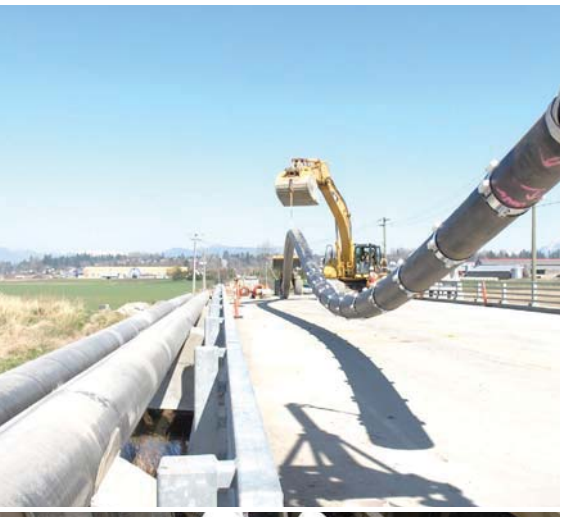

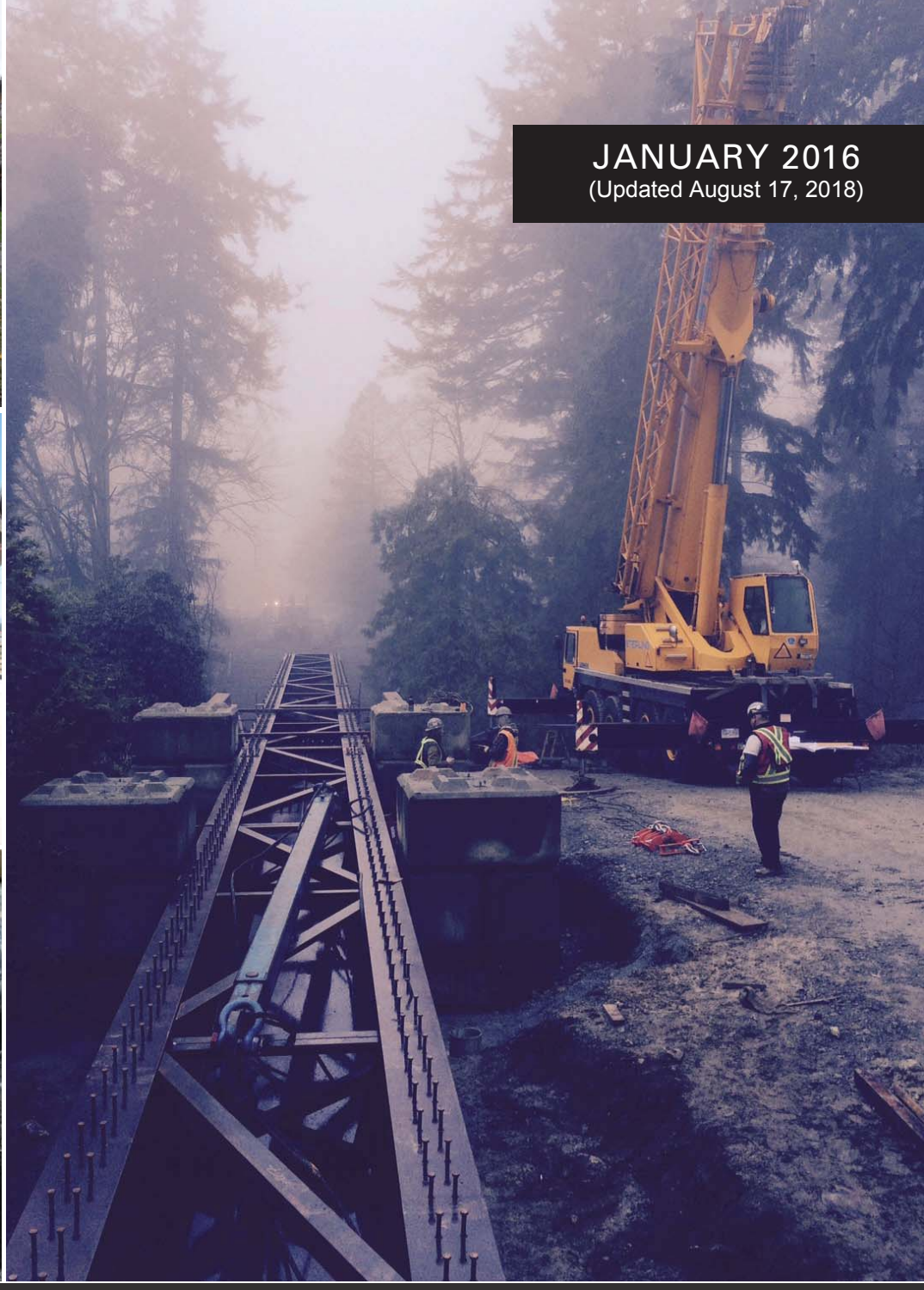

JANUARY 2016
(Updated August 17, 2018)

SUPPLEMENTARY MASTER MUNICIPAL CONSTRUCTION DOCUMENTS

SUPPLEMENTARY GENERAL CONDITIONS

SUPPLEMENTARY SPECIFICATIONS

SUPPLEMENTARY STANDARD DRAWINGS

ENGINEERING DEPARTMENT

CITY OF SURREY

Engineering Department

Supplementary Master Municipal Construction Documents

SUPPLEMENTARY GENERAL CONDITIONS

January 2016

The City of Surrey Supplementary Master Municipal Construction Documents are supplemental to the **Master Municipal Construction Document – Platinum Edition (2009)** and take precedence over the General Conditions, Specifications, Standard Detail Drawings and their Amendments.

TABLE OF CONTENTS

1.0 DEFINITIONS

1.1	**Abnormal Weather**	Delete 1.1.1 and replace with	"Abnormal Weather" means temperature, precipitation, wind or other weather condition, as determined by the Contract Administrator, that prevents the *Contractor* from proceeding with at least 60% of the normal labour and equipment force, for at least 5 hours on a component of the work, which if delayed is on the critical path of the schedule and as such will delay the completion of the Work.
1.76	**Variance Threshold Percentage**	Delete 1.76.1 and replace with	Variance Threshold Percentage is not applicable to any unit rate, whether it is for the benefit of the *Owner* or the *Contractor*.
1.79	**Archaeological Artifacts**	Add 1.79.1	"Archaeological Artifacts" means any fossils, artifacts, coins, articles of value or antiquity, remains, and other things of geological, archaeological or historical interest or value discovered at the Place of the Work.
1.80	**Commencement Date**	Add 1.80.1	"Commencement Date" has the meaning set out in paragraph 5.1.2 of the Form of Tender.
1.81	**Foreign Material**	Add 1.81.1	"Foreign Material" with respect to SGC 11.0 is limited specifically to the following: multiple layers of asphalt or concrete pavement resulting in a cumulative thickness in excess of 300mm; buried railway ties and tracks; and buried corduroy roads. It does not include *Utilities,* rocks, stumps and other subsurface conditions.
1.82	**Highway**	Add 1.82.1	"Highway" includes a street, road, lane, bridge, thoroughfare, sidewalk, boulevard, viaduct and any other way open to public use.
1.83	**Public Art**	Add 1.83.1	"Public Art" means publicly accessible original art that the *Owner* separately contracts and is created and/or installed at or near the Work.
1.84	**Supplementary General Conditions (SGC)**	Add 1.84.1	SGC means those City of Surrey Supplementary General Conditions (SGC's), made up of paragraphs and subparagraphs with the same numbering as the Master Municipal Construction Documents, which are supplementary to and superseding to GC's.

1.85	**Supplementary General Conditions, Project (SGCP)**	Add 1.85.1	SGCP means project specific supplementary general conditions, made up of paragraphs and subparagraphs with the same numbering as the Master Municipal Construction Document, which are supplementary to and superseding SGC's and GC's.
1.86	**Supplementary Specifications (SS)**	Add 1.86.1	SS means those City of Surrey Supplementary Specifications (SS), made up of paragraphs and subparagraphs with the same numbering as the Master Municipal Construction Documents, which are supplementary to and superseding the Master Municipal Specifications.
1.87	**Supplementary Specifications, Project (SSP)**	Add 1.87.1	SSP means project specific supplementary specifications, made up of paragraphs and subparagraphs with the same beginning paragraph numbers as the Master Municipal Construction Document, which are supplementary to and superseding the SS's and Master Municipal Specifications.
1.88	***Utilities***	Add 1.88.1	"*Utilities*" is used broadly and includes but is not limited to any and all lines, poles, structures, facilities, infrastructure works, utilities for power, cable TV, telephone, telecommunications and data transmission, all sanitary and drainage infrastructure, all water, oil, gas and electric services, all steam pipes and services, all survey monuments, street lights, traffic lights, traffic detector loops embedded in pavement, rail tracks, and all related infrastructure, whether located above or below ground, whether visible or invisible, whether man-made or natural.

2.0 DOCUMENTS

2.1 Execution

Delete 2.1.1 and replace with

The *Owner* shall deliver the *Contract Documents*, in a form ready for signing, to the *Contractor* within 15 *Days* after receipt of all information required to be submitted by the *Contractor* as set out in paragraph 5.1.1 of the Form of Tender.

2.2 Interpretation

Delete 2.2.4(1) and replace with

(1) the *Contract Documents* shall govern and take precedence in the following order with the Agreement taking precedence over all other *Contract Documents*:

a) Agreement
b) Addenda
c) Supplementary General Conditions, Project
d) Supplementary General Conditions
e) General Conditions
f) Supplementary Specifications, Project
g) Supplementary Specifications
h) Specifications
i) Drawings list in Schedule 2 to the Agreement
j) Supplementary Detail Drawings
k) Standard Detail Drawings
l) Executed Form of Tender
m) Instructions to Tenderers
n) All other *Contract Documents*;

3.0 CONTRACT ADMINISTRATOR

3.3 Contract Administration

Append to 3.3.5

The minimum replacement cost from the *Contractor* to the *Owner*, for City of Surrey owned monuments, shall be as follows, inclusive of taxes, or as amended by the City of Surrey on an annual basis:

a) ISA Monument - $1,820
b) High Precision Secondary Benchmark - $3,275
c) High Precision Network Benchmark - $7,535

4.0 *CONTRACTOR*

4.1	**Control of Work**	Append to 4.1.2	As the *Work* proceeds, or as directed by the *Contract Administrator*, remove and dispose of all rubbish and other deleterious material, remove false-work, forms, temporary structures, all equipment and machinery, and leave the Work in a clean, tidy and fully-restored condition. All curbing, sidewalks, drainage ditches and culverts, shrubs, fences and other surface properties that have been removed, damaged or disturbed in the performance of the *Work* shall be restored or replaced to a condition equivalent to that which existed before the *Work* began as determined by the Contract Administrator.
		Add 4.1.3	If the *Contractor* fails to clean up the *Site* when so ordered by the Contact Administrator, the *Owner* may proceed to do whatever is necessary to clean up and restore the *Site* and charge any and all costs thereof against the *Contractor* or deduct from payments owing to the *Contractor*.
4.2	**Safety**	Add 4.2.2	The *Contractor* shall, at its own expense and risk provide full, proper and safe access to, from and past buildings and properties, both for vehicles and pedestrians, and for this purpose construct and maintain, in good order and serviceable condition, suitable and convenient platforms, approaches, structures, bridges, crossings or similar works.
4.3	**Protection of Work, Property and the Public**	Delete 4.3.1 and replace with	In performing the Work the *Contractor* shall protect the Work, the *Owner*'s property and other person's property from damage. The *Contractor* shall, at the *Contractor*'s own expense, make good any such damage and indemnify the *Owner* from any loss or expense which arises as a result of the *Contractor*'s operations.

Delete 4.3.4 and replace with

The *Owner* does not possess complete or accurate information with respect to the occurrence or the location of existing *Utilities* that will or may be encountered by the *Contractor* during the performance of the Work. Any plans, surveys, maps or descriptions of *Utilities* given to the *Contractor*, verbal or otherwise, are intended only as an aid to assist the *Contractor* in locating these construction obstacles. However, the *Contractor* is solely responsible to take all steps necessary to investigate, locate, verify and protect all *Utilities*.

Before commencing *Work* the *Contractor* shall:

(1) Complete a BC One Call at least 48 hours in advance.
(2) Expose and determine conclusively in the field the location, elevation, dimensions and material type of all underground *Utilities* and structures indicated on the Contract Documents as being at the *Place of Work*.
(3) Consult with all utility corporations that provide electricity, communication, gas or other utility services in the area of the Place of the Work, to similarly expose and conclusively determine the location of all underground *Utilities* for which they have records; and
(4) Similarly expose and conclusively determine the location of any other *Utilities* or underground structures that are reasonably apparent in an inspection of the Place of the Work.

Append to 4.3.5

The *Contractor* hereby indemnifies and saves the *Owner*, its elected and appointed officials, employees and agents harmless from and against all liabilities, actions, causes of action, claims, damages, expenses, costs, debts, demands or losses suffered or incurred by them or any of them, including consequential damages and damages to third parties, whether known or unknown, foreseeable or not, for which the *Owner* or any of them might be liable arising from the provision of or failure to provide information regarding *Utilities*.

Delete 4.3.6 and replace with	In performing Work on or near *Utilities*, or where it is necessary to cut, move or alter any *Utilities*, the *Contractor* shall communicate and make arrangements with the proper authorities and perform the Work in compliance with any direction or instruction received from that authority. Any damage to *Utilities* by the *Contractor* shall be repaired at the *Contractor*'s expense. Where *Utilities* are serving the public while construction is in progress, it shall be the responsibility of the *Contractor* to plan and execute the Work such that there is no disruption of service by such *Utilities*.
Add 4.3.7	In performing *Work* on or near third-party *Utilities* (BC Hydro, CN Rail, CP Rail, Fiber Optic Fortis, Kinder Morgan, Metro Vancouver, Southern Rail, Shaw, Telus, etc.), or where it is necessary to cut, move or alter these *Utilities*, the *Contractor* shall communicate and coordinate with the third-party companies or authorities as it relates to schedule, timing, site safety and compliance in the utility alterations or relocations as part of performing the overall Work. If the alteration of these *Utilities* impacts the project schedule, the *Contractor* shall allow sufficient time for the companies or authorities to relocate their *Utilities*. It is the *Contractor's* responsibility to ensure all *Work*, including third-party utility relocations, is coordinated and completed in a reasonable time as part of the overall *Work*. In the event the *Contractor* has been diligent and made significant effort and attempts in coordinating with the third-party companies or authorities and having their relocations accelerated, any and all costs incurred as a result of the third-party companies' ability, or inability, to relocate the *Utilities* are considered incidental and any such Delays are considered *Unavoidable Delays* as per GC 13.3 and beyond the reasonable control of the *Owner.*

Add 4.3.8 Contractor shall not deposit any material upon any Highway without first obtaining the approval of the Contract Administrator to the location, manner of placement, nature and amount of the material to be deposited and length of time for placement of the material.

Add 4.3.9 Where any part of the Work is to be performed on private property, it is the responsibility of the *Owner* to arrange for and acquire required access. The *Contractor* shall not perform Work on any private property until the Contract Administrator has confirmed to the *Contractor* in writing that the Work thereon may proceed.

While it is anticipated that the *Owner* will be able to arrange required access to private property, the *Contractor* shall plan their work accordingly to mitigate delays and shall be flexible in accommodating delays or Changes in the sequence or schedule of the Construction Schedule, with no extensions in Contract Time nor Contract Price to the *Contractor*.

Add 4.3.10 On completion of *Work* in a right-of-way or on private property, the *Contractor* shall deliver to the Contract Administrator, a formal release in writing, in a form provided by the *Owner*, signed by each owner of private property on which the Work was performed, verifying that the *Contractor* has cleaned up the private property to the owner's satisfaction and that the property owner(s) has no claim upon the *Contractor* or the *Owner* as a result of the Work.

Add 4.3.11 The *Contractor* shall keep all portions of the Work properly and efficiently drained during construction until Total Performance and in compliance with any by-laws or requirements of the *Owner*.

	Add 4.3.12	The *Contractor* shall protect and maintain access to all existing utilities, properties, solid waste collection receptacles, and mailboxes at all times during construction, including a minimum 1.5m wide and flat accessible path with no safety concerns. If access cannot be maintained, the *Contractor* shall make suitable arrangement for access as requested by the Contract Administrator, including solid waste collection and delivery of mail to the residents affected.
	Add 4.3.13	The *Contractor* shall, at its own expense and risk, deliver to businesses and residents copies of letters provided to the *Contractor* by the *Owner*, advising these persons of intended construction activities. The *Contractor* shall deliver these letters no sooner than ten (10) Days and no later than five (5) Days before the start of construction in the affected area.
	Add 4.3.14	The *Contractor* is responsible for the maintenance and repair of any *Highway* affected by the *Work*, including *Highways* used for hauling, trucking and delivery.
	Add 4.3.15	Work on a *Highway* shall be carried out in such a manner that will not affect traffic on any *Highway* or prevent access to property fronting on the *Highway* without first having obtained written permission to do so from the authorities having jurisdiction. In that regard, the *Contractor* shall perform its *Work* in strict compliance with the requirements, rules, regulations and by-laws of any Federal, Provincial or municipal authority having jurisdiction.
4.6 Construction Schedule	Add 4.6.8	In instances where the *Contractor* is double-shifting, as determined to be either working longer than 12 hours per day or in any 24-hour period, then 2 *Days*, or *Work Days*, will be deducted from the Contract Time for every calendar day when such activity is completed.

			The *Contractor* may apply for exemptions to the noise by-law in order to perform portions of the Work at night, however the *Owner* does not guarantee that exemptions will be granted, nor shall the *Contractor* rely on exemptions being permitted in order to complete the *Work* in accordance with the Construction Schedule.
		Add 4.6.9	The Contractor shall not work on the Site, or deliver materials, for which delivery slips (i.e. weigh tickets) are the basis of payment, unless the Contract Administrator or his site inspector is present.
4.7	**Superintendent**	Append to 4.7.2	The *Superintendent* shall be in attendance at all times at the *Place(s) of the Work* unless permitted otherwise by the *Contract Administrator*.
		Add 4.7.4	Unless otherwise permitted by the *Owner*, the Superintendent shall be the person named in Appendix 3 in the tender submission documents.
4.12	**Tests and Inspections**	Delete 4.12.1 and replace with	The *Contractor* is solely responsible for ensuring that the Work is performed in accordance with the requirements of the *Contract Documents*. The *Contractor* shall perform or cause to be performed all tests, inspections and approvals of the Work as required by the *Contract Documents* or as required by the *Contract Administrator* as part of the Quality Control. Any reference in the specifications to inspection and testing shall mean that the Work described in the specification must be inspected and tested in a manner approved by the Contract Administrator. The *Contractor* shall only employ or engage, as an agent or consultant for testing, a person approved by the *Owner*. Where the specification indicates that the Contract Administrator will arrange for testing, the *Contractor* continues to be solely responsible for testing of the Work. Upon immediate completion of each test, certified copies of each test shall be submitted by the testing laboratory directly to the Contract Administrator. The Contract Administrator may perform additional tests for the *Owner*'s sole benefits. The costs of these tests will be the responsibility of the *Owner*.

		Append to 4.12.10	If the Contractor performs *Work* for more than 10 hours per *Day*, or work shift, overtime costs incurred by the *Owner* to complete tests, inspections and payment measurements may be charged, at the sole discretion of the *Owner*, to the *Contractor*.

7.0 CHANGES

7.4	**Optional Work**	Append to 7.4.1	If *Optional Work* is performed prior to the *Contractor* achieving *Substantial Performance*, there shall be no adjustments to the *Contract Time*.

9.0 VALUATION OF CHANGES AND EXTRA WORK

9.4	**Quantity Variations**	Delete 9.4.1 and replace with	The respective amounts of work and services to be done and carried out and materials to be furnished in the *Schedule of Quantities and Prices* is an estimate for the purpose of comparing tenders only. The *Owner* does not expressly, nor by implication, agree that the actual amounts of work will correspond even approximately to this estimate, but reserves the right to increase or decrease the amounts of any and all tender items in the *Schedule of Quantities and Prices*, and to omit portions of the *Work* that may be deemed unnecessary by the *Contract Administrator*. The *Contractor* shall make no claim for adjustments in unit prices, anticipated profits, for loss of profit, for overhead, for damages, or for any extra payment whatsoever, except as provided herein, because of any difference between the amount of actual work done and material actually furnished and the quantities stated in the *Schedule of Quantities and Prices*.

10.0 FORCE ACCOUNT

10.1	**Force Account Costs**	Append to 10.1.1 (1)	Costs for the *Contractor's Superintendent*, Project Managers, Health and Safety Personnel, and Office/Administration Staff are not eligible labour costs as those costs are considered incidental to the mark up owing for overhead on labour.

11.0 CONCEALED OR UNKNOWN CONDITIONS

11.1 Definition

Delete 11.1.1 and replace with

A "*Concealed or Unknown Condition*" is either *Archaeological Artifacts,* Foreign Material or *Hazardous Materials,* all as defined in GC and SGC paragraph 1.0, that:

(1) occur at the *Place of Work*; and
(2) materially affects the cost of, or the time required for, the performance of the *Work*; and
(3) differs materially from conditions disclosed in the *Contract Documents*, and was not apparent in an examination of the Place of the Work or could not be reasonably inferred from geotechnical examinations and as-built utility records.

Add 11.1.2

The risk of, responsibility and liability for *Utilities* and subsurface soil conditions and groundwater conditions, known or unknown, rests solely with the *Contractor*. The *Contractor* acknowledges and agrees that it has not relied on the accuracy or completeness of any data or information provided by or on behalf the *Owner* in assessing these risks except those defined in SGC 11.1.1 hereof and the *Contract Price* for the *Work* includes for these risks.

11.4 Acknowledgment

Add 11.4.1

The *Contractor* acknowledges and agrees that it has not relied on the accuracy or completeness of any data or information provided by or on behalf of the *Owner* in assessing the risks of a *Concealed or Unknown Condition*.

Add 11.4.2

The *Contractor* acknowledges and agrees that it has conducted its own independent investigation and has taken into account the risks of a *Concealed or Unknown Condition*.

11.5	**Archaeological Artifacts**	Add 11.5.1	Any *Archaeological Artifacts* discovered by the *Contractor* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.
		Add 11.5.2	The *Contractor* shall immediately advise the Contract Administrator of the discovery by the *Contractor* of any Archaeological Artifacts and take all reasonable precautions to protect and preserve same.

12.0 HAZARD MATERIALS

12.2	**Discovery of Hazardous Materials**	Delete 12.2.2 and replace with	If the Contract Administrator observes any materials at the place of the Work that the Contract Administrator knows or suspects may be *Hazardous Materials* then the Contact Administrator shall immediately give written notice to the *Contractor* and the *Contractor* shall immediately stop the Work or portion of the Work as required by GC 12.2.1 (1)
12.4	**Contract Adjustment for Hazardous Materials**	Append to 12.4.2	However, the *Contractor* is not entitled to payment of any delay costs associated with suspected or confirmed *Hazardous Materials*.

13.0 DELAYS

13.8	**Direction to Stop or Delay**	Delete 13.8.2 and replace with	During any such stoppage or delay, the *Contractor* shall be responsible to protect the *Work*. The *Contractor* shall not be entitled to an extension to schedule or claim for costs if the direction to Stop or delay was due to work being performed that was inconsistent with the *Contract Documents* or as a result of a safety hazard as deemed by the *Contract Administrator* or *Owner* or *Work Safe BC*.

13.9 Liquidated Damages for Late Completion

Delete 13.9.1 and replace with

If the *Contractor* fails to meet the *Milestone Date* for *Substantial Performance,* or any other specified *Milestone Date,* as set out in the Form of Tender paragraph 2.2, as may be adjusted pursuant to the provisions of the *Contract Documents*, then the *Owner* may deduct from any monies owing to the *Contractor* for the *Work*:

(1) as a genuine pre-estimate for the *Owner*'s increased costs for the Contract Administrator and their field representative caused by such delay an amount of $1500 per calendar day, or pro rata portion, for:

a. each day that the *Work*, or portion of *Work*, was completed after the specified *Milestone Date* for that applicable *Work*, or portion of *Work*; and
b. each day that actual *Substantial Performance* is achieved after the *Substantial Performance Milestone Date*; plus

(2) all direct out of pocket costs, such as, but not limited to: the *Owner*'s own staff costs; costs for safety, security, or equipment rental required; and costs for temporary surface restoration and increased temporary maintenance which may be reasonably incurred by the *Owner* as direct result of such delay; plus

(3) any loss to the *Owner* of third-party funding which the *Owner* was to receive if the Work, or a particular portion thereof, was not completed before a *Milestone Date*.

If the monies owing to the *Contractor* are less than the total amount owing by the *Contractor* to the *Owner* under (1), (2) or (3) then any shortfall shall immediately, upon written notice from the *Owner*, and upon *Substantial Performance*, be due and owing by the *Contractor* to the *Owner*.

15.0 *OWNER*'S RIGHT ON *CONTRACTOR*'S DEFAULT

15.2 Notice of Default

Delete 15.2.1 and replace with

On the occurrence of any one or more of the following events:

(1) it is discovered that any representation or warranty made by the *Contractor* was false or materially misleading when made;
(2) the *Contractor* fails to procure or maintain any bonds or required insurance coverage;
(3) the *Contractor* fails to comply with the requirements or obligations of the Workers Compensation Act;
(4) the *Contractor* fails to diligently proceed with and prosecute the Work;
(5) the *Contractor* fails to comply with any requirements of the *Contract*.

the *Owner* may notify the *Contractor* in writing that the *Contractor* is in default of the *Contractor's* obligations and instruct the *Contractor* to correct the default in the 5 *Days* immediately following the receipt of such notice.

15.3 Termination

Append to 15.3.1

After receipt of a written notice of termination, and except as otherwise directed by the *Contract Administrator*, the *Contractor* shall:

(1) stop Work under the Contract on the date and to the extent specified in the notice of termination;
(2) place no further orders or subcontracts except as may be necessary for completion of such portion of the Work as is not terminated;
(3) as directed by the *Contract Administrator*, terminate all orders and subcontracts to the extent that they relate to the performance of *Work* terminated by the notice of termination and/or assign, transfer and deliver to the *Owner* or to whom the *Owner* directs in the manner, at the times, and to the extent directed by the *Contract Administrator*, all of the right, title and interest of the *Contractor* under the subcontracts;

(4) transfer title and deliver to the *Owner* in the manner, at the times and to the extent, if any, directed by the *Contract Administrator*, the fabricated or un-fabricated parts of *Work* in process, completed Work produced as part of, or acquired in connection with the performance of, the *Work* terminated by the notice of termination and in the *Contractor's* possession or reasonable control;
(5) complete performance of such part of the Work as shall not have been terminated by notice of termination; and
(6) mitigate the costs for which the *Owner* may be liable.

16.0 CONTRACTOR'S RISK ON OWNER'S DEFAULT

16.2 Work Stoppage

Delete 16.2.2 and replace with

The *Owner* may, at its discretion, stop all or part of the *Work* in which event, subject to GC 16.4.1, the provisions of GC 13 (Delays) shall apply. If the Work stoppage required under this GC 16.2.2 continues for 60 calendar days, and provided the Work is not required or requested to accommodate seasonal work or to accommodate the relocation of third-party utilities, the *Contractor* may, by giving written notice to the *Owner*, terminate the *Contract*.

16.4 Termination

Delete 16.4.1 and replace with

If the *Contractor* terminates the Contract under the conditions set out in GC 16.2.2., the *Owner* shall pay the *Contractor*:

(1) for *Work* done under the *Contract,* pursuant to the terms of the *Contract*; plus
(2) reimbursement of expenditures, such as products and materials, *Subcontractors* and equipment, which the *Contractor* incurred to the date of termination on account of the remaining *Work*.

The amounts recoverable by the *Contractor* pursuant to this GC 16.4.1 shall be the *Contractor's* sole remedy for any and all costs, damages and expenses resulting from the events giving rise to the termination by the *Contractor*. In no event shall the *Contractor* be entitled to claim or recover against the *Owner* any costs, damages or expenses, whether for breach of

		Contract by the *Owner* or pursuant to the *Contract*, for loss of anticipated profits, consequential damages, impact costs, loss of contribution to overhead or any amount, other than those amounts recoverable pursuant to GC 16.4.1.

17.0 DISPUTES

17.5 Referee	Delete 17.5.2 (2) and replace with	(2) if the parties have not agreed upon a Referee within 3 *Days* the submission of names by one party or the other as provided by GC 17.5.2 (1), then the other party may request in writing the Master Municipal Construction Documents Association (The Association) to appoint the Referee. The Association will have the authority to appoint a Referee without further consultation with the parties and the parties shall accept the Associations appointment. If for any reason the Association fails to appoint a Referee within 5 *Days* of the written request then such failure shall be deemed to be an agreement between the parties to omit a review of that Dispute by a *Referee* and a party may at the end of the 5 *Days* request a settlement meeting and proceed with the remaining steps in the Dispute resolution process as described in this GC.

18.0 PAYMENT

18.5 Payment	Delete 18.5.1 and replace with	The net amount shown for payment on a *Payment Certificate* shall be due and payable to the *Contractor* on or before the thirtieth (30th) calendar day from receipt of the *Payment Certificate* by the *Owner*.

20.0 LAWS, NOTICES, PERMITS, AND FEES

20.2 Permits	Add 20.2.3	Apply for and obtain all necessary permits from the City of Surrey for working within *Highway* Right-of-Way, and for obstructing traffic.
20.4 Fees	Add 20.4.1	The Contractor is responsible for paying all fees required to obtain permits from the City of Surrey.

	Add 20.4.2	The Contractor is responsible for displaying all permits at the *Place of Work*, and on all vehicles and equipment. If the Contractor receives tickets for traffic and bylaw infractions, these fees shall be paid directly to the City and failure to pay such may result in a Work Stoppage or a permanent holdback in the amount due on the Contractor's Progress Certificate.

21.0 WORKERS COMPENSATION REGULATION

21.1	**Evidence of Compliance**	Append to 21.1.1	As a minimum, the evidence to be provided by the *Contractor* shall include the *Contractor's* Workers' Compensation Board registration number and a letter from the Workers' Compensation Board confirming that the *Contractor* is registered in good standing with the Workers' Compensation Board and that all assessments have been paid to the date thereof.
		Add 21.1.3	The *Contractor* agrees that it shall, at its own expense, procure and carry, or cause to be procured, carried and paid for, full Workers' Compensation Board coverage for itself and all workers, employees, servants and others engaged in or upon any *Work*.
21.2	***Contractor* is "Prime *Contractor*"**	Delete 21.2.1 and replace with	Commencing on the effective date of the *Notice to Proceed* and until such time as the *Contractor* has achieved *Total Performance*, as part of the Work the *Contractor* shall be the "*Prime Contractor*" as defined in the *Workers Compensation Act* and accordingly shall comply with all resulting requirements and obligations including coordination of the health and safety activities of all employees at the *Place of Work*, and complying with the obligations of a prime *Contractor* for a multi-employer workplace as prescribed by the applicable regulations. For certainty, except for that period during which the *Contractor* is the "*Prime Contractor*" pursuant to this Section 21.2.1, the *Owner* or appointed third party shall be the "*Prime Contractor*" for safety at the *Place of Work.*

		Add 21.2.2	The *Contractor* agrees that it is the "Prime *Contractor*" for the Work as defined in the Workers Compensation Act, R.S.B.C. 1996, c. 492 as amended and will ensure compliance with the Workers Compensation Act and Regulations in respect of the workplace. Without limiting its responsibilities under the legislation, the *Contractor* will coordinate the activities of employers, workers and other persons at the workplace relating to occupational health and safety. The *Contractor* shall have a safety program acceptable to the Workers' Compensation Board, shall provide first aid services, and shall ensure that all Workers' Compensation Board safety rules and regulations are observed during performance of this Agreement, not only by the *Contractor*, but by all sub-*Contractor*s, workers, material personnel and others engaged by the *Contractor* in the performance of this Agreement. The Prime *Contractor* shall appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the workplace. Prior to commencement of Construction, the *Contractor* shall complete and file a "Construction Notice of Project" with the Workers' Compensation Board and shall provide a copy of the same to the *Owner* confirming that the *Contractor* shall be the Prime *Contractor* responsible for coordination of safety and health under Part 3 of the Workers Compensation Act and Part 20 of the WCB Occupational Health & Safety Regulations
21.3	**Compliance with Workers Compensation Requirements**	Add 21.3.3	The *Contractor* shall ensure compliance with and conform to all health and safety laws, by-laws or regulations of the Province of British Columbia, including any regulations requiring installation or adoption of safety devices or appliances.
		Add 21.3.4	The *Contractor* shall fulfil all its duties, obligations and responsibilities in such a manner that it ensures the safety of the public and in accordance with the safety regulations of the Workers' Compensation Board and shall install signs and barriers as required to ensure the safety of the public and of its employees in the use of Highways and City of Surrey facilities.

	Add 21.3.5	The *Contractor* agrees that the *Owner* has the unfettered right to set off the amount of the unpaid premiums and assessments for the Workers' Compensation Board coverage against any monies owing by the *Owner* to the *Contractor*. The *Owner* shall have the right to withhold payment under this Agreement until the Workers' Compensation Board premiums, assessments or penalties in respect of the work done or service performed in fulfilling this Agreement have been paid in full.

22.0 INDEMNIFICATION

22.1 *Contractor* to Indemnify	Delete 22.1.1 and replace with	Without limiting the generality of any other indemnities granted by the *Contractor* in the *Contract Documents*, the *Contractor* shall indemnify and hold harmless the *Owner*, its elected and appointed officials, employees and agents, and the Contract Administrator, their agents and employees, from and against all liabilities, actions, causes of action, claims, damages, expenses, costs, debts, demands or losses suffered or incurred by them or any of them, including consequential damages and damages to third parties, whether known or unknown, foreseeable or not, that arise out of, or are attributed to, any act or omission or alleged act or omission of the *Contractor*, the *Contractor*'s agents, *Subcontractor*s, Suppliers, corporations and employees engaged in performance of *Work* under this *Contract*.

24.0 INSURANCE

24.1 Required Insurance	Delete 24.1.1 (2) and replace with	(2) Commercial General Liability Insurance through an insurance underwriter licensed to conduct insurance business in the Province of British Columbia, covering bodily injury and property damage with a minimum occurrence and aggregate limit of $5,000,000.00. The policy will be endorsed to include the *Owner*, the *Contract Administrator* and all *Subcontractors* as additional insureds. Contractual liability coverage will be of sufficient scope to include the liability assumed by the *Contractor* under the terms of this *Contract* and the on-site creation and installation of any *Public Art* undertaken in conjunction with the *Work*.

The insurance shall include:

(1) Premises and Operations
(2) Broad Form Products and Completed Operations;
(3) *Owner*'s and *Contractor*'s Protective Liability;
(4) *Contractor*'s Contingent Liability;
(5) Blanket Contractual;
(6) Contingent Employer's Liability;
(7) Non-Owned Automobile;
(8) Cross Liability/Severability of Interests;
(9) Employees as Additional Insureds;
(10) Personal Injury;
(11) Broad Form Property Damage;
(12) Sudden and Accident Pollution:
    Minimum occurrence and aggregate limit shall be $2,000,000 except where the *Work* is within 30 metres of a pipeline owned by Kinder Morgan Canada the minimum occurrence and aggregate limit shall be $20,000,000.
(13) Shoring, Blasting, Excavating, Underpinning, Demolition, Removal, Pile-driving and Caisson Work, Work Below Ground Surface, Tunnelling and Grading, as applicable;
(14) Elevator and Hoist Liability;
(15) Hook Liability, Riggers Liability
(16) Operation of Attached Machinery;
(17) Where the *Contractor* is providing Shop Drawings or other material sealed by a Professional Engineer the *Contractor*, or their Professional Engineer, shall provide a certificate of insurance for Professional Liability with a minimum occurrence and aggregate limit of $1,000,000.

If a Wrap-up Commercial General Liability policy is not purchased by the *Contractor*, the *Contractor* shall ensure that all *Subcontractor*s purchase and maintain during the term of the contract, Commercial General Liability insurance to the minimum levels specified in this agreement.

Any deductible shall be for the account of the *Contractor*. The policy will include coverage for flood and earthquake, and shall extend to cover any *Public Art* undertaken in conjunction with the

Work, and property at any other location, while in storage, transit and during erection, installation and testing. Coverage shall extend to protect the interest of the *Owner*, and to the extent that the *Owner* has an insurable interest, the policy will have the *Owner* as first loss payee.

Add 24.1.1 (5) The insurance shall include:

(1) a Breach of Conditions clause, "Notwithstanding anything contained elsewhere in this policy, any breach of a condition of the policy, whether by commission or omission, by one of the parties hereby insured shall not prevent recovery by any other party or all parties hereby insured who are innocent of any such act or breach."
(2) coverage of resultant damage from error in design that are carried out by the *Contractor*;
(3) coverage of resultant damage from faulty workmanship; and
(4) coverage of resultant damage from faulty materials.

Add 24.1.1 (6) The *Contractor* shall provide a certificate of insurance in the form attached to the *Contract Documents*. In the event of conflicts between GC 24 and the certificate attached to the *Contract Documents*, the more stringent requirements shall apply.

27.0 PATENTS AND COPYRIGHTS

27.1 Patent and Copyright Compliance

Add 27.1.1 The *Contractor* shall pay all royalties, patents and license fees applicable to any portion of the *Work*. The *Contractor* is obligated to ensure that the *Work* as performed does not breach any copyright, patent or license agreement.

28.0 NON-RESIDENTS

28.1 Non-Residents

Add 28.1.1 If the *Contractor* is a non-resident of Canada, the *Contractor shall*:

(1) obtain all necessary approvals, consents, permits, licenses, certificates, registrations and other authorizations required to comply with all applicable laws, regulations, by-laws or Codes in the performance of the Work;

(2) obtain from the Retail Sales Tax Office, a certificate confirming that the *Contractor* has duly registered, and provide proof of same to the *Contract Administrator*, prior to commencement of the *Work*.

Add 28.1.2 The *Contractor* shall ensure that all *Subcontractors* who are non-resident in British Columbia have obtained all necessary approvals, consents, permits, licenses, certificates, registrations and other authorizations required to comply with all applicable laws, regulations, by-laws or Codes in the performance of the Work, and have registered with the Retail Sales Tax Office, has a Goods and Service Tax registration number, a provincial Retail Sales Tax registration number and a Workers Compensation Office registration number.

Add 28.1.3 The *Contractor* is responsible to ensure that all applicable taxes or remittances are made by itself and its *Subcontractor*s and in relation to non-resident *Subcontractor*s, any applicable retentions or withholdings are made.

Add 28.1.4 If the *Contractor* does not provide to the *Owner* a waiver of regulation letter, or satisfactory evidence to satisfy the conditions of GC 28 then the *Owner* may withhold and remit to the appropriate authority the greater of:

(1) 15% of each payment due to the *Contractor*; or
(2) the amount required under applicable tax legislation.

END OF SECTION

Engineering Department

Supplementary Master Municipal Construction Documents

SUPPLEMENTARY SPECIFICATIONS

January 2016
(Updated July 01, 2016)

The City of Surrey Supplementary Master Municipal Construction Documents are supplemental to the **Master Municipal Construction Document – Platinum Edition (2009)** and take precedence over the MMCD General Conditions, Specifications, Standard Detail Drawings and their Amendments.

TABLE OF CONTENTS

MMCD Section 01 33 01 Project Record Documents

1.0 GENERAL

Append to 1.0.1 Operation and Maintenance (O&M) manuals shall be prepared by the Contractor for all projects containing mechanical, electrical or instrumentation materials and equipment, such as but not limited to: pump stations; sewage force mains and siphons; district energy systems; flood boxes, control valves and gates; storm water detention and water quality facilities; reservoirs, pressure reducing stations, wells, flow meters and level meters.

O&M manuals shall address all related below-ground and building interior materials and equipment.

1.4 Format

Append to 1.4.2 Binders shall contain DVD's with all documents in PDF format.

Append to 1.4.3 Groupings should be based on MMS Division or Discipline (i.e. HVAC, electrical, instrumentation, etc.).

Append to 1.4.7 Drawings to be included in binders shall consist of Contract Drawings and Shop Drawings.

1.5 Contents, Each Volume

Append to 1.5.3 Part number and serial number shall be included in the list of information for each product.

Append to 1.5.5 The sequence of instructions shall include an Operational Narrative, to be written by the Contract Administrator, that identifies: design objectives and parameters (flows, pressures, velocities); operational and control philosophy, on-off set points, high and low level alarms, primary, duty and secondary control settings and relationship; and emergency power capacity and fuel capacity.

Append to 1.5.6 Manufacturer's calibration and testing results and certificates for range of parameters and equipment including flow, velocity, pressure, horsepower and air quality emissions.

Append to 1.5.7 Safety Requirements: list of all hazards and safe practices required, including electrical hazards, confined space areas, fall protection, system isolation, de-pressurising utilities, lockout procedures and required safety training programs.

		Append to 1.5.8	Parts Inventory: a checklist and tabular summary of all critical parts, and their average delivery times, and recommendation on which spare parts should be kept on hand.
1.6	**Record Documents and Samples**	Add 1.6.1.10	Shop Drawings that require an Engineer's Seal are to be sealed by a Professional Engineer registered in the Province of British Columbia.

END OF SECTION

MMCD Section 01 34 00S Start-up Testing and Commissioning

1.0 GENERAL

1.1 Overview .1

This section is applicable to all projects containing mechanical , electrical or instrumentation materials and equipment, such as but not limited to: pump stations; sewage force mains and siphons; district energy systems; flood boxes, control valves and gates; storm water detention and water quality facilities; reservoirs, pressure reducing stations and wells; flow and level meters.

The Contractor shall provide, test, commission, and turn over, to the City, a complete operating facility as described in the contract

1.2 Related Work .1

Project Record Documents – Section 01 33 01.

1.3 Scheduling of work .1

The startup testing and commissioning may need to be or be best scheduled at a time where suitable conditions are present to adequately test the equipment or facility, or at a time when it will disrupt the public or services to the residents the least. The Contractor shall schedule the testing and commissioning to suit these conditions and to cause the least disruption.

1.4 Commissioning Planning .1

The Contractor shall provide a plan and checklist indicating components and systems to be tested, detailed procedure and schedule for testing and commissioning to the Contract Administrator one month, or sooner, in advance of the commissioning. The checklist shall indicate the following:

1. components and systems to be tested or set
2. test, check or setting result
3. initials of person doing test, check or setting,
4. date and time.

The Contract Administrator and the City will review the plan and checklist and provide any comments they have to the Contractor within one week. The Contractor shall update the plan and checklist based on the Contract Administrator's and City's comments as needed.

The Contractor shall provide the final testing and commissioning plan and checklist to the Contract Administrator and the City two weeks in advance of the commissioning.

The testing and commissioning plan and checklist shall be followed during the testing and commissioning of the equipment.

The Contract Administrator may order any changes in testing plan, procedure, operation or schedule at any time before or during testing and commissioning to ensure correct commissioning.

1.8 Payment .1 Payment for all work performed under this Section will be incidental to payment for work described in other Sections unless shown otherwise in the Schedule of Quantities and Prices.

2.0 PRODUCTS Not Used

3.0 EXECUTION

3.1 Personnel .1 The Contractor shall provide competent, experienced and trained personnel to supervise the installation, inspection, pre-testing, testing and commissioning of all components and systems installed under this contract. The cost of the personnel supplied by the Contractor, manufacturer and suppliers shall be included in the contract prices.

Operation of any part of the existing system shall be performed by the City.

Contract Administrator, City and Contractor will be present for the testing and commissioning

3.2 Pre-testing .1 The Contractor shall:

.1 Pre-test all components and systems before start up testing and commissioning where possible, including assistance from the equipment manufacturer's representatives. This must be co-ordinated with the Contract Administrator and Owner.

.2 Inspect all materials and components to ensure that the work is complete and that materials and components are in place and secure.

.3 Ensure that all of the manufacturers and suppliers requirements and recommendations have been complied with.

.4 Clean the facility and equipment.

.5 Pre-test all lights, alarms, locks, and site safety equipment.

.6 Pre-test components and systems by themselves and in combination with related components and systems to ensure they are operating properly and comply with specified requirements.

.7 Pre-test all components over the entire range of operation specified including variations in flow, pressures, speeds and controls/levels.

.8 Pre-test all malfunctions, alarms, safety devices, interlocks and annunciation by simulation of malfunctions as necessary.

Should tests, checks, inspections indicate defective components or work or performance in variance with specifications the Contractor shall correct the defect or performance.

3.3 Testing and Commissioning

.1 .1 In the presence of the Contract Administrator and the City, the Contractor and the manufacturer's representatives shall:

.1 test all individual components and systems individually and in combination with related components and systems to ensure they are operating properly and comply with specified requirements.

.2 test and demonstrate all components and systems over the entire range of operation specified including variations in flow, pressures, speeds and controls.

.3 demonstrate all malfunctions, alarms, safety devices, interlocks and annunciation by simulation of malfunctions as necessary.

.2 Should tests, checks, inspections indicate defective components or work or performance in variance with specifications the Contractor shall correct the defect or performance.

.3 All tests, checks, calibration, adjustments and settings shall be recorded by the Contractor. The record shall be included in the Operation and Maintenance manual.

