the development of the following listed:		Is to be provided per "lm" (linear meter) of the street frontage of the parcel of land being developed. "Downtown Core" means those areas of the downtown core as shown in Map 1 of Schedule A
Damage Deposit	Single-detached dwelling, duplex, or multiple dwelling (four self-contained dwelling units or less) outside the Downtown Core	$150/lm	
Damage Deposit	Multiple dwelling (five self-contained dwellings or more) outside the Downtown Core	$200/lm	
Damage Deposit	Non-residential development outside the Downtown Core	$200/lm	
Damage Deposit	All types of development located within the Downtown Core	$200/lm	

Landscape Damage Deposits for Existing Municipal Landscape Assets		**Deposit Amount**	**Notes** All damage deposits are estimated based on the project scope and likelihood of damage
Damage Deposit	Turf Boulevard	$35 per m^2	
Damage Deposit	Natural Area Boulevard	$50 per m^2	
Damage Deposit	Shrub bed and/or Rain Garden Planting	$100 per m^2	
Damage Deposit	Irrigation System for Landscape	$25 per m^2	
Damage Deposit	Irrigation Drip System for Street Trees	$250 per irrigated tree	
Damage Deposit	Parkland Deposit	$100 per linear metre of shared property line	
Damage Deposit	Street Tree: ≤15 cm DBH	$1750 per tree	
Damage Deposit	Street Tree: > 15 cm DBH	Damage Deposit is based on the Appraised landscape value (minimum tree value is $1750)	
Off-Site Electrical		**Deposit Amount**	**Notes**
Damage Deposit	Existing Fibre Optic Cable Present	$20,000	To be provided where the City has an existing buried fibre optic cable as part of its fibre network (in a conduit or micro-trenched), and that cable is located within a project frontage, and where the owner is undertaking works within that portion of right-of-way. This deposit is to provide for repair to damages to the fibre optic line where such repair is not undertaken by the owner.

WORKS AND SERVICES BYLAW

SCHEDULE E

This Schedule contains a Subdivision Works and Services Agreement at Appendix 1 and a Building Permit Works and Services Agreement at Appendix 2

APPENDIX 1

SUBDIVISION WORKS AND SERVICES AGREEMENT

SUBDIVISION FILE #:

THIS AGREEMENT made [month, day, year].

BETWEEN:

The Corporation of the City of Victoria
#1 Centennial Square
Victoria, BC V8S 1P6

(the "**City**")

AND:

[legal name of owner]
[address]

(the "**Owner**")

WHEREAS:

A. Capitalized terms not otherwise defined herein are defined in section 1;

B. The Owner is the registered owner of the Lands;

C. The City's Works and Services Bylaw requires the provision of various works and services upon the subdivision of land and establishes the standards to which such works and services must be constructed and installed;

D. The Owner has applied to subdivide the Lands and has under section 509 of the *Local Government Act*, requested the City to enter into this Agreement in order to enable the Approving Officer to approve the subdivision before the construction and installation of all works and services required by the Works and Services Bylaw;

E. As security for the due and proper performance by the Owner of all of the covenants, agreements and obligations of the Owner in this Agreement, the Owner has deposited with the City a letter of credit in the amount of the Deposit;

F. The Owner has agreed to grant and transfer to the City all its right, title and interest in and to the works and services required to be constructed and installed by the Works and Services Bylaw to the City and the City has agreed to accept such transfer of the works and services on the terms of this Agreement.

NOW THEREFORE in consideration of the mutual promises contained in this Agreement and in consideration of the City entering into this Agreement to allow the construction and installation of the works and services after the approval of the subdivision of the Lands, the Owner covenants and agrees with the City as follows:

Part 1 - Definitions

1. In this Agreement:

"Approved Design and Specifications" has the meaning ascribed in section 3(b);

"Certificate of Acceptance" means a certificate issued by the Director of Engineering pursuant to section 45 of the Works and Services Bylaw and section 10(c) of this Agreement;

"**Certificate of Completion**" means a certificate issued by the Director of Engineering pursuant to section 44 of the Works and Services Bylaw and section 10(b) of this Agreement;