.4 Provide manufactures certifications as specified before acceptance of the work. The certificates shall be included in the Operation and Maintenance manual.

.5 The Contractor must co-operate with the City during testing, start-up and commissioning and during work by the City to install the pertinent equipment for its SCADA system. The SCADA system back panel will be supplied by the City to the Contractor for installation by the Contractor.

.6 Once the testing of components and systems is considered satisfactory by the Contract Administrator the Contractor shall then operate the entire system in the presence of the Contract Administrator and the City.

.7 Upon achieving Substantial Performance and once the operation of the entire system is considered acceptable and operating successfully for at least 48 hours, or longer duration as directed by the Contract Administrator and City, the City will assume responsibility for the operation of the facility at a time acceptable to the City.

.8 Contractor to completely refuel all generators and fuel storage tanks after testing and prior to transfer to the City.

END OF SECTION

MMCD Section 01 42 00 Referenced Specifications

1.0 GENERAL

1.2	**Referenced Specifications**	Append to 1.2.15.5	CAN / CSA-A23.5 no longer exists and has been combined into the CSA A3000 Referenced Specification, therefore all references to A23.5 should be changed to CSA A3000.
		Add 1.2.15.15	CAN / CSA-A5 no longer exists and has been combined into the CSA A3000 Referenced Specification, therefore all references to A5 should be changed to CSA A3000.
		Add 1.2.15.16	CAN / CSA-A8 no longer exists and has been combined into the CSA A3000 Referenced Specification, therefore all references to A8 should be changed to CSA A3000.
		Add 1.2.9.46	ASTM D6927-06 Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures.

END OF SECTION

MMCD Section 01 55 00 Traffic Control, Vehicle Access and Parking

1.0 GENERAL

Append to 1.0.1 This section includes requirements for permanent signage.

Add 1.0.6 The Contractor is required to apply for and secure City Road and Right-of-Way (CRRP) and Traffic Obstruction (TOP) permits to carry out the Work. Contractor shall comply with the terms and conditions stipulated in these traffic control permits.

Add 1.0.7 For work on Local Roads, except for road closures, detours and locations where traffic impacts will extend back to intersections or Collector or Arterial Roads, permits are required from the City with reference to the BC Traffic Control Manual however a formal Traffic Management Plan (TMP) is not required for submission to the City, unless instructed otherwise.

Add 1.0.8 For work in intersections, on Collector Roads, on Arterial Roads, and where road closures and detours are being proposed, the Contractor shall solely prepare a TMP(s), submit it to the City for acceptance, complete the City's on-line process for booking/requesting the road usage, and then implement and maintain the TMP(s). If the Work is located across various locations / sites / roads, each location/road/site will require a unique TMP.

The TMP(s) shall include:

.1 Name of the: Contractor; Traffic Control Person / Subcontractor, Owner; Contract Administrator; Contract; Contractor's Traffic Manager, and the related addresses and contact information.

.2 Be prepared by a qualified Traffic Management Company or Subcontractor, and in accordance with the BC Traffic Control Manual for work on Roadways, as amended.

.3 Be prepared using editable computer program, relatively to scale, and submitted in digital PDF 11x17 format.

.4 Include an accurate road configuration, with road names, north arrow marker, speed limit, and proposed extents or the Work.

.5 Indicate placement marker and distance of signs; sign images and sign number; delineators, cones, barricades, etc.; position of certified TCP's and traffic control equipment including FAB's and HLWD's

.6 Include Dynamic Message Signs (DMS) and static Message Signs, as directed by the City, for each direction of each project and provide advance notice for full closures.

.7 Identify the number of lanes to be obstructed, along with taper lengths and widths of lanes.

.8 Identify the impact to: driveways and bus stops; Intersections, turning isles; sidewalks; and bike lanes Include measures to facilitate and maintain access.

.9 Consider project specific restrictions (work hours, movements, etc.) as outlined in the Contract Documents.

.10 Stipulate that advance notice of construction signs to be installed at least 5 (five) working days before planned traffic diversion/start of work.

.11 Include map of full detour routes (if applicable), including the above requirements along each route

In the event that excessive traffic delays or unsafe conditions result from implementation of the TMP, the City at its sole discretion may suspend the Work, without schedule extensions nor payment of costs, and the Contractor will be required to modify the TMP.

Contractor responsible to allow sufficient time for TCP review, possible modifications, and preparation of signage when preparing the project schedule. No claims for delays or time extensions will be considered due to failure to obtain an approved TMP.

When work is required outside the allowable working/construction hours (i.e. night work), the Contractor shall apply for exemptions to noise by-laws. The Contractor shall complete all application forms and pay required fees to the City when apply for exemptions

1.3 Temporary Parking Areas

Add 1.3.2 Where it is necessary to temporarily disrupt on-street parking for construction:

.1 Distribute 72-hour advance notices to affected residents and businesses.

.2 Supply and erect temporary no-parking signs 72 hours in advance and at the same time as issuing notice to residents and businesses. Temporary no-parking signs shall state hours and dates of when no-parking is permitted, as well as name and phone number of the Contractor.

.3 Do not impound parked vehicles unless instructed to do so by the RCMP, or if authorized by the City's Parking Services in conjunction with the City's By-law Enforcement.

.4 Vehicles may be towed at Contractor's risk and expense to a nearby location. Inform registered owner as soon as possible where vehicle has been relocated. Do not charge vehicle recovery or towing fees to vehicle owner.

.5 Prior to use of pay station areas for construction or storage/laydown of equipment and materials, Contractor to get written authorization in advance from the City's Parking Services and pay/reimburse the City for use of pay station areas.

1.4 Traffic Control

Add 1.4.14 Where business driveways are being obstructed for more than one day the Contractor shall post signage to direct business patrons to an alternate entrance.

Add 1.4.15 Do not obstruct any travelled way longer than is absolutely necessary.

Add 1.4.16 Unless expressly stated to in the Contract Documents, temporary road closures will not be permitted.

Add 1.4.17 Where temporary traffic obstructions are permitted by the City, advise the Contract Administrator:

.1 At least five (5) Days prior to the date of any desired closures, and

.2 At least 15 Days prior to the date of any desired full

closure, so that the Owner may assess traffic control priorities, and advertise the closure. If there are conflicts, the Contractor will be advised of alternate periods during which he may complete the requested traffic control measure;

1.5 Payment

Delete 1.5.1 and replace with

Payment for all work performed under this Section will be on a Lump Sum basis unless noted otherwise in the Schedule of Quantities and Prices. Payment shall be 50% upon preparing TMP's, securing permits and erecting traffic control devices; 40% distributed in monthly Progress Payments for traffic control persons and related control devices; and 10% upon Substantial Performance.

Add 1.5.2

Payment for supply, installation and maintenance of Dynamic Message Signs, also known as Changeable Message Boards, to be on a per sign per calendar week basis, pro-rated based on *Work Days*, unless noted otherwise in the Schedule of Quantities and Prices. Payment shall be for the number of signs requested by the Owner in accordance with the TMP and related permits.

2.0 PRODUCTS

2.1 Temporary Road Markings and Signage

Add 2.1.1

The temporary traffic line shall be a 100mm x 300mm strip of prefabricated reflective yellow tape having an adhesive backing and shall be placed at 10 metre intervals along the center of pavement.

Add 2.1.2

The temporary stop bar shall be 2 - 100mm continuous strips of prefabricated reflective white tape having an adhesive backing and placed across the travel lanes at traffic control intersections.

Add 2.1.3

Notice of Construction signs to be 1200mm x 1200mm and have black printing on fluorescent orange background.

Add 2.1.4

Signs shall be reflectorized to a minimum 3MEngineeringGrade Standard, and include the project and Contractor's name imprinted on the back.

3.0 EXECUTION

3.1 Temporary Road Markings and Signage

Add 3.1.1 Temporary traffic lines and stop bars shall be placed immediately following laying of the asphalt pavement.

Add 3.1.2 Remove the temporary markings when instructed by the Contract Administrator, immediately before placement of the permanent traffic road markings.

Add 3.1.3 Signs that are not conforming to standards will be removed and replaced with suitable signs at Contractor's cost.

Add 3.1.4 Obtain prior approval from the Contract Administrator on construction speed limit changes.

Add 3.1.5 When the permanent signs are removed during construction, the Contractor shall keep and maintain temporary signs of equal quality in place at all times until permanent replacement signs are reinstated.

3.2 Permanent Signage

Add 3.2.1 Prior to commencement of the Work, prepare and deliver a list of all signs, such as traffic control signs, school signs and playground signs. The City will supply sleeves for traffic sign posts. The Contractor shall arrange to pick up the sleeves from the City. The Contractor is responsible for installing the sleeves and coordinating with the City to install the permanent signage. Contractor shall give the City at least ten (10) days' notice before requesting the permanent signs be installed.

Sign sleeves for bus stops will be supplied by Coast Mountain Bus Company and Contractor to coordinate.

END OF SECTION

MMCD Section 01 57 01 Environmental Protection

1.0 GENERAL

	Delete 1.0.2 and replace with	All Work shall comply with GC 20.4 Environmental Laws, including the City's Erosion and Sediment Control (ESC) By-law 2006 No. 16138, and any updates thereto.
	Append to 1.0.4	Work in the vicinity of watercourses is subject to restrictions imposed by Federal, Provincial and Municipal Agencies.
1.2 Temporary Erosion and Sediment Controls	Delete 1.2.2.2 and replace with	Do not operate construction equipment in watercourses.
1.4 Environmental Protection	Add 1.4.2.5	To avoid undue impact to nesting birds, vegetation will not be removed or altered during the sensitive breeding period which is generally between March 15 and August 15. If land clearing is necessary within this window, land clearing will proceed only after the Contractor's qualified Registered Biologist has completed an onsite survey to confirm no impact to nests. If bird nests are found in areas requiring vegetation removal, appropriate buffer zones will be implemented to reduce sensory disturbance until chicks have fledged.
1.6 Payment	Delete 1.6.1 and replace with	Payment for all work performed under this Section will be on a Lump Sum basis unless noted otherwise in the Schedule of Quantities and Prices. Payment shall be 50% upon installing ESC measures; 40% distributed in monthly Progress Payments for maintenance and monitoring related work; and 10% upon Total Performance.

2.0 PRODUCTS

2.1 Contractor Machinery and Equipment	Add 2.1.1	All diesel engine construction equipment and machinery that is 25 horsepower (19 kW) or greater, whether owned or operated by the Contractor or a Subcontractor, shall be registered and in compliance with Metro Vancouver's Non-Road Diesel Engine Emissions Regulation Bylaw No 1161, and any updates thereto. Certificates / labels of registration shall be clearly visible on the side or rear of the equipment and machinery.

Add 2.1.2 All construction equipment and machinery and generators shall be fitted with standard noise suppression devices. If noise abatement is deemed necessary by the Contract Administrator, mitigation measures, such as time sensitive restrictions or the use of smaller, less disturbing equipment, may be implemented upon the Contractor.

Add 2.1.3 Prior to construction, the Contractor will verify that equipment and machinery used is in good working condition and free of fuel and lubricant leaks. Necessary maintenance oils/lubricants will be stored in a separate, contained lay-down area, and all maintenance activities will be conducted at least 30 metres away from any watercourse.

2.2 Implementation Add 2.2.1 A fuel spill emergency response kit is to be kept at the place of Work at all times, including at least one for each site/location. The kit should include: material data sheet for hazardous materials being used on site; emergency contact list; absorbent pads; straw bale and poly covers; and floating containment boom for locations adjacent to watercourses.

3.0 EXECUTION

3.1 Implementation Add 3.1.1 The Contractor is responsible for supply, installation, and maintenance of the necessary ESC measures through the entire duration of the Contract, including the clearing and construction stages and through the Maintenance Period, unless noted otherwise in the Contract Documents.

Add 3.1.2 Storm water discharge from the project site must comply with the City's ESC By-law 2006 No. 16138, and any updates thereto.

Add 3.1.3 The Contractor shall use appropriate means to protect the water quality of all ditches, watercourses and drainage infrastructure.

Add 3.1.4 All ESC measures shall be established in place, and inspected by the Contract Administrator, prior to commencement of any clearing, excavation/stripping and/or placement of fill material.

Exclusion zones around watercourses and wetlands shall be flagged to prevent disturbance of vegetated riparian areas by construction machinery, equipment and personnel.

Filter fabric, particularly at catch basins and drainage inlets, and silt fences shall be kept clean during construction to ensure adequate drainage is maintained.

3.2 Flow Diversion

Add 3.2.1 The Contractor is responsible for management, control and flow diversion, including bypass pumping and water quality treatment, if required, of water from the site, where water includes but not limited to: excavation and trench dewatering, groundwater, surface runoff, sewer and ditch flows, and watercourse flows.

Add 3.2.2 Flow diversion is to be implemented in accordance with the City's ESC By-Law, and other Municipal and Agency bylaws and regulations, including discharge quality requirements. If discharge requires third-party permits (i.e. Metro Vancouver, MOE, FLNRO, DFO, etc.) the Contractor is required to apply and secure these permits, including the associated costs, as part of their Work.

Add 3.2.3 If requested by the Contract Administrator, the Contractor shall prepare and submit a Flow Diversion Plan to the Contract Administrator for review prior to works being completed. The Flow Diversion plan should include: map of the site area complete with excavation and trench limits, location of water sources, proposed pumps/intake piping, proposed flow isolation location and proposed discharge locations; construction methodology; pump, piping and well pointing sizes, including flow rates expected; and ESC measures required for flows. Preparing this plan is considered incident to all other work described in this Section.

Add 3.2.4 If the Work involves construction in and around a watercourse, the Contractor is responsible for site isolation of watercourse flows and fish salvage prior to any dewatering and construction. Related flow diversion during construction shall be completed using gravity piping or pumps equipped with fish screens, in accordance with Ministry of Environment and Department of Fisheries Guidelines.

Add 3.2.5 Sediment laden water shall be properly handled by the Contractor and as a minimum be discharged to a flat, vegetated area or an impervious container, before being further controlled and discharged off site.

3.3 Adjustment and Maintenance

Add 3.3.1 The Contractor is responsible for anticipating ESC concerns and adjusting their work plan to mitigate potential risks to ensure all Work is completed in accordance with the Environmental Laws.

Add 3.3.2 For temporary flow diversion pumping systems, which operate on a 24-hour basis, Contractor is responsible for operation and maintenance which includes competent staff to operate and maintain the equipment including re-fuelling the pumps and generators at all times, including night-time and weekends, and have security personal present to ensure equipment is fully functional.

Add 3.3.3 Deficiencies identified by the Contract Administrator, their site representative and through regular ESC monitoring reports shall be corrected by the Contractor within a reasonable time frame, and no longer than 48 hours. If additional ESC measures are required to correct the deficiencies then these measures are deemed incidental to other work described in this Section and should the deficiencies not be completed within the set timeframe then the Owner reserves the right to have the works corrected and payment will be deducted, at cost plus 10%, from the Contractor's Progress Certificate with maintenance of the corrected measures to be the Contractor's responsibility.

Add 3.3.3 Where sediment is observed to have been tracked onto a travelled area, as a result of the Contractor's Work, then the Contractor must perform sufficient street cleaning within four (4) hours of notification.

Add 3.3.4 Maintenance and revisions to ESC measures are considered incidental to work described herein this Section.

END OF SECTION

MMCD Section 01 58 01 Project Identification

1.0 GENERAL

1.2 Temporary Project Signage

Delete 1.2.1.1 and replace with

1. One week prior to construction, the Contractor shall install information signs.
2. The Contractor shall maintain the signs for the duration of the contract.
3. The Contractor shall remove the signs after completion of construction.

Delete 1.2.1.2 and replace with

The City will provide project notification signage and the Contractor shall delivery the signs to site, supply and install the framing, and erect the signage.

Append to 1.2.2.1

Contractor to deliver to businesses and residents copies of letter, provided by the Owner, advising these persons of intended construction activities. The Contractor shall deliver these letters no sooner than ten (10) Days and no later than five (5) Days before the start of construction in the affected area.

END OF SECTION

MMCD Section 01 62 01S List of Approved Materials and Products

This Section identifies the City of Surrey's List of Approved Products and Materials, and applicable restrictions or specifications, which are to be read in conjunction with, and superseding, products specified within the MMCD Master Specifications. Alternates to the products in this Section require the written approval from the City of Surrey.

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications
26 56 01	**ROADWAY LIGHTING**			
	Wire Conductor	Aluminium	• Alcan Aluminium Nual • SouthwireSimpull • Prysmian Cable • Northern Cable	Copper conductor is acceptable from handhole to fixture in streetlight pole.
	Luminaires	LED Luminaires	• LED Roadway lighting NXT series Fixture • American Electric AutoBahn fixture	LED Roadway Lighting NXT series fixture, NXT-XX-X-7-2ES-X-XX-3-UL-S-2H with adjustable selectable driver. All X's are attributes to be determined by the lighting Consultant to meet City standards for that area. City may permit American Electric AutoBahn fixture Model No. ATB2-80BLEDEXX-XXX-R2-XX-P7.
33 11 01	**WATERWORKS**			
2.1.4	**Joint Protection**		• Trenton Tec Tape • Denso Petrolatum Tape	Apply joint protection as per Fraser Health requirement.
2.2.1	**Ductile Iron Pipe**	Ductile Iron		AWWA C 151, Pressure Class 350. Nitrile gasket required when hydrocarbons encountered in soil. **July 01/16**
2.2.2	**PVC Pressure Pipe**	• PVC C900 • PVCO C909	• Ipex • Royal	Permitted for 150mm – 300mm diameter. Shall be pigmented blue, and shall be bell thickened to ASTM D3139 Clause 6.2. Not permitted on Arterial Roads, nor are they permitted in areas subject to soil liquefaction in seismic events. Nitrile gasket required when hydrocarbons encountered in soil.

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.2.3	**High Density Polyethylene Pipe**	HDPE DR 9	• KWH Sclairpipe • WL Plastics • High Performance	HDPE to AWWA C-906 pipe is permitted for water supply to Agricultural Lands only, and if diameter is 150mm or smaller.	
2.2.4	**Fittings**	• Ductile Iron • Compact Ductile Iron	• Terminal City IW • Sigma Products • Star (C153) • OB Waterworks	Cast Iron fittings are not acceptable	**July 01/16**
		PVC C 907 Injection moulded 100mm – 300mm Diameter	• IPEX • Royal	PVC fittings for mainline water mains shall require restrainers to MMCD that do not de-rate the pressure rating of the pipe material.	
		PVC C900 Fabricated 150mm – 300mm Diameter	• IPEX • Royal • Galaxy Plastic • Pro-line Fittings	High Deflection coupling by Certain Tee. PVC DR18, C800, Class 150, 5^{o} bend fitting is acceptable.	
		Bolts, Nuts and Tie Rods		Type 304 Grade A stainless steel required for all hardware.	**July 01/16**
	Couplings and Flange Coupling Adapters	Plain End	• Dresser 38 or 62 • Robar • Smith-Blair • Romac • EBAA 3800 • Ford • Mueller	Type 304 Grade A stainless steel required for all hardware	**July 01/16**
		Restrained Flange Adaptors	• Romac RFCA • Uniflange RFAD • EBAA 2100	Type 304 Grade A stainless steel required for all hardware	**July 01/16**
		Repair Clamps	• Robar • Romac • Mueller • Canpac	Couplers shall have appropriate adaptor gaskets to suit OD of pipe material(s) being coupled.	
	Joint Restraint Devices	Ductile Iron Mains	• UniFlange Series 1400 • EBBA Iron	Joint restraints shall have pressure rating equal to the mainline pipe. Type 304 Grade A stainless steel required for all hardware	**July 01/16**
		PVC / PVCO Mains	• EBAA Series 1900 • Uniflange Series 1309, 1399, 1500 • JCM Series 610	Restraints for PVC/PVCO shall be approved by pipe manufacturer. Type 304 Grade A stainless steel required for all hardware	**July 01/16**
		Integral Joint Restraints	• Terra Brute • Cobra Lock		

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.3.1	**Gate Valves**	50mm – 250mm Resilient-seated	• Mueller • Clow • AVK	All valves shall have epoxy coated ductile iron body to AWWA C 509.	**July 01/16**
		300mm Resilient-seated	• Mueller • AVK	Ductile iron body to AWWA C 515. Valves >=300mm shall have brass or stainless steel stems.	**July 01/16**
2.3.3	**Butterfly Valves**	General		Not permitted unless approved by Engineer	
2.3.4	**Blow-off Valves**	General		Permanent blow-offs shall be as per Standard Drawing. Testing and Temporary blow-offs shall be to MMCD Drawing W8 complete with 50mm gate valve. Temporary valves for testing and flushing shall not be left exposed above grade.	
					July 01/16
2.3.5	**Air Valve**		• Apco • Val-Matic • Crispin		
2.3.6	**Water Valve Boxes**		• Terminal City • Dobney • Westview • Trojan	Nelson Box will not be allowed. Circular Cast Iron (MR6 Style), 300mm length	**July 01/16**
2.3.7	**Service Valve Boxes**	Curb Stop Box	• Clow • Dobney D-10 • Muller A-726 • Muller A-728 • Trojan	150mm riser pipe with cast iron box (MR6 style). If in driveway, concrete meter box c/w metal lid.	**July 01/16**
2.5.1	**Water Service Connections**	Pipe Material	Polyethylene	AWWA C-901 c/w #10 tracer wire shall be attached to all services	
2.5.3	**Service Saddles**	Saddles for Ductile Iron Pipe	• Robar • Romac • Smith Blair • Mueller		
		Saddles for PVC Pipe	• Canpac • Mueller • Robar • Romac • Smith Blair	Saddles required for service installation on all PVC mains.	

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.6	**Hydrants**		• Terminal City C71P • Canada Valve "Century" • Clow M93 Brigadier • AVK 2780	Ductile iron boot shall be installed. Refer to SS for Paint Colours and requirements	
2.7	**Underground Service Line Valves and Fittings**	Corporation Stop	• Cambridge • Ford • Mueller	Shall be full-port ball valve up to 38mm only. Use mainline ball valve for sizes 50mm and larger.	**July 01/16**
		Curb Stop	• Cambridge • Ford • Mueller	Shall be full-port ball valve to 38mm with 90^0 turn stop. Use gate and check valve, near property line, for sizes 50mm and larger	**July 01/16**
2.10	**Casing Spacers**		• Uniflange • Calpico • Raci	Shall be fabricated cast iron or high density polyethylene insulating spacers designed to centre main in the carrier pipe.	
33 30 01	**SANITARY SEWERS**				
2.1	**Concrete Pipe**	Non-reinforced and Reinforced Concrete	• Langley Concrete • Ocean Pipe	Manufacturers to be PPP or Q-Cast Certified Concrete sewers 200mm to 750mm requires prior approval from the Engineer. Sewers 900mm in diameter and larger shall have factory PVC/HDPE interior liner (T-Lok or Agru)	
2.2	**Plastic Pipe, Mainline Smooth Profile**	PVC SDR 35	• IPEX • Royal • JM Eagle • Northern	Maximum diameter of 750mm Recycled PVC (EnviroTite SDR) is not permitted. No repairs from inside pipe.	**July 01/16**

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.2 (cont'd)	**High Density Polyethylene Pipe**	HDPE smooth wall pipe with fusion welded joints	• KWH Sclairpipe • WL Plastics • High Performance	Only to be used at location approved by the City Shall be DR 21 or thicker	
2.3	**Service Connections**	PVC-SDR 28	• IPEX • Royal • JM Eagle • Northern	Minimum size shall be 100mm.	July 01/16
	Tees and Wyes	PVC-SDR 28	• IPEX • Royal • JM Eagle • Northern	Manufactured wye fitting shall be used for all connections on new mains.	
		Insertable Tee	• Inserta Tee	Insertable tee only permitted for connections to PVC and Concrete mains which are 200mm mains or larger. Connections to 150mm diameter mains, AC and VC mains, require manufactured wye.	
		Saddle	• Robar 3506 • Romac CB	Applicable for connections to AC and Vitrified Clay mainlines. Stainless steel straps required.	
	Inspection Chamber	Inspection Chamber	• Pro-Line • Royal • Galaxy Plastics	IC to have locking lid c/w gasket	July 01/16
		Cover: Cast Iron MR Style	• TR 10C • Dobney MR 10-18B • TC 10C	Shall be used in all travelled areas, and when I.C. within 2.0m of travelled areas.	July 01/16
		Inspection Chamber Back-flow Check Valve	• Pro-line Fittings • Royal • Galaxy Plastics	Comply with CSA/CAN3 B70-M86.	

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
33 34 01	**SEWAGE FORCE MAINS**				
2.2.1	**Ductile Iron Pipe**	General		Not permitted for sewage forcemains	
2.2.2	**PVC Pressure Pipe**	• PVC C900 • PVCO C909	• Ipex • Royal	Permitted for 150mm – 300mm diameter, DR18 or thicker. Shall be pigmented blue, and shall be bell thickened to ASTM D3139 Clause 6.2. Not permitted on Arterial Roads, nor are they permitted in areas subject to soil liquefaction in seismic events.	**July 01/16**
2.2.4	**High Density Polyethylene Pipe**	HDPE DR 17 (or thicker)	• KWH Sclairpipe • WL Plastics • High Performance	HDPE comply with AWWA C906 for pipe 100mm diameter and larger. Outside diameter (OD) to iron pipe size (IPS) dimensions.	
2.2.5	**Fittings:**	Saddle	• Friatec VA • Corix Flo-Control (75-150mm)	Electrofusion Saddle Service for HDPE	
		Bolts, Nuts and Tie Rods		Type 304 Grade A stainless steel required for all hardware.	**July 01/16**
2.2.8	**Low-pressure Sewage Force mains**	HDPE DR 13.5 (or thicker)	• KWH Sclairpipe • WL Plastics • High Performance	HDPE comply with AWWA C901 for pipes 75mm diameter and smaller and AWWA C906 for pipe 100mm diameter and larger. Outside diameter (OD) to iron pipe size (IPS) dimensions.	
		• PVC C900 • PVCO C909	• Ipex • Royal	Permitted for 150mm – 300mm diameter, DR18 or thicker. Shall be pigmented blue, and shall be bell thickened to ASTM D3139 Clause 6.2. Not permitted on Arterial Roads, nor in areas subject to soil liquefaction in seismic events.	

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.3.2	**Gate Valves**	50mm – 250mm Resilient-seated	• Mueller • Clow • AVK	All valves shall have epoxy coated ductile iron body to AWWA C 509.	July 01/16
		>= 300mm Resilient-seated	• Mueller • AVK	Ductile iron body to AWWA C 515. Valves >300mm shall have brass or stainless steel stems.	July 01/16
2.3.4	**Air Valves**		• Apco • ARI • Val-Matic	25mm valves to be brass	
2.3.6	**Plug Valves**		• APCO series 500 resilient-seated • Milliken Millcentric • Valmatic Eccentric	All Plug Valves to be Full Port. Refer to SS Section 33 34 01, 2.6	
2.3.7	**Ball Valves**		• Unifid Alloys	All Ball Valves to be Full Port. 50mm and smaller to be brass, larger to be stainless steel and flanged.	
2.3.8	**Check Valves**	Ball Check – Cast/Ductile Iron	• Danfoss 408/408FB	Plastic check valves not permitted.	
2.5	**Low Pressure Sewage Pumps**	Grinder Pumps	• ABS • Barnes • Environment One • Hydromatic • ITT Flytt / Xylem • Myers • Zoeller	Refer to Design Criteria Manual for more specifications.	
33 40 01	**STORM SEWERS**				
2.1	**Concrete Pipe**	Non-reinforced and Reinforced Concrete	• Langley Concrete • Ocean Pipe	Manufacturers to be PPP or Q-Cast Certified Not permitted in Lowland areas (below 7.0m elev.)	July 01/16
2.2	**PVC Pipe, Mainline Smooth Wall**	PVC SDR 35	• IPEX • Royal • JM Eagle • Northern	Maximum diameter of 750mm Recycled PVC (EnviroTite SDR) not permitted. No repairs from inside pipe.	July 01/16

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.3	**PVC Pipe, Mainline Profile**		• IPEX • Royal (Korflo)	Only permitted in Lowland areas (below 7.0m elev.) Only permitted up to 675mm in diameter. Spiral ribbed pipe is not permitted. IPEX Ultra-Rib not permitted. No repairs from inside pipe.	July 01/16
2.4	**HDPE Pipe, Mainline Open Profile**	HDPE smooth wall pipe with fusion welded joints	• KWH Sclairpipe • WL Plastics • High Performance	Only permitted in Lowland areas (below 7.0m elev.) unless approved otherwise by the City Shall be DR 21 or thicker	July 01/16
2.5	**Spiral Rib Steel Pipe**		• Not permitted	Steel and CSP pipe is not permitted for storm sewers.	
2.6	**Service Connections**	PVC-SDR 28	• IPEX • Royal • JM Eagle • Northern	Minimum size shall be 150mm.	
	Tees and Wyes	PVC-SDR 28	• IPEX • Royal • JM Eagle • Northern	Manufactured wye fitting shall be used for all connections on new mains.	
		Insertable Tee	• Inserta Tee	Insertable tee only permitted for connections to PVC and Concrete mains which are 200mm mains or larger. Connections to 150mm diameter mains, AC and VC mains, require manufactured wye.	
		Saddle	• Robar 3506 • Romac CB	Applicable for connections to AC and Vitrified Clay mainlines. Stainless steel straps required.	

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
	Inspection Chamber	Inspection Chamber	• Pro-Line • Royal • Galaxy Plastics	IC to have locking lid c/w gasket	July 01/16
		Cover: Cast Iron MR Style	• TR 10C • Dobney MR 10-18B • TC 10C	Shall be used in all travelled areas, and when I.C. within 2.0m of travelled areas.	July 01/16
		Inspection Chamber Back-flow Check Valve	• Pro-line • Royal • Galaxy Plastics	Comply with CSA/CAN3 B70-M86.	
2.11	**Polypropylene Pipe, Mainline Open Profile**		• ADS Santite HP	Only permitted in Lowland areas (below 7.0m elev.) Service connections on new Open Profile HDPE / Polypropylene mains shall be injection moulded PVC manufactured wyes for mains < 300mm.	July 01/16
33 42 13	**PIPE CULVERTS**				
2.1	**Corrugated Steel Pipe**		• Armtec • Canada Culvert • Atlantic Industries	Only permitted in Lowland areas (below 7.0m elev.) Shall be Aluminized II coating. Requires prior approval from the Engineer.	July 01/16
2.2	**Concrete Pipe**	Non-Reinforced and Reinforced Concrete	• Langley Concrete • Ocean Pipe	Not permitted in Lowland areas (below 7.0m elev.) Manufacturers to be PPP or Q-Cast Certified.	July 01/16
2.3	**PVC Pipe, Mainline Smooth Wall**	PVC-SDR 35	• IPEX • Royal		
2.4	**PVC Pipe Profile, Mainline**		• IPEX • Royal (Korflow)	Only permitted in Lowland areas (below 7.0m elev.) Only permitted up to 675mm in diameter. Spiral ribbed pipe is not permitted. IPEX Ultra-Rib not permitted.	July 01/16

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications	
2.5	**HDPE Plastic Pipe, Open Profile**		• Boss 2000 • ADS N12	Only permitted in Lowland areas (below 7.0m elev.) Certified to CSA B182.8-02 Requires prior approval from the Engineer.	**July 01/16**
2.9	**Polypropylene Open Profile**		• ADS Santite HP	Only permitted in Lowland areas (below 7.0m elev.) Refer to SS Section 33 42 13	**July 01/16**
33 44 01	**MANHOLES AND CATCH BASINS**				
2.1	**Precast Manhole sections**	Manhole Base and Riser	• Diamond Precast • Langley Concrete • Ocean Pipe	Manufacturers to have CSA, PPP or Q-Cast Third-Party Certification	**July 01/16**
2.1.7	**Manhole Frames and Covers**	Type 1 and 2 Height Adjustable Cast Iron Style		Refer to Supplementary Specification Section 33 44 01 ASTM A48-03, Class 35B Gray cast iron; or ASTM A536 Grade 65/45/12 ductile iron	
		Type 1 and 2 Height Adjustable	• East Jordan IW 00302407 • Dobney C-44A Frame and Ring with C724 Style cover		
		Low-profile Frame and Covers		Use of 100mm low profile frames and covers to be approved by the City.	
2.1.13	**Catch Basin and related castings**	CB Frame	• Dobney • Westview Sales	Refer to Standard Drawings for required lettering on Manhole Covers for sanitary and storm sewers, including in fish habitat areas. Shall be compatible and interchangeable with existing City castings.	
		CB Grate	• Dobney • Westview Sales	Refer to Standard Drawings for required lettering on CB Grates, including in fish habitat areas.	
		Lawn Basin Grate	• Dobney • Westview Sales		

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications
2.1.16	**Tapered Adjusting Rings**	• Concrete • Ductile Iron • EPP • HDPE	• Ipex • Dobney • ARPRO	
2.24	**Sealant**	Sealant to be ASTM D 1850	• X-Seal from SealGuard Inc.	
33 41 13	**TRAFFIC SIGNALS**			
2.5	**Concrete Junction Boxes**		• Armtec	Labelled "ELEC"
2.6	**Poles and Anchor Bolts**	Poles, Arms, Service Base	• Nova Pole • West Coast Engineering	M.O.T.I/MMCD Galvanized and powder coated
2.7	**Conductors and Cables**	Pre-Emption Cable	GTT	Model 138
		Radio Cable	Cat 6 Ethernet cable	Outdoor rated
2.11	**Service Panels**	Service Panel	• Westcoast Electric • Valid Manufacturing	Stainless Steel or Powder Coated Aluminum – See Std Drawings
2.16.	**Traffic and Pedestrian Signals**	Signal Heads	• Econolite • Eagle	M.O.T.I/MMCD – Aluminum Housing
		Pedestrian Heads	• McCain • Eagle	Current ITE Specifications – Aluminium Housing
2.17.	**LED Signal Modules**	LED Vehicle Display	• Dialight • Leotek	M.O.T.I Current ITE Specifications
		LED Pedestrian Displays	• Dialight • Leotek	Current ITE Specifications C/W countdown timer
2.19	**Sign Mounting Hardware**	Overhead adjustable Bracket	Pelco	Astro-brac
		Side mount Brackets	Greenlite Traffic	M.O.T.I – GEL 189
2.21.	**Pedestrian / Cyclist Pushbuttons**	Push Button Sign Unit	Polara	Navigator APS EZ 2 wire C/W Central Control and Ped Station Monitor Unit.
2.28	**Uninterrupted Power Supply**	UPS	Alpha	FXM Series

MMCD Section	Product	Approved Material / Type	Approved Product/Manufacturer	Restrictions/Additional Specifications
2.32	**Extruded Aluminium Signs**	Streetname Sign Mount	Fortran	Can-Brac assembly
		Special Crosswalk Controller	Novax	PXO-II
		Fire Hall Signal Controller	Novax	ELA515

END OF SECTION

MMCD Section 03 30 20 Concrete Walks, Curbs and Gutters

1.0 GENERAL

1.4	**Measurement and Payment**	Append to 1.4.3	Payment shall also include joint and surface finishing. Curb within the area ramp or driveway crossing is considered regular curb for the purpose of payment.
		Append to 1.4.5	Payment will be on actual area placed, unless noted otherwise in the Schedule of Quantities and Prices.
		Delete 1.4.6 and replace with	Concrete driveway crossing will be based on actual area placed for different types of finishes and thickness. Payment shall be for those driveways noted on the Contract Drawings, and include grading of base gravels, supply and placement of concrete and surface finishing.
		Append to 1.4.8	Adjustment shall include: removal of existing frame and cover; cleaning; re-set to meet new grade, profile and cross fall; replace grade rings.

2.0 PRODUCTS

2.1	**Materials**	Amend 2.1.5.1	Minimum cement content should be 335 kg/m3.
		Add 2.1.5.3	Exposed Aggregate Concrete shall be 32MPa 9.5mm Chilliwack Exposed mix.
		Add 2.1.7	1. Colored Patterned Surface for median infill, splash strips, and maintenance vehicle parking pads shall be: 100mm thick stamped colored concrete splash strips or median infill except in maintenance vehicle parking area where concrete shall be 120mm thick. 2. Concrete color to be Brick Red or equivalent using Davis Pigment # 160 at rate of 30 pounds per cubic meter. Stamped concrete pattern shall be running bond pattern. All coloured concrete to be sealed with clear/translucent sealer after installation and surface is swept clean.
2.2	**Curbs & Gutters**	Add 2.2.1	On all roads with bike lanes, curb/gutter/catch basins adjacent to the bike lane shall be bike friendly as per Standard Drawing.
		Add 2.2.2	All references to concrete barrier curb shall be the narrow base barrier curb as per the Standard Detail Drawing C4, unless approved otherwise by the City.

July 01/16

3.0 EXECUTION

3.13 Special Effects Add 3.13.3

Exposed aggregate concrete shall be placed in similar fashion as regular concrete finish, except:

.1 Concrete surface shall be washed to expose the aggregates underneath after concrete has been set.

.2 During the wash, all washed water shall be collected and disposed in accordance with the local Best Management Practices.

.3 Disposing the washed water into the storm or sanitary system will not be permitted.

.4 In instances where disposal offsite is not achievable, with the approval of the Contract Administrator, the Contractor may install an onsite collection pond to store and dissipate the washed water through infiltration.

END OF SECTION

MMCD Section 03 30 53 Cast-in-Place Concrete

1.0 GENERAL

1.4 Measurement and Payment

Append to 1.5.5

Payment will be on an individual basis for the complete headwall or other structure being constructed.

3.0 EXECUTION

3.5 Acceptance

Add 3.5.1

Concrete shall develop a minimum compressive strength of 32 MPa at 28 days based on standard cylinder test, performed in accordance with CSA A23.2-9C, based on concrete cylinders collected on the day of placement.

Add 3.5.2

One strength test (3 specimen cylinders) shall be made for each 100 square metres of concrete work. In no case, however, shall there be less than one strength test for concrete placed in one day. One cylinder shall be tested at 7 days, 2 cylinders shall be tested at 28 days.

Add 3.5.3

The core test shall be performed in accordance with CSA 23.2-14C. The compressive strength of the concrete, based on core tests, shall be interpreted from CSA A23.1-94.

Add 3.5.4

In the event that the cylinders, tested at 28 days, fail to achieve the specified 32 MPa, the Contractor shall, upon notification, obtain cores for further testing. The cores are to be drilled from the portions of the structure in question and tested prior to day 38.

Add 3.5.5

Concrete not meeting the minimum compressive strength criteria shall be rejected and must be removed and replaced at the Contractor's expense.

END OF SECTION

MMCD Section 26 56 01 Roadway Lighting

1.0 GENERAL

1.4	**Electrical Energy Supply**	Add 1.4.4	The Contractor shall coil and tape conductors out of weather head. Utility company shall complete electrical service connections.

2.0 PRODUCTS

2.1	**General**	Append to 2.1.2	All products must bear evidence of either a mark or a label of a certification agency accredited by the Standards Council of Canada or an approved label issued by the BC Safety Authority.
		Replace 2.1.3	All products shall be in accordance with Section 01 62 01S.
2.4	**Plastic Junction Boxes**	Append to 2.4.1	Lids for plastic junction boxes to be galvanized.
2.5	**Concrete Junction Boxes**	Delete 2.5.1 and replace with	Refer to Drawing SSD-R.E.6 and R.E.7 for concrete junction box details.
2.7	**Poles and Anchor Bolts**	Append to 2.7.1	Roadway Lighting poles shall be Type S or L Shafts as defined on the Contract Drawings. Pole specifications vary by neighbourhoods and the latest specifications are available from the City's Engineering Traffic Operations Section.
2.8	**Conductors and Cables**	Add 2.8.5	Roadway Lighting Feeder Conductors: 600V, conductor size (AWG) as noted on Contract Drawings, stranded aluminum type with RW90 polyethylene insulation, to conform to CSA C22.2 No. 38, 90°C, and color coded as per CEC. All new roadway lighting systems shall be constructed with underground aluminum conductors. System bonding conductors shall be aluminum. Service Panel grounding conductor shall be copper. Pole raceway conductors shall be RW90 stranded copper.
2.10	**Conductor Connectors**	Delete 2.10.1 and replace with	Compression Type: Connectors shall accommodate combinations of aluminum to copper, and aluminum to aluminum conductors. Size to suit conductor gauge and number of conductors.

2.14	**Luminaires**	Delete 2.14.1 and replace with	All luminaires shall be LED.
		Delete 2.14.2 and replace with	All luminaires shall be LED.
3.0	**EXECUTION**		
3.1	**General**	Add 3.1.5	When tying into or upgrading an existing installation, maintain the existing lighting system operation during the hours of darkness.
3.5	**Underground Conduits**	Delete 3.5.2 and replace with	Minimum cover over conduits to be 600mm in boulevard areas and 900mm in travelled areas.
		Add 3.5.6	Before pulling conductor cable/wire into a run of conduit, the conduit shall be blown out with compressed air, and pull string installed with caps at each end. Conductors shall be pulled in slowly by hand or hand winch, in order to keep close control on pulling tension and prevent cutting the conduit at bends.
3.8	**Wiring**	Delete 3.8.3 and replace with	See Drawing SSD-R.E.13 for splice details. Delete reference to solderless type connectors as connectors shall be compression type. Use tool recommended by the connector supplier to make splices. Connectors shall be prefilled with an oxide-inhibiting joint compound.
		Delete 3.8.8 and replace with	Secure conductor splices with compression type connectors. Install using manufacturer recognized mechanical or hydraulic compression tools and matching die set. An oxide-inhibiting joint compound shall be used for terminating or splicing all aluminum conductors.
3.10	**Luminaires and Photocells**	Add 3.10.4	NEMA wattage label shall be visible at the bottom of the luminaire on all fixtures. Place label on the underside of the luminaire for cobra heads and on the neck or top of pole for post tops.

END OF SECTION

MMCD Section 31 05 17 Aggregates & Granular Materials

1.0 GENERAL

1.5	**Inspection and Testing**	Add to 1.5.2	Sieve analysis and proctors are required for each type of material to be used prior to the commencement of Work and every 1,000 tonnes during the Work.

2.0 PRODUCTS

2.7	**Granular Pipe Bedding and Surround Material**	Change 2.7	Delete "Recycled concrete free from contaminated and other extraneous material, conforming to the Type 1 gradations, may be used as pipe bedding and surround material.
2.10	**Granular Base**	Delete 2.10.2	Delete the use of Type 2 – 19mm crushed gravel.

END OF SECTION

MMCD Section 31 11 41 Shrub and Tree Preservation

1.0 GENERAL

1.3 Measurement and Payment

Delete 1.3.1 and replace with

Payment for all shrub and tree preservation, including tree protection fencing, grading, exposing root zone and hand excavation, and works deemed necessary by a certified arborist or the Contract Administrator, is applicable to all work performed under this Section, and incidental to payment for work described in other Sections unless shown otherwise in the Schedule of Quantities and Prices.

END OF SECTION

MMCD Section 31 15 60 Dust Control

3.0 EXECUTION

3.1 Application

Append to 3.1.1

Control of dust and sediment is critical. The Contractor will regularly scrape, sweep and clean the roads. The sites must be maintained in a professional manner to ensure that the works does not adversely affect the residents in the area. Dust and sediment build-up on adjacent surrounding roads or grounds is not permitted and must be immediately removed by the Contractor. **July 01/16**

Append to 3.1.3

Aqueous chloride and magnesium cannot be used for work areas within 100m of a watercourse, and work areas that are draining to a watercourse.

Add 3.1.5

The Contract Administrator may request additional street cleaning which shall be promptly undertaken at the Contractor's expense.

Add 3.1.6

If the Contractor fails to maintain dust and sediment control the City can carry out the dust and sediment control as needed and costs will be charged against the Contractor.

END OF SECTION

MMCD Section 31 22 01 Site Grading

1.0 GENERAL

1.4 Measurement and Payment

Delete 1.4.1 and replace with

No separate payment will be made for topsoil stripping, unless noted otherwise in the Schedule of Quantities and Prices, as payment for this work shall be included in rough site grading and common excavation.

Append to 1.4.2

Rough site grading and redistribution of excavated materials to design elevations and grades will be paid on a volumetric basis, measured in cubic meters based on before and after surveyed cross sections measured at a maximum 20 meter interval.

3.0 EXECUTION

3.2 Grading

Delete 3.2.2 and replace with

Works shall be carried out in accordance with Section 31 23 01 - Excavating, Trenching and Backfilling - 3.5.4, except Provincial Highways where the compaction shall be 95% Modified Proctor density.

3.3 Tolerances

Delete 3.3.1 and replace with

Accuracy of subgrade elevations to be within tolerances shown in Table 2.

Table 2: Tolerances for Subgrade where Growing Medium (Topsoil) to be Placed Over Subgrade

Intended Growing Medium Depth	Tolerance
0 – 150mm	25mm +/-
151 – 300mm	25mm +/-
301 – 600mm	50mm +/-

END OF SECTION

MMCD Section 31 23 01 Excavating, Trenching and Backfilling

1.0 GENERAL

1.3 Definitions

Append to 1.3.4

Removals shall also include asphalt; concrete; driveways; street lights and traffic signals and their bases; electrical and communication conduits and vaults; fences; handrails; and similar works.

1.10 Measurement and Payment

Append to 1.10.1

Payment for works in this Section shall include excavation, shoring, trench and site dewatering, hauling and disposal, of surplus soil.

Append to 1.10.7

Cleaning and deepening of existing channel or ditch shall be paid on a lineal metre basis as measured along centerline, unless noted otherwise in the Schedule of Quantities and Prices.

Append to 1.10.8

Payment for boulevard swale shall be measured on a lineal metre along centerline, unless noted otherwise in the Schedule of Quantities and Prices.

1.11 Inspection and Testing

Add 1.11.2

For items that are measured by weight, the Contractor shall:

.1 Co-ordinate his Work so that no more than one Contract Administrator representative is required to witness, collect and check the weigh tickets at any one time.

.2 Arrange weigh tickets to be collected and verified at specific locations on the Site, and on the same day as material is delivered, as agreed by the Contract Administrator.

The Contract Administrator and Owner may refuse approval of tickets received after the day of placement. Payment is only for the material completely incorporated into the Works as witnessed by the Contract Administrator's representative.

2.0 PRODUCTS

2.2	**Use of Specified Materials**	Delete 2.2.1 and replace with	Backfill for over-excavated trench shall be imported 75mm Pit Run Gravel as specified in Section 31 05 17 - 2.3
		Delete 2.2.3 and replace	Trench backfill to be imported granular material as per Standard Drawing SSD-G.4. **July 01/16**

3.0 EXECUTION

3.2	**Stockpiling**	Add 3.2.2	Carefully dismantle and stockpile items containing materials for salvage, and dispose excess materials after salvage is completed.
3.3	**Excavation**	Add 3.3.13	Asbestos pipe and products to be removed and disposed by Contractor, in accordance with Work Safe BC requirements.
3.5	**Backfill and Compaction**	Append to 3.5.4.1	Boulevard and easement along Provincial Highways and shall be compacted to 95% Modified Proctor density.
		Add 3.5.4.4	Trench backfill, road subgradeand embankment fill shall be placed and compated in 0.300m vertical lifts, or less, along the entire length. As a minimum, the frequency of quality control testing for compaction densities for trench backfill, road subgrade and embankment fill shall be at least one test per 50 lineal metres of trench, or lane width, and the number of tests shall vary per vertical depth: **July 01/16**

.1 Trench backfill, Subgrade and embankment fill 0.600m or less shall include 1 vertical test per 50m;

.2 Trench backfill, Subgrade and embankment fill between 0.600m and 1.8m shall include 2 vertical test per 50m, with vertical test intervals being equally spaced;

.3 Trench backfill, Subgrade and embankment fill greater than 1.800m shall include 3 vertical test per 50m, with vertical test intervals being equally spaced;

END OF SECTION

MMCD Section 31 24 13 Roadway Excavation, Embankment and Compaction

1.0 GENERAL

1.3 Definitions

Amend 1.3.1

Change wording to read "three classes" of excavation and add 1.3.1.3 as follows:

.4 Mass Excavation: As defined as "Removals" under Section 31 23 01 – Excavating, Trenching and Backfilling – 1.3.

1.8 Measurement and Payment

Delete 1.8.4 and replace with

Payment for Mass Excavation (or Removals), as defined in paragraph 1.3.1 of this Section, will be on a Lump Sum basis, unless noted otherwise in the Schedule of Quantities.

Delete 1.8.5 and replace with

Payment for Common Excavation includes that defined in paragraph 1.3.1.2 of this Section including striping, removal and disposal of grass, sod and topsoil.

Payment for Common Excavation shall be as follows, unless noted otherwise in the Schedule of Quantities and Prices:

.1 Where the average thickness of Common Excavation is less than 0.5 metres, volume will be established from loose truck volume, which varies based on truck size / equipment, as determined by the Contract Administrator. Loose truck volume to be calculated after Mass Excavation is complete.

.2 Where the average thickness of Common Excavation is greater than 0.5 metres, in place volume will be calculated for payment from cross-sections at sufficient and equal intervals as determined by the Contract Administrator.

The initial cross sections will be taken after Mass Excavation and Clearing and Grubbing are complete. The final cross sections will be taken upon completion of excavation to lines and levels required prior to placing of other materials over the excavated surface.

.3 Payment for on-site re-use includes stockpiling, double handling and hauling, moisture conditioning, placement, grading and compaction. Payment will be on a volumetric basis, calculated from cross-sections at sufficient and equal intervals as determined by the Contract Administrator.

		Delete 1.8.9 and replace with	Payment shall include finish grading, removal of surplus material, placement of additional gravels, adjustment of moisture content and compaction to obtain the required grades and cross section. Payment for subgrade preparation under sidewalks, curbs and boulevard strips shall be included in their respective sections.
3.0	**EXECUTION**		
3.5	**Compaction**	Add 3.5.7	The frequency of density tests shall be one test per 250m^2 per 300mm vertical lift.
3.7	**Proof Rolling**	Add 3.7.6	If the Contractor disagrees with the Contract Administrator's determination of soft areas, density tests, Benkelman beam testing or other mutually acceptable testing shall be carried out and be the determining criteria.

END OF SECTION

MMCD Section 32 01 11 Pavement Surface Cleaning and Removal of Pavement Markings

1.0 GENERAL

1.2	**Measurement and Payment**	Delete 1.2 and replace with	Payment for pavement cleaning surfaces, removal of pavement markings and related work will be incidental to Work described in other sections, unless noted otherwise in the Schedule of Quantities.

MMCD Section 32 01 16.7 Cold Milling

1.0 GENERAL

1.1	**Related Work**	Add 1.1.6	Hot-Mix Asphalt Concrete Paving - Section 32 12 16.
		Add 1.1.7	Superpave Hot-Mix Asphalt – Section 32 12 17.
		Add 1.1.8	Full Depth Reclamation - Section 32 01 16.8
1.5	**Measurement and Payment**	Append to 1.5.3	Payment for reusing milled material onsite shall also include, stockpiling and double handling, spreading, grading and compacting milled material.
		Add to 1.5.4	Payment for supply, installation and removal of temporary asphalt slope around manholes, valve covers and utility covers is incidental to the milling work.

3.0 EXECUTION

3.1	**Equipment**	Add 3.1.2	Grader mounted grinders are not acceptable for this Work.
		Add 3.1.3	The existing asphalt concrete shall be milled by equipment suitable to produce a well graded material with the largest aggregate size not exceeding 25mm.
3.2	**Preparation**	Add 3.2.4	All manhole rims, valve covers, and utility cover lids must have an asphalt slope from the top of the lid to milled surface of sufficient length to prevent damage to vehicular traffic. These slopes are to be completely removed immediately prior to final paving. These appurtenances must be monitored until final paving. Use of temporary sloped collar will also be acceptable for a period of less than 7 days.
		Add 3.2.5	Minimum milling: Depth – 35mm Width – 1.2 metre
3.3	**Stockpiled Material**	Add 3.3.3	Subject to prior approval of the Contract Administrator, the milled material shall be used onsite for road base and sub-base. The Contract Administrator will determine the mixture ratio between the milled material and the imported base and sub-base material and the method of placing.

3.4 Placing

Append to 3.4.4 The material shall be bladed to proper grade and cross section as directed.

Add 3.4.6 Unless otherwise specified in writing by the Contract Administrator, the milling of the existing asphalt shall be followed by repaving within five (5) Days of the commencing of the milling. The milled asphalt surface shall be graded, monitored, signed and maintained at no additional cost to the Owner.

END OF SECTION

3.0 EXECUTION

3.3 Compaction Add 3.3.6

The frequency of density tests shall be at least one test per 150 square metres placed, and test interval shall be consistent and evenly spaced along length and width of Work. For Work that involves roadway, curb and sidewalk, test locations shall be staggered amongst the travelled lanes, curbs and sidewalks.

END OF SECTION

3.0 EXECUTION

3.3	**Compaction**	Add 3.3.6	The frequency of density tests shall be at least one test per 150 square metres placed, and test interval shall be consistent and evenly spaced along length and width of Work. For Work that involves roadway, curb and sidewalk, test locations shall be staggered amongst the travelled lanes, curbs and sidewalks.
3.5	**Proof Rolling**	Delete 3.5.1 and replace with	Contractor is also responsible for proof rolling granular base course grade prior to paving and placement of concrete curb and sidewalks. Contractor to complete Benkelman Beam testing in the presence of the Contract Administrator prior to any paving work.

END OF SECTION

MMCD Section 32 12 16 Hot-Mix Asphalt Concrete Paving

1.0 GENERAL

Add 1.0.2 — Work required in this Section shall be in accordance with the latest version of the City's Engineering Department Pavement Cut Practice and Procedure.

1.5 Measurement and Payment

Append to 1.5.4 — No additional payment will be made for hand formed curbing.

Delete 1.5.7 and replace with — No additional payment will be made for saw cutting asphalt concrete or curbs; Portland cement concrete or curbs; curbs, gutters, or sidewalks; including the requirement for neat lines and tie-ins. Payment for this work will be incidental to payment for work described in other Sections.

Delete 1.5.8 and replace with — Payment for permanent reinstatement of pavement includes all work under Section 31 23 01 – 3.6.7.

Add 1.5.9 — Payment for pavement patching is defined as isolated or segmented areas of pavement repair that are less than 10 square meters in area. Payment shall include saw cutting, excavation, and removal of existing asphalt, fine grading and compaction of base, tack coat, prime coat, and all other works described in 1.5.1 of this Section.

Add 1.5.10 — Payment for stamped asphalt concrete surfaces shall be as per 1.5.3 of this Section.

1.6 Inspection and Testing

Add 1.6.3 — The frequency of Marshall tests shall be one test for each asphalt type, minimum one per day, per site/location.

Add 1.6.4 — For road paving, core locations will be selected for each pass of the paving machine as follows:

.1 Across the width, core locations will be selected randomly from each lane.
.2 Along length, core locations should be spaced evenly every 75 metres, with a minimum of 2 core samples required for lengths shorter than 150m.

Add 1.6.5 — For other paving operations, a minimum of one core for every 500 square metres of asphalt mix placed. For area less than 1500 square metres, a minimum of 3 cores will be required. For areas less than 500 square metres, testing frequency will be at the direction of the Contract Administrator.

	Add 1.6.6	A section of pavement is deemed to have met the specification for compaction if the cores average 97% or more of the 75 blow Marshall density obtained in an approved hot mix laboratory test conducted on an actual field sample with no individual core less than 95%. For this purpose, a section of pavement is defined as an area the width of one pass of a paving machine by the length required to obtain 5 consecutive cores.
	Add 1.6.7	A section of pavement is deemed to have met the specification for thickness if the average of 5 consecutive cores is within 5mm tolerance of the design thickness with no individual core more than 6mm thinner than the design thickness.
	Add 1.6.8	Acceptance will be based on an appropriate combination of cores, hot- mix test results, and smoothness / ride ability of the surface.
	Add 1.6.9	Core holes shall be reinstated to the satisfaction of the Contract Administrator.

2.0 PRODUCTS

2.2	**Mix Design**	Amend 2.2.3.3	Change references to ASTM D1559 to ASTM D6927.
2.3	**Stamped Asphalt Surface**	Add 2.3.1	Where specified as stamped asphalt, colored patterned surface for median infill, splash strips, and maintenance vehicle parking pads shall be: 50mm thick stamped colored asphalt for splash strips or median infill, and 75mm in maintenance vehicle parking area. Asphalt color to be "Terra-cotta" as supplied by Integrated Paving Concepts or Approved Equivalent, and stamped pattern shall be running bond.

3.0 EXECUTION

3.3	**Preparation**	Append to 3.3.3	Contractor shall inform utility agencies with sufficient notice in regard to the affected utility covers. The Contractor shall loosen the utility covers and make adjustment. Adjustment may be completed by the Agency or deferred to the Contractor. Adjustment shall be completed at least one day prior to paving.
		Append to 3.3.6	Prior to final paving, reinstate disturbed detector loops and complete paving and reconnection of the loops.

		Add 3.3.7	When removing reclaimed asphalt pavement (RAP) for subsequent incorporation into hot mix asphalt concrete paving, prevent contamination with base aggregates.
3.5	**Placing**	Add 3.5.3.4	The asphalt mix shall be placed at a temperature between 135^{o}C and 163^{o}C measured in the mat immediately behind the paver.
3.7	**Joints**	Delete 3.7.4 and replace with	All joints shall be butt joints.
3.9	**Asphalt Sidewalks and Driveways**	Add 3.9.6	Sidewalks and driveways shall not be opened to pedestrians or vehicles until the mix has cooled sufficiently to prevent deformation.
		Add 3.9.7	Curbs shall be machine extruded. The weight of the placing machine shall be such that compaction is obtained without the machine riding above the bed on which the curb in constructed. The machine shall form curbing that is uniform in texture, shape and density. The curbs shall be placed to an accurate alignment. The curbs shall be protected from traffic by barricades or other suitable methods until the curb has hardened.
3.9	**Finished Tolerances**	Append to 3.9.1	Finished asphalt surface to be within 20mm horizontally from design alignment.

END OF SECTION

MMCD Section 32 12 17 Superpave Hot-Mix Asphalt Concrete Paving

1.0 GENERAL

Add 1.0.6 Work required in this Section shall be in accordance with the latest version of the City's Engineering Department Pavement Cut Practice and Procedure.

Add 1.0.7 All pavement on Arterial Roads shall be Superpave Hot-Mix Asphalt Concrete with a design traffic load of 3 to 30 Million ESAL.

1.5 Measurement and Payment

Add 1.5.9 Payment for sawcutting asphalt concrete or Portland cement concrete pavement for temporary and permanent pavement restoration will be incidental to payment for work described in other Sections.

1.6 Inspection and Testing

Add 1.6.3 For Superpave Hot-Mix asphalt, the frequency of Gyratory, moisture content, asphalt content and percent fracture tests shall be one test for each asphalt type, minimum one per day and minimum one per 500 tonnes.

Add 1.6.4 For road paving, random core locations will be selected for each lane, or pass of the paving machine, but not to exceed 75m in length.

For other paving operations, a minimum of one core for every 500 square metres of asphalt mix placed. For area less than 1500 square metres, a minimum of 3 cores will be required. For areas less than 500 square metres, testing frequency will be at the direction of the Contract Administrator.

Add 1.6.5 A section of pavement is deemed to have met the specification for compaction if the cores have achieved the compaction requirements of 3.6 in this Section, when conducted by a CCIL certified asphalt laboratory on actual field hot-mix sample.

Add 1.6.6 A section of pavement is deemed to have met the specification for thickness if the average of 5 consecutive cores is within 5mm tolerance of the design thickness with no individual core more than 6mm thinner than the design thickness.

Add 1.6.7 Acceptance will be based on an appropriate combination of cores, hot-mix test results, and smoothness / ride ability of the surface.

		Add 1.6.8	Core holes shall be reinstated to the satisfaction of the Contract Administrator.
2.0	**PRODUCTS**		
2.1	**Materials**	Append to 2.1.1	Superpave asphalt cement must meet or exceed Performance Grade PG 64-22.
		Delete 2.1.2 and replace with	Reclaimed asphalt pavement (RAP): processing, quality and use to requirements of NCHRP Report 452 and Table 1, with a RAP incorporation limit not to exceed 10% in lower course Superpave HMA and 10% in upper course Superpave HMA.
		Append to 2.1.3.1	Lower course to be Superpave 25mm aggregate size mix, and Upper Course to be Superpave 19mm mix.
		Amend 2.1.4	In Table 1, maximum allowable RAP shall be 10%. Add the following notes below Table 1: 7. The amount of total AC replaced by AC in the RAP will be calculated as follows: % AC Replacement = (a x b) / c Where: a = AC content of RAP b = RAP percent in mixture by total weight of mix c = Total percent AC content in mixture .8 Rejuvenators and softening agents not permitted .9 Asphalt Shingles not permitted.
2.2	**Mix Design**	Append to 2.2.2	Mix design gradation curve to be based on at least five (5) samples for each aggregate type.
3.0	**EXECUTION**		
3.1	**Plant and Mixing Requirements**	Add 3.1.4.4	Air voids shall be between 3.0 – 5.0%.
3.3	**Preparation**	Append to 3.3.3	Contractor shall inform utility agencies with sufficient notice in regard to the affected utility covers. The Contractor shall loosen the utility covers and make adjustment. Adjustment shall be completed at least one day prior to paving.

		Add 3.3.7	When removing reclaimed asphalt pavement (RAP) for subsequent incorporation into hot mix asphalt concrete paving, prevent contamination with base aggregates.
3.5	**Placing**	Append to 3.5.1	Contractor shall prepare and submit a Quality Control Plan to the Contract Administrator at least 7 days prior to paving. The plan shall include full details of: .1 Plant test and gradation results, including date sampled / tested .2 Equipment, number of trucks, placement rate .3 Contemplated rolling patterns .4 Testing for control of density.
		Add 3.5.3.4	The asphalt mix shall be placed and compacted at a temperature range determined from the Viscosity – Temperature Chart from 250-310 cST (compaction range) for the asphalt cement type being used, and to be measured in the mat immediately behind the paver.
3.7	**Joints**	Delete 3.7.4 and replace with	Feather joints are not permitted.
3.10	**Finished Tolerances**	Append to 3.10.1	Finished asphalt surface to be within 20mm horizontally from design alignment.

END OF SECTION

MMCD Section 32 14 01 Unit Paving

1.0 GENERAL

1.6	**Measurement and Payment**	Delete 1.6.3 and replace with	Payment for unit paving should be measured in square metres, unless noted otherwise in the Schedule of Quantities and Prices. The price shall include the supply and installation of all materials, including pavers of varying color, size and type, edging, granular laying course, bedding sand, joint sand, cutting of all edges to fit, compaction, adjusting, leveling, cleaning surface of excess sand, and sealant.

2.0 PRODUCTS

2.1	**Materials**	Append to 2.1.4	Granular laying course sand shall have moisture content between 6.0% to 8.0%.
		Append to 2.1.5	Boulevard or sidewalk pavers shall be a minimum 60mm thick.
		Add 2.1.7	Concrete pavers shall conform to ASTM C939 to C982, specifications for solid concrete interlocking paving units.
		Add 2.1.8	All concrete pavers shall be sealed with after installation and surface is swept clean.

3.0 EXECUTION

3.4	**Granular Laying Course**	Delete 3.4.1 and replace with	Granular laying course shall be spread evenly over the area to receive concrete pavers in one day and protected against weather. This bedding shall have a compacted thickness of 50mm, and graded to meet cross falls in boulevards, sidewalks and driveways.
3.5	**Unit Paving**	Delete 3.5.4.1 and replace with	Full units shall be installed first and edge pieces fitted subsequently. All pavers to have 3mm +/- joints.
		Append to 3.5.4.2	Pavers shall be vibrated to their final level by having not less than 3 passes of a vibrating plate compactor. The compactor shall be a high frequency, low amplitude unit with plate sized to cover at least 12 pavers.
		Append to 3.5.4.4	Jointing sand shall be spread over the paver surface and vibrated to completely fill all joints. Jointing sand shall be reinstalled after the first heavy rainstorm.

END OF SECTION

MMCD Section 32 17 23 Painted Pavement Markings

1.0 INTRODUCTION

1.5	**Measurement and Payment**	Add 1.5.5	Payment for enhanced safety markings covers supplying all materials and completing all permanent enhanced safety markings shown on Contract Drawings.

2.0 PRODUCTS

2.1	**Materials**	Add 2.1.6.10	The temporary traffic line shall be a 100mm x 300mm strip of prefabricated reflective yellow tape having an adhesive backing and shall be placed at 10 metre intervals along the center of pavement. **July 01/16**
		Add 2.1.6.11	The temporary stop bar shall be 2 - 100mm contnuous strips of prefabricated reflective white tape having an adhesive backing and placed across the travel lanes at traffic control intersections. **July 01/16**
		Add 2.1.7	Permanent Pavement Markings to be as follows:
			.1 Extruded Thermoplastic screed for line markings, median markings, stop bars and bicycle symbols; **July 01/16** .2 Colourized enhanced safety markings, such as "green" bike conflict zones and "red" que jumpers are to be Methyl Methacrylate (MMA).

3.0 EXECUTION

3.3	**Application**	Append to 3.3.2.1	Survey layout to be at 500mm intervals and markings to be placed within 24 hours of final lift of paving.
		Delete 3.3.3.3 and replace with	Thermoplastic material shall be heated in the melter to a temperature of 195^0 C.

END OF SECTION

MMCD Section 32 31 13 Chain Link Fences and Gates

3.0 EXECUTION

3.3	**Installation of Gates**	Add 3.3.1	Install gates and gate stops in locations as shown on Contract Drawings.
		Add 3.3.2	Level ground between, and around, gate posts and set gate bottom approximately 40mm above ground surface.
		Add 3.3.3	Determine position of center gate rest for double gate. Cast gate rest in concrete as directed and dome concrete above ground level to shed water.
3.4	**Touch Up**	Add 3.4.1	Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas. Pre-treat damaged surfaces according to manufacturer's instructions for zinc-rich paint.
3.5	**Cleaning**	Add 3.5.1	Clean and trim areas disturbed by operations. Dispose of surplus material as specified in Contract Documents.

END OF SECTION

MMCD Section 32 91 21 Topsoil and Finish Grading

1.0 GENERAL

1.5 Inspection and Testing — Add 1.5.2

Contractor to provide an analysis of each type of material to be used prior to commencement of the Work and analysis of a minimum of 2 random samples of growing medium taken just before planting.

2.0 PRODUCTS

2.10 Growing Medium — Amend 2.10 as follows

Amend Table 2 in 2.10 to be as follows:

Table 2: Properties of Growing Medium

Criteria	Optimum Specification	Accepted Range
C/N Ratio	30	20 - 35
pH	6.8	6.0 - 7.5
Lime	0	0
Extract Conductivity	3	2.5 - 5
Sand	63%	50 - 68%
Fines	18%	10 - 25%
Organic Matter	19%	13 - 25%
Nitrogen	0.5	0.25 - 1.0
Phosphorus	250	125 - 350
Potassium	1500	1000 - 2500
Calcium	3000	2000 - 4000
Magnesium	400	300 - 600

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3.0 EXECUTION

3.4 Placing Growing Medium — Append to 3.4.5

Thickness of growing medium to be in accordance with the Drawings SSD-R.1 to SSD-R.10.

END OF SECTION

MMCD Section 32 92 23 Sodding

2.0 PRODUCTS

2.1	**Sod**	Add 2.1.8	Sod shall be free of fibrous net.

END OF SECTION

MMCD Section 32 93 01 Planting of Trees, Shrubs and Ground Covers

1.0 GENERAL

1.9	**Measurement and Payment**	Append to 1.9.1	Payment shall include excavation of the planter pocket, disposal, and supply and installation of structural topsoil or growing medium.
		Add 1.9.3	Bark mulch shall be measured and paid on the basis of square metre of specified thickness. The unit prices shall include the supply and installation of the polyethylene sheets and bark mulch; spreading and grading.

2.0 PRODUCTS

2.1	**Plant Material**	Add 2.1.13	All Tree and shrub species to be in accordance with the City's Parks, Recreational and Culture Standard Construction Documents, including species, caliper, and branch elevation above finished ground.

3.0 EXECUTION

3.3	**Planting**	Add 3.3.4.5	Around base of trees and shrubs, apply 75mm thick layer of bark mulch over soil surface, maintaining a separation distance of 100mm between the mulch and the trunk of the tree or shrub.
3.5	**Watering**	Append to 3.5.1	Frequency of watering to be weekly during summer months, if plantings are less than 4 months of age, otherwise frequency shall be on a monthly basis as a minimum.

END OF SECTION

MMCD Section 33 01 30.1 CCTV Inspection of Pipelines

1.0 GENERAL

1.2	**References**	Delete 1.2.2.1 and replace with	National Association of Sewer Service Companies (NASSCO), latest version of the Pipeline Assessment and Certification Program (PACP).
		Add 1.2.3	In this Section, replace all references to "NAAPI" with "NASSCO".
		Add 1.2.4	In this Section, replace all references to "WRc" with "PACP".
1.6	**Measurement for Payment**	Delete 1.6.6 and replace with	Separate payment will not be made for flow control or bypass pumping as that work is to be included in the unit rates for CCTV inspection.
		Add 1.6.7	Separate payment will not be made for reverse set-up cleaning and inspection, nor traffic control as that work is to be included in the unit rates for CCTV inspection.

2.0 PRODUCTS

2.1	**Equipment**	Add 2.1.1.5	Each unit is to be equipped with fans to remove fog that is present in the sewer at the time of the inspection.
		Add 2.1.3.5	The focal range is to be adjustable from 100mm in front of the camera's lens to infinity. The digital camera is to be capable of producing clear, sharp images at a minimum resolution of 800 x 600.
2.2	**Materials**	Delete 2.2.3 and replace with	Digital report data and videos to be stored on a USB memory stick or web based server, with hardcopy backup on DVD-R, and provided to the City.

3.0 EXECUTION

3.1	**CCTV Inspection**	Append to 3.1.6	Conduct all inspections in the direction of flow unless a reverse set-up is required. Inspections are generally to begin with the upstream sewer in the system and proceed downstream in a consecutive manner. Inspection is not to proceed downstream until all contributing upstream sewers have been cleaned.
		Append to 3.1.14	If during the inspection clear water infiltration, flow disparity, or if there is a hole, void or collapse greater than 10%, capture an image and immediately notify the Contract Administrator.

		Append to 3.1.17	If inspection of an entire sewer cannot be completed due to collapse, deformation or solid debris, intruding connections, obstructions or large displaced joints, move the equipment to the upstream manhole and attempt inspection again. If complete inspection cannot be performed notify the Contract Administrator immediately.
3.8	**Inspection Reporting Hard Copies & Digital Format**	Append to 3.8.4	The digital output files shall be stored in Microsoft Access Database Format (*.mdb) and in a format compatible with the City's GIS (ArcMap) and internal software.
3.9	**Flushing and Cleaning**	Add 3.9.2	For sewers that are deemed by the Contract Administrator to be unacceptably cleaned, or not clear, CCTV video inspection reports will be rejected and the sewer shall be re-cleaned and re-videoed at the Contractor's expense.
3.11	**Flow Reduction**	Delete 3.11.1 and replace with	Reduce flow depth, through a combination of measures as outlined in this Section, to approximately 20% of the pipe diameter in order complete CCTV inspection.
3.12	**Coding Accuracy**	Add 3.12.5	On a random basis, the Contract Administrator may complete an independent Quality Assurance review of the inspection reports.

END OF SECTION

MMCD Section 33 01 30.2 Sewer Cleaning

1.0	**GENERAL**		
		Add 1.0.3	Sewer cleaning shall remove all debris from existing sewers and manholes to: alleviate blockages and prevent sewer backups, overflows and property damage; to restore hydraulic capacity; to reduce odors; to permit thorough CCTV inspection; and to allow rehabilitation works to be performed. Definitions for debris are generally consistent with the nomenclature contained in the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP).
1.5	**Measurement and Payment**	Delete 1.5.4 and replace with	Solid debris and root cutting and shall include removal and disposal of debris in existing sewers to an approved off-site facility. The length paid will be the total number of lineal meters cut, as authorized and approved by the Contract Administrator, and as verified by pre and post sewer inspection videos.
		Add 1.5.5	Separate payment will not be made for reverse set-up cleaning.
3.0	**EXECUTION**		
3.1	**Sewer Cleaning**	Add 3.1.1.5	Deliver notification letters to residents and businesses at least five (5) days prior to commencing work.
3.3	**Root Removal**	Delete 3.3.1 and replace with	Obtain Contract Administrator's approval prior to undertaking any debris removal or root cutting.

END OF SECTION

MMCD Section 33 11 01 Waterworks

1.0 GENERAL

1.8	**Measurement and Payment**	Delete 1.8.4 and replace with	Payment for service connection includes mainline saddles where specified, corporation stops, curb stops, meter setter, boxes, service pipes and all related fittings and appurtenances specified and/or shown on Drawing SSD-W.1. Payment includes all applicable Work described in 1.8.2. Measurement for service connections will be for each complete service installed, with no regard to length of service pipe installed.
		Append to 1.8.10	Payment for casing pipe shall include the method of construction, such as open cut or trenchless technology, as noted on the Contract Drawings; and payment shall include excavation and backfill for casing pipe of access pits, casing spacers and end seals. Measurement for casing pipe will be made along the centerline of the casing pipe, over surface, after Work has been completed.
		Delete 1.8.12 and replace with	There will be no payment for tie-ins to existing mains or service transfers when all work is to be undertaken by the City's Crew.
		Add 1.8.14	Payment for hydrants includes the hydrant body, lateral connections from mainline tee off water main to hydrants, isolation valve at the mainline tee and curb valve with adjustable valve box, fittings and all other incidental Work as shown on the Drawings.

2.0 PRODUCTS

2.2	**Mainline Pipe, Joints and Fittings**	Delete 2.2.4.1 and replace with	Grey-iron (cast iron) fittings are not acceptable

Delete 2.2.4.10.1 and replace with

.1 Tie rods to be continuous threaded stainless steel, Type 304. Tie rods shall be the correct size for the lug opening and installed on all lugs provided with the minimum number of lugs and diameter to be as per the following table in order to achieve a safety factor of 2.0: **July 01/16**

Nominal Pipe Size (mm)	Water Pressure (KPa)	Minimum Number of Tie Rods	Tie Rod Diameter
150	1380	2	20mm
200	1380	2	20mm
250	1380	4	20mm
300	1380	4	20mm
350	1380	4	20mm
400	1380	6	20mm
450	1380	8	20mm

Add 2.2.4.7.4 HDPE flanges to have epoxy coated, steel backup rings.

Delete 2.2.4.13.11 and replace with

All joint restraints for PVC and PVCO water mains shall not be wedge style and shall be approved by the City and Manufacturer to not de-rate the pressure rating of the pipe.

Delete 2.2.5 and replace with

Pre-stressed Concrete Pressure Pipe is not acceptable.

Add 2.2.7

Oriented Polyvinyl Chloride (PVCO) Pressure Pipe:

.1 Pipe:

.1 Pipe to be manufactured to specifications for pipe size ranges as follows:

.1 Pipes 150 to 300mm dia. - AWWA C909

.2 Pipes to be pressure rated to minimum operating pressure of 1620 kPa (235psi)

.3 Pipes to be certified by Canadian Standards Association to CSA B137.3.1

.2 Outside diameter to be Cast Iron Pipe Size.

.3 To be compatible with specified mechanical joint and push-on joint fittings and valves without use of special adapters. **July 01/16**

.2 Joints: Push-on integrally thickened bell and spigot type to ASTMD 3139 with single elastomeric gasket to ASTM F477.

2.3	**Valve Boxes and Lids**	Delete 2.3.2.2 and replace with	To AWWA C515: 400mm and larger to working pressure 1725 kPa, non-rising stem, hub, flanged or mechanical joint ends.
		Delete 2.3.2.3 and replace with	To AWWA C509: 75mm to 300mm to working pressure 1380 kPa ductile iron body, non-rising stem, hub, flanged or mechanical joint ends.
		Delete 2.3.5.1 and replace with	Ductile Iron body.
		Add 2.3.6.1.2	Mainline valve boxes shall be MR style.
		Delete 2.3.8.1 and replace with	To AWWA C508: 50 to 300mm diameter to 1200 kPa; 400 to 500mm working pressure to 1035 kPa; ductile iron body, clear waterway type, resilient seated, mechanical joint ends to AWWA C111 of flanged ends to AWWA C110.
2.6	**Hydrants**	Delete 2.6.2 and replace with	Color: Body shall be painted S/P Urethane Industrial Enamel LF Signal Red General Paint Product # 9811624801. Nozzle caps shall be painted S/P Urethane Industrial Enamel LF White General Paint Product # 9811601001.
3.0	**EXECUTION**	Append to 3.6.3	Prior to construction, contractor to confirm tie-in location, elevations, pipe materials and dimensions for at least 1.5m upstream and downstream of the tie-in.
3.6	**Pipe Installation**	Delete 3.6.6 and replace with	Maximum joint deflection shall be 50% of the manufacturer's recommendation.
		Append to 3.6.10.10	Pipe to be installed in accordance with ASTM D2774, and cold bending allowed to a minimum radius of 50 times nominal diameter. All fusing to be completed by personnel trained by the manufacturer.
		Append to 3.6.11	Watermain Identification: yellow PVC marker tape to be placed at top of pipe zone. Marker tape to be continuous, 75mm wide and lettered "Watermain" at 1m intervals.
		Add 3.6.15	Where casing pipes are installed, provide casing spacers at maximum 3.0m spacing with spacers at each bell and 0.5m from the start and end of the casing pipe.

		Add 3.6.16	When joint wrapping is required, all applicable joints shall be wrapped with heat shrink plastic or packed and wrapped with petrolatum tape in accordance to the following standards: .1 ANSI/AWWA C214 (factory applied) .2 ANSI/AWWA C209 (field applied) .3 ANSI/AWWA C217-90 (petrolatum tape) .4 All materials to have zero health hazard. Installation shall be in accordance with the requirements of the Regional Health Engineer under the Health Act.
		Add 3.6.17	Anchor weights to be included on PVC, PVCO and HDPE pipe where the pipe is susceptible to floatation caused by soil and groundwater, with anchor weight sized not to cause settlement.
		Delete 3.10.6 and replace with	Tapings in PVC mains to AWWA C900 pipe to be with service saddles specified in Section 33 11 01 -2.5.3.3. Nuts on service saddle straps to be tightened to torque range specified by manufacturer approved and in no case in excess of that torque. Only manufacturer approved tapping tool will be allowed. Provide test coupons to Contract Administrator.
3.10	**Service Connection Installation**	Append to 3.10.1	Service connection and boxes shall also be installed in accordance with the City's Water Meter Design Criteria Manual & Supplementary Specifications.
		Append to 3.10.7	Service connections to HDPE mains shall be connected by methods of thermal butt fusion as outlined in ASTM 2657. Butt fusion tees or couplings shall be used for all service connections. Wet tapping HDPE pipe is not permitted for service connections.
		Delete 3.10.11 and replace with	Install and set plumb stop and valveboxes.Adjust top flush with final grade. Leave curb stop or service valvesfully closed. **July 01/16**
3.19	**Testing Procedure**	Delete 3.19.2 and replace with	Before pipe is filled with water, pipe bedding, concreting of all valves and fittings, and backfilling to be completed as required in this specification. Fill each section of pipe and allow to remain full of water for a period of at least 24 hours prior to commencement of any pressure tests. Submit pipeline to a test of 1.5 x working pressure applied at the highest elevation in the each section, with a minimum of 1380 kPa applied at the lowest elevation in the test section. Ensure that

test pressure does not exceed pipe or thrust restraint design pressures.

Add 3.19.7 Pressure and leakage testing of high density polyethylene pipe to consist of an initial expansion phase and a test phase. Prior to testing, pressurize the HDPE pipe to test pressure for 4 hours and maintain pressure on an hourly basis to accommodate the initial expansion. Submit pipeline to a test of 1.5 x working pressure applied at highest elevation in each section, with a minimum of 1380 KPa at lowest point of test section, and under no circumstances should the total time with the pipe at 1.5 x working pressure exceed 8 hours.

Immediately upon completion of the initial expansion phase, begin a 2 hour test period. Allowable leakage shall not exceed following:

Normal Pipe Size	Allowable Leakage (L/km)
75mm	18.6
100mm	31.1
150mm	74.5
200mm	124.2
250mm	161.5
300mm	285.6
350mm	335.3

Temperature correction factor to be applied to allowable leakage. Temperature to be taken as temperature of test water in the pipe measured after the initial expansion phase. Temperature correction factor for pressure testing to be:

Temperature (^{0}C)	Correction Factor
23.0	1.0
22.3	0.9
21.0	0.8
19.0	0.7
16.2	0.6
13.0	0.5
9.5	0.4
5.2	0.3
-1.0	0.2

3.20 Disinfection, General

Add 3.20.3 Disinfection, flushing and water quality testing shall be completed by the City and only upon successful pre-pressure testing by the Contractor.

3.23 Connections to Existing Mains

Delete 3.23.1 and replace with

Tie-ins to the existing water mains will be performed by the City, unless noted otherwise in the Contract Documents. The Contractor shall cooperate fully with the City's forces and provide them with suitable working areas and conditions to allow their Work to proceed efficiently. At least 3 weeks notification shall be given to the City's Water Operations Manager before any testing and tie-ins.

Contractor to make all necessary arrangements with Contract Administrator to schedule work to prevent construction delays.

Add 3.23.2

City Crew will complete excavation, tie-in, backfill, compaction and temporary surface restoration for the tie-in works. After tie-ins are complete and temporary surface restored, Contractor shall complete permanent surface restoration, overlays and related maintenance.

END OF SECTION

MMCD Section 33 30 01 Sanitary Sewers

1.0 GENERAL

1.6 Measurement and Payment

Delete 1.6.5 and replace with

Payment for concrete bedding or controlled density fill, where shown on the Contract Drawings, will be made as extra-over payment to sanitary sewer under 1.6.2 of this Section. No payment will be made for concrete bedding or controlled density fill required as a result of unauthorized excavation beyond neat lines or limits of excavation shown on the Contract Drawings.

Add 1.6.8

Payment for casing pipe shall include the method of construction, such as open cut or trenchless technology; excavation and backfill for casing pipe of access pits, casing spacers and end seals. Measurement for casing pipe will be made along the centerline of the casing pipe, over surface, after Work has been completed.

2.0 PRODUCTS

2.1 Concrete Pipe

Add 2.1.5

Interior Lining:

.1 Concrete pipe, 900mm diameter and larger, shall have continuous interior lining of 2mm thickness or greater.

.2 Liner shall be one of the following products:
- .1 Agru Sure Grip Liner – white, grey or yellow high density polyethylene (HDPE) with integral studs, as manufactured by Agru America Inc.
- .2 Ameron T-Lock – white polyvinyl chloride (PVC) with integral "T-Lock" ribs, as manufactured by Ameron International

.3 The liner shall be cast directly into pipe at time of manufacturing and cover 360 degrees of the pipe interior and the two edges of the liner shall be welded together, with the weld at the invert of the pipe.

.4 The liner shall withstand a pull test of at least 100 pounds per linear inch, applied perpendicular to the concrete surface for a period of one (1) minute, without rupture of the locking anchors /ribs or yielding and withdraw from embedment.

.5 The liner shall be able to withstand a 105 kPa (15 psi) hydrostatic back pressure applied to the under surface of the lining without losing anchorage and without rupture or leakage.

2.3 Service Connections

Add to 2.3.8.2 Insertable tees are not to be used on 150mm diameter or smaller mainline.

Add 2.3.8.4 Saddles with stainless steel straps must be used for connections to existing Asbestos Cement and Vitrified Clay mainlines.

3.0 EXECUTION

3.6 Pipe Installation

Delete 3.6.6.2 and replace with Curvelinear and bending of sewers is not permitted.

Add 3.6.14 Where casing pipes are installed, provide casing spacers at maximum 3.0m spacing, including spacers at each bell and within 0.5m from the start and end of the casing pipe.

Add 3.6.15 Lined Concrete Pipe, in accordance to 2.1.5 of this Section, shall be installed as follows:

.1 The interior liner shall have either: (1) an overlap joint whereby the liner shall protrude 100mm past the spigot end of the pipe to allow a field joint or (2) a butt edge joint whereby the liner shall be terminated 25mm from the ends of the pipe and a 100mm closure strip shall be field welded across the joint, centred to have at least 25mm overlap on each side of the liner.

.2 Liner shall not be field welded at the pipe joints until the pipe has been backfilled to within 300mm from the final surface elevation. At no time shall there be more than 150m of installed pipe that has not been field welded and successfully tested.

.3 Prior to field welding overlap or butt edge joints, the weld joints shall be clean, free of dirt and water, and roughened using a scraper knife to remove gloss and oxidation.

.4 Prior to welding the closure strip across butt edge joints, the Contractor shall low pressure air test the installed joint and gasket in accordance with ASTM C1103.

.5 All field welding persons shall be trained and certified by the manufacturer for the respective liner being used, and have previous proven liner welding experience along with confined space training and certification. Copies of the training certificates shall be provided to the Contract Administrator at least five (5) days prior to construction.

.6 All field welding shall be completed in accordance with the manufacturer's recommendations, including heat, drying/humidity reduction, and application time adjustments suitable to climate conditions in the pipe at the time of welding.

.7 At the time of welding, the Contract Administrator may request 400mm long x 200mm wide test weld specimens to complete Quality Assurance of liner pull tests.

.8 Each transverse welding strip shall be tested. The welding strip shall extend 50mm below the liner to provide a tab for testing. A 10 pound pull test shall be applied to the tab, perpendicular to the face of the pipe, by means of a spring balance and the liner strip shall adhere to the pipe during the test.

.9 Within three (3) days of the joint being welded, the weld shall be tested with a 20,000 volt electronic holiday detector, as well as physically tested by non-destructive probing through the use of a putty knife.

.10 All patches over holes, or repairs to the liner, wherever damaged has occurred shall be completed in conformance with the manufacturer's recommendation and tested.

.11 Defective welds shall be retested after repairs have been made.

Tabs used for testing shall be trimmed away neatly after the welding strip has passed inspections.

3.10 Service Connection Installation

Append to 3.10.3

Plug for temporary blocking of the inlet of inspection chamber shall be removed upon completion of the Work.

Add 3.10.5

After new service connections are installed and transferred to a new sanitary sewer main, old services are to be abandoned including removing the old inspection chamber and capping the old service.

Add 3.10.6

After new service connections are installed and transferred to an existing sanitary sewer main that will remain in operation, the old services are to be abandoned. Abandonment shall include:

.1 Removal of the old inspection chamber and capping the old service connection pipe at the property line. Drill a 25mm to 37.5mm diameter hole in the end cap to allow for release of air and grouting.

.2 Chemically grout the old service internally through the sewer main. Grouting records need to be submitted along with a video inspection of the sewer main to confirm the grouting has resulted in a sealed service and that there has been no damage to the existing sewer main nor grout residual on the inside of the existing sewer main.

.3 If chemical grout cannot be applied then the service can be capped 1.0m from the sewer main and grouted externally.

3.12 Leakage Testing General

Delete 3.12.1 and replace with

Upon completion of cleaning and flushing of each section, carry out the following testing, which varies by pipe diameter and material type:

.1 Exfiltration Test or Infiltration Test required for all concrete sanitary sewers 675mm diameter and smaller. Exfiltration Test, per 3.13 of this Section, unless the groundwater table is above the crown of pipe and then Infiltration Test as per 3.15 of this Section.

.2 Individual Joint Test for all concrete sanitary sewers 750mm diameter and greater.

.3 If concrete sanitary sewer has interior PVC or HDPE liner, complete liner tests as per 3.6 of this Section.

.4 Low Pressure Air Test required for all PVC and HDPE sanitary sewers and service connections. Tests on PVC shall be as per 3.14 of this Section. Tests on HDPE shall be as per 3.19.7 of Section 33 11 01, with maximum test pressure of 69 kPa and zero leakage permitted.

.5 Short Term Deflection Test required for all PVC and HDPE sanitary sewers as per 3.16 of this Section.

3.14 Low Pressure Air Test

Delete 3.14.2 and replace with

Increase test pressure in section prior to conducting test. Test pressure to be 24 kPa above average groundwater pressure and observe rate of pressure drop.

Delete to 3.14.4 and replace with

Append the following test periods to the table:

150mm – 3 minutes, 12 seconds
200mm – 5 minutes, 42 seconds
250mm – 8 minutes, 54 seconds
300mm – 12 minutes, 50seconds
375mm – 20 minutes, 02 seconds
450mm – 28 minutes, 51 seconds
525mm – 39 minutes, 16 seconds
600mm – 51 minutes, 17 seconds
675mm – 1 hour, 4 minutes, 54 seconds
750mm – 1 hour, 20 minutes, 07 seconds
900mm – 1 hour, 45 minutes, 23 seconds

3.16	**Short-Term Deflection Test**	Delete 3.16.1 and replace with	Lamps test all PVC and HDPE sanitary sewers, unless noted otherwise by the City. Sewers shall be lamped from manhole to manhole to check alignment and grade. Lamping shall be carried out using strong light or mirrors by an approved lamp testing firm. All sewers shall have a minimum 75% pipe diameter exposed when measured horizontally and a minimum 100% pipe diameter exposed when measured vertically when lamped
		Add 3.16.2	For all PVC and HDPE sanitary sewers 600mm diameter and greater, pass rubber test ball, mandrel or test plug having minimum dimension of 95% of base inside diameter of sewer pipe completely through pipes and appurtenances. Test ball, mandrel or test plug shall be collapsible to fit within manhole lid.
3.17	**Individual Joint Test**	Delete 3.17.1 and replace with	Each joint on pipes 750mm diameter and greater to be joint tested, in accordance with ASTM C1103.
3.18	**Video Inspection**	Delete 3.18.1 and replace with	The Contractor shall CCTV all installed sanitary sewers and services, regardless of length, material type and diameter, in accordance with Section 33 01 30.1. CCTV to be completed after sewer installation and backfill to the underside of the final surface treatment (i.e. asphalt) and successful passing is a requirement to achieve Substantial Performance.
		Delete 3.18.2 and replace with	In the event the CCTV indicates apparent deficiencies, Contractor shall correct the deficiencies and re-video at the Contractor's expense.
		Add 3.18.3	The City reserves the right to request the sanitary sewers and service connections to be re-videoed during the Maintenance Period. Costs for re-video shall be paid at the unit rates in the Schedule of Quantities and Prices, unless the re-video is required as a result of deficient work.
		Add 3.18.4	The Contractor shall submit the final video and reports to the Contract Administrator, who shall review and submit the reports to the City indicating their acceptance, or non-acceptance, of the system to the City.