"**Complete**" or "**Completion**" with respect to the Works means completion to the satisfaction of the Director of Engineering as evidenced by the Director of Engineering's Certificate of Completion;

"**Cost Estimate**" means the Owner's approved cost estimate (as that term is defined in the Works and Services Bylaw) of all outstanding Works remaining to be completed at the time of this Agreement, attached at Schedule B;

"**Deadline**" means 24 months from the date of this Agreement, by [month, day, year];

"**Deposit**" means a security deposit of 120% of the Cost Estimate of the Works and Services, totaling [$_____];

"**Director of Engineering**" or "**Director**" means the City's Director of Engineering and Public Works and their duly authorized designates and such consulting or professional engineer as may be appointed to act for the City;

"**Full Cost Estimate**" means the owner's approved cost estimate (as that term is defined in the Works and Services Bylaw) of all works required for the subdivision, attached at Schedule C;

"**Lands**" means:
Civic address: [Civic, Street]
PID: [XXX-XXX-XXX]
Legal description: [Lot X, VIP XXXXX, Full Plan Description here]

"**Professional Engineer**" has the meaning ascribed in the Works and Services Bylaw;

"**Qualified Professional**" has the meaning ascribed in the Works and Services Bylaw;

"**Warranty Period**" means [# year(s)], beginning from the Completion of the Works;

"**Works**" means all those works and services required to be provided under the Works and Services Bylaw and without limitation, those works and services described in Schedule A to this Agreement.

Part 2 - Owner's Covenants

2. The Owner covenants and agrees:

   (a) to install, construct and complete the Works;

   (b) to pay to the City in advance upon execution of this Agreement a damage deposit and other applicable fees and deposits in the amount specified in the Works and Services Bylaw;

   (c) that the Deposit, less the amount required by section 6 to be maintained, will only be returned to the Owner upon completion of the Works in strict conformance with this Agreement; and

   (d) that no interest on the Deposit shall be paid to the Owner.

3. In carrying out the Works, the Owner covenants and agrees:

   (a) not to commence the construction or installation of the Works without first advising the Director of Engineering in writing at least five days before commencement and receiving the Director of Engineering's approval to proceed;

   (b) to construct, install and complete the Works as designed and to the specifications and as shown in the "Issued for Construction" drawings authenticated by the Professional Engineer, and in the case of landscaping, authenticated by a landscaping professional, attached as Schedule A (the "**Approved Design and Specifications**") and in conformance with the Works and Services Bylaw;

   (c) to obtain the prior written approval of the Director of Engineering for any changes to the Approved Design and Specifications;

   (d) to comply with any changes to the Approved Design and Specifications required by the Director of Engineering as necessary to satisfy the Director that the Works will function and operate in a satisfactory manner;

   (e) to pay the cost of all necessary connections required by the City to add to or modify existing City works for the purpose of accommodating or tying in the Works to those existing City works, including but not limited to concrete works (sidewalk, curb). signage, irrigation systems, electrical conduit, paving and landscaping on City streets that adjoin the Lands;

   (f) not to damage any works, services or property of the City, or remove, alter or destroy any survey, pins, posts or monuments, and if in default to replace, repair and restore any damage of whatever nature to the reasonable satisfaction of the Director of Engineering;

   (g) to comply with all statutes, laws, regulations and orders of any authority having jurisdiction with respect to any aspect of the Works and without limiting the generality of the foregoing all bylaws of the City;

(h) to not deposit or permit the deposit of any material or debris upon any highways or lands of the City;

(i) to retain at all times a Professional Engineer to provide competent survey, layout and onsite supervision to ensure that the Works strictly conform to the Approved Design and Specifications, and to record the details of any field design or construction changes to the Approved Design and Specifications and to record all of the geometric information for the preparation of record drawings;

(j) prior to commencing construction and installation of the Works, to advise the Director of Engineering of the name and address of the Professional Engineer retained by the Owner where not previously provided, and otherwise advise the Director of any change to or termination of the Professional Engineer;

(k) not to employ any person or contractor in the construction of the Works who, in the reasonable opinion of the Director of Engineering is unfit, incapable or unskilled, and at all times, in connection with the execution of the Works, to employ and keep on site a competent general works superintendent capable of speaking, reading and writing the English language. Any explanations, directions and requests given by the Director of Engineering to the superintendent shall be conclusively deemed to have been given to the Owner; and

(l) not to engage any contractor in respect of the Works unless that contractor holds a business license issued by the City.