3.19 Installation Standard

Delete 3.19.5.2 and replace with

Mainline sewers and service connections, regardless of pipe material:

.1 100mm to 250mm diameter, inclusive: 10mm maximum ponding over a 3 metre length of pipeline.

.2 300mm diameter and larger: 15mm maximum ponding over a 3 metre length of pipeline.

Delete 3.19.5.3 and replace with

Concrete pipe shall not have cracks exceeding ASTM specifications.

END OF SECTION

MMCD Section 33 34 01 Sewage Force mains

1.0 GENERAL

1.8 Measurement and Payment

Append to 1.8.4

Payment for casing pipe shall include the method of construction, such as open cut or trenchless technology, as noted on the Contract Drawings; and payment shall include excavation and backfill for casing pipe of access pits, casing spacers and end seals. Measurement for casing pipe will be made along the centerline of the casing pipe, over surface, after Work has been completed.

2.0 PRODUCTS

2.2 Pipe, Joints and Fittings

Delete 2.2.1 and replace with

Ductile iron is not permitted.

Delete 2.2.2 an replace with

PVC C900 and PVCO C909 to be manufactured to specifications for pipe size ranges as follows:

.1 Pipes 150mm to 300mm diameter
.2 Pipes to be pressure rated to minimum operating pressure of 1620 kPa (235psi)
.3 Pipes to be certified by Canadian Standards Association to CSA B137.3.1
.4 Outside diameter to be Cast Iron Pipe Size.
.5 To be compatible with specified mechanical joint and push-on joint fittings and valves without use of special adapters. **July 01/16**
.6 Joints: Push-on integrally thickened bell and spigot type to ASTMD 3139 with single elastomeric gasket to ASTM F477.

PVC/PVCO not permitted on Arterial Roads, nor are they permitted in areas subject to soil liquefaction in seismic events.

Delete 2.2.5.1 and replace with

Grey Iron (cast iron) fittings are not acceptable.

Delete 2.2.5.10 and replace with

Tie Rods to be in accordance with Section 33 11 01

		Delete 2.2.5.13 and replace with	Joint restraints for PVC / PVCO forcemains shall be to MMCD and shall not de-rate the pressure rating of the pipe material. **July 01/16**
		Delete 2.2.6 and replace with	Pre-stressed Concrete Pressure pipe is not acceptable.
2.3	**Valves and Vale Boxes**	Delete 2.3.2.2 and replace with	To AWWA C515: 400mm and larger to working pressure 1725 kPa, non-rising stem, hub, flanged or mechanical joint ends.
		Delete 2.3.4.1 and replace with	Ductile Iron Body
		Add 2.3.6	Plug Valves to have: .1 Full-port opening not less than 100% of the nominal pipe area. .2 Rating for municipal sewage .3 Minimum rating for operating pressure of 690kpa (100 psi) .4 Valve body and cover: (i) Ductile Iron ASTM A536, grade 65-45-12. .5 Class 125 Flanges to ANSI B16.1 .6 Stainless steel nuts, stud, washers, bolts and stem .7 Seat that is bi-directional welded nickel and corrosion resistant. .8 Side geared valve with actuator
3.0	**EXECUTION**		
3.6	**Pipe Installation**	Add 3.6.11	Where casing pipes are installed, provide casing spacers at maximum 3.0m spacing, including spacers at each bell and within 0.5m from the start and end of the casing pipe.
3.11	**Pipe Surround**	Delete 3.11.5 and replace with	Force main identification: Red or Yellow PVC marker tape to be placed at top of the pipe zone. Marker tape shall be continuous, 75mm wide and lettered permanently with "SEWAGE FORCE MAIN" at 1.0 m intervals along tape.

3.15	**Pressure Testing Procedure**	Delete 3.15.2 and replace with	Force main to be submitted to a test of 2.0 x Working pressure applied at highest elevation in each section minimum 690 kPa. Maximum allowable leakage rate at test pressure varies based on pipe material, diameter and length as outlined in 3.15 of this Section. Minimum duration of test period to be 2 hours.
3.17	**Mandrel inspection**	Add 3.17.1	Forcemain to be tested by pigging or passing a mandrel/rubber ball/test plug having 95% of the base inside diameter of the pipe completely through the pipeline A lamp test may not be used in lieu of the ball test. CCTV inspection may be used in lieu of the mandrel inspection.

END OF SECTION

MMCD Section 33 40 01 Storm Sewers

1.0 GENERAL

1.6	**Measurement and Payment**	Add 1.6.12	Payment for storm sewers undercrossing services will only be made for crossing with use of a pipe casing as shown on the Contract Drawings or directed by the Contract Administrator. Payment includes the pipe casing and all other work and materials as specified in this Section. Payment will be extra over the storm sewer item under 1.6.2 of this Section for each undercrossing installation. Payment for casing pipe shall include the method of construction, such as open cut or trenchless technology, as noted on the Contract Drawings; and payment shall include excavation and backfill for casing pipe of access pits, casing spacers and end seals. Measurement for casing pipe will be made along the centerline of the casing pipe, over surface, after Work has been completed.

2.0 PRODUCTS

2.3	**PVC Pipe Mainline Profile**	Add 2.3.6	Spiral rib PVC profile pipe is not acceptable.
2.3	**Spiral Rib Pipe – Steel**	Delete 2.5 2 and replace with	Pipe material: Aluminized Steel Type II. **July 01/16**
2.6	**Service Connections**	Add 2.6.8.3	Insertable tee's will only be permitted for new service connections to existing sewers. Manufactured wyes shall be used on all other new storm sewer systems. **July 01/16**
		Add 2.6.11	All new storm sewer service connections should have an inspection chamber, and the lid shall be PVC pigmented green.

3.0 EXECUTION

3.6	**Pipe Installation**	Delete 3.6.6 and replace with	Pipe bending is not permitted.
		Add 3.6.14	Where casing pipes are installed, provide casing spacers at maximum 3.0m spacing, including spacers at

			each bell and within 0.5m from the start and end of the casing pipe.
3.10	**Service Connection Installation**	Add 3.10.5	All existing functional service connections shall be located and marked, and transferred or connected to the new storm sewer. The Contractor is liable for any damages resulting from service connections being left unconnected.
3.12	**Video Inspection**	Delete 3.12.1 and replace with	The Contractor shall CCTV inspect all installed storm sewers and services, regardless of length, material type and diameter, in accordance with Section 33 01 30.1. CCTV to be completed after sewer installation and backfill to the underside of the final surface treatment (i.e. asphalt) and successful passing is a requirement to achieve Substantial Performance.
		Delete 3.12.2 and replace with	In the event the CCTV inspection indicates apparent deficiencies, Contractor shall correct the deficiencies and re-video at the Contractor's expense.
		Delete 3.12.3 and replace with	The City reserves the right to request the storm sewers and service connections to be re-videoed video inspected during the Maintenance Period. Costs for re-video shall be paid at the unit rates in the Schedule of Quantities and Prices, unless the re-video is required as a result of deficient work.
		Add 3.12.4	The Contractor shall submit the final video and reports to the Contract Administrator, who shall review and submit the reports to the City indicating their acceptance, or non-acceptance, of the system to the City.
3.13	**Installation Standard**	Add 3.13.6	Concrete pipe shall not have cracks exceeding ASTM specifications.

MMCD Section 33 42 13 Pipe Culverts

2.0 PRODUCTS

2.1	**Corrugated Steel Pipe**	Delete 2.1.6 and replace with	All Corrugated or Steel Spiral Rib Pipe to be Aluminized Steel Type II to CAN3-G401
2.4	**PVC Pipe Profile**	Add 2.4.7	Spiral rib PVC profile pipe is not acceptable
2.8	**Polypropylene Profile pipe**	Add 2.8.1	Polypropylene profile pipe; 300mm to 600mm diameter dual wall to ASTM F2736, 750 to 1500mm diameter triple wall to ASTM F2764. .
		Add 2.8.2	Bell and Spigot joints including two rubber gaskets to ASTM3212.

MMCD Section 33 44 01 Manholes and Catch Basins

1.0 GENERAL

1.5 Measurement and Payment

Delete 1.5.3 and replace with

Frame and Cover Adjustment shall include: removal of existing frame and cover; cleaning; re-set to meet new grade, profile and cross fall; replace grade rings and one ladder rung to suit.

Minor Manhole Replacement shall include: removal of existing frame and cover; supply and install of a new frame and cover (type to vary based on road classification); provide new grade rings, set at new grade, profile and cross fall. Add one ladder rung to suit.

Major Manhole Replacement shall include: removal of existing cast iron frame and cover, grade rings, concrete lid and one riser section if required; supply and install new concrete riser section, with new frame and cover (type to vary based on road classification), grade rings and set to new grade, profile and cross fall. Add two ladder rungs to suit.

Payment for manhole frame and cover adjustments, and adjustment of existing catch basins, cleanouts, valves, inspection chambers and lawn drains shall be incidental to the asphalt or concrete placement, unless noted otherwise in the Schedule of Quantities and Prices.

Payment for Minor and Major Manhole Replacement shall be on an individual basis, varying by type of frame and cover corresponding to the road classification, unless noted otherwise in the Schedule of Quantities and Prices.

2.0 PRODUCTS

2.1 Materials

Delete 2.1.2 and replace with

Concrete strength shall be minimum 30 MPa, at 28 days, unless otherwise stated.

Delete 2.1.6 and replace with

Manhole lids manufactured from precast concrete shall be rated to withstand H25.

Delete 2.1.7 and replace with

Manhole frame and cover shall be rated to withstand H25 loading. Frame and cover, as shown on Standard Drawings, and as specified in this Section.

.1 Frame and cover must be made of the following materials:
   1. ASTM A48-03, Class 35B grey cast iron
   2. ASTM A536 Grade 65/45/12 ductile iron
   3. Austempered ductile iron is not permitted

.2 Frame and cover must be from the same foundry, and imprinted with foundry name, date code and country of origin.

.3 Be height-adjustable to suit the road surface contour by means of integral levelling screws or flanged frame with telescopic extension, as shown on the Standard Drawings, and with exception for manholes on local roads:

   1. Levelling screws shall be integrally designed with the frame and cover
   2. Flanged frame with telescopic extension design shall be resilient seated
   3. Use of shims, wedges, or any materials that will induce point load to the concrete lid or grade ring is not permitted

.4 Any frame and cover assembly creating a point load on the concrete riser rings will not be permitted.

.5 Manhole cover shall have a diameter between 625mm and 660mm, as 565mm diameter cover is not permitted, and weight between 60kg and 70kg.

.6 Bolt down manhole cover is not permitted unless approved by the Contract Administrator.

	Delete 2.1.16 and replace with	Adjusting grade rings to be as follows: .1 Concrete to ASTM C478M, with a minimum thickness of 75mm and maximum thickness of 150mm. Concrete grade rings are only permitted on local roads. .2 HDPE to ASTM D1248 and rated for H25 loading. To be free of cracks, voids, and other defects. Maximum of three grade rings is permitted. .3 Expanded Polypropylene (EPP) rated to H25 loading, and free of cracks, voids, and other defects. Maximum of three grade rings is permitted.
	Delete 2.1.17 and replace with	Concrete bricks are not permitted.
	Delete 2.1.23 and replace with	Pre-fabricated Corrugated Steel Pipe Manholes are not permitted.
	Add 2.1.24	Anchor bolts, hex nuts and washers to be as follows: .1 Anchor bolts minimum 5/8 inch diameter and to ASTM 307 Grade C, and hot dip galvanized. .2 Hex bolts to ASTM A563 Grade A. .3 Washers to ASTM F844 Grade A.
	Add 2.1.25	Sealant: Sealant between manhole risers, and between grade rings and casting, shall be hydrophobic polyurethane sealant and adhesive.
	Add 2.1.26	In areas where groundwater table is above pipe invert, manholes to be sealed watertight at all pipe connections with epoxy gel or polyurethane product to ASTM D 1850.
3.0	**EXECUTION**	
3.3	**Manhole Installation**	
	Delete 3.3.12.2 and replace with	For local roads only, allowable product is: cast-in-place form system; or pre-cast concrete grade rings as per 2.1.16 of this Section.
	Delete 3.3.12.5 and replace with	Proper layer of grout between the grade rings and spacers, covering the entire surface of the rings, should be utilized.

Append to 3.3.13.6	Set height adjustable frame in direct contact and centered on non-concrete grade rings, and secure frame and adjustment rings to manhole lid by pre-set anchor bolts for new installation or Hilti bolt for rehabilitation. Anchor bolts, hex nuts and washer to be as per 2.1.24 of this Section. In case where the existing road grade exceeds 8%, taper riser rings shall be used in conjunction with the height adjustable manhole to supplement the additional inclination.
Append to 3.3.13.7	For leveling screw style height adjustable manhole frame and cover, 30MPa concrete with 10mm aggregate shall be used to infill void space between the leveling screws.
Delete 3.3.13.8 and replace with	Watertight sealant to fill gap between frame and adjustment ring, and between adjustment ring and concrete lid.
Append to 3.3.17	Prior to paving the base lift, Contractor shall confirm the accuracy of the base gravel preparation, pavement contours, and appurtenance adjustments. Road grade and elevations shall be verified with string line or other method to ensure the cover match the grade and cross fall of the road. Final cover grade shall be set within 3mm from the surrounding road surface. The Contractor Administrator reserves the right to request the Contractor to repair the manhole and the pavement should the manhole settle more than 5mm from the surrounding road surface within the Maintenance Period.
Delete 3.3.18 and replace with	Pre-fabricated Corrugated Steel Pipe Manholes are not permitted.

END OF SECTION

MMCD Section 34 41 13 Traffic Signals

1.0 GENERAL

1.4	**Electrical Energy Supply**	Add 1.4.4	The Contractor shall coil and tape conductors out of weatherhead. Utility company shall complete electrical service connections.
1.9	**Measurement and Payment**	Append to 1.9.1	Payment shall include excavation, disposal of surplus excavated material, bedding, supply and installation of all pipe and materials, concrete encasement, import or native backfill as shown on the Contract Drawings, and all surface restoration.

2.0 PRODUCTS

2.1	**General**	Delete 2.1.2 and replace with	All products supplied to be new, and in accordance with Contract Documents. All products must bear evidence of either a mark or a label of a certification agency accredited by the Standards Council of Canada or an approved label issued by the BC Safety Authority.
		Delete 2.1.3 and replace with	All products shall be in accordance with Section 01 62 01S, and where the product is not listed in this Section then Contractor to contact the Contract Administrator for a current list.
2.4	**Plastic Junction Boxes**	Append to 2.4.1	Plastic junction box lid to be galvanized.
2.5	**Concrete Junction Boxes**	Delete 2.5 and replace with 2.5.1	Refer to drawing SSD-R.E.6 and –R.E.7 for concrete junction box details.
2.6	**Poles and Anchor Bolts**	Append to 2.6.1	Traffic Signal poles shall be Type S or L Shafts as defined on the Contract Drawings. Traffic pole specifications vary by neighbourhoods and the latest specifications are available from the City of Surrey's Engineering Traffic Operations Section.
2.7	**Conductors and Cables**	Add 2.7.5	For Roadway Lighting conductors refer to Supplemental Specifications Section 26 56 01.
		Add 2.7.6	Shielded cables for emergency vehicle pre-emption system shall be "GTT Opticom Cable, model 138" and no alternates are permitted unless noted otherwise.

2.9	**Conductors Connectors**	Add 2.9.1.3	For Roadway Lighting conductor connectors refer to Section 26 56 01.
2.11	**Service Panels**	Delete 2.11.1 and replace with	Service panels shall be as shown on Contract Drawings.
2.16	**Traffic and Pedestrian Signals**	Append to 2.16.1	Traffic signal heads and pedestrian signal heads shall be aluminum and conform to the latest TAC and ITE Standards and Specifications. Housing colour shall be green. Each primary signal head section shall be designed for a 300mm diameter LED display and have a green cowl visor. Each secondary signal head section shall be designed for a 300mm diameter LED display and shall have a 300mm long tunnel visor. Each pedestrian signal head shall be designed for a 450mm bi-modal LED display with countdown. All signal heads shall have yellow aluminum backboards with 75mm border of yellow prismatic retro-reflective sheeting (3M™ Scotchlite™ Diamond Grade™ VIP, Series 3990).
		Add 2.16.3	Fire signal heads shall have special yellow backboards as shown on Drawing SSD-R.E.9.
2.21	**Pedestrian / Cyclist Pushbuttons**	Append to 2.21.1	All pedestrian pushbuttons shall be Accessible Pedestrian Signal (APS) type with the exception of special crosswalk signals.
		Delete 2.21.8 and replace with	Cyclist pushbuttons shall have white background and black raised characters. Button mechanism is to be raised style with mounting fully external to the pole.
2.22	**Luminaires**	Delete 2.22 and replace with	All luminaires shall be LED. Refer to Section 26 56 01.
2.26	**NEMA Traffic Controllers**	Delete 2.26 and replace with	NEMA Controllers are not permitted.
2.29	**Illuminated Crosswalk Signs**	Add 2.29.2	Crosswalk internal illumination and downlight shall be LED

2.34	**Advance Warning Signs**	Add 2.34.1	Advance warning signs shall have illustration details in yellow prismatic retro-reflective sheeting (3M™ Scotchlite™ Diamond Grade™ VIP, Series 3990. Signal heads shall be 300mm green aluminum with yellow LED and cowl visors.
3.0	**EXECUTION**		
3.1	**General**	Add 3.1.5	When tying into or upgrading an existing installation, maintain the existing traffic signal operation at all times.
3.3	**Concrete Bases**	Append to 3.3.1	Refer to Drawing SSD-R.E.5 for controller base details.
3.4	**Junction Boxes and Vaults**	Append to 3.4.1	All conduits shall enter the box through knockouts in the side as opposed to the bottom
3.5	**Underground Conduit**	Append to 3.5.1	The conduit shall not be bent in the field by deflecting joints. Only factory bends will be accepted
		Delete 3.5.2 and replace with	Minimum cover over conduits to be 600mm in boulevard areas and 900mm in travelled areas.
		Delete 3.5.5 and replace with	Before pulling conductor cable/wire into a run of conduit, the conduit shall be blown out with compressed air, and pull string installed with caps at each end. Conductors shall be pulled in slowly by hand or hand winch, in order to keep close control on pulling tension and prevent cutting the conduit at bends.
3.6	**Poles and Related Equipment**	Delete 3.6.7 and replace with	Field Drilling of holes larger than 33mm diameter not allowed in Type 1, 3, 6, 7, L & S shafts, and all arms and extension. Where larger holes are required, reinforce holes with welded bushing prior to galvanizing.
		Append to 3.6.9	Poles shall be erected plumb, using the shims supplied if required. No more than 4 shims shall be used for any one bolt. If pole can't be installed with 4 shims of less than foundation shall be adjusted. After traffic signal poles are installed, there shall be at least one thread of the anchor bolts exposed on top of all nuts.

3**.7**	**Traffic and Pedestrian Signal Head Mounting**	Append to 3.7.4	Traffic signal head lenses and pedestrian signal head lenses shall be cleaned prior to signal start-up.
		Add 3.7.5	Primary traffic signal heads shall be mounted to pole arms as per Standard Drawings. Primary traffic signal heads shall be safety cabled to the pole arm using 3/32" galvanized steel aircraft cable looped through the traffic signal backboard and fastened with a rope clip (VAN-RC18 or approved alternate).
		Add 3.7.6	Secondary traffic signal head and pedestrian head mounting brackets and hardware shall be installed as per Standard Detail Drawing E5.2. Traffic signal poles shall be drilled such that all wiring shall be located within the poles and traffic signal brackets.
		Add 3.7.7	Secondary and Pedestrian signal head mounting arms at skewed intersections are to be drilled in the field in order to achieve optimum viewing angles.
3.10	**Luminaires and Photocells**	Delete 3.10.2 and replace with	Luminaires shall be securely fastened to the poles, leveled and cleaned after pole erection and plumbing is complete.
		Add 3.10.4	NEMA wattage label must be visible at the bottom of the luminaire on all cobra head style fixtures.
3.13	**Electrical Service Panels**	Add 3.13.2	The electrical service panel shall be installed a minimum of 2.5m from the traffic controller.
3.14	**Wiring**	Add 3.14.14	Looping of feeder conductors with "T" taps shall not be permitted.
3.16	**Traffic Controller**	Add 3.16.8	Duct-seal shall be placed over/in all underground conduits entering traffic signal cabinet. All unused conduits shall be capped with an R.PVC cap, and cap not to be glued.
		Add 3.16.9	Surrey will supply two (2) traffic signal cabinet padlocks and one (1) electrical service panel padlock. Contractor to install.
		Add 3.16.10	Traffic signal cabinet interior must be kept dry during inclement weather.

3.17	**Detector Loops**	Delete 3.17.1 and replace with	Detector loops shall be as per Drawing SSD-R.E.12 and installed per Standard Detail Drawings E8.1 to E8.7.
		Delete 3.17.2 and replace with	Detector loop shall be installed in the base lift of asphalt when possible. Loops in adjacent lanes shall be wound in opposite directions, i.e.; clockwise, counter clockwise, clockwise, etc.
		Add 3.17.3	Each shielded cable shall run continuously with no splices from the traffic signal cabinet to the junction box. Splices between the detector loop and the shielded cable shall be connected with solder less type connectors and dipped in 3M ScotchKote™.
3.19	**Advance Warning Signs**	Add 3.19.2	Advance warning signs shall be completely covered with burlap sack until system start-up.
3.20	**Grounding & Bonding**	Add 3.20.5	No grounding rod or plate electrodes shall be installed inside the traffic signal cabinet base.
3.22	**Pole Application Finish**	Append to 3.22.1	Poles shall powder coated and in accordance with section 26 56 01. Pole color shall be as per City Specifications for each neighbourhood.
		Append to 3.22.4	Contractor shall clean and wire brush galvanized surfaces, touch up scratches and abrasions with prime coat (General Paint META Prime, vinyl wash), and apply finish coat of non-alkyds color base paint. Poles must be free from moisture (rain, dew, frost, fog). No pole refinishing shall be undertaken if frost is predicted within 24 hours of the work.
3.28	**Emergency Vehicle Pre-emption**	Add 3.28.1	The Contractor shall install, as noted on Contract Drawings, emergency vehicle pre-emption (Opticom) infrared receiver units on signal pole arms as per manufacturer's instructions. The Contractor shall provide aiming, testing and commissioning of this equipment required for correct operation.
		Add 3.28.2	Opticom receiver units shall be supplied by the City.
3.29	**Streetname Signs**	Add 3.29.1	Streetname signs to be installed as per Drawing SSD-R.E.8, and safety cabled to the pole arm using 3/32" galvanized steel aircraft cable looped through the street name sign and fastened with a rope clip.

END OF SECTION

Engineering Department

Supplementary Master
Municipal Construction Documents

SUPPLEMENTARY STANDARD DRAWINGS

January 2016
(Updated August 17, 2018)

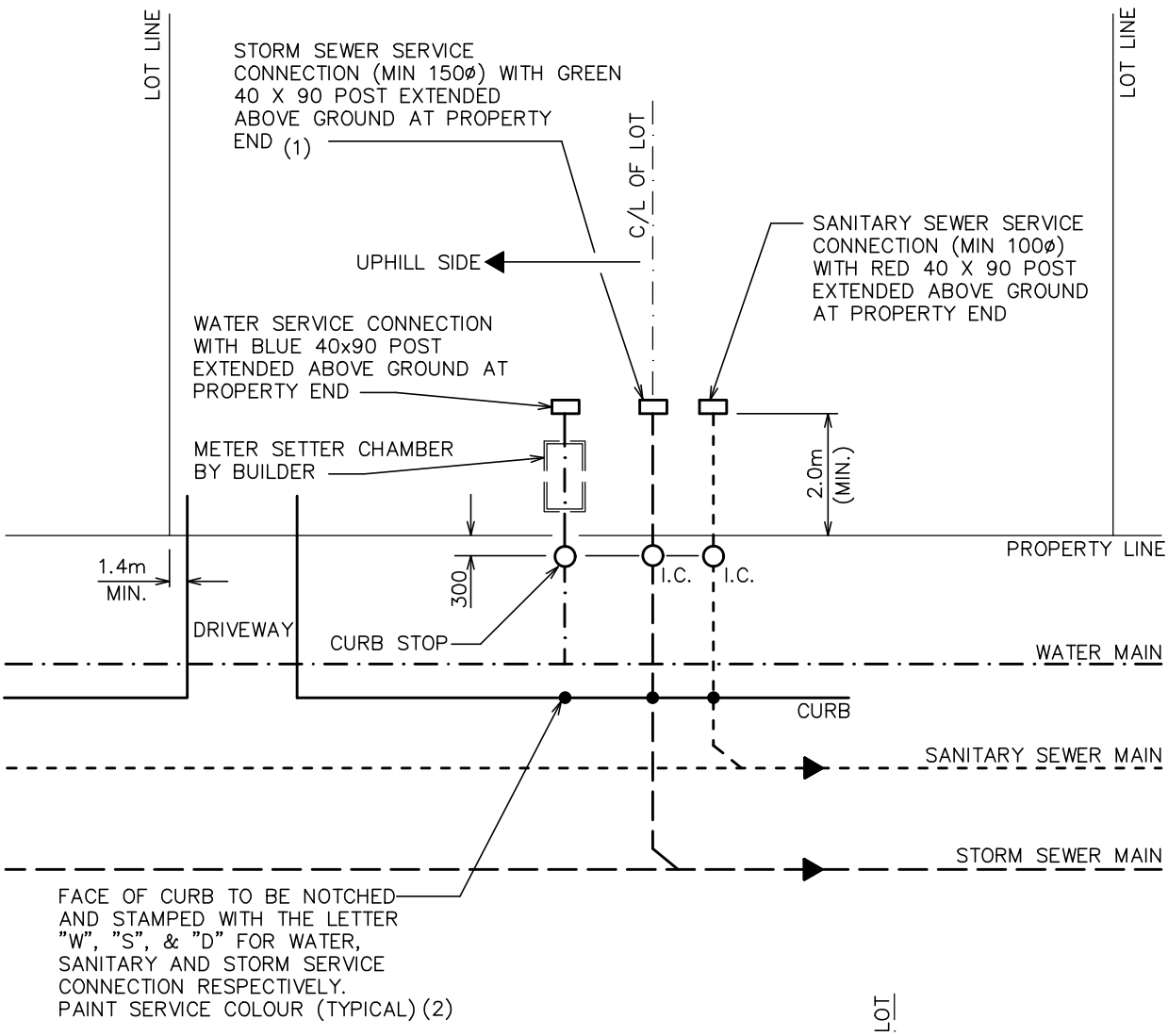
The City of Surrey Supplementary Master Municipal Construction Documents are supplemental to the **Master Municipal Construction Document – Platinum Edition (2009)** and take precedence over the MMCD General Conditions, Specifications, Standard Detail Drawings and their Amendments.

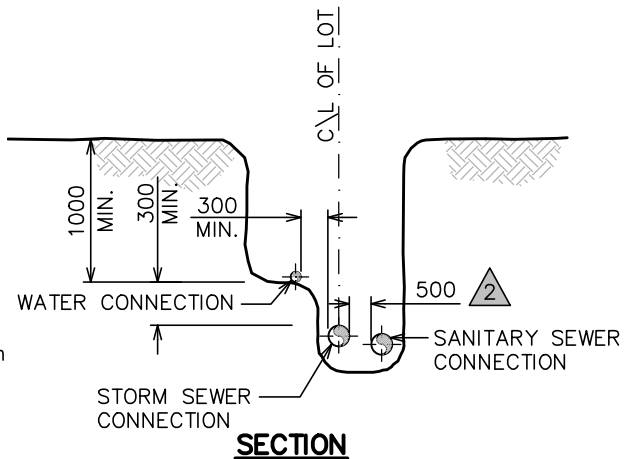
The following table serves as amendments to the **Master Municipal Construction Document – 2009 Edition (Platinum Book)** which have been adopted by the City of Surrey ("City") and are to be included within the City's Supplementary Specifications.

MMCD Drawing	Amendment / Supplementary Drawing
Drawings CE 1.3, CE 1.4, CE 1.5 and CE 1.7	References to Drawing E 8.3 should be changed to E 7.3 for conduit layout
Drawing E 5.7	References to Drawing E 6.8 should be changed to E 5.8
Drawings E 7.2 and CE 7.3	Delete references to Drawings A 8.2 and A 8.3
Drawings E 7.5 and CE 7.6	References to Drawing E 8.10 should be changed to E 7.10 for ground plate detail
Drawing E 7.7	References to Drawing E 8.8 should be changed to E 7.8 for ground plate detail
Drawing S6	Flow direction is incorrect and should be pointing to the right

The City has developed Supplementary Standard Drawings (SSD's) which supplement, and where applicable overwrite, the Standard Detail Drawings within the MMCD (2009). A list of the City's SSD's and a concordance table with references to the MMCD Standard Detail Drawings is included at the end of the Supplementary Specifications.

Drawing Table of Contents





SECTION

NOTES:

(1) STORM SEWER SERVICE CONNECTION MAY ALTERNATIVELY BE 300 FROM THE SIDE PROPERTY LINE ON THE LOWER END OF THE GENERAL GRADE OF THE AREA.

(2) ALL CONNECTIONS SHALL BE LOCATED AT LEAST 1.5m FROM THE DRIVEWAY AND THE SERVICE LINES FOR THE HYDRO POWER LINE, B.C. TEL AND OTHER UTILITIES. EXEMPTION MAY BE ALLOWED IN CUL-DE-SACS SUBJECT TO THE APPROVAL OF THE CITY OF SURREY.

3		
2	JULY 2016	SCOTT NEUMAN
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

LOT SERVICE CONNECTIONS

CITY OF SURREY
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SUPPLEMENTARY STANDARD DRAWINGS

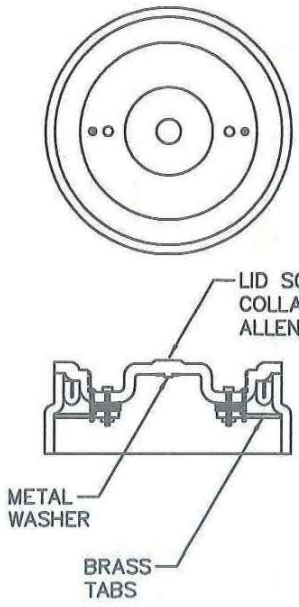
Approved by :

JANUARY 2016

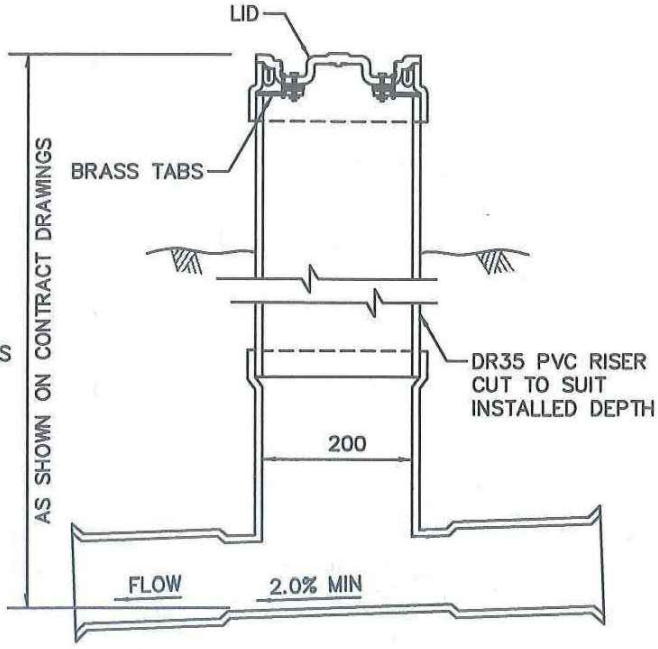
G.M. Engineering

DRAWING NUMBER

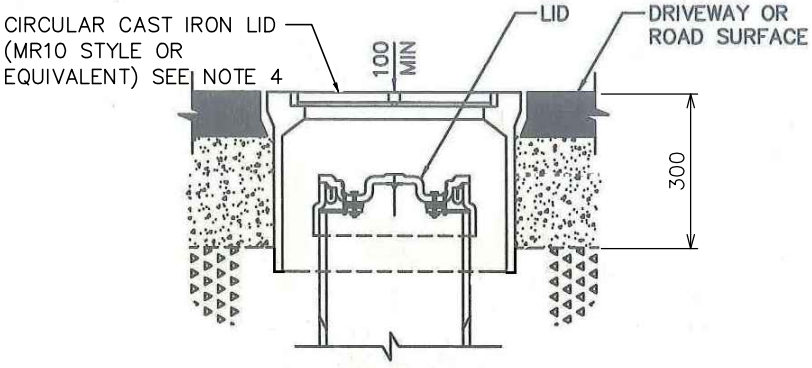
SSD-G.1



LID DETAIL



INSTALLATION IN BOULEVARD



INSTALLATION IN DRIVEWAY AND ROAD(4)

1. REFER TO DRAWING S7 AND S8 FOR INSTALLATION REQUIREMENTS.
2. INSPECTION CHAMBER TO BE APPROVED MANUFACTURED FITTING.
3. REFER TO CONTRACT DRAWINGS FOR SITE SPECIFIC DIMENSIONS. REFER TO SECTION 33 30 01 AND 33 40 01 FOR DETAILED SPECIFICATIONS.
4. CAST IRON (MR STYLE) REQUIRED WHEN INSPECTION CHAMBER IS IN TRAVELLED AREA OR WITHIN 2.0m FROM DRIVEWAY. MARK "SANITARY" OR "STORM" AS APPLICABLE. MR BOX TO BE MAINTAINED BY PROPERTY OWNER

3		
2		
1	JULY 2016	SCOTT NEUMAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title **INSPECTION CHAMBER FOR SANITARY AND STORM SEWER CONNECTIONS**

CITY OF SURREY
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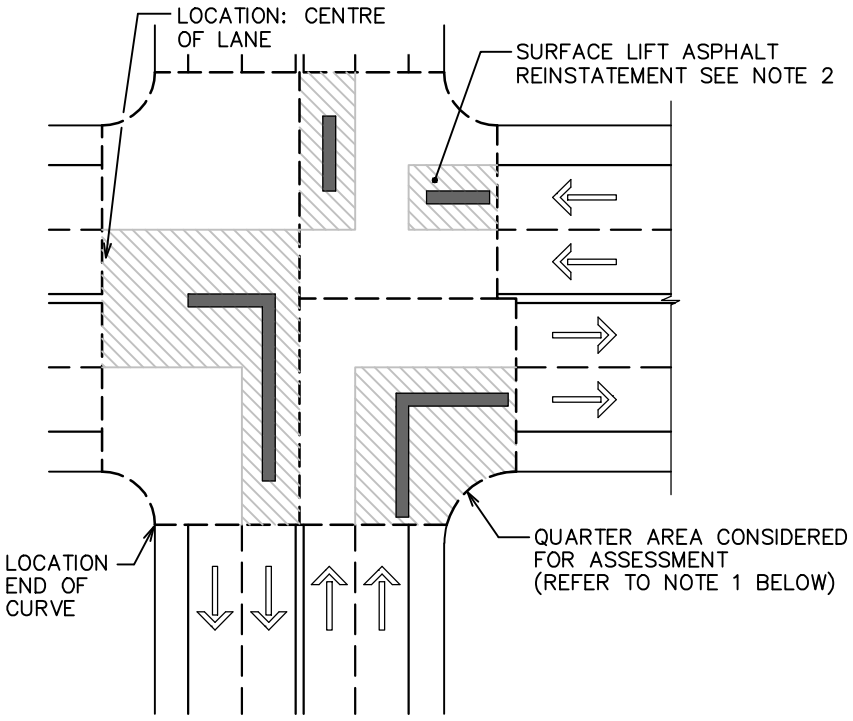
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

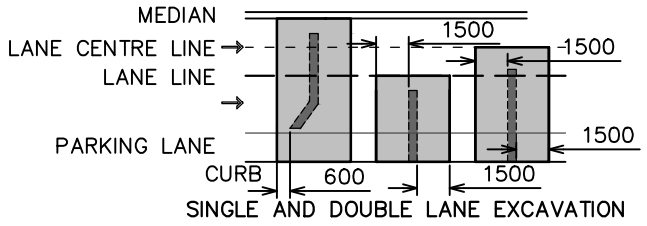
JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD-G.1.1



INTERSECTION CUTS



PERPENDICULAR CUTS

NOTES:

1. IF THE CUT AREA (EXISTING AND NEW) ON A QUARTER OF THE INTERSECTION IS 50% PERMANENT RESTORATION OR MORE BY AREA, THEN THE ENTIRE AFFECTED QUARTER MUST BE PAVED, OTHERWISE PAVE FULL LANE ENTIRE WIDTH.
2. SURFACE ASPHALT RESTORATION INVOLVES MILL/OVERLAY TO DEPTH OF UPPER COURSE ASPHALT AS NOTED ON SSD–G.5.

3		
2		
1	JANUARY 2016	SCOTT NEUMAN
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All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

REGULAR TRENCH CUTS

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SUPPLEMENTARY STANDARD DRAWINGS

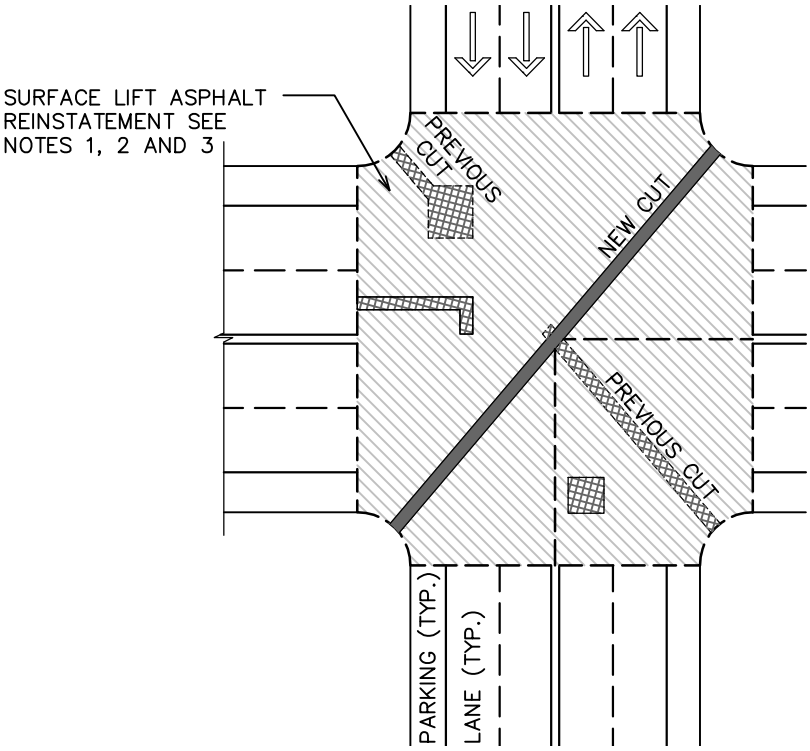
Approved by :

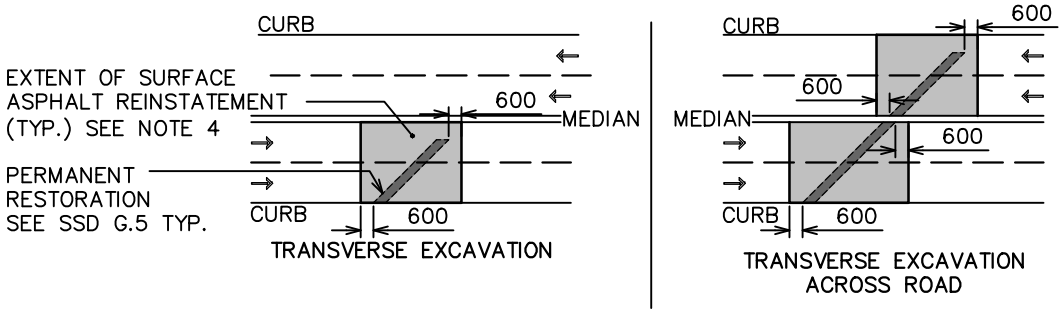
JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD–G.2





NOTES:

1. IF THE CUT AREA (EXISTING AND NEW) ON A QUARTER OF THE INTERSECTION IS 50% PERMANENT RESTORATION OR MORE BY AREA, THEN THE ENTIRE AFFECTED QUARTER MUST BE PAVED.
2. IF CUT IMPACT AREA (EXISTING AND NEW) IS LESS THAN 50% OF ANY INTERSECTION QUARTER BUT MORE THAN 35% OF ENTIRE INTERSECTION THEN PAVING THE ENTIRE INTERSECTION IS REQUIRED.
3. SURFACE ASPHALT RESTORATION INVOLVES MILL/OVERLAY TO DEPTH OF UPPER COURSE ASPHALT AS NOTED ON SSD–G.5.

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

Title: **IRREGULAR & DIAGONAL CUTS**

CITY OF SURREY the future lives here.

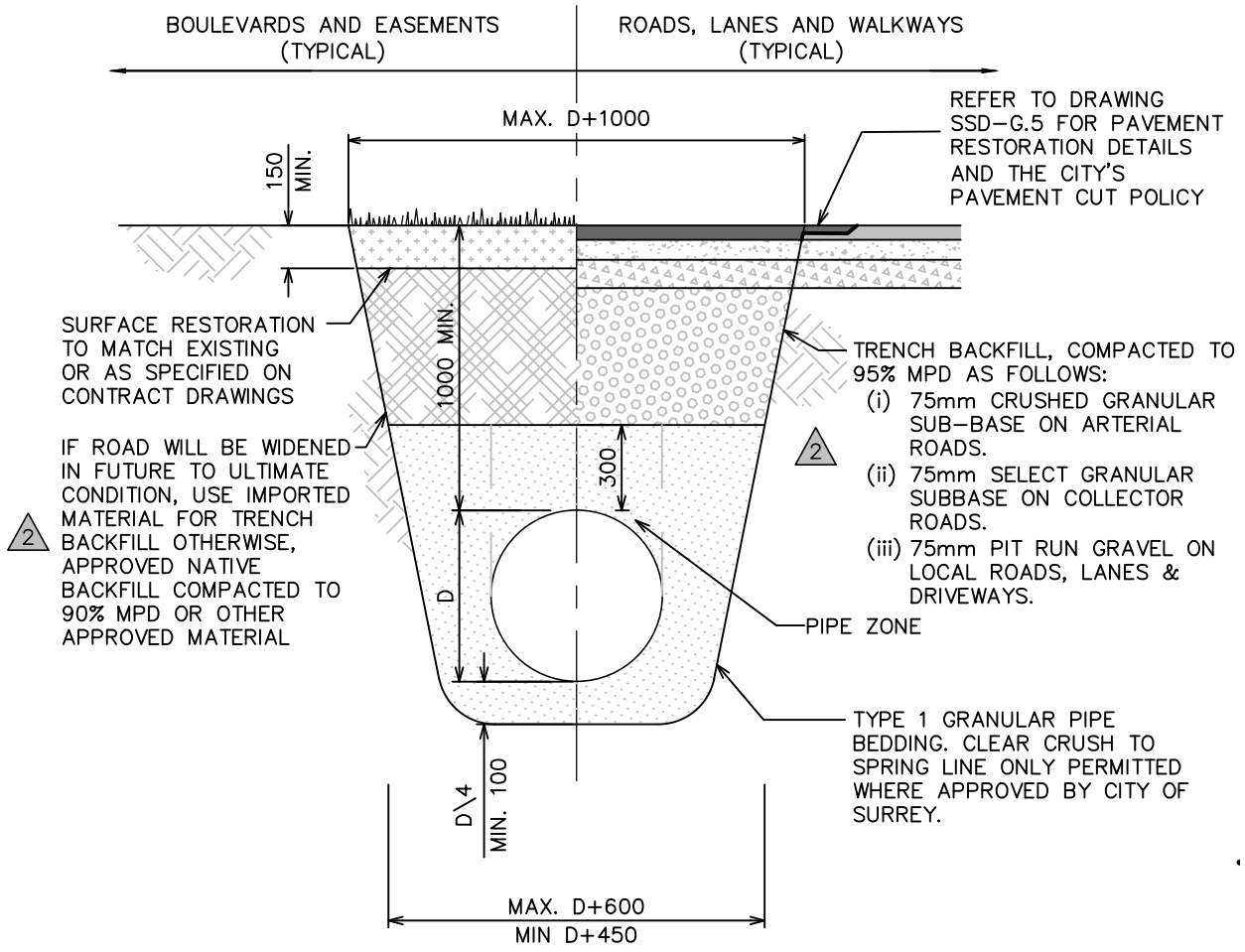
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–G.3



NOTES:
1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF WORKSAFE B.C.
2. REFER TO CONTRACT DRAWINGS, SECTION 31 23 01 FOR DETAILED SPECIFICATIONS.

3		
2	JULY 2016	SCOTT NEUMAN
1	JANUARY 2016	SCOTT NEUMAN
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All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

UTILITY TRENCH

CITY OF SURREY
the future lives here.

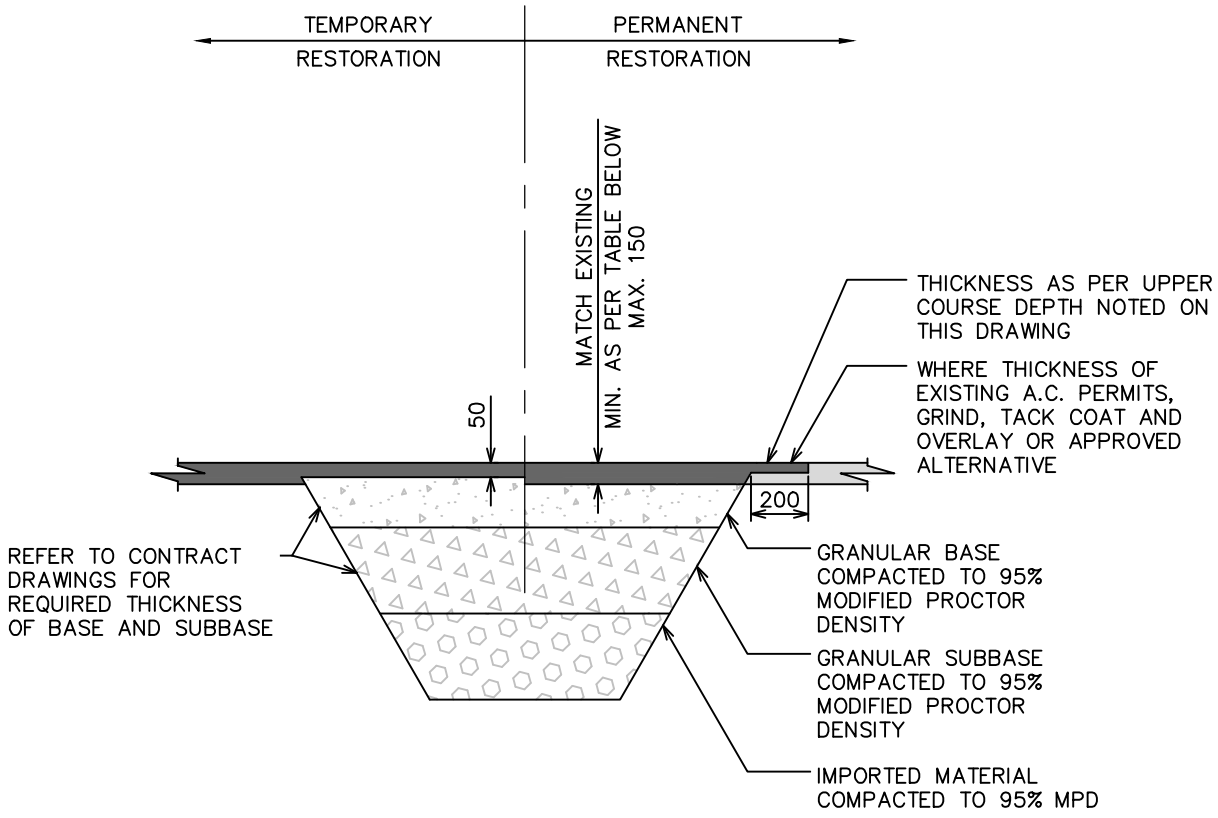
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–G.4



	UPPER COURSE ASPHALT	LOWER COURSE ASPHALT	BASE COURSE	SUB-BASE COURSE
ARTERIALS	50mm SUPER PAVE (12.5mm)	75mm SUPER PAVE (19mm)	100mm 19mm CRUSHED GRANULAR BASE	200mm 75mm CRUSHED GRANULAR SUBBASE
COLLECTORS	40mm UPPER COURSE 1	60mm LOWER COURSE 1	100mm 19mm CRUSHED GRANULAR BASE	200mm 75mm SELECT GRANULAR SUBBASE
LOCAL ROADS 2	40mm UPPER COURSE 2	45mm LOWER COURSE 2	100mm 19mm CRUSHED GRANULAR BASE	200mm 75mm SELECT GRANULAR SUBBASE
NON-RESIDENTIAL 2 LANES & DRIVEWAYS	35mm UPPER COURSE 2	40mm LOWER COURSE 2	100mm 19mm CRUSHED GRANULAR BASE	100mm 75mm SELECT GRANULAR SUBBASE
2 RESIDENTIAL DRIVEWAYS	65mm UPPER COURSE 2 (1 LIFTS)		100mm 19mm CRUSHED GRANULAR BASE	100mm 75mm SELECT GRANULAR SUBBASE

NOTE:
1. REFER TO CONTRACT DOCUMENT SECTIONS 31 23 01, 32 12 16 AND 32 12 17 FOR SPECIFICATIONS.
2. BUTT JOINT TO HAVE 600mm MINIMUM OVERLAP IN LATERAL DIRECTION.

3		
2	JULY 2016	SCOTT NEUMAN
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **SURFACE ASPHALT REINSTATEMENT AND STANDARD ROAD STRUCTURE SECTIONS**

CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

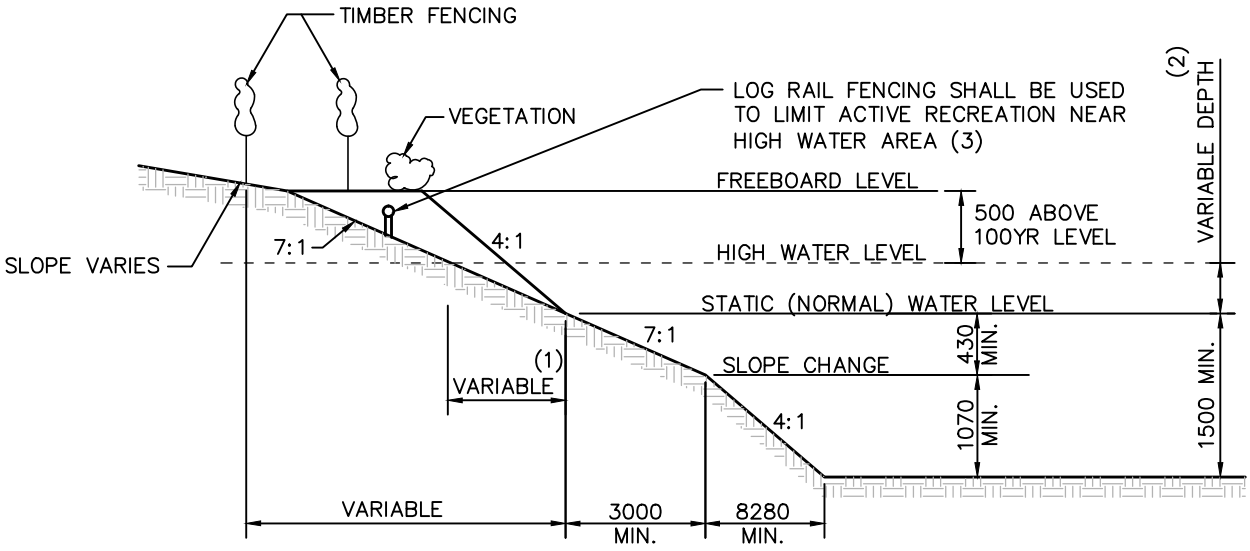
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD-G.5



NOTES:

1. MAXIMUM SIDE SLOPE OF 4:1 (H:V) MAY BE USED PROVIDED ADEQUATE VEGETATION IS USED TO PREVENT ACCESS.
2. MAXIMUM 2.0m FOR <=5 YEAR LEVEL AND 3.0m FOR THE 100 YEAR LEVEL.
3. LOG RAIL SHOULD BE AT LEAST 1.0m FROM HWL

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

Title: **SIDE SLOPES FOR DETENTION PONDS**

CITY OF SURREY the future lives here.

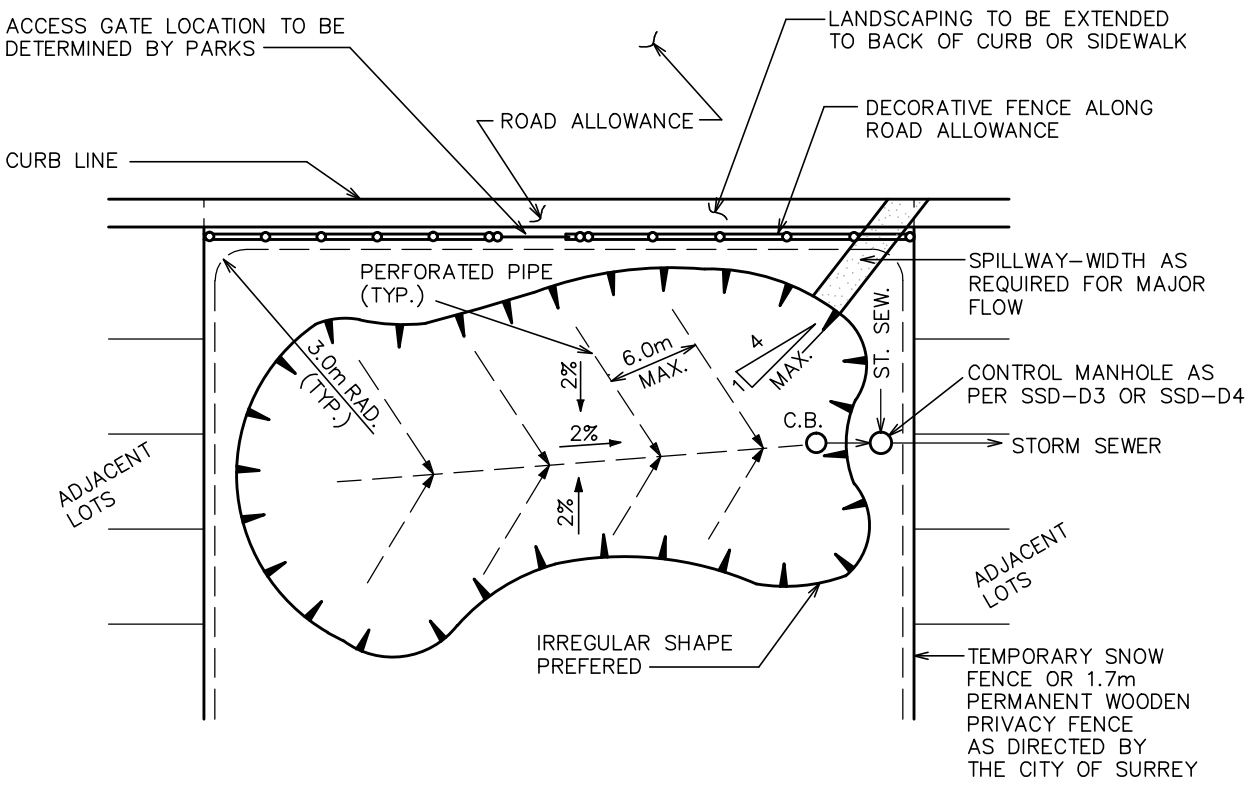
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

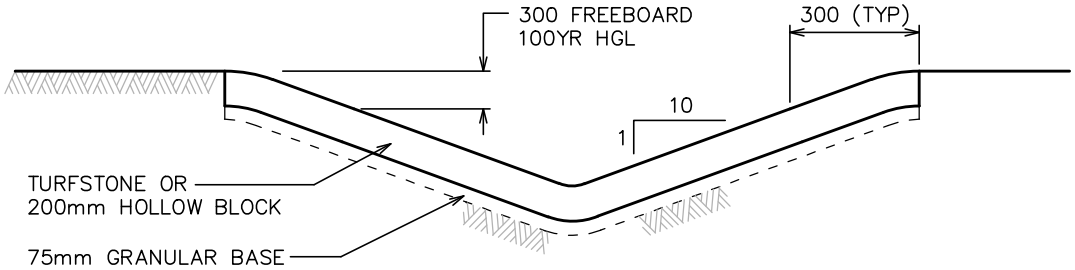
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-D.1



PLAN



SPILLWAY SECTION

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

Title: **DETENTION BASIN PLAN VIEW**

CITY OF SURREY the future lives here.

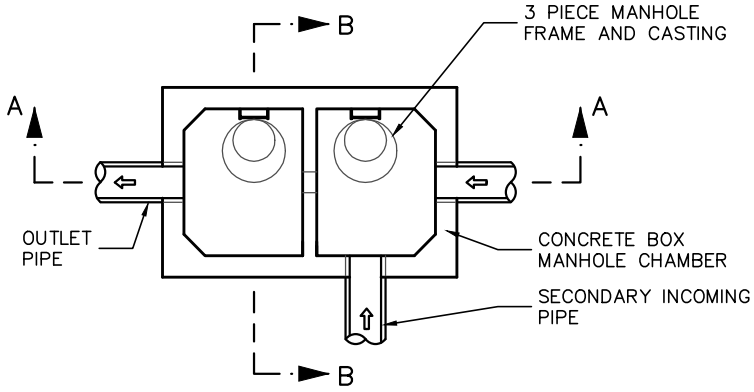
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

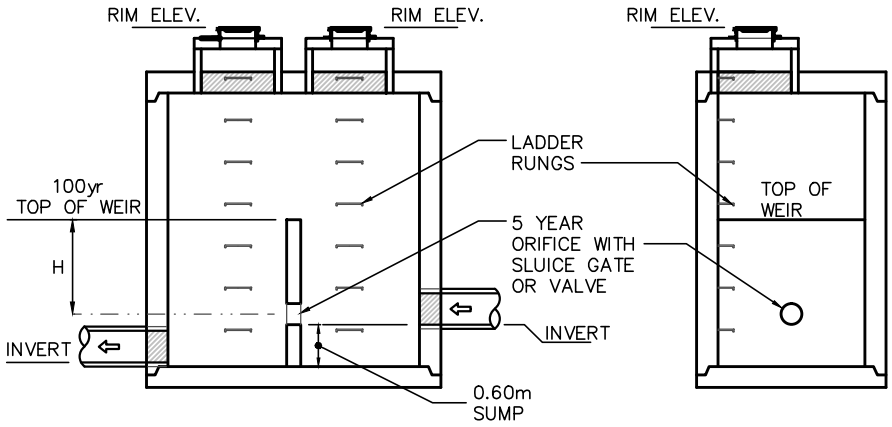
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–D.2



PLAN



SECTION A–A **SECTION B–B**

NOTES

1. "H" REFERS TO HYDRAULIC HEAD
2. CHAMBER SIZE TO BE DETERMINED BY THE SIZE OF THE INCOMING PIPE

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

Title: **FLOW CONTROL MANHOLE "A" (DETENTION POND)**

CITY OF SURREY the future lives here.

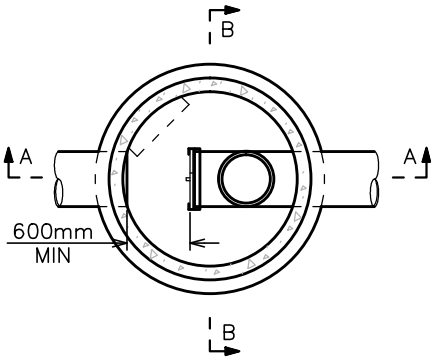
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

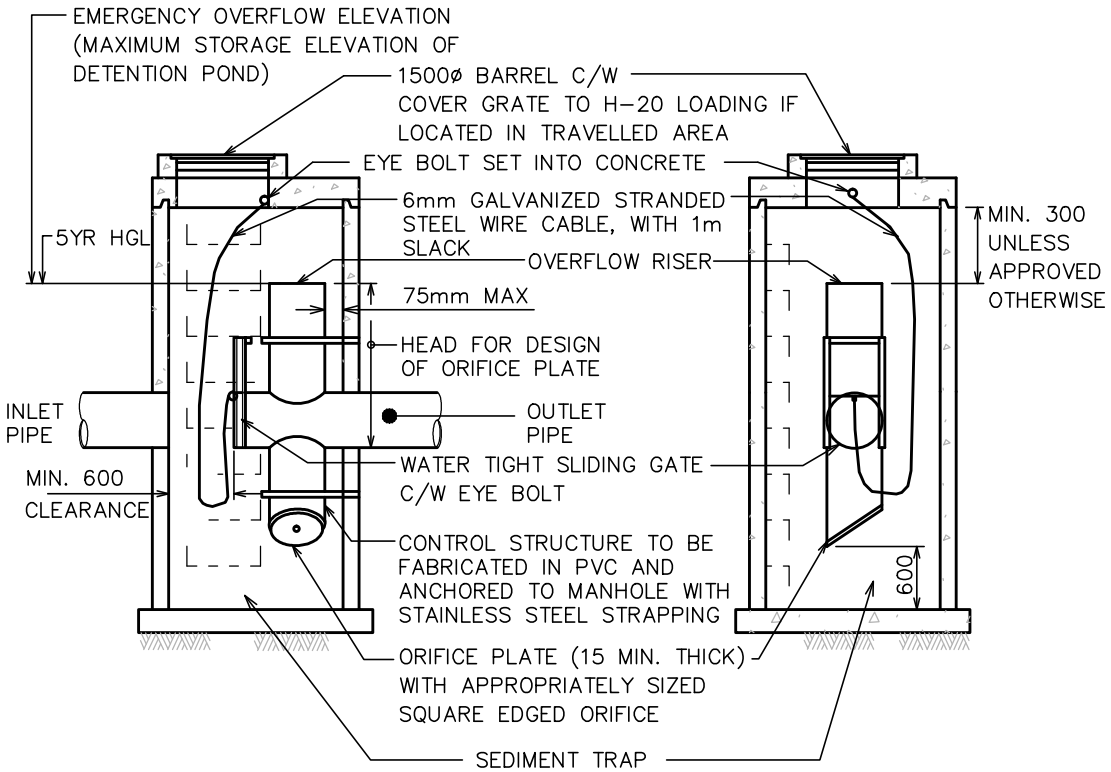
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–D.3



PLAN



STANDARD MANHOLE
SECTION A-A

STANDARD MANHOLE
SECTION B-B

3		
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimeters,
Unless Otherwise Noted

Title **FLOW CONTROL MANHOLE "B"
(DETENTION POND)**

CITY OF SURREY
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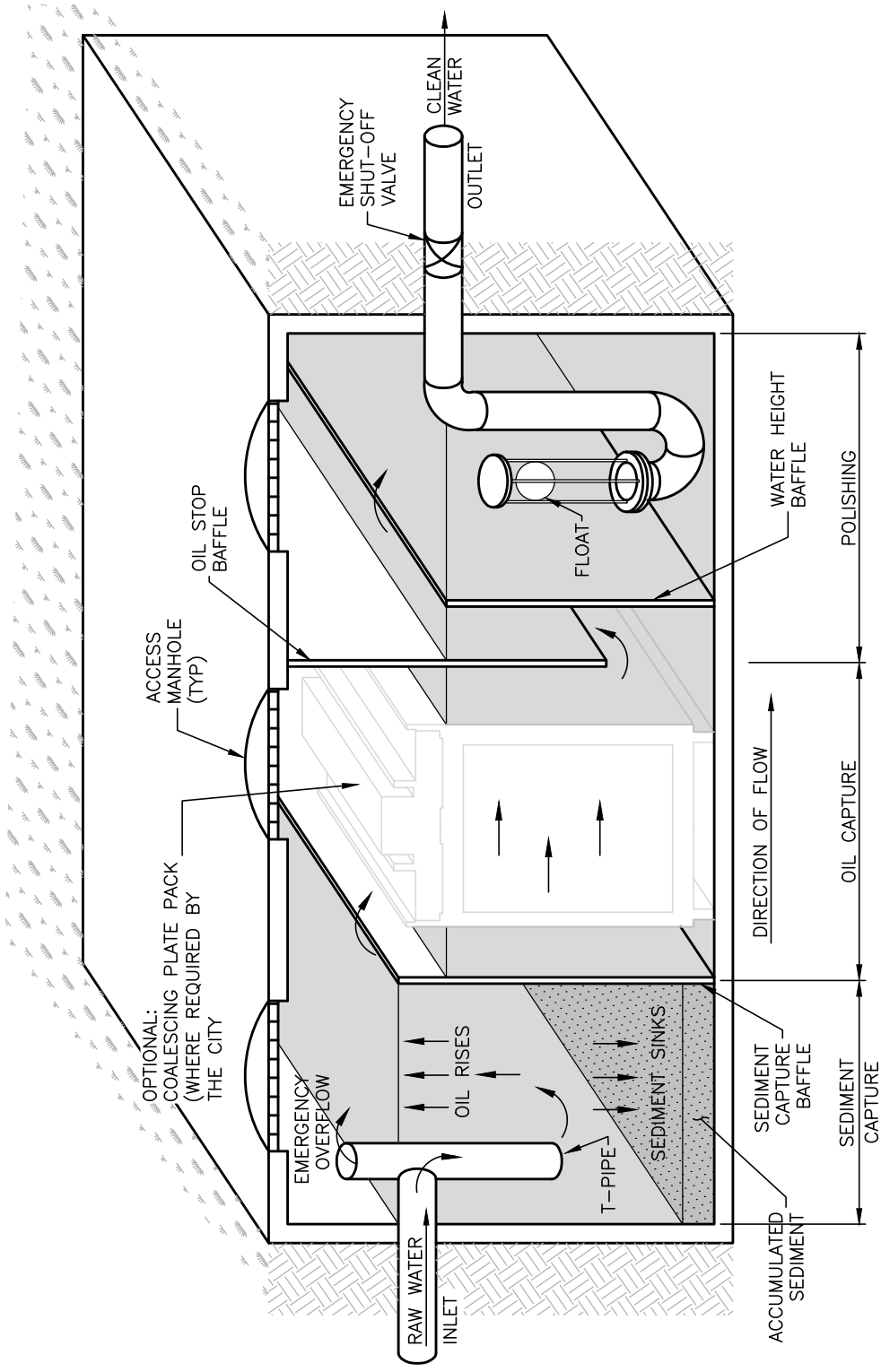
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-D.4



NOTE: REFER TO CITY OF SURREY DESIGN CRITERIA MANUAL FOR SIZING REQUIREMENTS AND ALTERNATE PRODUCTS.

3		
2	JANUARY 2016	CAROLYN BARON
1	MARCH 2002	
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

OIL/GREASE SEPARATOR

CITY OF SURREY
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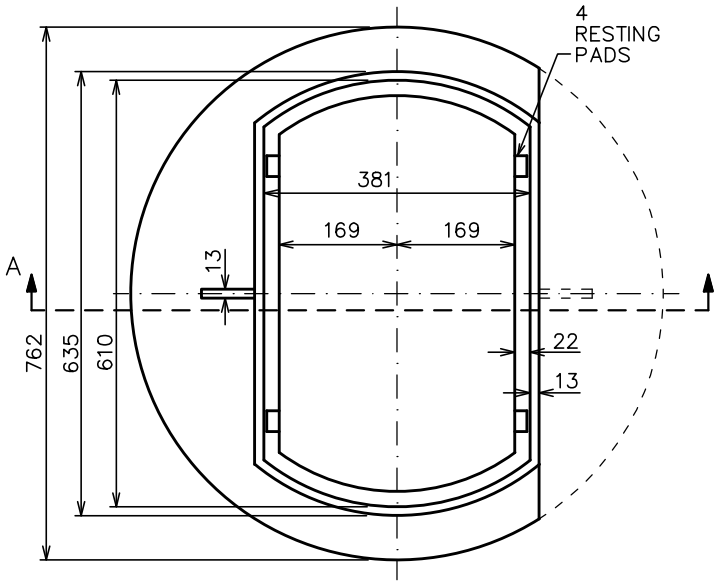
SUPPLEMENTARY STANDARD DRAWINGS

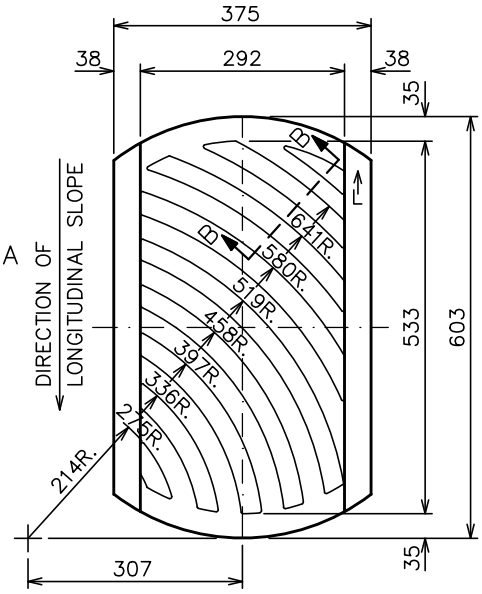
Approved By :

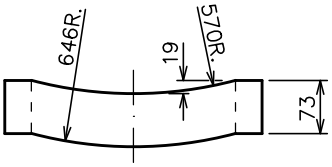
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

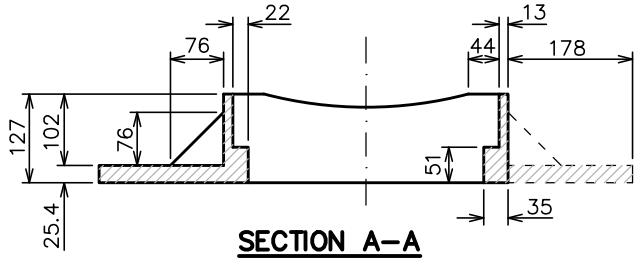
SSD-D.5



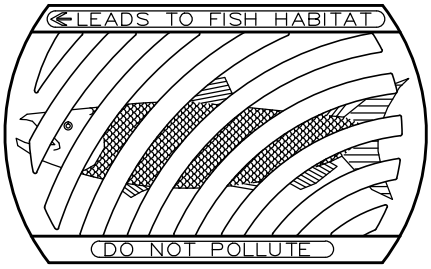




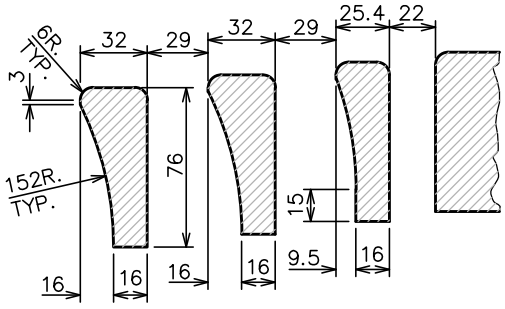
GRATE ELEVATION



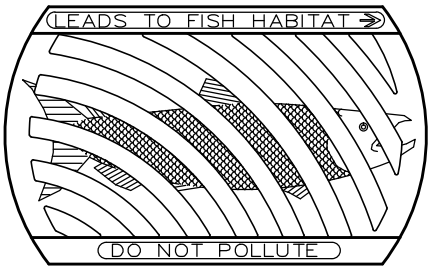
SECTION A–A



LEFT HAND GRATE



SECTION B–B



RIGHT HAND GRATE

NOTE:

1. SYMBOL OF FISH TO BE INDENTED ON TOP OF GRATE BY 3mm.

3		
2		
1	JANUARY 2016	CAROLYN BARON
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Title

DRAINAGE GRATE AND FRAME

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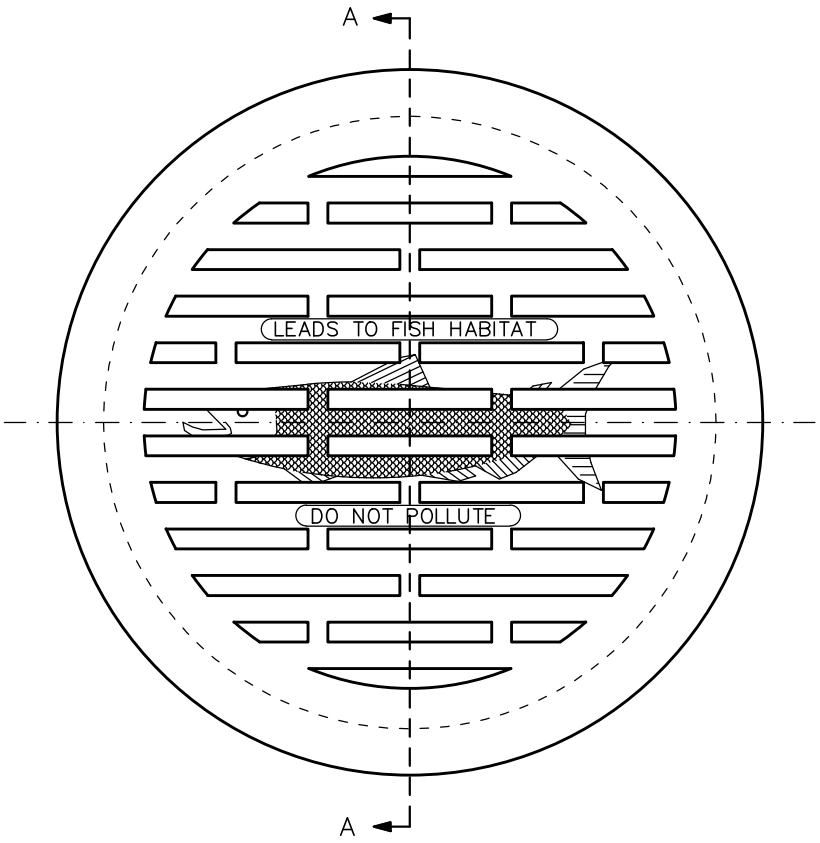
SUPPLEMENTARY
STANDARD
DRAWINGS

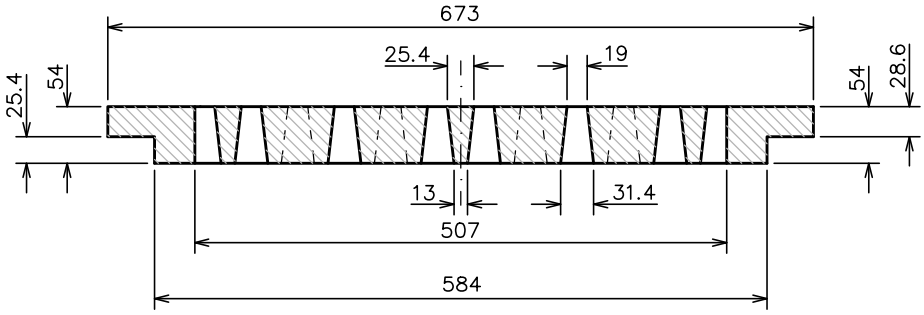
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–D.6





SECTION A–A

NOTES:

1. SYMBOL OF FISH TO BE INDENTED ON TOP OF GRATE BY 3mm.
2. FOR INTENDED USE WITHIN CITY R/W's.

3		
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **BOULEVARD BASIN GRATE**

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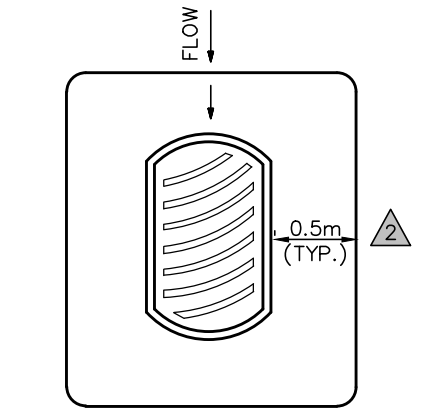
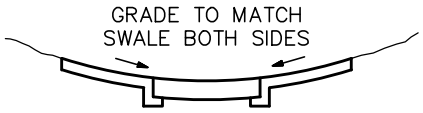
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

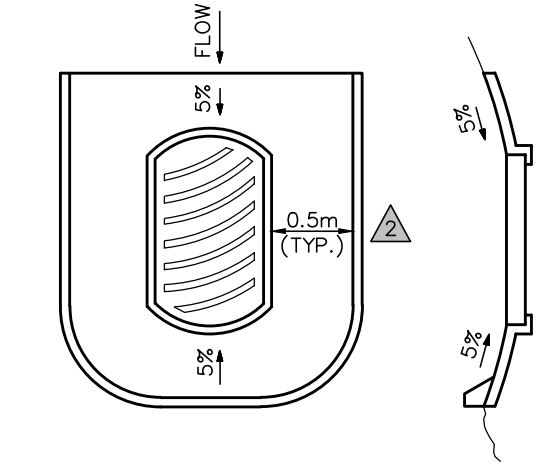
DRAWING NUMBER
SSD–D.7

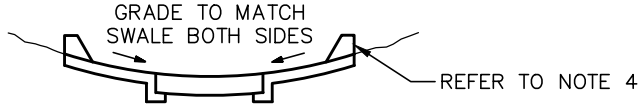




SWALE TYPE APRON

FOR GRADE UP TO 3%





CURB TYPE APRON

FOR GRADES FROM 3–5%

NOTES:

1. ALL ASPHALT TO BE LOWER COURSE #2.
2. APRON THICKNESS 50mm.
3. MINIMUM WIDTH OF ASPHALT SURROUND IS 500mm.
4. ALL APRON CURB 75x255 EXTRUDED OR FORMED CURB.
5. CATCH BASIN FRAME PER SSD–D.6

3		
2	JULY 2016	CAROLYN BARON
1	JANUARY 2016	CAROLYN BARON
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Title: **ASPHALT APRONS FOR CATCH BASINS**

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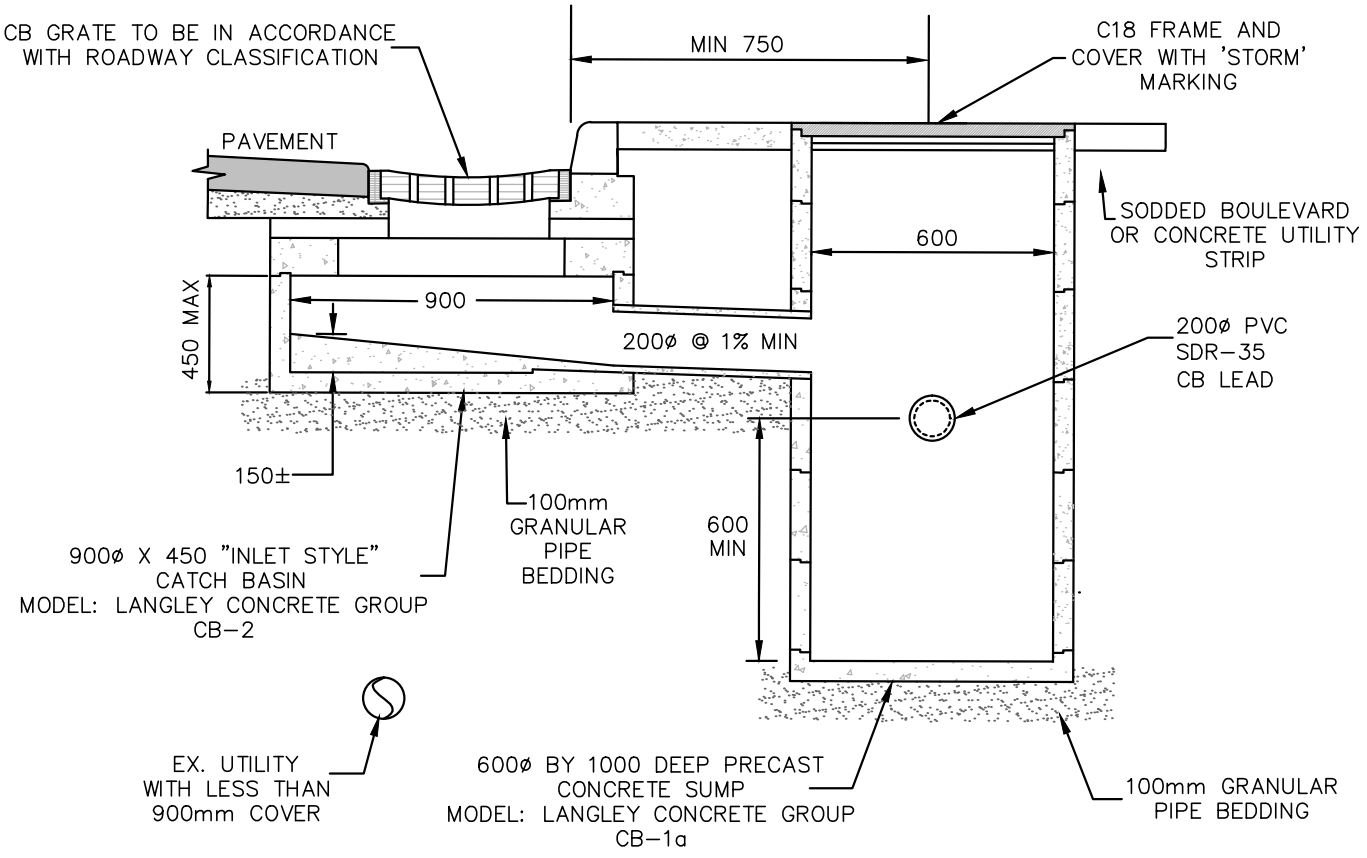
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–D.8



CATCH BASIN C/W OFFSET SUMP

N.T.S.

3			All Dimensions Shown In Meters, Unless Otherwise Noted
2			
1	JANUARY 2016	JAIME BOAN	Title: OFFSET SUMP CATCH BASIN
	Revision Date	Approved	

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SUPPLEMENTARY STANDARD DRAWINGS

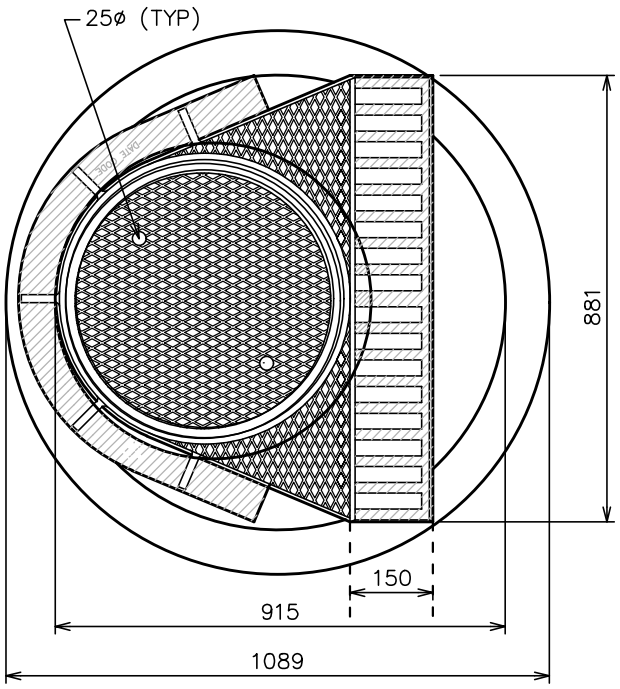
Approved By :

JANUARY 2016

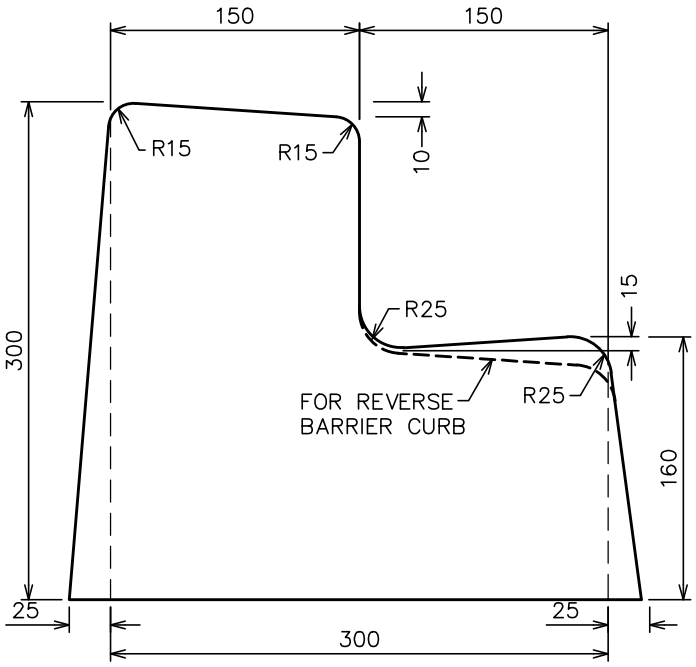
G.M. Engineering

DRAWING NUMBER

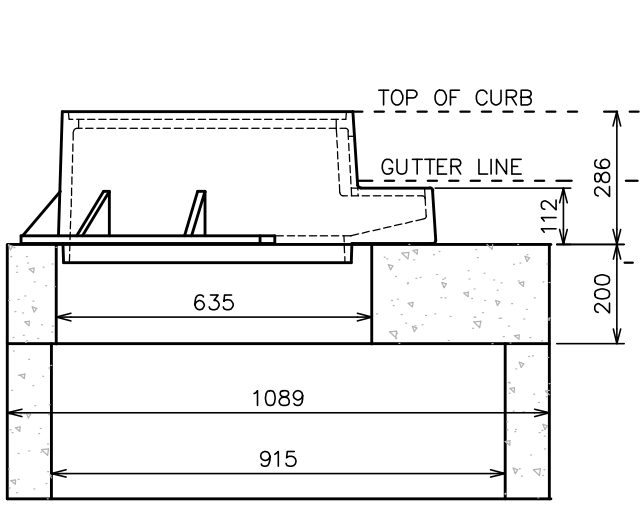
SSD-D.9.1



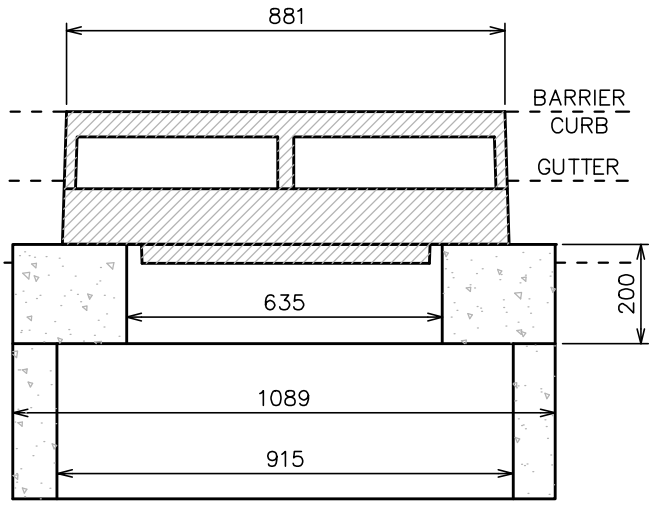
PLAN



BIKE FRIENDLY BARRIER CURB



SECTION



CURB VIEW

NOTES:
1. FOR USE WITH NARROW GUTTER PAN.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

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Unless Otherwise Noted

Title: **BIKE FRIENDLY CATCH BASIN & CURB** 2

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SUPPLEMENTARY
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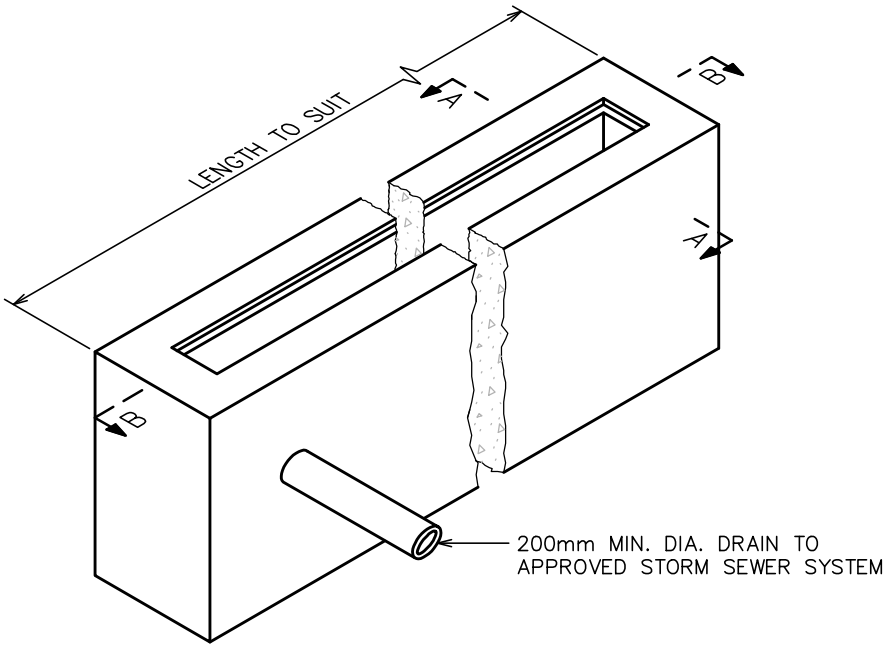
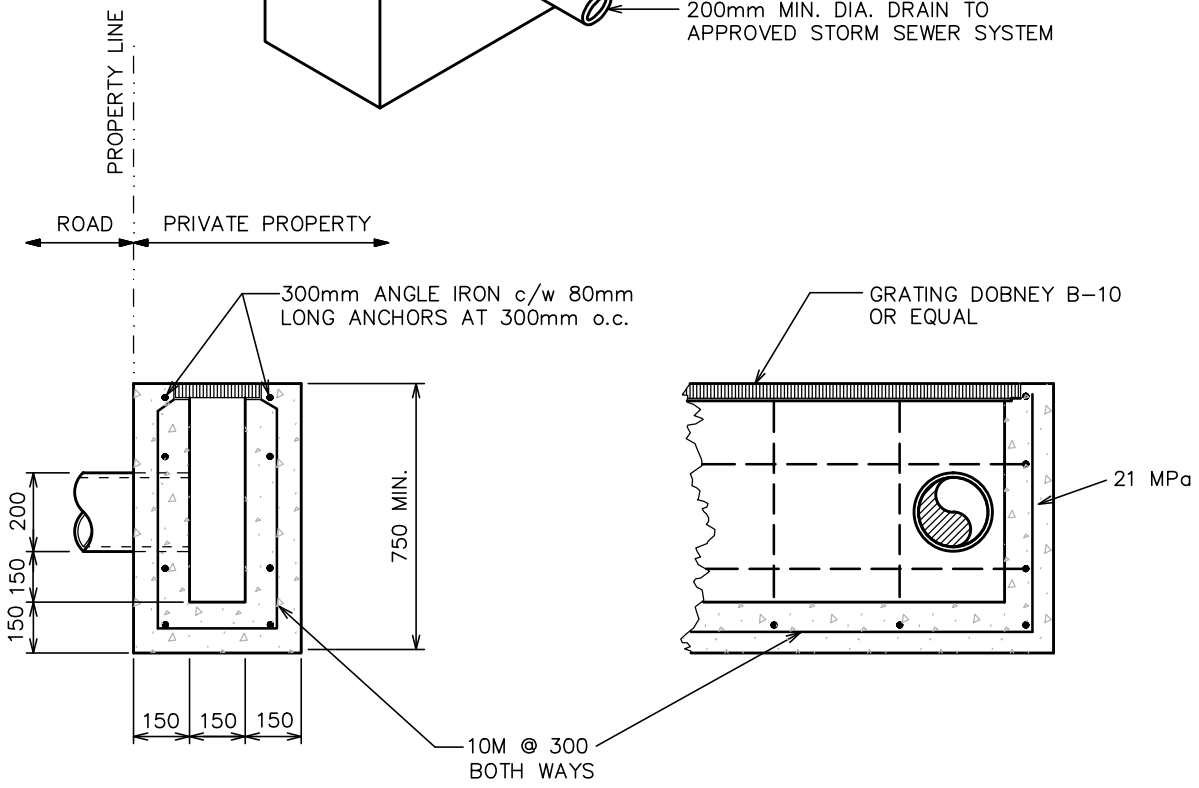
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-D.9