4. The Owner shall prosecute the Works diligently without interruptions and shall Complete the construction and installation of the Works by the Deadline.

5. Upon Completion of the Works, the Owner covenants and agrees:

(a) to assign to the City all of its right, title and interest in and to the Works free and clear of all encumbrances;

(b) to grant or cause to be granted to the City in registrable form all statutory rights-of-way and covenants reasonably required by the Director of Engineering for the operation, maintenance, repair and replacement of the Works, in the City's standard form for such instruments and, in the absence of a standard form, on such terms and in a form as are satisfactory to the Director of Engineering and the City Solicitor;

(c) to execute and deliver or cause to be executed and delivered at the request of the City all such further transfers, instruments, agreements, documents and plans and to perform all such acts as may be necessary to give full effect to this Agreement;

(d) to deliver to the City final record drawings of the Works which drawings shall be prepared and authenticated by the Owner's Professional Engineer in accordance with good engineering practice and be in a form satisfactory to the Director of Engineering; and

(e) to cause the Owner's Professional Engineer to undertake testing to confirm appropriate connections to sanitary and storm drain sewers to verify no cross connections, with such confirmation to be submitted concurrent with the final record drawings.

Part 3 - Maintenance and Warranty Period

6. The Owner covenants and agrees to:

(a) maintain the Works in complete repair for the duration of the Warranty Period;

(b) remedy any defects appearing within a period of one year from the date of completion and pay for any damage to other work or property resulting therefrom, save and except for defects caused by reasonable wear and tear, negligence of the City, its servants or agents, or acts of God; and

(c) keep deposited with the City for the Warranty Period, the sum of 10% of the Full Cost Estimate in the form of cash or letter of credit.

Part 4 – Indemnity, Release, Insurance, Reliance

7. The Owner shall release, and does hereby indemnify and save the City harmless from and against:

(a) all costs, expenses, damages, claims, demands, actions, suits and liability by whomever brought or made and however arising whether directly or indirectly, from the construction or installation of the Works and any injury or damage thereby caused to person or property (including death) except that arising from the exclusive negligence or other fault of the City;

(b) all costs and expenses incurred by the City arising directly or indirectly from any engineering operation, construction, repair, replacement or maintenance by the City to or on any real or personal property which is affected by the Works and which the City either owns or is by duty or custom obliged, directly or indirectly to construct, repair, replace or maintain; and

(c) all expenses and costs incurred by reason of liens for nonpayment of labour or material, workers' compensation assessments, unemployment insurance, federal or provincial tax check off in relation to the Works and for unlawful encroachments by the Works.

8. The Owner shall take out and maintain at all times from commencement of construction and installation of the Works until the Director of Engineering issues a Certificate of Acceptance, insurance at its sole expense. Such insurance shall:

(a) include comprehensive general liability insurance against claims for bodily injury including death and property damage or loss arising from its operations in or about

the Lands, highways or other lands in carrying out the construction and installation of the Works and in performing its obligations under this Agreement;

(b) name the City as a co-insured and shall contain a cross-liability or severability of interest clause so that the City and the Owner may be insured in the same manner and to the same extent as if individual policies had been issued to each;

(c) be for the amount of not less than $5,000,000 combined single limit or such other amount as the Director of Engineering may reasonably require; and

(d) contain a provision requiring the insurer to give to the City 30 days prior written notice before any alteration of or cancellation of the policy shall be effective.

9. The Owner shall provide to the Director of Engineering proof in writing of such insurance before commencing the Works and again before the issuance of any Certificate of Completion.

10. The Owner acknowledges and agrees that the Owner relies exclusively on its own Professional Engineer and contractor and that the City does not, by its approvals, inspections or acceptance of the Works, warrant or represent that the Works are without fault or defect and that all approvals and inspection of the Works given or made by the City are for the sole benefit of the City and shall in no way relieve or excuse the Owner from constructing and installing the Works in strict compliance with the provisions of this Agreement.

Part 5 - City Covenants

11. The City covenants and agrees that:

(a) it will permit the Owner to perform the Works on the terms and conditions contained in this Agreement and to occupy and use municipal highways and lands of the City as necessary for the Works subject to applicable City bylaws including the Works and Services Bylaw and Streets and Traffic Bylaw and other such terms and conditions in any case and from time to time as the Director of Engineering may impose;

(b) it will issue a Certificate of Completion signed by the Director of Engineering upon the owner satisfactorily completing the Works and performing all other requirements of this Agreement except the requirements of section 6; and

(c) upon the satisfactory completion by the Owner of all the covenants and conditions in this Agreement, and without limiting the generality of the foregoing, including the maintenance of the Works constructed under this Agreement in complete repair for the length of the Warranty Period, it shall provide to the Owner a Certificate of Acceptance of the Works, signed by the Director of Engineering, together with the remaining Deposit.

Part 6 - Miscellaneous

12. Nothing in this Agreement shall exempt the Owner or the Lands from the ordinary jurisdiction of the council of the City, its bylaws and regulations, and without limitation the construction of the Works shall not confer directly or indirectly any exemption or right of set-off from development cost charges, connection charges, application fees, user fees or other fee or charge, except as statutorily required.

13. Any letter of credit provided by the Owner to the City shall be a clean unconditional and irrevocable letter of credit in favour of the City drawn on a Canadian chartered bank or such other financial institution in a form and on terms satisfactory to the Director of Engineering and the Chief Financial Officer. Such letter of credit shall be maintained as good and valid security by the Owner at all times as required by this Agreement.

14. If the Owner shall fail to observe, perform or keep any of the provisions of this Agreement to be observed, performed or kept by the Owner, the City may at its sole discretion and without prejudice to any other remedy rectify the default of the Owner, at the Owner's expense and without limiting the generality of the foregoing may:

    (a) enter onto the Lands and do or cause to be done through its servants, contractors and others, all such things as may be required to fulfill the obligations of the Owner including without limitation, the Completion of the Works;

    (b) make any payments required to be made for and on behalf of the Owner; and

    (c) retain the services of a professional engineer or landscape professional to inspect the Works in order to determine whether they have been constructed in accordance with the requirements of this Agreement,

    and for such purposes may without notice or limitation deduct from the Deposit all costs, and expenses incurred, payment and expenditures made, and monies due and owing to the City.

15. If the City incurs any costs and expenses or makes payments, all as either provided in section 14 of this Agreement or otherwise in this Agreement, or if the Owner is otherwise indebted to the City under this Agreement, and the Deposit is not sufficient to fully recompense the City, the Owner shall forthwith upon notice from the City pay to the City the amount of such deficiency together with interest thereon at 2% per annum calculated and compounded monthly from the date such cost or expense was incurred or payment or expenditure was made by the City. Such amounts required to be paid by the Owner shall constitute a debt due and owing to the City.

16. Wherever in this Agreement the approval of the Director of Engineering is required or some act or thing is to be done to the satisfaction of the Director of Engineering:

    (a) such provisions shall not be deemed to have been fulfilled or waived unless the approval or expression of satisfaction is in writing signed by the Director of Engineering and no prior approval or expression of satisfaction and no condoning, excusing or overlooking by the City or the Director of Engineering on previous

occasions when such approval or satisfaction was required shall be taken to operate as a waiver of the necessity for such approval or satisfaction wherever required by this Agreement; and

(b) such approval or satisfaction shall be at the discretion of the Director of Engineering acting reasonably in conformance with sound and accepted public municipal engineering practice.

17. Unless otherwise expressly provided in this Agreement, wherever the Owner is obliged or required to do or cause to be done any act matter or thing such act, matter or thing shall be done by the Owner at its sole expense.

18. Any notice to be given under this Agreement shall be in writing, and any letter may be delivered personally or sent by prepaid mail. The addresses of the parties for the purpose of notice shall be the addresses set out in this Agreement. Any party may at any time give notice in writing to another of any change of address and from and after the third day after the giving of such notice the address specified shall be deemed to be the address of such party for the giving of notice.