SECTION A–A

SECTION B–B

3		
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title

COMMERCIAL DRIVEWAY SUMP

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SUPPLEMENTARY
STANDARD
DRAWINGS

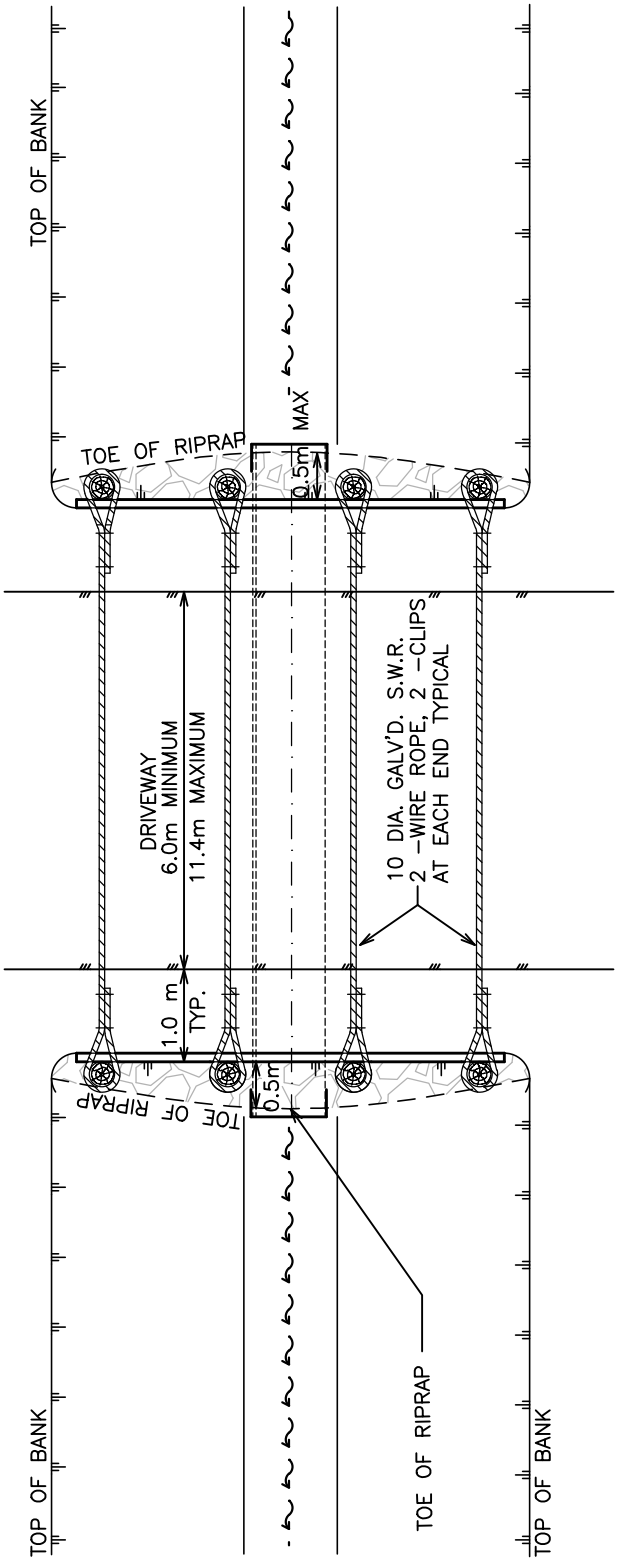
Approved By :

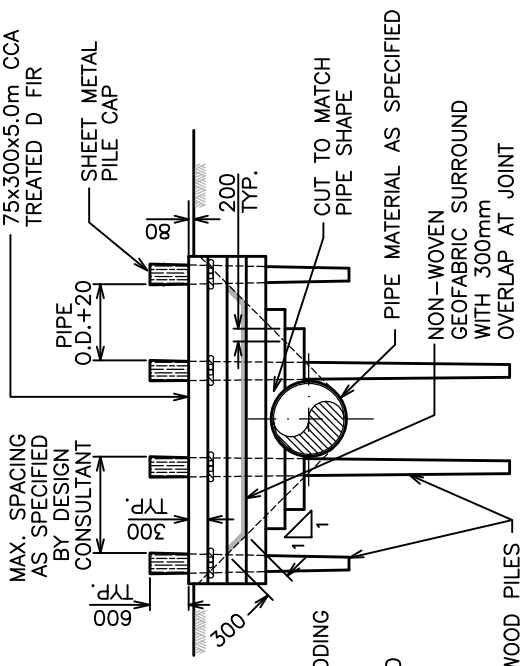
JANUARY 2016

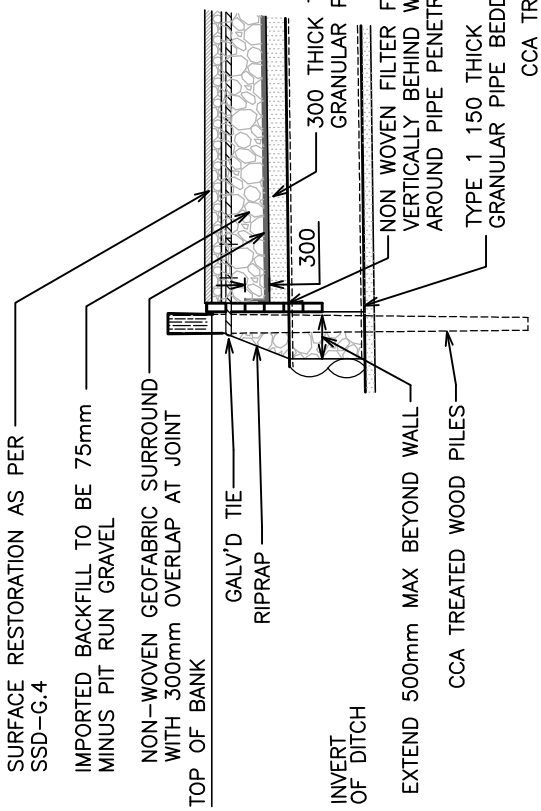
G.M. Engineering

DRAWING NUMBER

SSD–D.10







NOTES:
1. FILL BETWEEN HEADWALLS WITH GRANULAR BACKFILL EXCEPT FOR THE TOP 150mm WHICH SHALL BE GRANULAR BASE.

3		
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimeters,
Unless Otherwise Noted

Title

TIMBER HEADWALL DETAILS FOR USE ONLY IN LOWLANDS

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SUPPLEMENTARY
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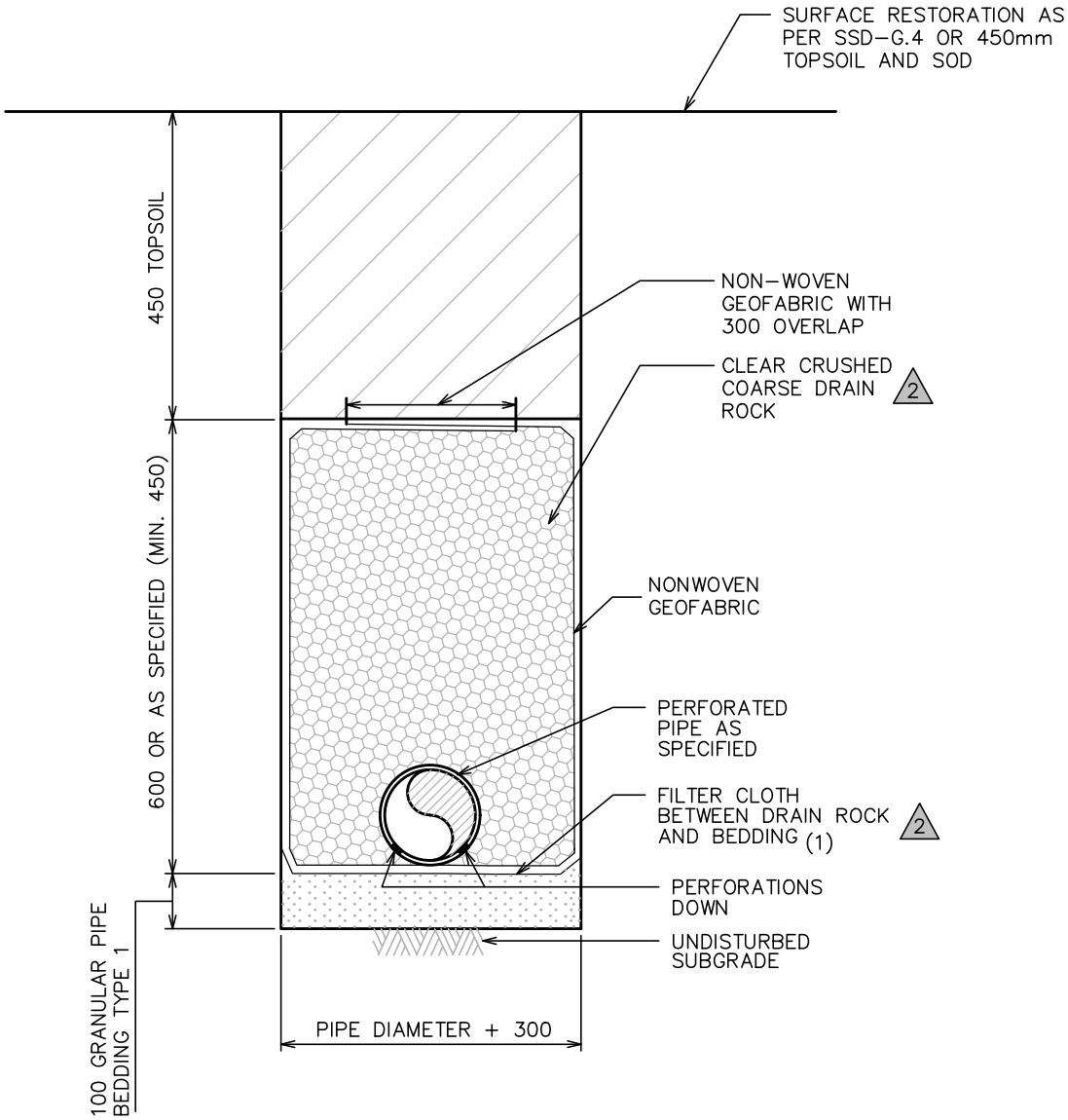
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-D.11



NOTE:

1. FILTER CLOTH MINIMUM SPECIFICATIONS: 2
   (A) TENSILE STRENGTH 0.4 kN MINIMUM
   (B) PUNCTURE STRENGTH 1.1 kN MINIMUM
   (C) PERMEABILITY MIN. 5 TIMES PERMEABILITY OF SOIL RETAINED

3		
2	JULY 2016	CAROLYN BARON
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

SUBDRAIN

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SUPPLEMENTARY STANDARD DRAWINGS

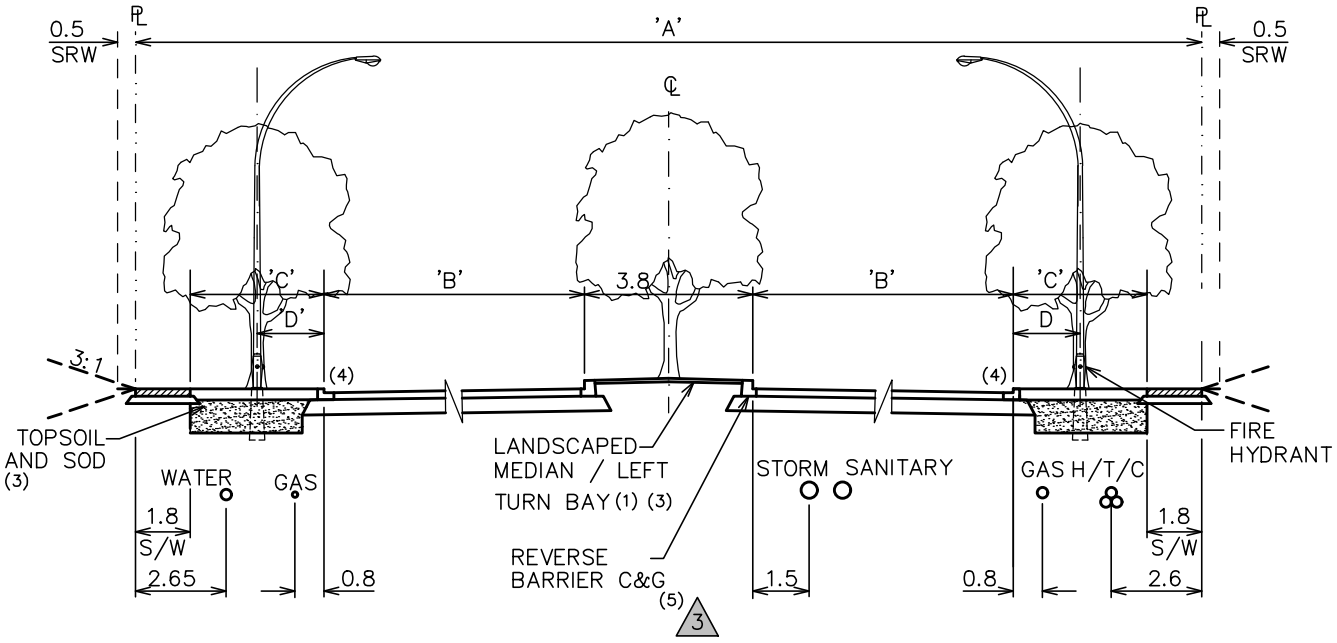
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD–D.12



ROAD ALLOWANCE	PAVEMENT	UTILITY STRIP	OFFSET FROM CURB	LANE CONFIGURATION
'A'	'B'	'C'	'D'	WITHIN 'B'
27	7.6	2.2	1.0	1.3–3.0–3.3 (5)
30	8.1	3.2	1.7	1.8–3.0–3.3
34	11.1	2.2	1.0	1.5–3.0–3.3–3.3 (5)
37	11.6	3.2	1.7	1.8–3.0–3.3–3.3

NOTES:

1. LANDSCAPED MEDIAN AS PER SSD–R.16, LEFT TURN BAY AS PER SSD–R.15
2. FOR 70 km/h DESIGN SPEED OR GREATER USE MMCD C6 MEDIAN CURB.
3. 450mm GROWING MEDIUM FOR TOPSOIL.
4. CURB AND GUTTER TO BE BIKE FRIENDLY BARRIER CURB AS PER SSD–D.9, UNLESS APPROVED OTHERWISE.
5. MEDIAN CURB AND GUTTER TO BE NARROW BASE BARRIER CURB AS PER MMCD C4.

	Revision Date	Approved
3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

ROAD SECTIONS, ARTERIAL ROADS

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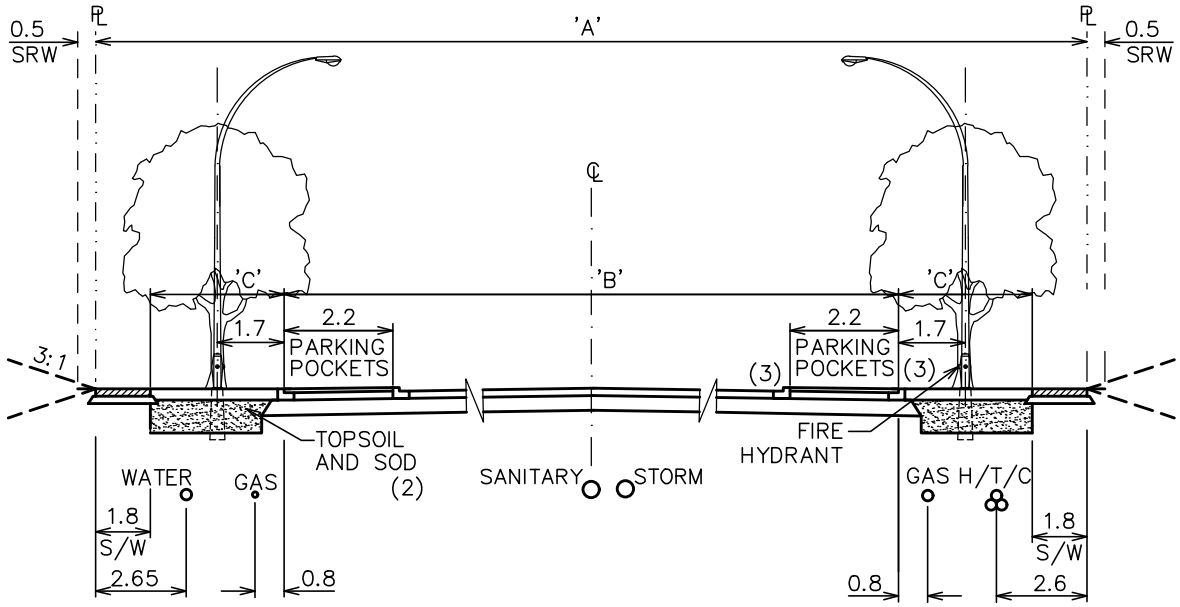
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.1



ROAD ALLOWANCE	PAVEMENT	UTILITY STRIP	LANE CONFIGURATION
'A'	'B'	'C'	WITHIN 'B'
22	12.2	3.1	1.8–3.2–3.2–1.8–2.2
23(1)	14.0	2.3	(2.2–1.8–3.0)x2
24	14.0	3.2	(2.2–1.8–3.0)x2

NOTES:

1. WHEN COMPLETING REMAINING HALF OF EXISTING URBAN FOREST SECTION, 0.9m OFFSET PAVEMENT CENTERLINE AND 2.3m UTILITY STRIP IS REQUIRED.
3. 2. 450mm GROWING MEDIUM FOR TOPSOIL.
3. CURB AND GUTTER TO BE BIKE FRIENDLY BARRIER CURB AS PER SSD–D.9, UNLESS APPROVED OTHERWISE.

	Revision Date	Approved
3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **ROAD SECTIONS, COLLECTOR ROADS**

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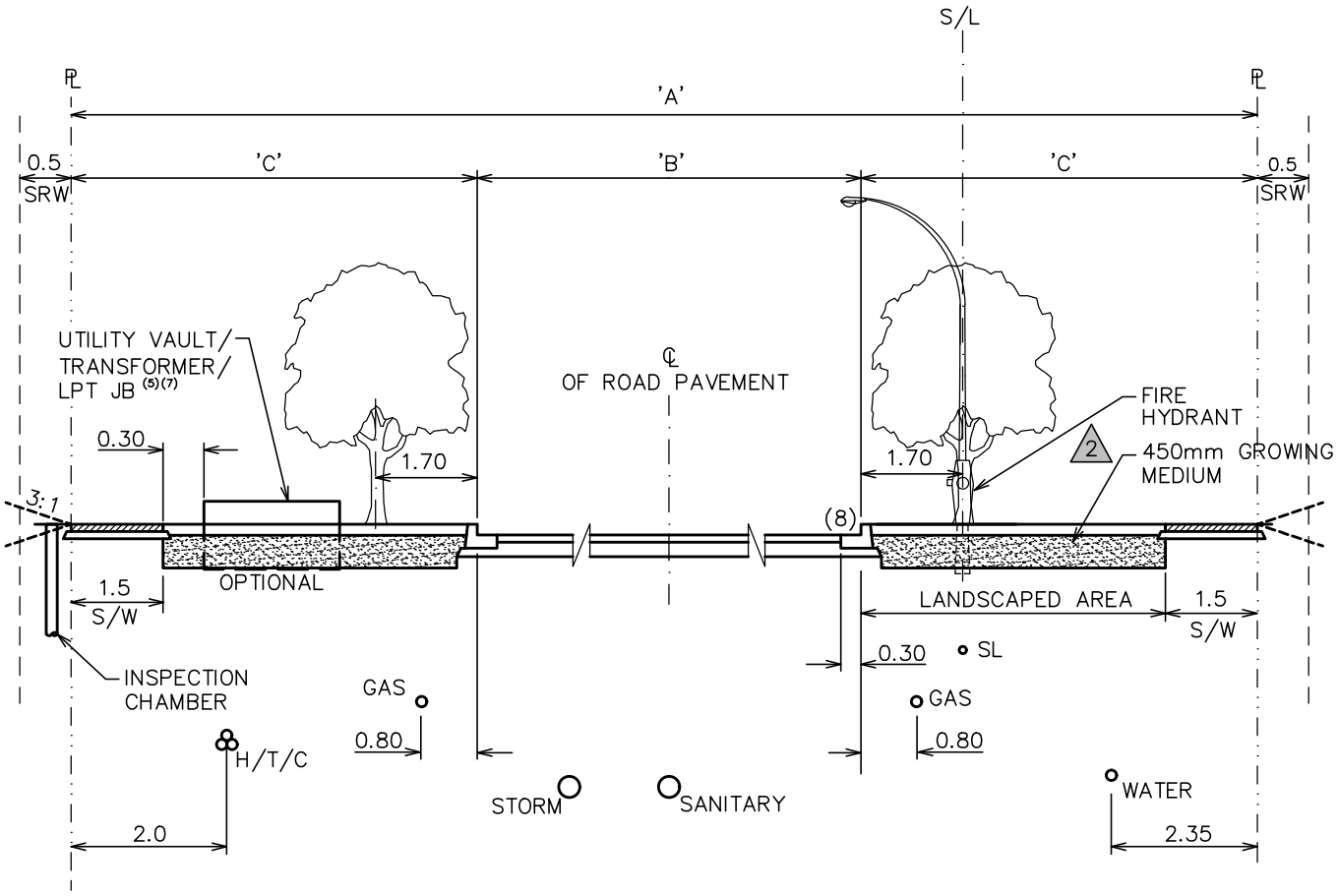
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.2



ROAD ALLOWANCE	PAVEMENT	BOULEVARD
A	B	C
15.5	6.6(3)	4.45(6)
17.0	8.0	4.50
18.0	8.5	4.75
20.0	10.5	4.75
20.0	11.0	4.50

NOTES:

1. TO DETERMINE APPROPRIATE CROSS SECTION REFER TO SECTION 2.2 OF THE DESIGN CRITERIA.
2. STREETLIGHTS STAGGERED ON BOTH SIDES FOR PAVEMENT WIDTH GREATER THAN 8.5m, WITH PRIMARY DUCTING OPPOSITE HYDRO/TEL/CABLE.
3. DRIVEWAYS ON OPPOSITE SIDE OF STREET MUST ALIGN.
4. FOR PARKING CURB EXTENSIONS, REFER TO SSD–R28.3
5. TRANSFORMER MUST BE 6.1m FROM ANY COMBUSTIBLE SURFACE OR CONCRETE FENCE IS REQUIRED.
6. SIDEWALK ON ONE SIDE ONLY.
7. UTILITY VAULT/TRANSFORMER/LPT/JUNCTION BOX SHALL BE MIN OF 0.3m OFFSET FROM SIDEWALK.
8. CURB AND GUTTER TO BE NARROW BASE BARRIER CURB AS PER MMCD C4.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

ROAD SECTIONS, LOCAL ROADS

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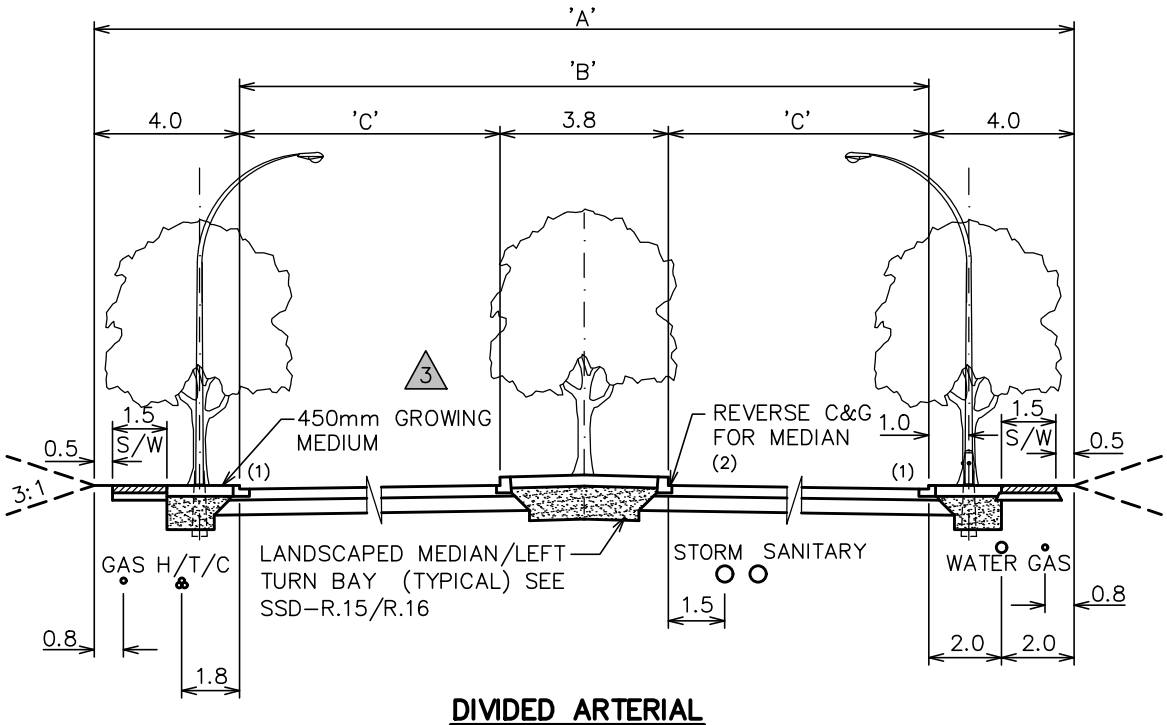
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

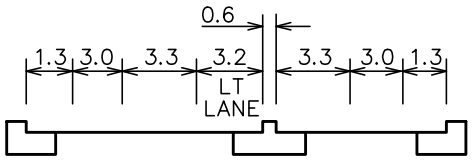
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

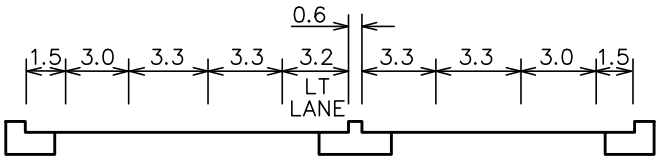
SSD–R.3



DIVIDED ARTERIAL



4 LANE DETAIL



6 LANE DETAIL

TRAVEL LANES	ROAD ALLOWANCE	CURB TO CURB	PAVEMENT
	A	B	C
4 LANE	27	19	7.6
6 LANE	34	26	11.1

NOTES:

3 1. CURB AND GUTTER TO BE BIKE FRIENDLY BARRIER CURB AS PER SSD–D.9, UNLESS APPROVED OTHERWISE.
2. REVERSE NARROW BASE BARRIER CURB AS PER MMCD C4.

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **ROAD SECTIONS, URBAN FOREST ARTERIAL ROADS**

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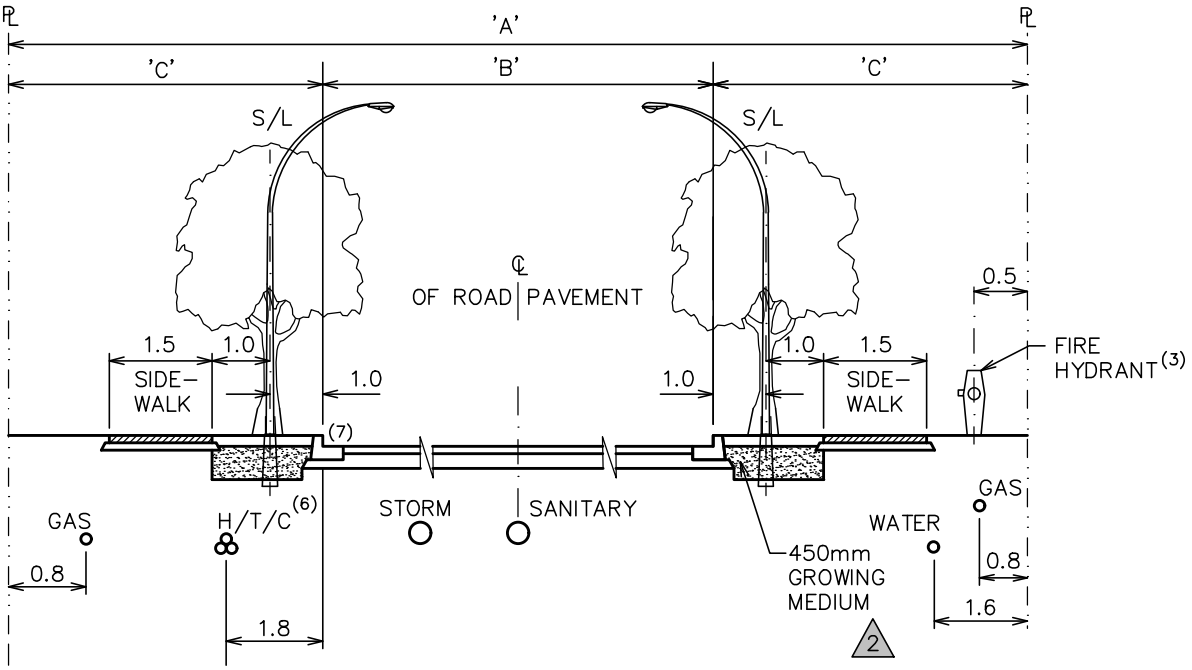
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.4



ROAD ALLOWANCE	PAVEMENT	BOULEVARD
A	B	C
16.5	8	4.25
20	8.5	5.75
20	11	4.5
22	12.2	4.9
24	14	5

NOTES:

1. TO DETERMINE APPROPRIATE CROSS SECTION, REFER TO SECTION 2.2 OF THE DESIGN CRITERIA.
2. STREETLIGHTS STAGGERED ON BOTH SIDES FOR PAVEMENT WIDTH GREATER THAN 8.5m, WITH PRIMARY DUCTING OPPOSITE HYDRO/TEL/CABLE.
3. WHERE THE FIRE HYDRANT IS IN THE WAY OF THE SIDEWALK, THE HYDRANT LOCATION SHALL BE SHIFTED TO THE SAME ALIGNMENT AS THE STREET LIGHT.
4. FOR CURB EXTENSIONS, REFER TO SSD–R.28.3.
5. MEANDER SIDEWALK AROUND EXISTING UTILITY POLES/PLANTS AT 3m RADIUS.
6. HYDRO/TEL/CABLE ARE NOT TO BE LOCATED UNDER SIDEWALK.
7. CURB AND GUTTER TO BE NARROW BASE BARRIER CURB AS PER MMCD C4.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title
ROAD SECTIONS, URBAN FOREST

CITY OF SURREY
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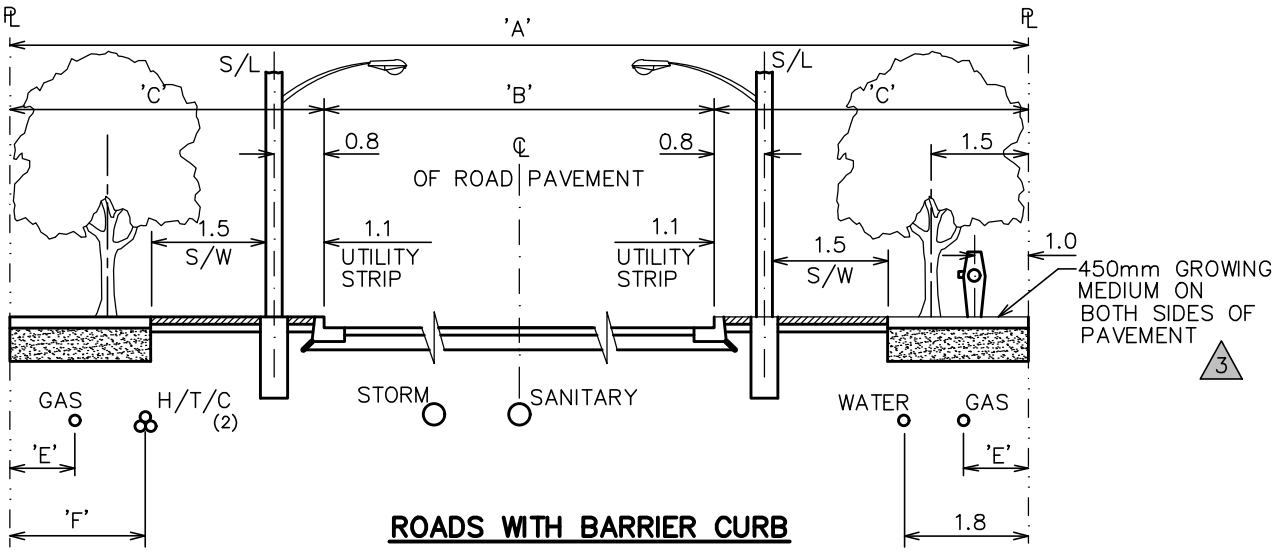
SUPPLEMENTARY
STANDARD
DRAWINGS

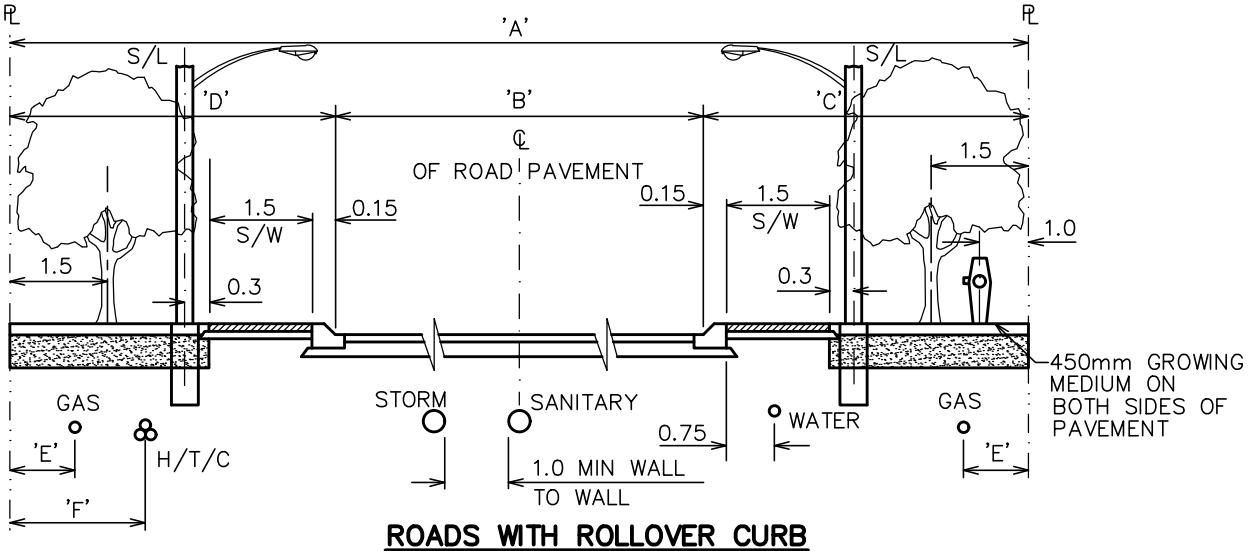
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.5



ROADS WITH BARRIER CURB



ROADS WITH ROLLOVER CURB

ROAD ALLOWANCE	PAVEMENT	No. OF S/WALK	BOULEVARD		GAS	H/T/C
A	B		C	D	E	F
16.5	8	1	4.25	4.25	0.8	1.3
20	8.5	2	5.75	5.75	0.8	2
20	11	2	4.5	4.5	0.8	1.3
22	12.2	2	4.9	4.9	0.8	2

NOTES:

1. STREETLIGHTS STAGGERED ON BOTH SIDES FOR PAVEMENT WIDTH GREATER THAN 8.5m, WITH PRIMARY DUCTING OPPOSITE HYDRO/TEL/CABLE.
2. HYDRO/TEL/CABLE BOXES ARE NOT TO BE LOCATED UNDER SIDEWALK.

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	MARCH 2002	
	Revision Date	Approved

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Title

ROAD SECTIONS, HISTORICAL

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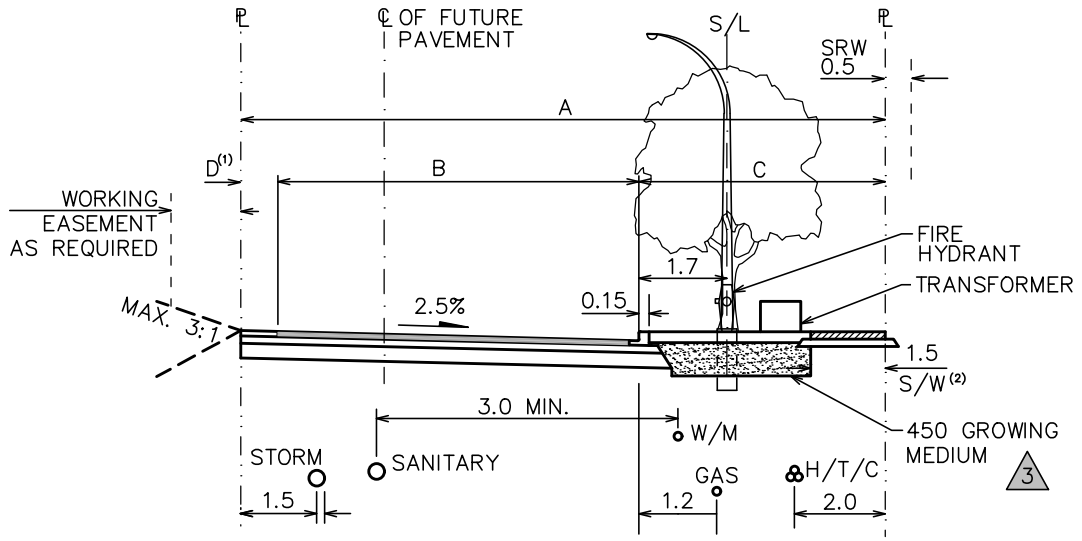
Approved By :

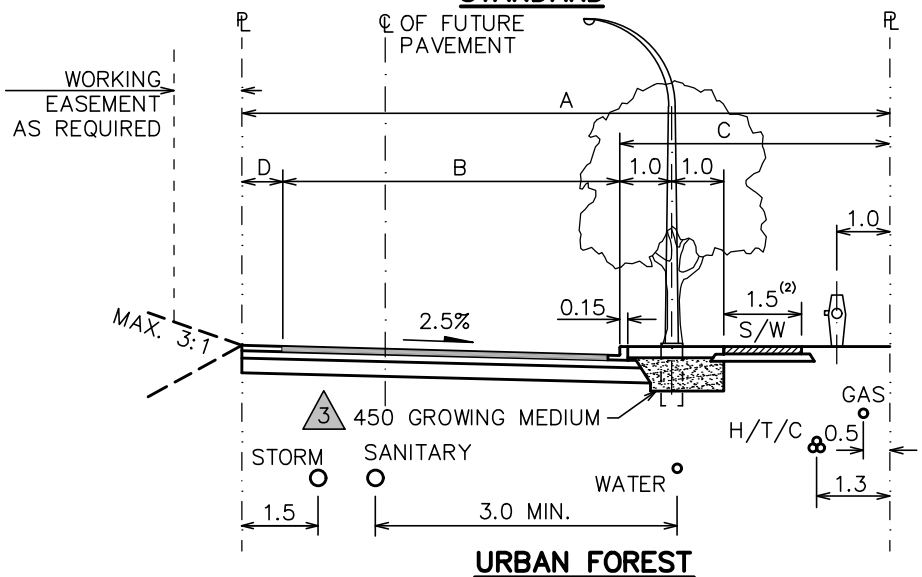
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.6



STANDARD



URBAN FOREST

		ROAD ALLOWANCE	PAVEMENT	BOULEVARD	SHOULDER
ROAD CLASS	ADJACENT LAND USE	A	B	C	D
LOCAL	RESIDENTIAL	11.5	6.0	4.75	0.75
LOCAL	RESIDENTIAL–URBAN FOREST	11.5	6.0	5.0	0.5
LOCAL	INDUSTRIAL/COMMERCIAL	13.5	8.0	4.5	1.0
COLLECTOR	RESIDENTIAL	12.0	6.0	5.0(2)	1.0
COLLECTOR	INDUSTRIAL/COMMERCIAL	13.5	8.0	5.0(2)	0.5

NOTES:

1. HALF ROAD SHALL REFLECT THE ULTIMATE ROAD CROSS SECTION.
2. 1.8m SIDEWALK FOR COLLECTOR.

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	FEBRUARY 2002	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

ROAD SECTIONS, HALF ROAD

CITY OF SURREY the future lives here.

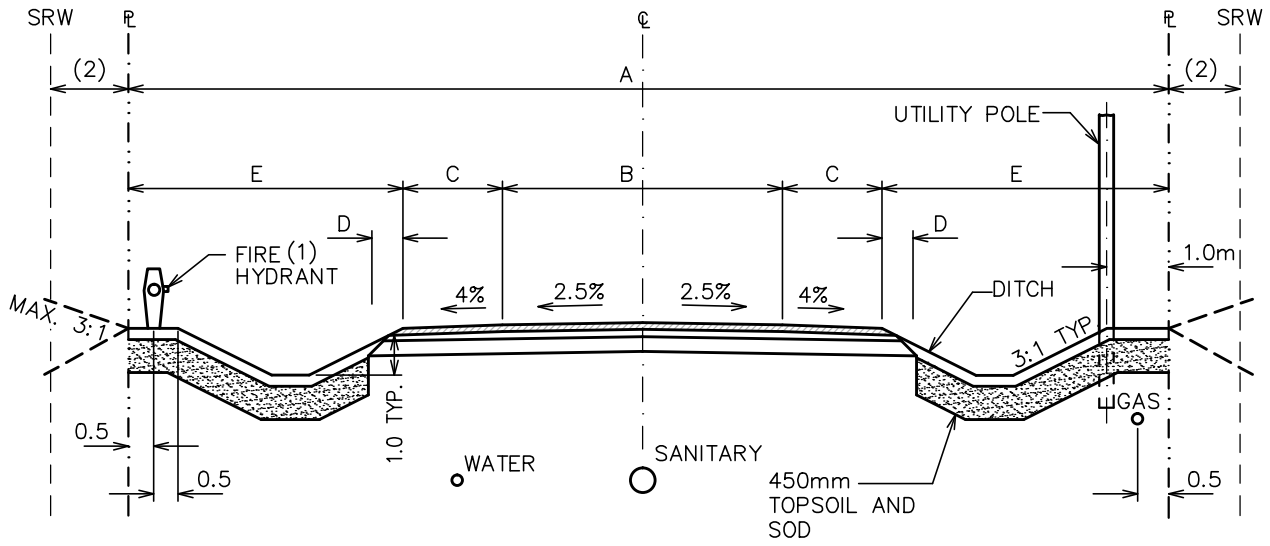
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.7



	ROAD ALLOWANCE	PAVEMENT	PAVED SHOULDER (3)	GRAVEL SHOULDER ROUNDING	DITCH SWALE
ROAD CLASS	A	B	C	D	E
LOCAL	20	6.0	1.5	0.5	5.0
COLLECTOR	24	6.6	2.0	0.5	6.2
INT. ARTERIAL	22	6.6	2.0	0.5	5.2
ULT. ARTERIAL (4LANE) (2)	30	20	1.2	0.5	3.3
ULT. ARTERIAL (6LANE) (2)	37	27	1.2	0.5	3.3

NOTES: (1) THE LOCATION OF THE FIRE HYDRANT FROM THE PROPERTY LINE CAN BE LESS IF SPACE DOES NOT PERMIT. VEHICLE ACCESS SHOULD BE PROVIDED IF THE DITCH DEPTH EXCEEDS 0.7m.