19. The City has made no representations, warranties, guarantees, promises, covenants or agreements to or with the Owner other than those in this Agreement.

20. Subject only to section 3(d) of this Agreement, no amendment to this Agreement is valid unless in writing and executed by the parties.

21. Wherever the singular or masculine is used in this Agreement, the same shall be construed as meaning the plural or the feminine or the body corporate or politic where the context or the parties so require.

22. Time is of the essence of this Agreement.

23. This Agreement shall enure to the benefit of and be binding upon the parties, their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF the parties have set their hands and seals on the day and year first above written.

THE CORPORATION OF THE CITY OF VICTORIA by its authorized signatories this _____ day of _____, 202_)

_____

Director of Engineering and Public Works

[NAME OF OWNER]	)
by its authorized signatories this ____ day	)
of _____, 202_	)
	)
_____	)
Name:	)
	)
_____	)
Name:	)

Schedule A – Approved Design and Specifications
Schedule B – Cost Estimate of Outstanding Works
Schedule C – Full Cost Estimate

APPENDIX 2

BUILDING PERMIT WORKS AND SERVICES AGREEMENT

BUILDING PERMIT FILE #:

THIS AGREEMENT made [month, day, year].

BETWEEN:

The Corporation of the City of Victoria
#1 Centennial Square
Victoria, BC V8S 1P6

(the "**City**")

AND:

[legal name of owner]
[address]

(the "**Owner**")

WHEREAS:

A. Capitalized terms not otherwise defined herein are defined in section 1;

B. The Owner is the registered owner of the Lands;

C. The City's Works and Services Bylaw requires the provision of various works and services upon the development of land and establishes the standards to which such works and services must be constructed and installed;

D. The Owner has applied for a building permit for a development on the Lands and has under section 509 of the *Local Government Act*, requested the City to enter into this Agreement in order to enable the City's building official to issue the building permit before the construction and installation of all works and services required by the Works and Services Bylaw;

E. As security for the due and proper performance by the Owner of all of the covenants, agreements and obligations of the Owner in this Agreement, the Owner has deposited with the City a letter of credit in the amount of the Deposit;

F. The Owner has agreed to grant and transfer to the City all its right, title and interest in and to the works and services required to be constructed and installed by the Works and Services Bylaw to the City and the City has agreed to accept such transfer of the works and services on the terms of this Agreement.

NOW THEREFORE in consideration of the mutual promises contained in this Agreement and in consideration of the City entering into this Agreement to allow the construction and installation of the works and services after the issuance of the building permit for the development on the Lands, the Owner covenants and agrees with the City as follows:

Part 1 - Definitions

1. In this Agreement:

"Approved Design and Specifications" has the meaning ascribed in section 3(b);

"Certificate of Acceptance" means a certificate issued by the Director of Engineering pursuant to section 45 of the Works and Services Bylaw and section 10(c) of this Agreement;

"**Certificate of Completion**" means a certificate issued by the Director of Engineering pursuant to section 44 of the Works and Services Bylaw and section 10(b) of this Agreement;

"**Complete**" or "**Completion**" with respect to the Works means completion to the satisfaction of the Director of Engineering as evidenced by the Director of Engineering's Certificate of Completion;

"**Cost Estimate**" means the Owner's approved cost estimate (as that term is defined in the Works and Services Bylaw) of all outstanding Works remaining to be completed at the time of this Agreement, attached at Schedule B;

"**Deadline**" means 24 months from the date of this Agreement, by [month, day, year];

"**Deposit**" means a security deposit of 120% of the Cost Estimate of the Works and Services, totaling [$_____];

"**Director of Engineering**" or "**Director**" means the City's Director of Engineering and Public Works and their duly authorized designates and such consulting or professional engineer as may be appointed to act for the City;

"**Full Cost Estimate**" means the owner's approved cost estimate (as that term is defined in the Works and Services Bylaw) of all works required for the development, attached at Schedule C;

"**Lands**" means:
Civic address: [Civic, Street]
PID: [XXX-XXX-XXX]
Legal description: [Lot X, VIP XXXXX, Full Plan Description here]

"**Professional Engineer**" has the meaning ascribed in the Works and Services Bylaw;

"**Qualified Professional**" has the meaning ascribed in the Works and Services Bylaw;

"**Warranty Period**" means [# year(s)], beginning from the Completion of the Works;

"**Works**" means all those works and services required to be provided under the Works and Services Bylaw and without limitation, those works and services described in Schedule A to this Agreement.

Part 2 - Owner's Covenants

2. The Owner covenants and agrees:

   (a) to install, construct and complete the Works;

   (b) to pay to the City in advance upon execution of this Agreement a damage deposit and other applicable fees and deposits in the amount specified in the Works and Services Bylaw;

   (c) that the Deposit, less the amount required by section 6 to be maintained, will only be returned to the Owner upon completion of the Works in strict conformance with this Agreement; and

   (d) that no interest on the Deposit shall be paid to the Owner.

3. In carrying out the Works, the Owner covenants and agrees:

   (a) not to commence the construction or installation of the Works without first advising the Director of Engineering in writing at least five days before commencement and receiving the Director of Engineering's approval to proceed;

   (b) to construct, install and complete the Works as designed and to the specifications and as shown in the "Issued for Construction" drawings authenticated by the Professional Engineer, and in the case of landscaping, authenticated by a landscaping professional, attached as Schedule A (the "**Approved Design and Specifications**") and in conformance with the Works and Services Bylaw;

   (c) to obtain the prior written approval of the Director of Engineering for any changes to the Approved Design and Specifications;

   (d) to comply with any changes to the Approved Design and Specifications required by the Director of Engineering as necessary to satisfy the Director that the Works will function and operate in a satisfactory manner;

   (e) to pay the cost of all necessary connections required by the City to add to or modify existing City works for the purpose of accommodating or tying in the Works to those existing City works, including but not limited to concrete works (sidewalk, curb). signage, irrigation systems, electrical conduit, paving and landscaping on City streets that adjoin the Lands;

   (f) not to damage any works, services or property of the City, or remove, alter or destroy any survey, pins, posts or monuments, and if in default to replace, repair and restore any damage of whatever nature to the reasonable satisfaction of the Director of Engineering;

   (g) to comply with all statutes, laws, regulations and orders of any authority having jurisdiction with respect to any aspect of the Works and without limiting the generality of the foregoing all bylaws of the City;

(h) to not deposit or permit the deposit of any material or debris upon any highways or lands of the City;

(i) to retain at all times a Professional Engineer to provide competent survey, layout and onsite supervision to ensure that the Works strictly conform to the Approved Design and Specifications, and to record the details of any field design or construction changes to the Approved Design and Specifications and to record all of the geometric information for the preparation of record drawings;

(j) prior to commencing construction and installation of the Works, to advise the Director of Engineering of the name and address of the Professional Engineer retained by the Owner where not previously provided, and otherwise advise the Director of any change to or termination of the Professional Engineer;

(k) not to employ any person or contractor in the construction of the Works who, in the reasonable opinion of the Director of Engineering is unfit, incapable or unskilled, and at all times, in connection with the execution of the Works, to employ and keep on site a competent general works superintendent capable of speaking, reading and writing the English language. Any explanations, directions and requests given by the Director of Engineering to the superintendent shall be conclusively deemed to have been given to the Owner; and

(l) not to engage any contractor in respect of the Works unless that contractor holds a business license issued by the City.

4. The Owner shall prosecute the Works diligently without interruptions and shall Complete the construction and installation of the Works by the Deadline.

5. Upon Completion of the Works, the Owner covenants and agrees:

(a) to assign to the City all of its right, title and interest in and to the Works free and clear of all encumbrances;

(b) to grant or cause to be granted to the City in registrable form all statutory rights-of-way and covenants reasonably required by the Director of Engineering for the operation, maintenance, repair and replacement of the Works, in the City's standard form for such instruments and, in the absence of a standard form, on such terms and in a form as are satisfactory to the Director of Engineering and the City Solicitor;

(c) to execute and deliver or cause to be executed and delivered at the request of the City all such further transfers, instruments, agreements, documents and plans and to perform all such acts as may be necessary to give full effect to this Agreement;

(d) to deliver to the City final record drawings of the Works which drawings shall be prepared and authenticated by the Owner's Professional Engineer in accordance with good engineering practice and be in a form satisfactory to the Director of Engineering; and

(e) to cause the Owner's Professional Engineer to undertake testing to confirm appropriate connections to sanitary and storm drain sewers to verify no cross connections, with such confirmation to be submitted concurrent with the final record drawings.