(2) ADDITIONAL SRW AS REQUIRED FOR DITCH/SWALE.

(3) ADDITIONAL 0.75m WIDTH WOULD BE ADDED TO "C" IF ROADSIDE BARRIER IS REQUIRED.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **ROAD SECTIONS, RURAL ROADS**

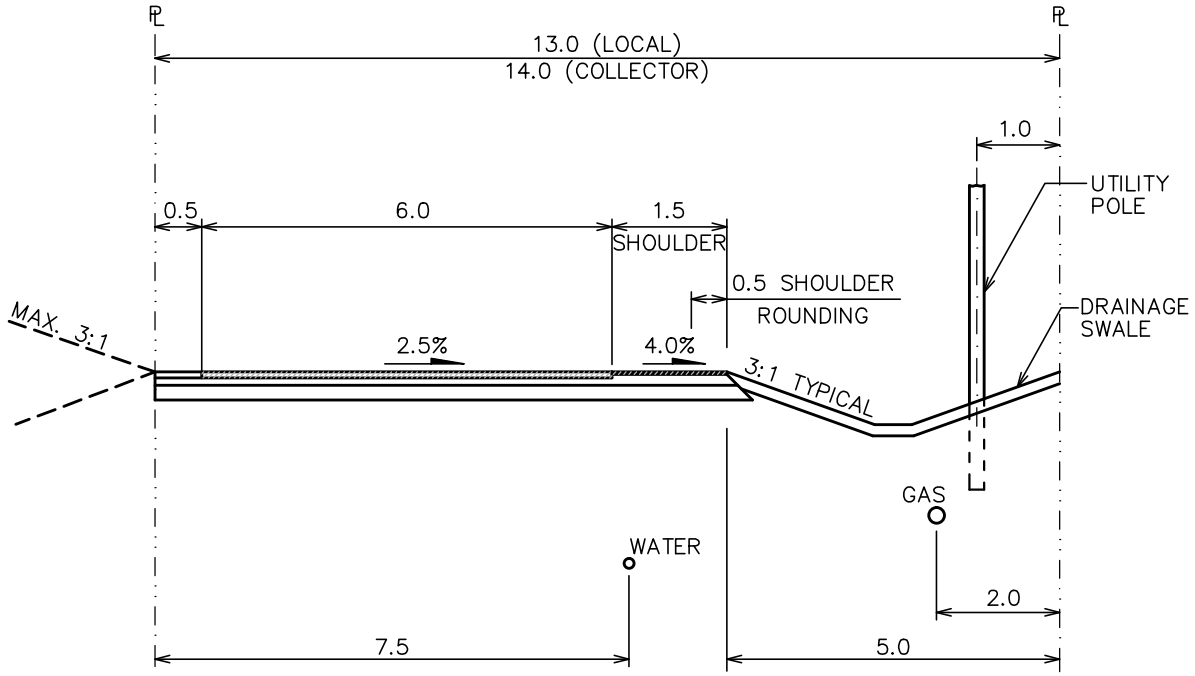
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

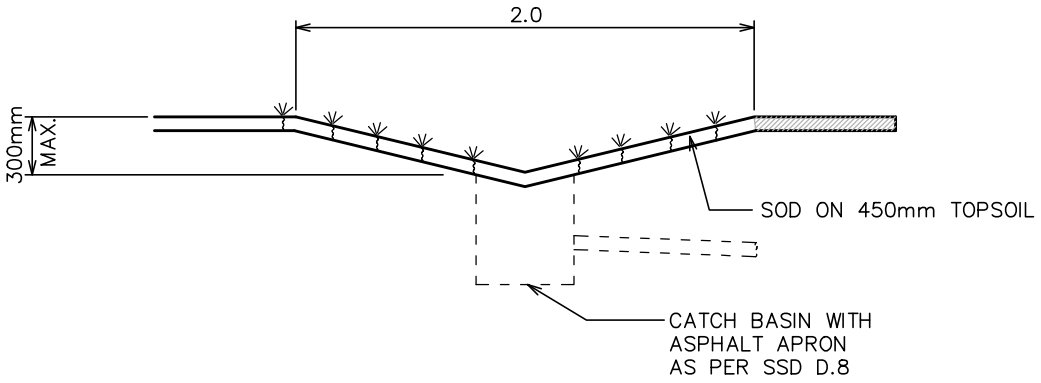
DRAWING NUMBER SSD–R.8



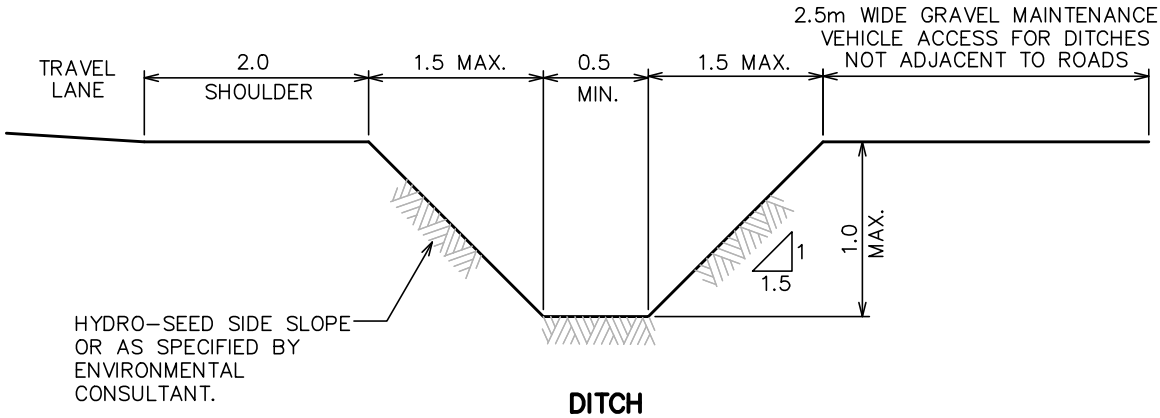
NOTES:

1. FOR COLLECTOR ROADS, PAVEMENT WIDTH IS INCREASED TO 7.0m AND ROAD ALLOWANCE INCREASED TO 14.0m.
2. DRAINAGE SWALE TO BE HYDROSEEDED.

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JANUARY 2016	JAIME BOAN	Title: ROAD SECTIONS, RURAL HALF ROAD
	Revision Date	Approved	
CITY OF SURREY the future lives here.	SUPPLEMENTARY STANDARD DRAWINGS		Approved By : JANUARY 2016 G.M. Engineering
			DRAWING NUMBER SSD–R.9



SODDED SWALE



DITCH

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

Title: **ROAD DRAINAGE FOR ROADS WITHOUT CURBS**

CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

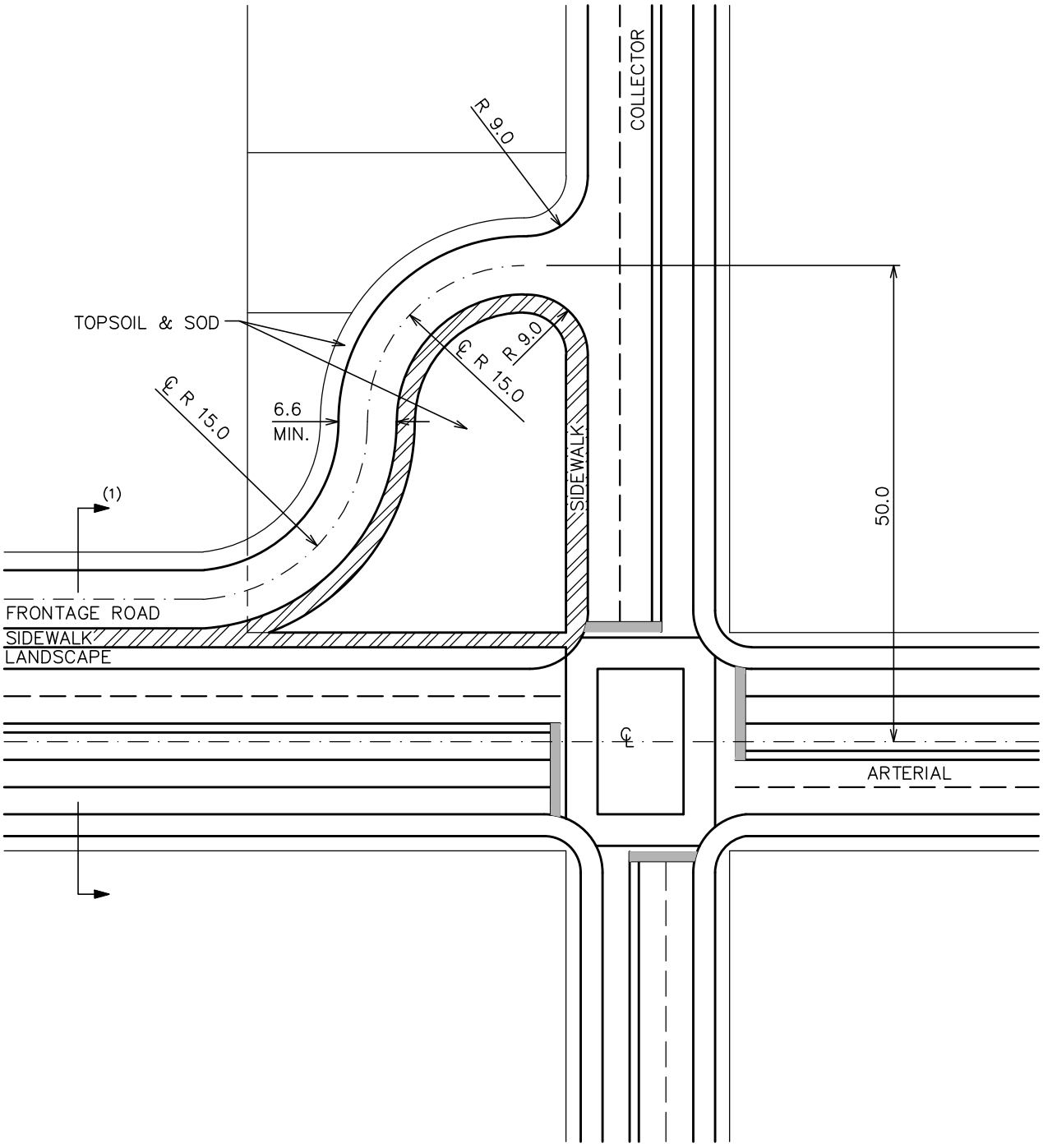
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD-R.10



NOTES:

1. FOR CROSS SECTION REFER TO SSD–R.11.2.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **FRONTAGE ROADS, TYPICAL COLLECTOR ROAD ACCESS**

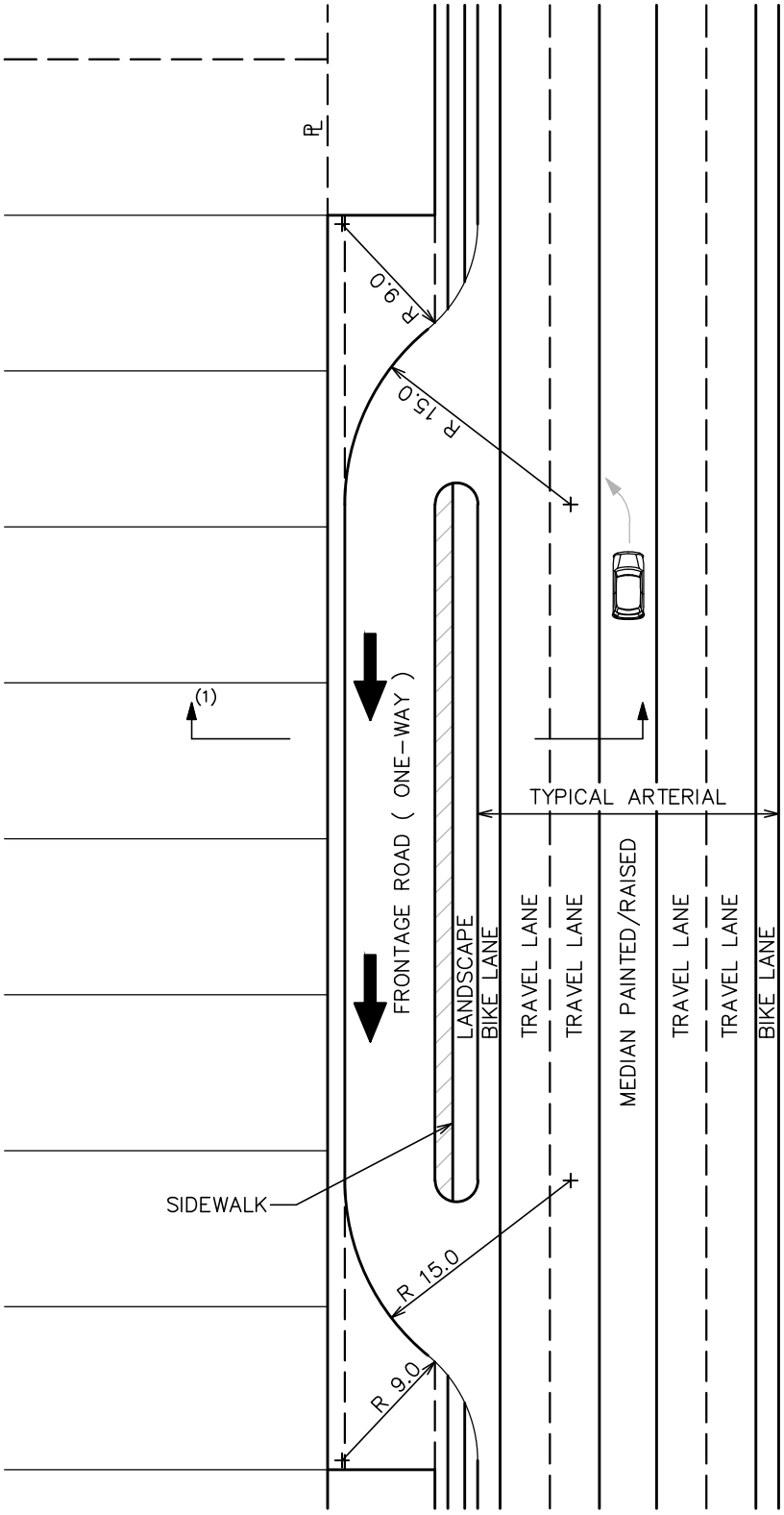
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–R.11



NOTES:
1. FOR CROSS SECTION REFER TO SSD–R.11.2

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **FRONTAGE ROADS TYPICAL INTERIM ACCESS**

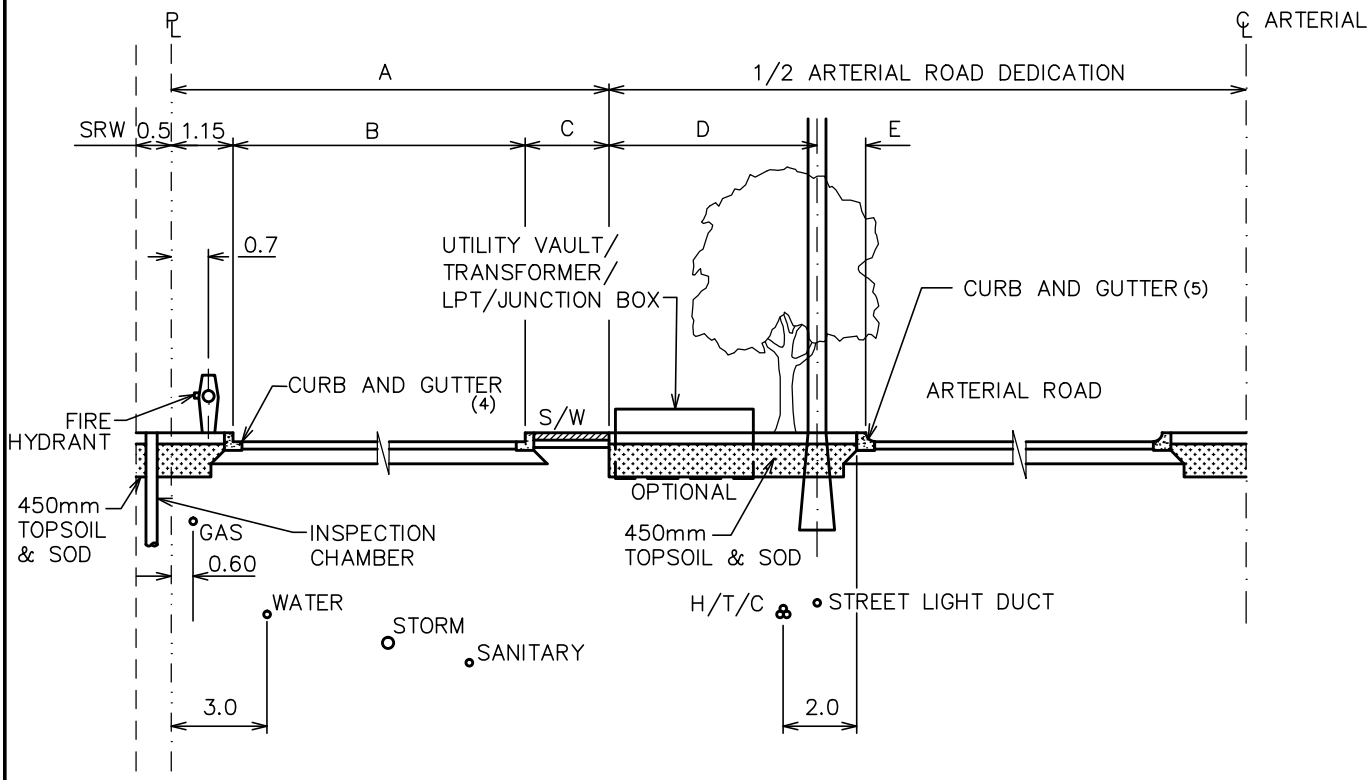
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.11.1



	FRONTAGE ROAD ALLOWANCE	PAVEMENT	S/W & CURB	LANDSCAPE	S/L OFFSET
	A	B	C	D	E
URBAN FOREST ARTERIAL	8.8	6.0	1.65	3.0	1.0
ARTERIAL	9.1	6.0	1.95	3.2	1.7
URBAN FOREST ARTERIAL	11.3	8.5	1.65	3.0	1.0
ARTERIAL	11.6	8.5	1.95	3.2	1.7

NOTES:

1. FRONTAGE ROADS ULTIMATELY SERVICING MORE THAN 50 LOTS OR UNITS, OR COMMERCIAL/INDUSTRIAL PROPERTIES, OR IN EXCESS OF 200m, SHALL HAVE A PAVEMENT WIDTH OF 8.5m.
2. EXTRUDED CONCRETE CURB REQUIRED FOR INTERIM ARTERIAL WIDENED ROADS, WITH ILLUMINATION REQUIREMENTS DESIGNED FOR ULTIMATE ARTERIAL WIDENING.
3. PARKING ADJACENT TO PROPERTY LINE FOR 6.0m PAVEMENT.
4. CURB AND GUTTER TO BE NARROW BASE BARRIER CURB AS PER MMCD DWG C4
5. CURB AND GUTTER TO BE BIKE FRIENDLY BARRIER CURB AS PER SSD–D.9, UNLESS APPROVED OTHERWISE

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **ROAD SECTIONS, FRONTAGE ROAD**

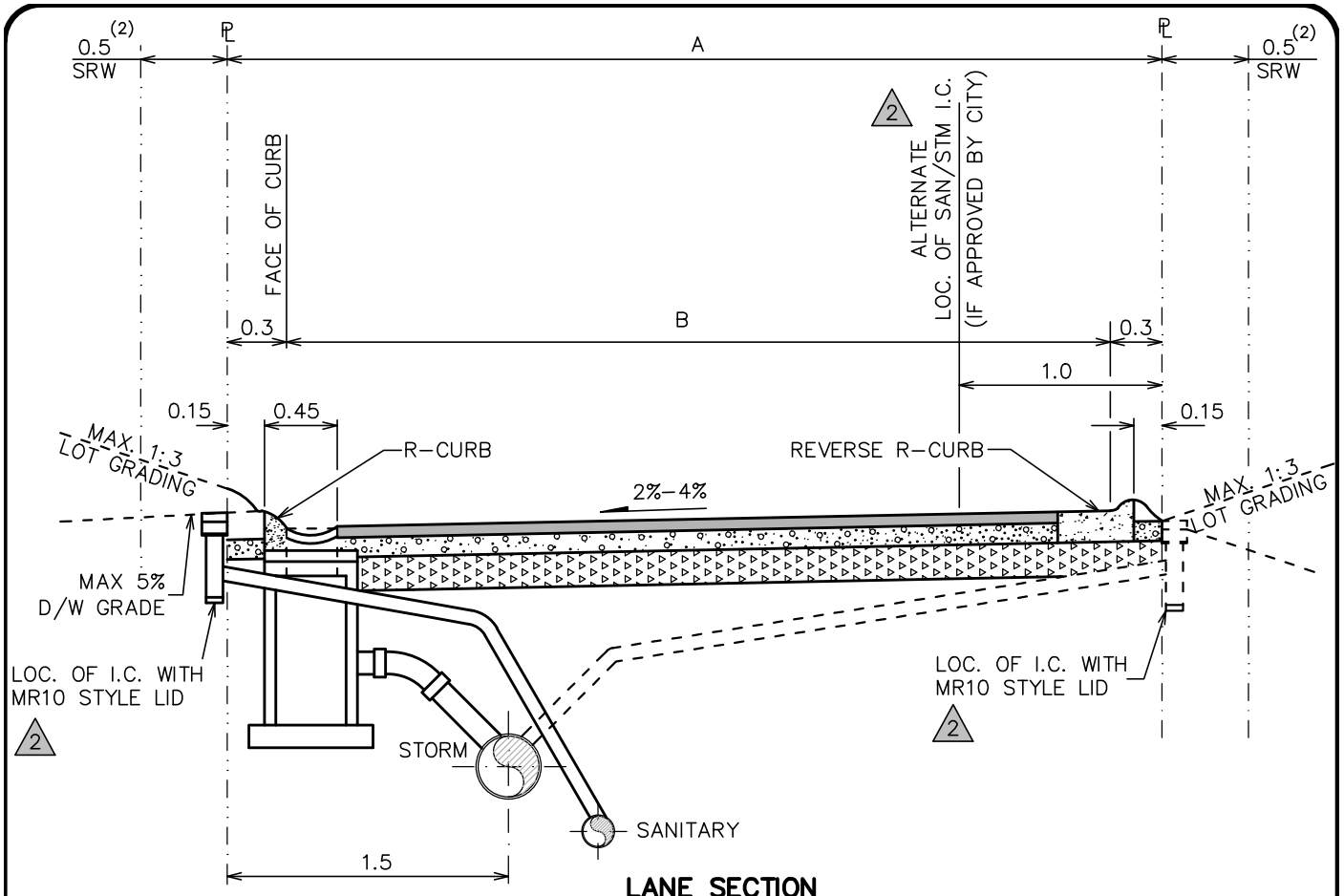
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

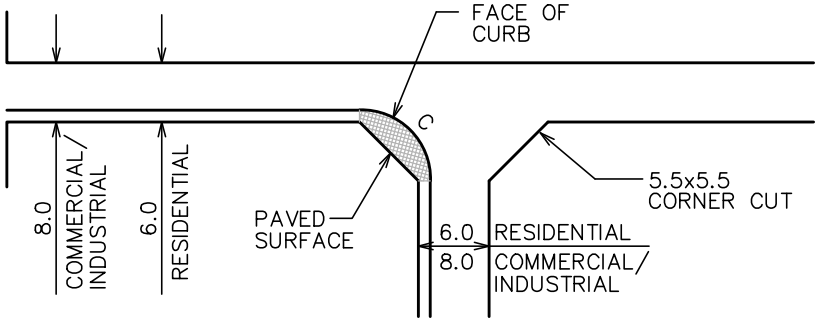
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.11.2



LANE SECTION



LANE INTERSECTION

	ROAD ALLOWANCE	ROADWAY	CURB RETURN RADIUS
	A	B	C
RESIDENTIAL	6.0	5.4	5.0
COLLECTOR IND/COMM	8.0	7.4	5.0

NOTES:

1. FOR DRIVEWAYS A LANDING AREA OF 6.0m LENGTH WITH MAXIMUM 5% GRADE IS REQUIRED.
2. 0.5m SRW REQUIRED FOR SERVICING IN LANE.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

LANE SECTION, STANDARD

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SUPPLEMENTARY STANDARD DRAWINGS

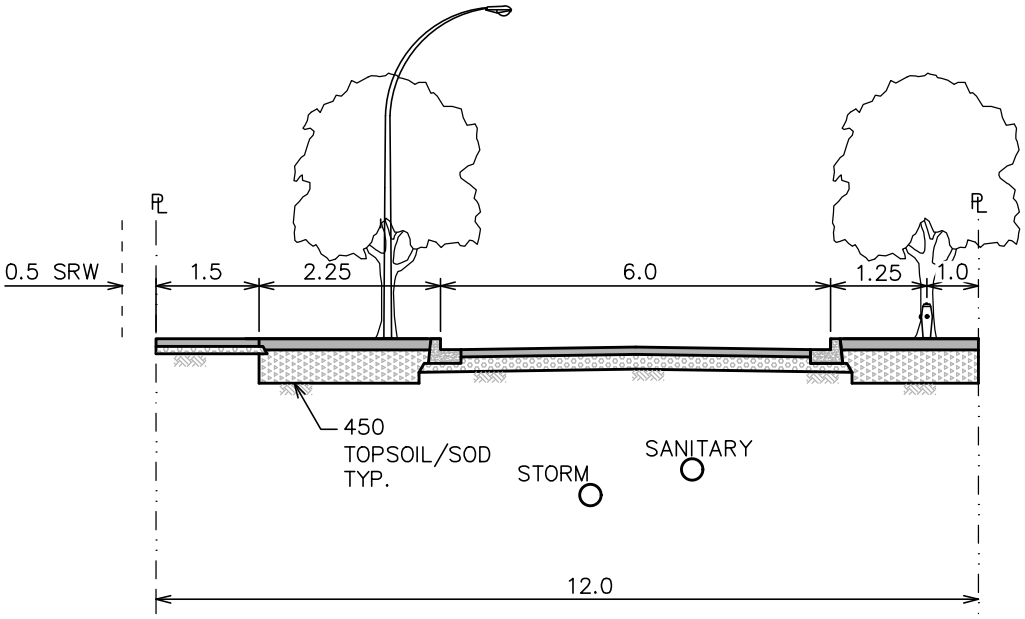
Approved By :

JANUARY 2016

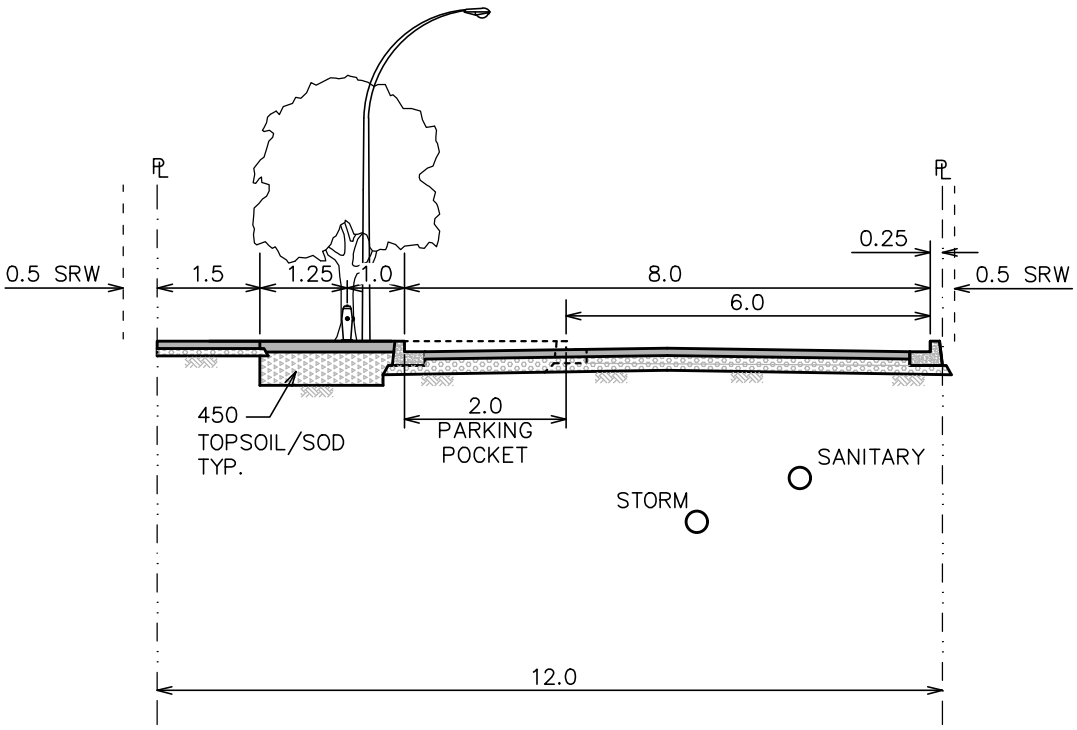
G.M. Engineering

DRAWING NUMBER

SSD-R.12



GREEN



URBAN

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JANUARY 2004	KOK KUEN LI	Title: **LANE, GREEN & URBAN**
	Revision Date	Approved	

CITY OF SURREY
the future lives here.

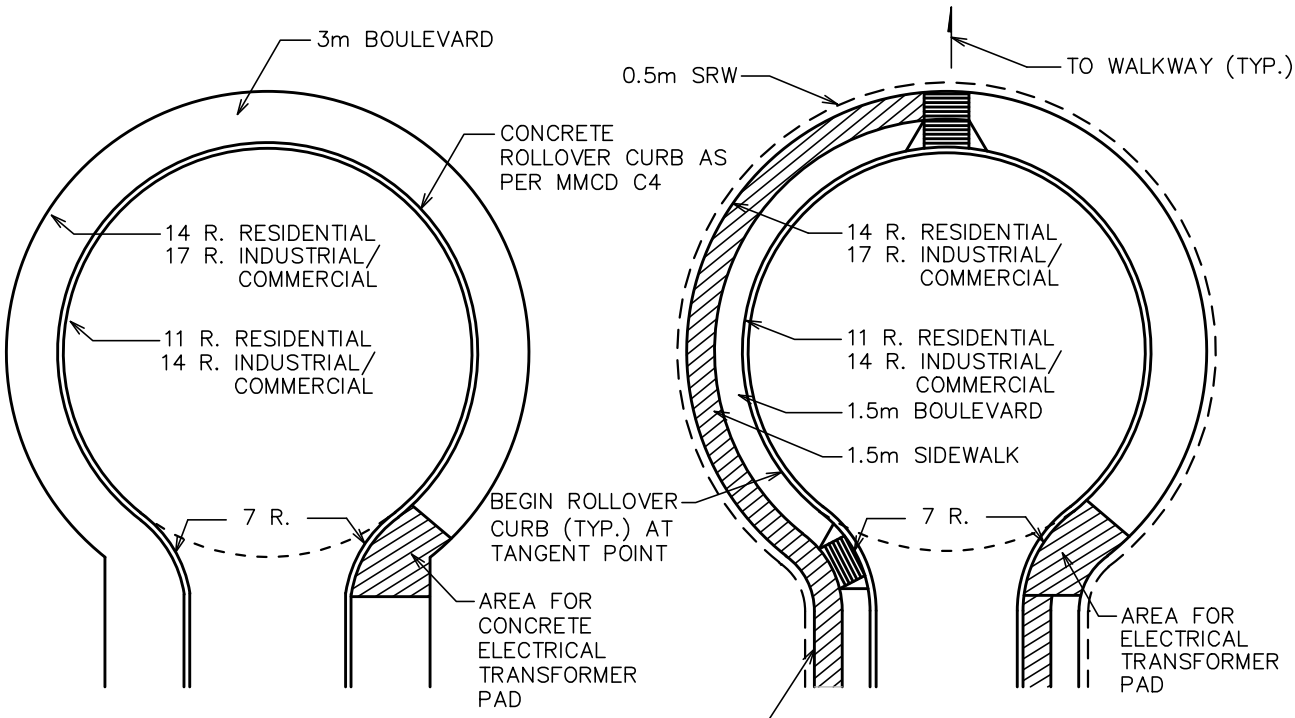
SUPPLEMENTARY STANDARD DRAWINGS

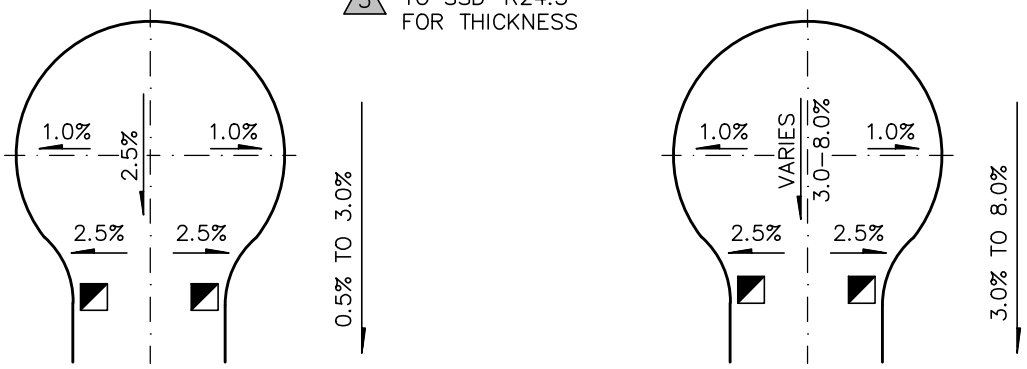
Approved By :

JANUARY 2016

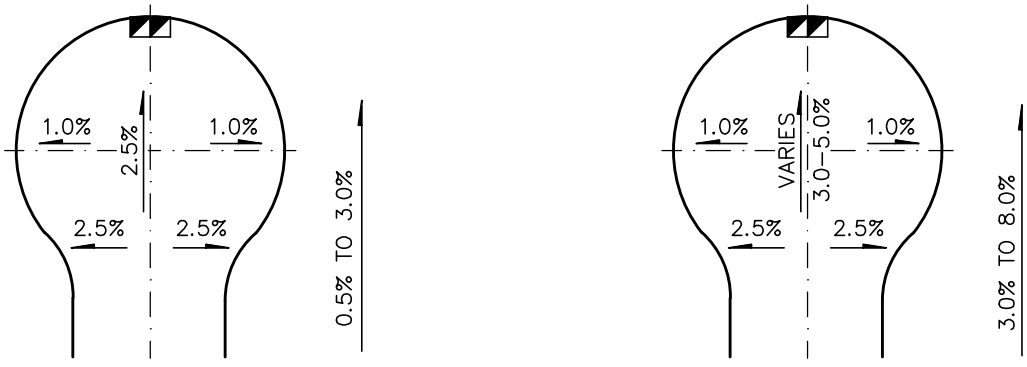
G.M. Engineering

DRAWING NUMBER
SSD–R.12.1





UPHILL GRADING DETAILS (TYPICAL)



DOWNHILL GRADING DETAILS (TYPICAL)

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	NOVEMBER 1999	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TURNAROUND, CUL-DE-SAC BULB**

CITY OF SURREY
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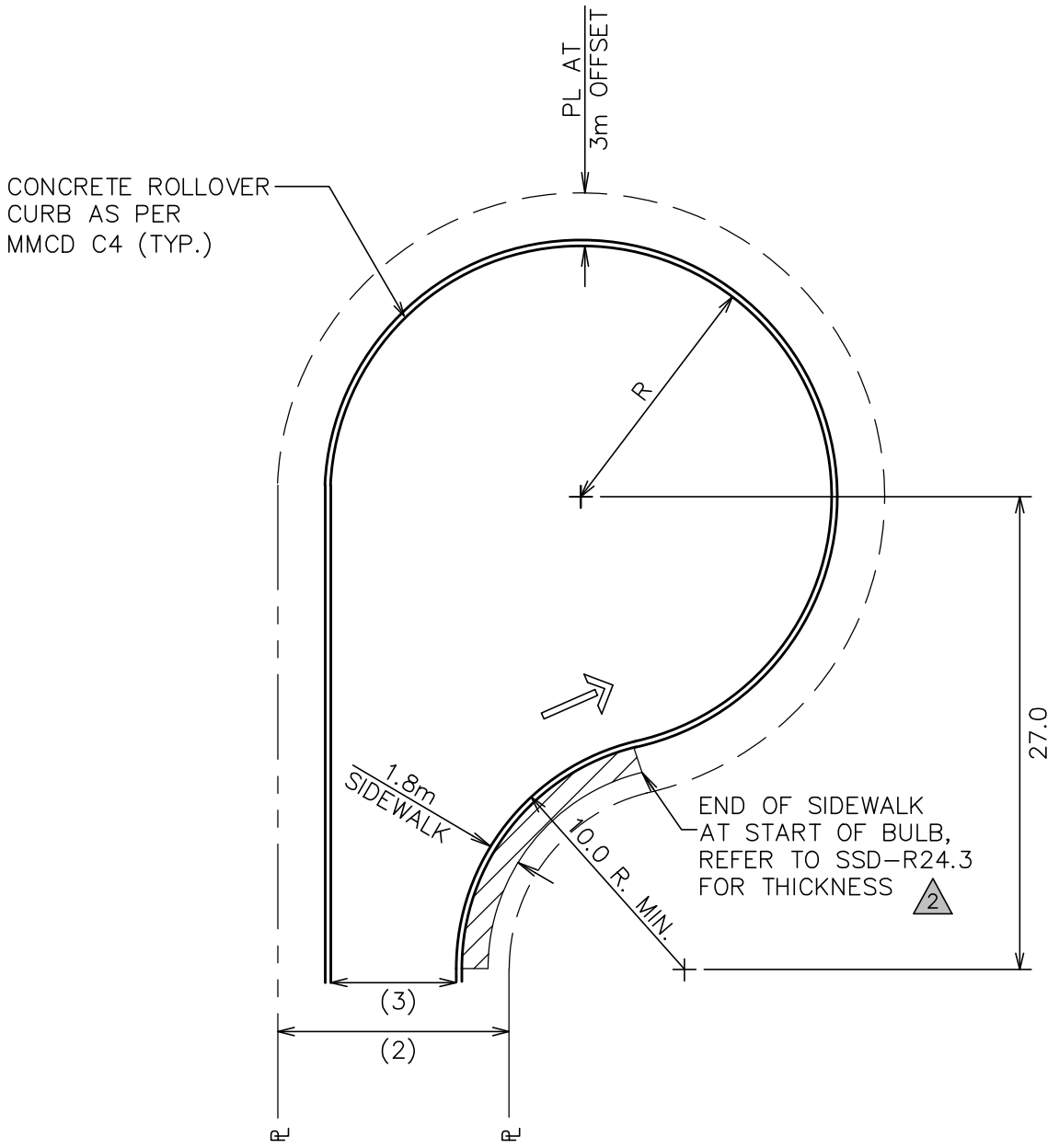
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-R.13



(1) R = 14m FOR COMMERCIAL/INDUSTRIAL ZONED.
R = 11m FOR RESIDENTIAL ZONED.
(2) ROAD DEDICATION AS PER ROADWAY CLASSIFICATION.
(3) PAVEMENT WIDTH AS PER ROADWAY CLASSIFICATION.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

CUL-DE-SAC, OFFSET

CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

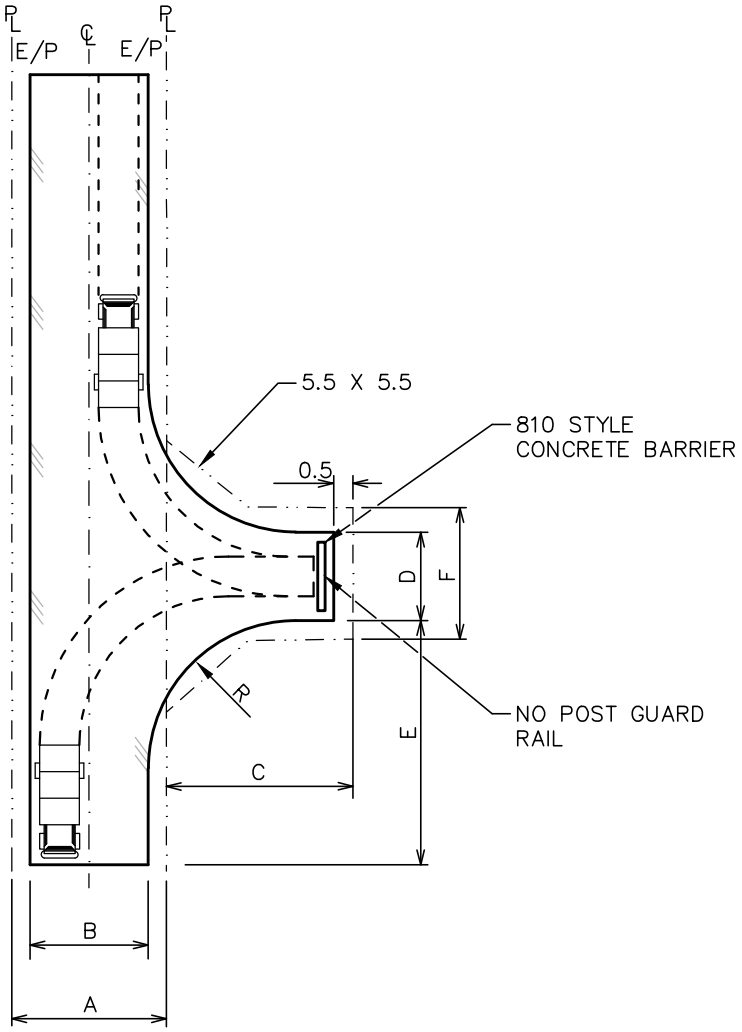
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD-R.13.1



DESIGN VEHICLE	LANE ALLOWANCE A(2)	PAVEMENT B(2)	DEPTH C	WIDTH D	LENGTH E	RADIUS R	ROW WIDTH F
SU–9	6.0	5.4	15.0	5.0	17.0	5.0	6.0
P	6.0	5.4	7.0	3.5	10.0	5.0	4.5

NOTES: (1) DESIGN VEHICLE AS DIRECTED BY THE CITY ENGINEER.
(2) 8.0m ROAD ROW, 7.4m PAVEMENT FOR COMMERCIAL/INDUSTRIAL ZONES.