Part 3 - Maintenance and Warranty Period

6. The Owner covenants and agrees to:

(a) maintain the Works in complete repair for the duration of the Warranty Period;

(b) remedy any defects appearing within a period of one year from the date of completion and pay for any damage to other work or property resulting therefrom, save and except for defects caused by reasonable wear and tear, negligence of the City, its servants or agents, or acts of God; and

(c) keep deposited with the City for the Warranty Period, the sum of 10% of the Full Cost Estimate in the form of cash or letter of credit.

Part 4 – Indemnity, Release, Insurance, Reliance

7. The Owner shall release, and does hereby indemnify and save the City harmless from and against:

(a) all costs, expenses, damages, claims, demands, actions, suits and liability by whomever brought or made and however arising whether directly or indirectly, from the construction or installation of the Works and any injury or damage thereby caused to person or property (including death) except that arising from the exclusive negligence or other fault of the City;

(b) all costs and expenses incurred by the City arising directly or indirectly from any engineering operation, construction, repair, replacement or maintenance by the City to or on any real or personal property which is affected by the Works and which the City either owns or is by duty or custom obliged, directly or indirectly to construct, repair, replace or maintain; and

(c) all expenses and costs incurred by reason of liens for nonpayment of labour or material, workers' compensation assessments, unemployment insurance, federal or provincial tax check off in relation to the Works and for unlawful encroachments by the Works.

8. The Owner shall take out and maintain at all times from commencement of construction and installation of the Works until the Director of Engineering issues a Certificate of Acceptance, insurance at its sole expense. Such insurance shall:

(a) include comprehensive general liability insurance against claims for bodily injury including death and property damage or loss arising from its operations in or about

the Lands, highways or other lands in carrying out the construction and installation of the Works and in performing its obligations under this Agreement;

(b) name the City as a co-insured and shall contain a cross-liability or severability of interest clause so that the City and the Owner may be insured in the same manner and to the same extent as if individual policies had been issued to each;

(c) be for the amount of not less than $5,000,000 combined single limit or such other amount as the Director of Engineering may reasonably require; and

(d) contain a provision requiring the insurer to give to the City 30 days prior written notice before any alteration of or cancellation of the policy shall be effective.

9. The Owner shall provide to the Director of Engineering proof in writing of such insurance before commencing the Works and again before the issuance of any Certificate of Completion.

10. The Owner acknowledges and agrees that the Owner relies exclusively on its own Professional Engineer and contractor and that the City does not, by its approvals, inspections or acceptance of the Works, warrant or represent that the Works are without fault or defect and that all approvals and inspection of the Works given or made by the City are for the sole benefit of the City and shall in no way relieve or excuse the Owner from constructing and installing the Works in strict compliance with the provisions of this Agreement.

Part 5 - City Covenants

11. The City covenants and agrees that:

(a) it will permit the Owner to perform the Works on the terms and conditions contained in this Agreement and to occupy and use municipal highways and lands of the City as necessary for the Works subject to applicable City bylaws including the Works and Services Bylaw and Streets and Traffic Bylaw and other such terms and conditions in any case and from time to time as the Director of Engineering may impose;

(b) it will issue a Certificate of Completion signed by the Director of Engineering upon the owner satisfactorily completing the Works and performing all other requirements of this Agreement except the requirements of section 6; and

(c) upon the satisfactory completion by the Owner of all the covenants and conditions in this Agreement, and without limiting the generality of the foregoing, including the maintenance of the Works constructed under this Agreement in complete repair for the length of the Warranty Period, it shall provide to the Owner a Certificate of Acceptance of the Works, signed by the Director of Engineering, together with the remaining Deposit.

Part 6 - Miscellaneous

12. Nothing in this Agreement shall exempt the Owner or the Lands from the ordinary jurisdiction of the council of the City, its bylaws and regulations, and without limitation the construction of the Works shall not confer directly or indirectly any exemption or right of set-off from development cost charges, connection charges, application fees, user fees or other fee or charge, except as statutorily required.

13. Any letter of credit provided by the Owner to the City shall be a clean unconditional and irrevocable letter of credit in favour of the City drawn on a Canadian chartered bank or such other financial institution in a form and on terms satisfactory to the Director of Engineering and the Chief Financial Officer. Such letter of credit shall be maintained as good and valid security by the Owner at all times as required by this Agreement.

14. If the Owner shall fail to observe, perform or keep any of the provisions of this Agreement to be observed, performed or kept by the Owner, the City may at its sole discretion and without prejudice to any other remedy rectify the default of the Owner, at the Owner's expense and without limiting the generality of the foregoing may:

    (a) enter onto the Lands and do or cause to be done through its servants, contractors and others, all such things as may be required to fulfill the obligations of the Owner including without limitation, the Completion of the Works;

    (b) make any payments required to be made for and on behalf of the Owner; and

    (c) retain the services of a professional engineer or landscape professional to inspect the Works in order to determine whether they have been constructed in accordance with the requirements of this Agreement,

    and for such purposes may without notice or limitation deduct from the Deposit all costs, and expenses incurred, payment and expenditures made, and monies due and owing to the City.

15. If the City incurs any costs and expenses or makes payments, all as either provided in section 14 of this Agreement or otherwise in this Agreement, or if the Owner is otherwise indebted to the City under this Agreement, and the Deposit is not sufficient to fully recompense the City, the Owner shall forthwith upon notice from the City pay to the City the amount of such deficiency together with interest thereon at 2% per annum calculated and compounded monthly from the date such cost or expense was incurred or payment or expenditure was made by the City. Such amounts required to be paid by the Owner shall constitute a debt due and owing to the City.

16. Wherever in this Agreement the approval of the Director of Engineering is required or some act or thing is to be done to the satisfaction of the Director of Engineering:

    (a) such provisions shall not be deemed to have been fulfilled or waived unless the approval or expression of satisfaction is in writing signed by the Director of Engineering and no prior approval or expression of satisfaction and no condoning, excusing or overlooking by the City or the Director of Engineering on previous

occasions when such approval or satisfaction was required shall be taken to operate as a waiver of the necessity for such approval or satisfaction wherever required by this Agreement; and

(b) such approval or satisfaction shall be at the discretion of the Director of Engineering acting reasonably in conformance with sound and accepted public municipal engineering practice.

17. Unless otherwise expressly provided in this Agreement, wherever the Owner is obliged or required to do or cause to be done any act matter or thing such act, matter or thing shall be done by the Owner at its sole expense.

18. Any notice to be given under this Agreement shall be in writing, and any letter may be delivered personally or sent by prepaid mail. The addresses of the parties for the purpose of notice shall be the addresses set out in this Agreement. Any party may at any time give notice in writing to another of any change of address and from and after the third day after the giving of such notice the address specified shall be deemed to be the address of such party for the giving of notice.

19. The City has made no representations, warranties, guarantees, promises, covenants or agreements to or with the Owner other than those in this Agreement.

20. Subject only to section 3(d) of this Agreement, no amendment to this Agreement is valid unless in writing and executed by the parties.

21. Wherever the singular or masculine is used in this Agreement, the same shall be construed as meaning the plural or the feminine or the body corporate or politic where the context or the parties so require.

22. Time is of the essence of this Agreement.

23. This Agreement shall enure to the benefit of and be binding upon the parties, their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF the parties have set their hands and seals on the day and year first above written.

THE CORPORATION OF THE CITY OF VICTORIA by its authorized signatories this _____ day of _____, 202_)

_____)

Director of Engineering and Public Works

[NAME OF OWNER]	)
by its authorized signatories this ____ day	)
of _____, 202_	)
	)
_____	)
Name:	)
	)
_____	)
Name:	)

Schedule A – Approved Design and Specifications
Schedule B – Cost Estimate of Outstanding Works
Schedule C – Full Cost Estimate