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JANUARY 2016	JAIME BOAN	Title: TURNAROUND HAMMERHEAD
	Revision Date	Approved	

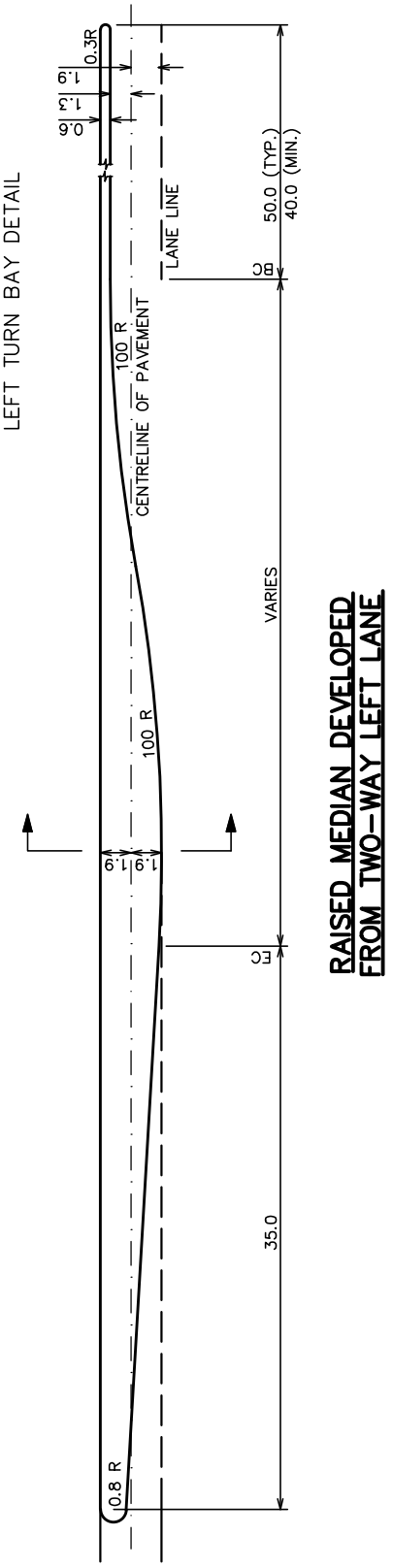
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

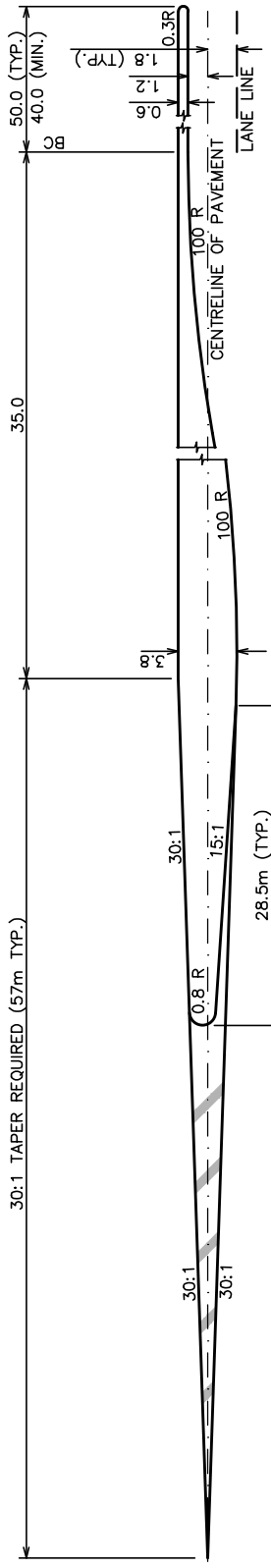
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.14



RAISED MEDIAN DEVELOPED FROM TWO-WAY LEFT LANE



RAISED MEDIAN DEVELOPED FROM CENTRELINE

NOTE: (1) REFER TO SSD-R.15.2 FOR NARROW (SKINNY) MEDIAN DESIGN.
(2) SLEEVES TO BE INSTALLED FOR MEDIAN SIGNS.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

RAISED MEDIAN, LEFT TURN BAY

CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

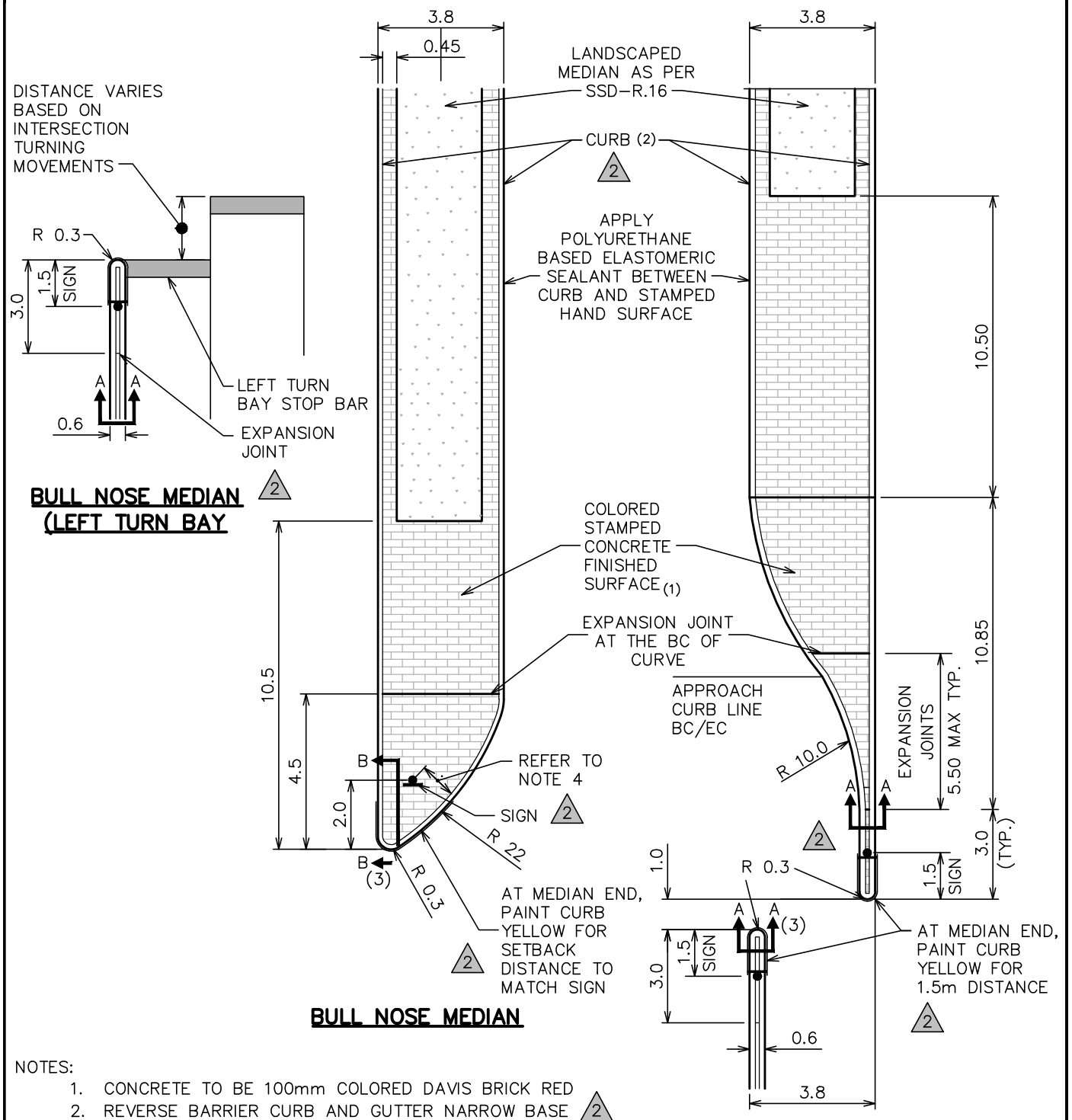
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD-R.15



NOTES:

1. CONCRETE TO BE 100mm COLORED DAVIS BRICK RED
2. REVERSE BARRIER CURB AND GUTTER NARROW BASE PER MMCD C4. 2
3. FOR SECTIONS A–A AND B–B SEE R.15.2/R.15.3
4. SIGN POST TO BE 0.8m OFFSET FROM APPROACH FACING CURB. 2

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **RAISED MEDIAN, END TREATMENT**

CITY OF SURREY the future lives here.

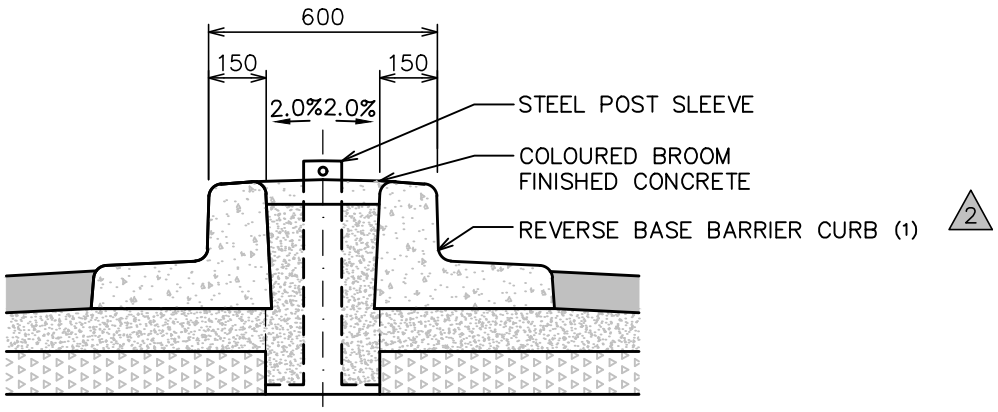
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

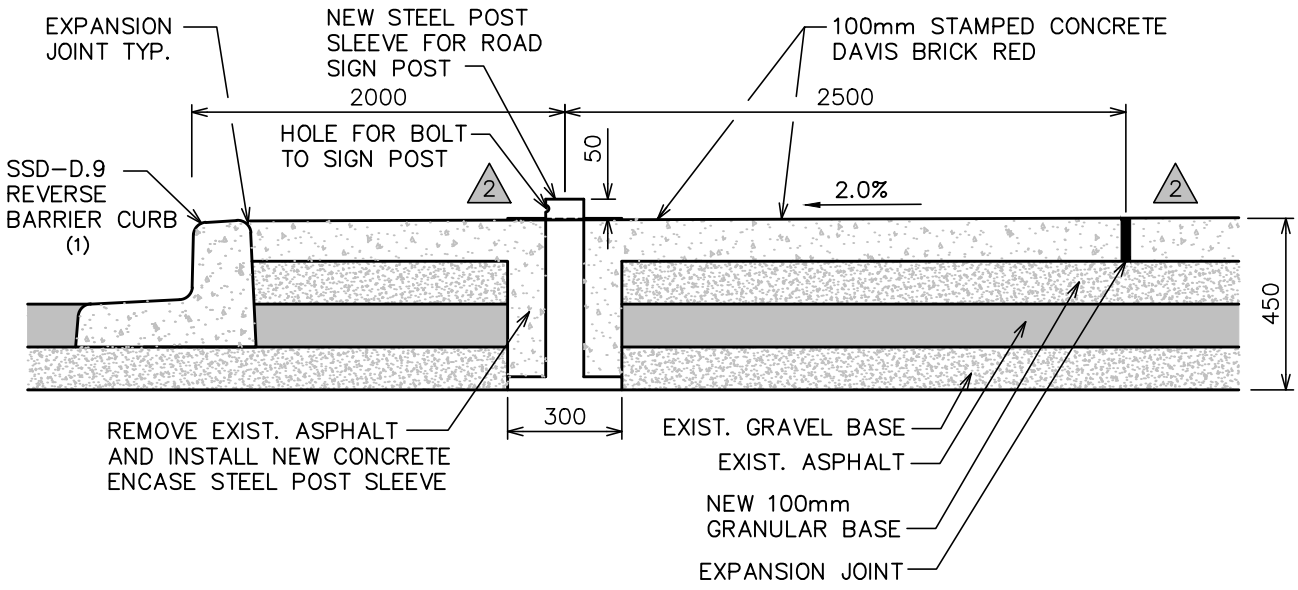
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.15.1



SECTION A–A



SECTION B–B

2 NOTES: (1) CURB AND GUTTER TO BE BULL NOSE END TO BE NARROW BASE BARRIER CURB AS PER MMCD DWG C4

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **RAISED MEDIAN, BULL NOSE END BARRIER CURB DETAIL**

CITY OF SURREY the future lives here.

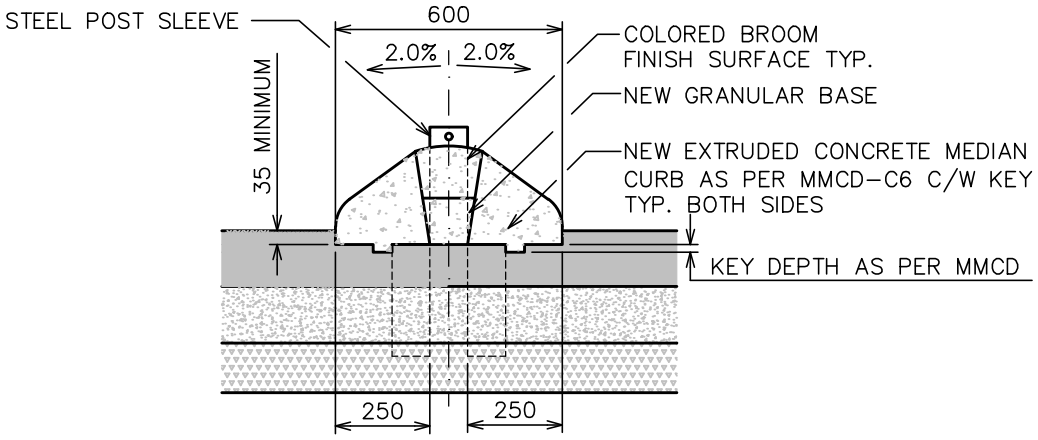
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

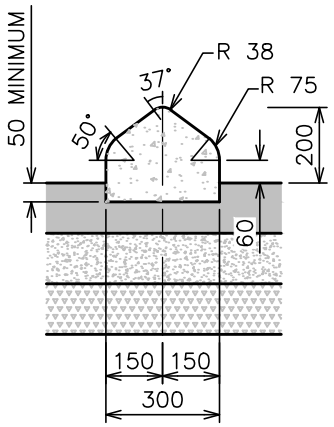
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

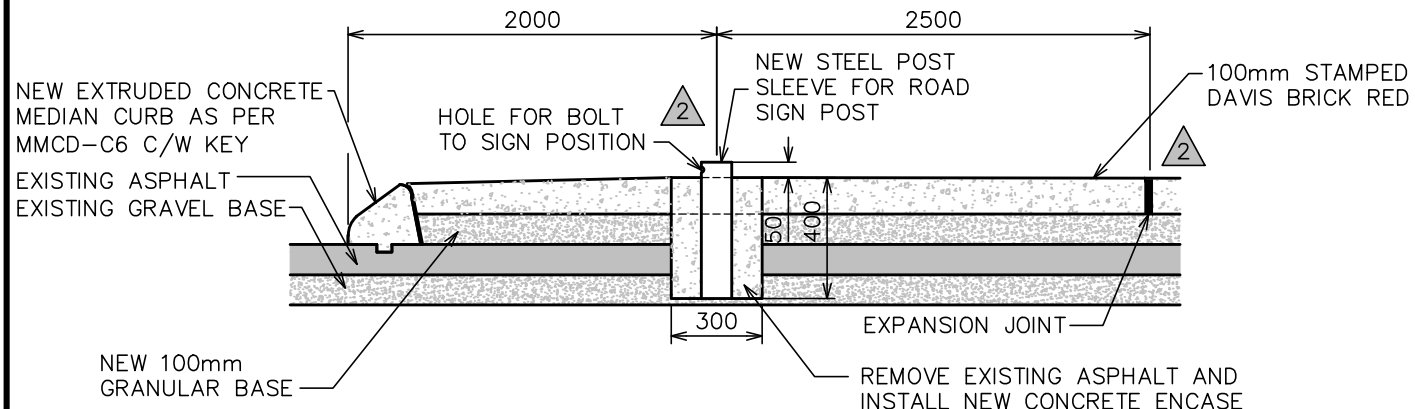
SSD–R.15.2



SECTION A–A
MEDIAN AT LEFT TURN BAY
TYP. SECTION



EXTRUDED CONCRETE CURB CENTER
DIVIDER NARROW SECTION DETAIL



SECTION B–B

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **RAISED MEDIAN, BULL NOSE END EXTRUDED CURB DETAIL**

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the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–R.15.3

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

MEDIAN PLANTING SECTION

CITY OF SURREY
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SUPPLEMENTARY STANDARD DRAWINGS

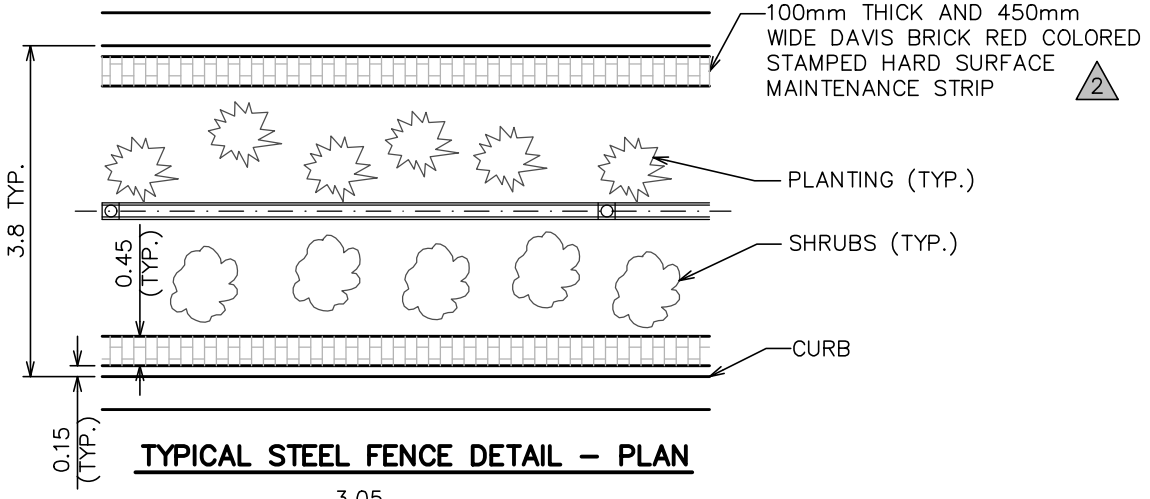
Approved By :

JANUARY 2016

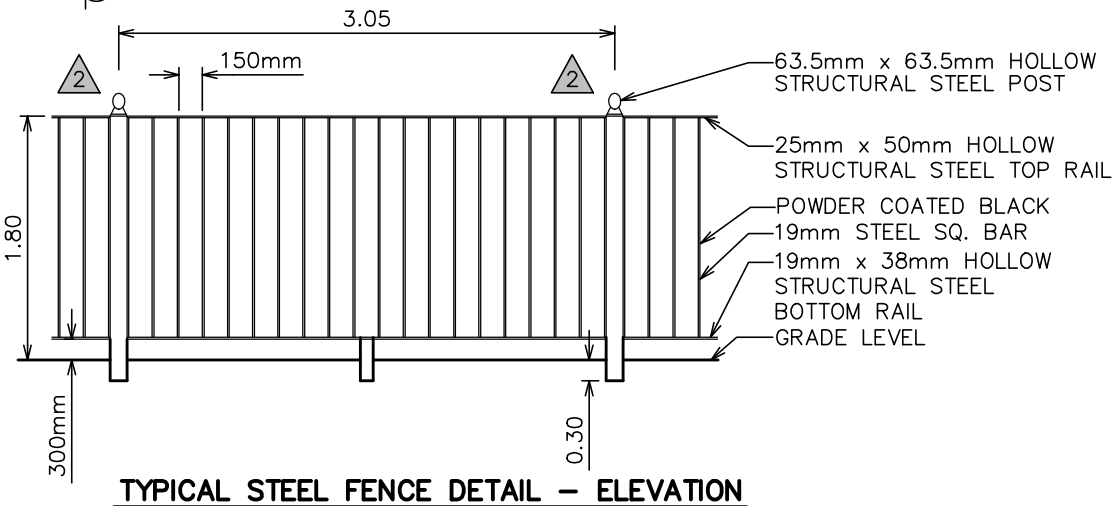
G.M. Engineering

DRAWING NUMBER

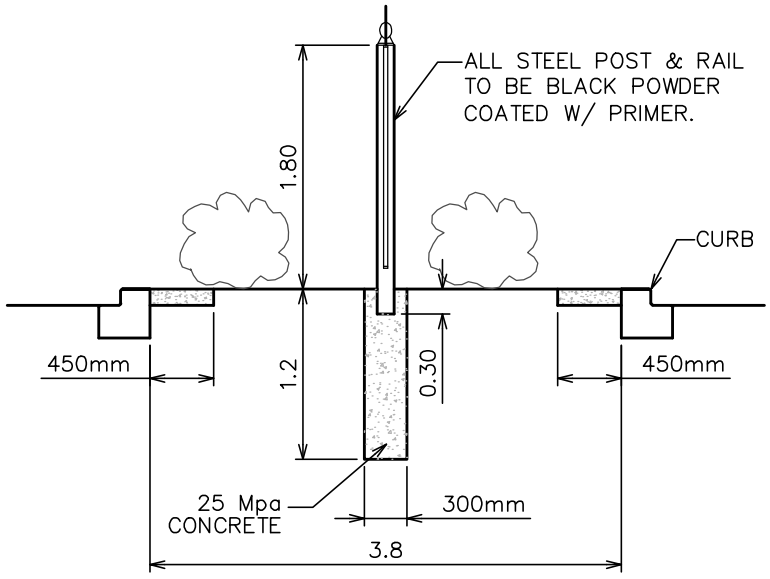
SSD–R.16



TYPICAL STEEL FENCE DETAIL – PLAN



TYPICAL STEEL FENCE DETAIL – ELEVATION



TYPICAL STEEL FENCE DETAIL – SIDE ELEVATION

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title

RAISED MEDIAN, FENCE

CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

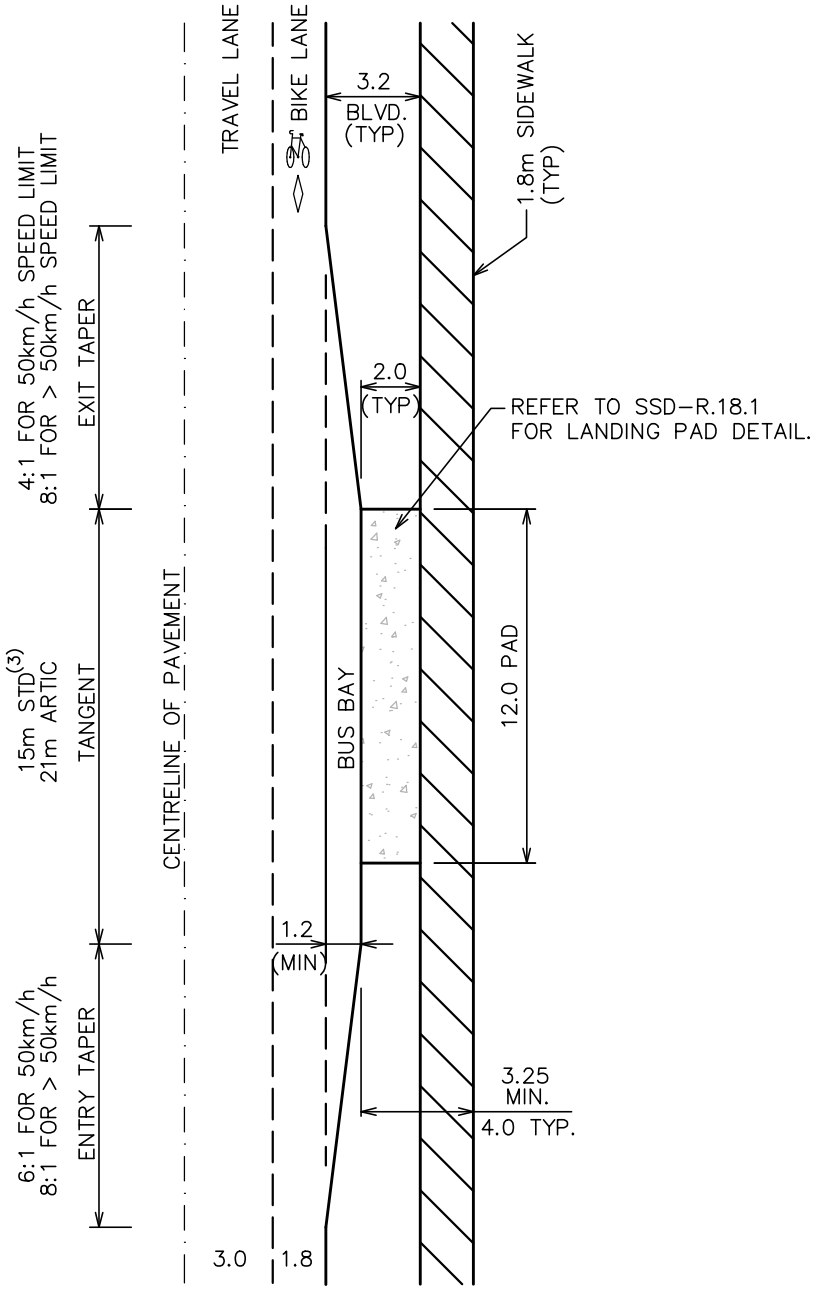
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD–R.17



NOTES:

1. BUS BAY REQUIRED ON ALL ROADS WITH WITH POSTED SPEED > 50km/h OR 1 LANE PER DIRECTION.
2. COAST MOUNTAIN BUS COMPANY TO SPECIFY LOCATION AND TYPE OF ENTRY TREATMENT.
3. ADD 8m BETWEEN TANGENTS IF TWO STOPS WITH INDEPENDANT DEPARTURE ARE REQUIRED.
4. ADDITIONAL LAND DEDICATION MAY BE REQUIRED.

3		
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

BUS STOP,
BAY DETAILS

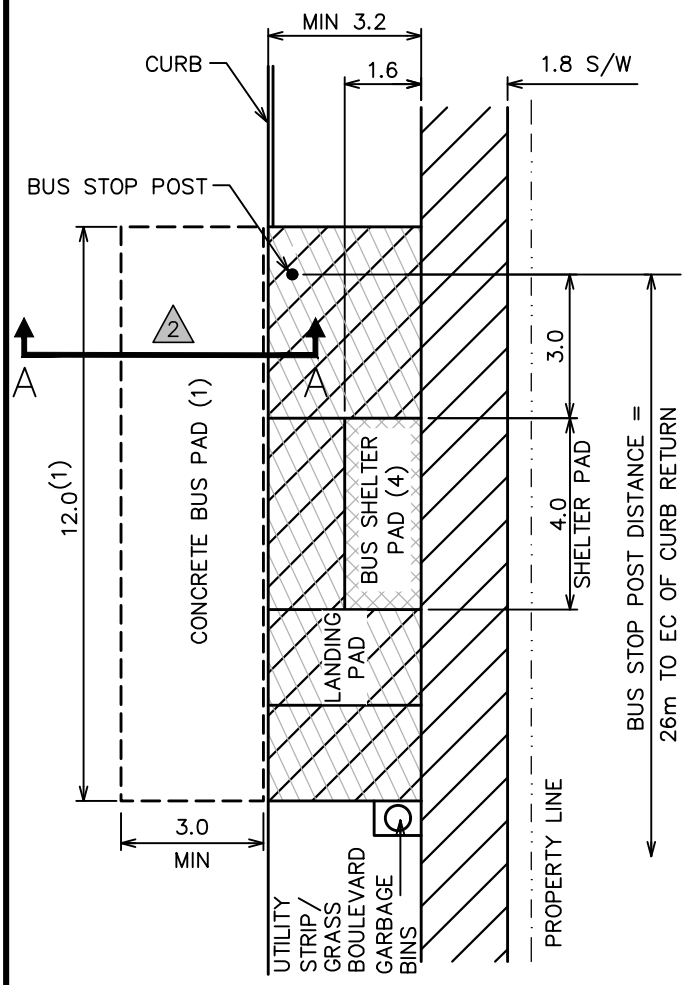
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

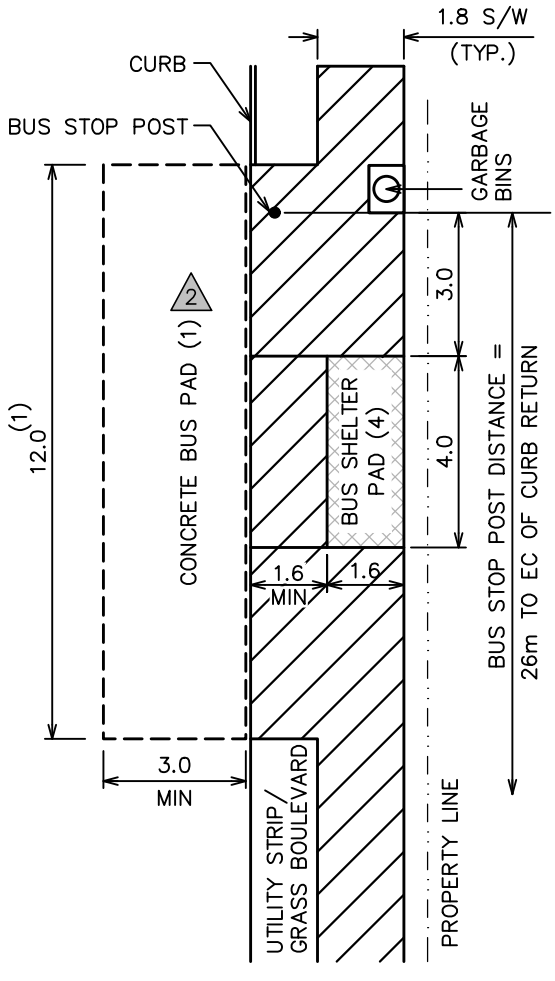
Approved By :

JANUARY 2016 G.M. Engineering

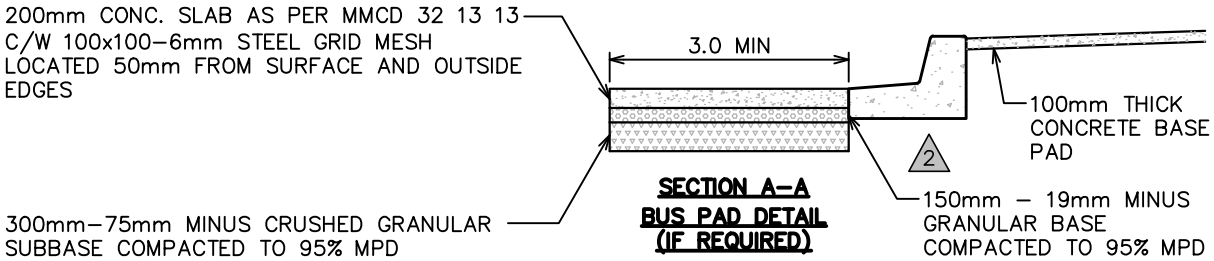
DRAWING NUMBER
SSD–R.18



BUS SHELTER LOCATION
SIDEWALK BEHIND SHELTER



BUS SHELTER LOCATION
SIDEWALK IN LINE WITH SHELTER



SECTION A-A
BUS PAD DETAIL
(IF REQUIRED)

NOTES:
2
1. 18m CONCRETE PAD FOR ARTICULATED BUS MAY BE REQUIRED BY CITY FOR HIGH VOLUME BUS.
2. STANDARD SHELTER TO BE CONSTRUCTED IN FRONT OF SIDEWALK (5.0 MIN BOULEVARD) IF NOT ENOUGH WIDTH, CITY MUST REVIEW AND APPROVE DESIGN BEHIND SIDEWALK.
3. REFER TO SSD-R.18.2 FOR SHELTER PAD DETAIL.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **BUS STOP, LANDING PAD**

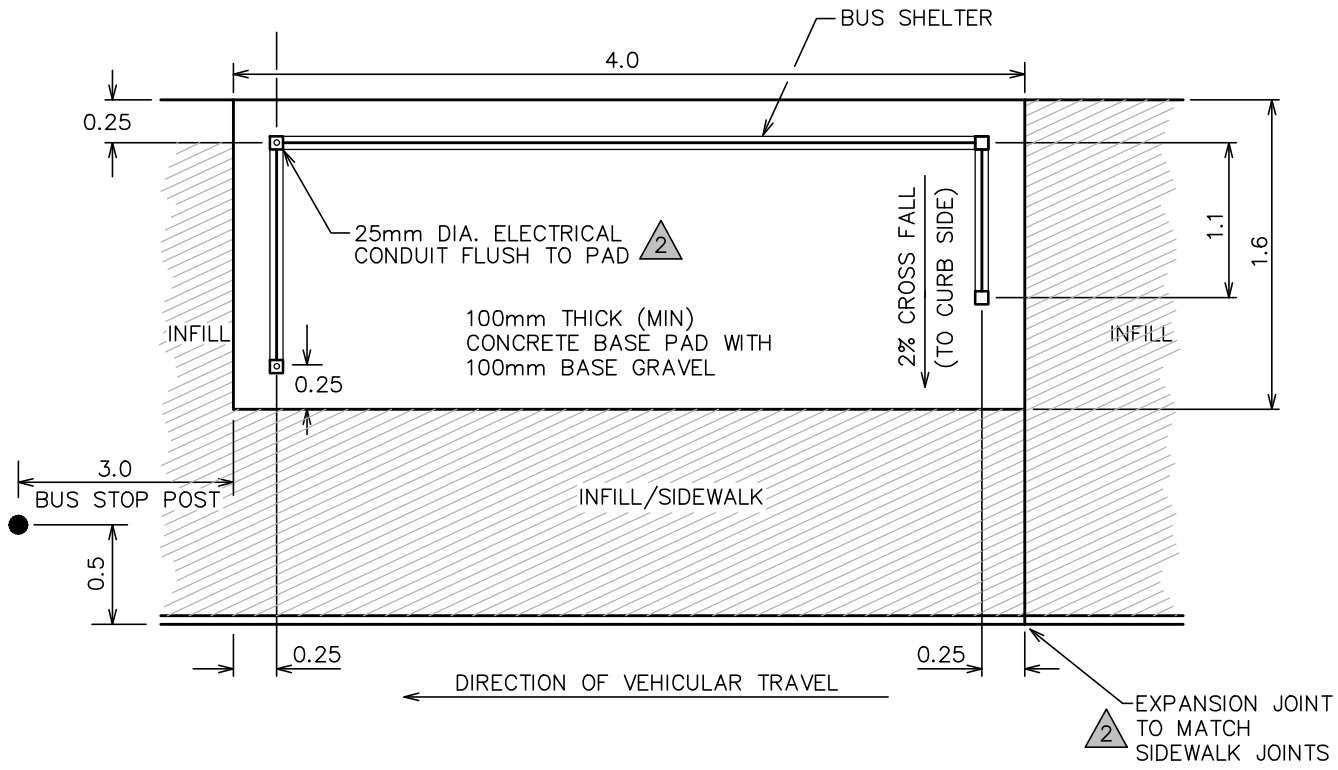
CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-R.18.1



BUS SHELTER PAD DETAIL

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title
BUS STOP, BUS SHELTER PAD DETAILS

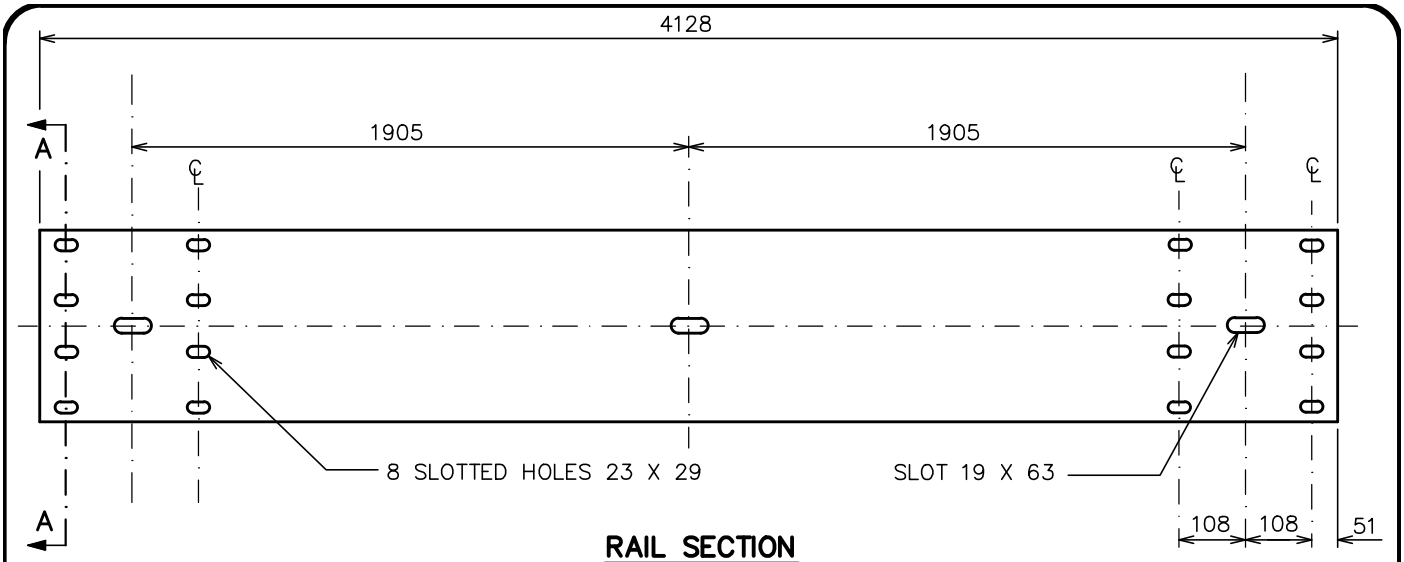
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

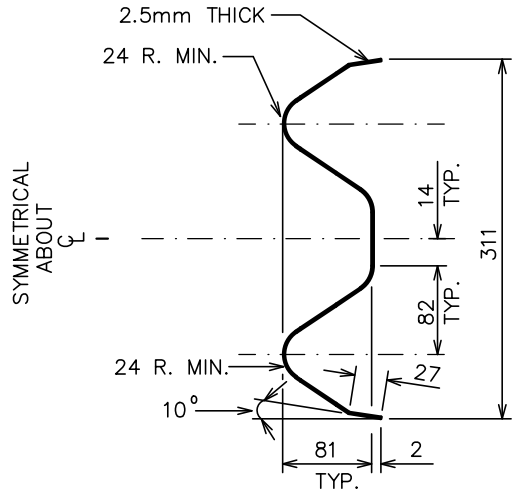
Approved By :

JANUARY 2016 G.M. Engineering

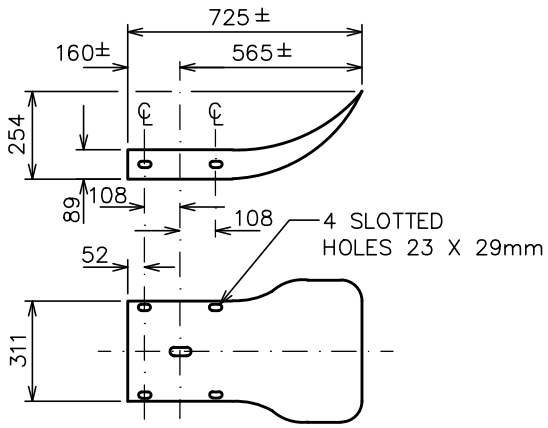
DRAWING NUMBER
SSD-R.18.2



RAIL SECTION

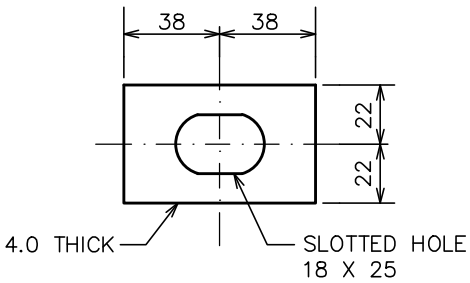


ENLARGED SECTION A–A

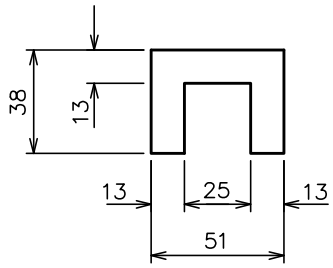


TERMINAL SECTION

(SECTION B–B SIMILAR)



RECTANGULAR WASHER



SHIM

NOTE: (1) ALL METAL TO BE GALVANIZED FINISH

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **GUARD RAIL**

CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

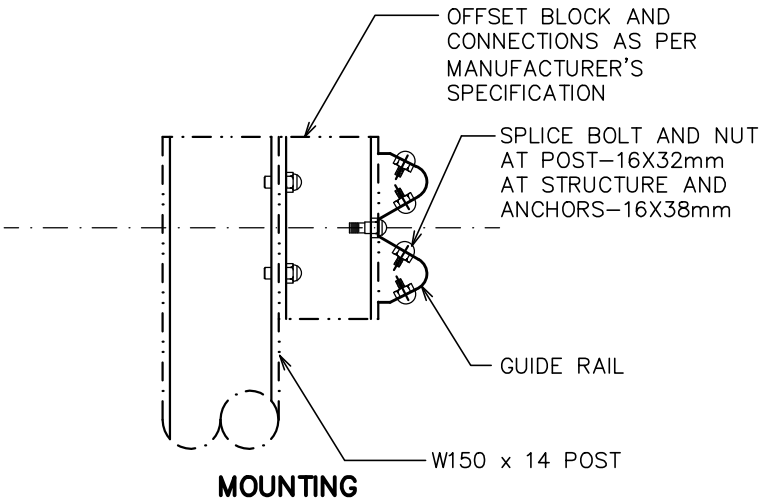
Approved By :

JANUARY 2016

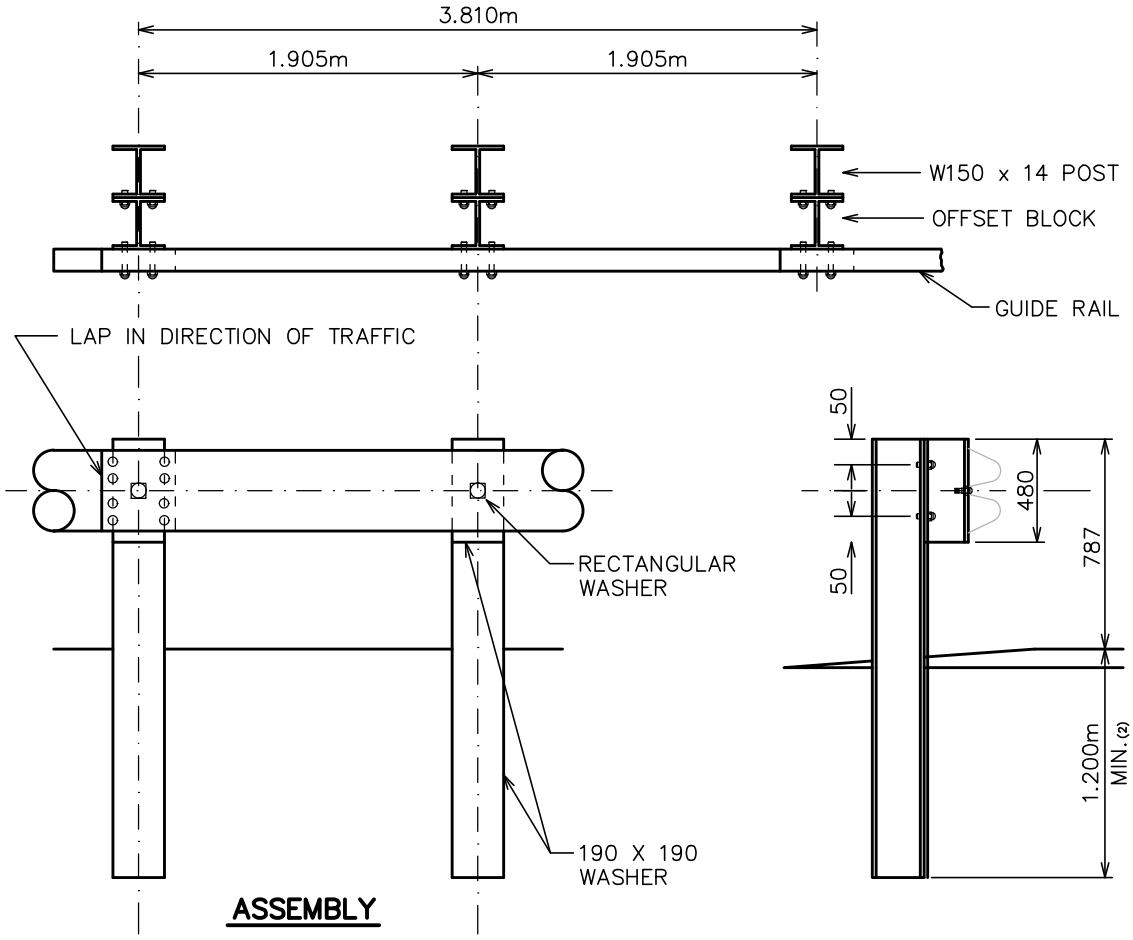
G.M. Engineering

DRAWING NUMBER

SSD–R.19



MOUNTING



ASSEMBLY

NOTE:

1. ALL METAL TO BE GALVANIZED FINISH.
2. DEPTH OF BURIAL TO BE DESIGNED BASED ON SOIL CONDITION.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

GUARD RAIL – ASSEMBLY & MOUNTING

CITY OF SURREY
the future lives here.

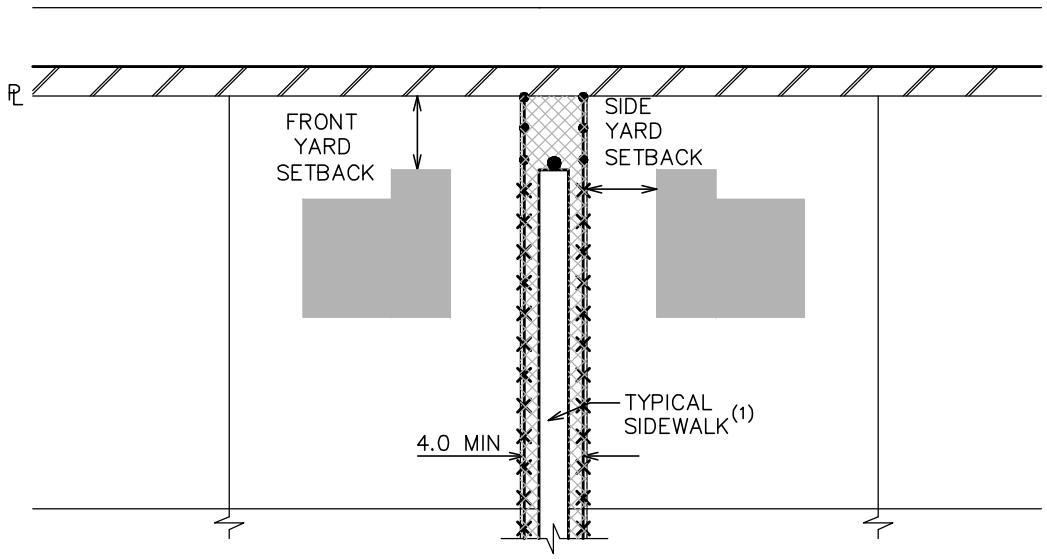
SUPPLEMENTARY STANDARD DRAWINGS

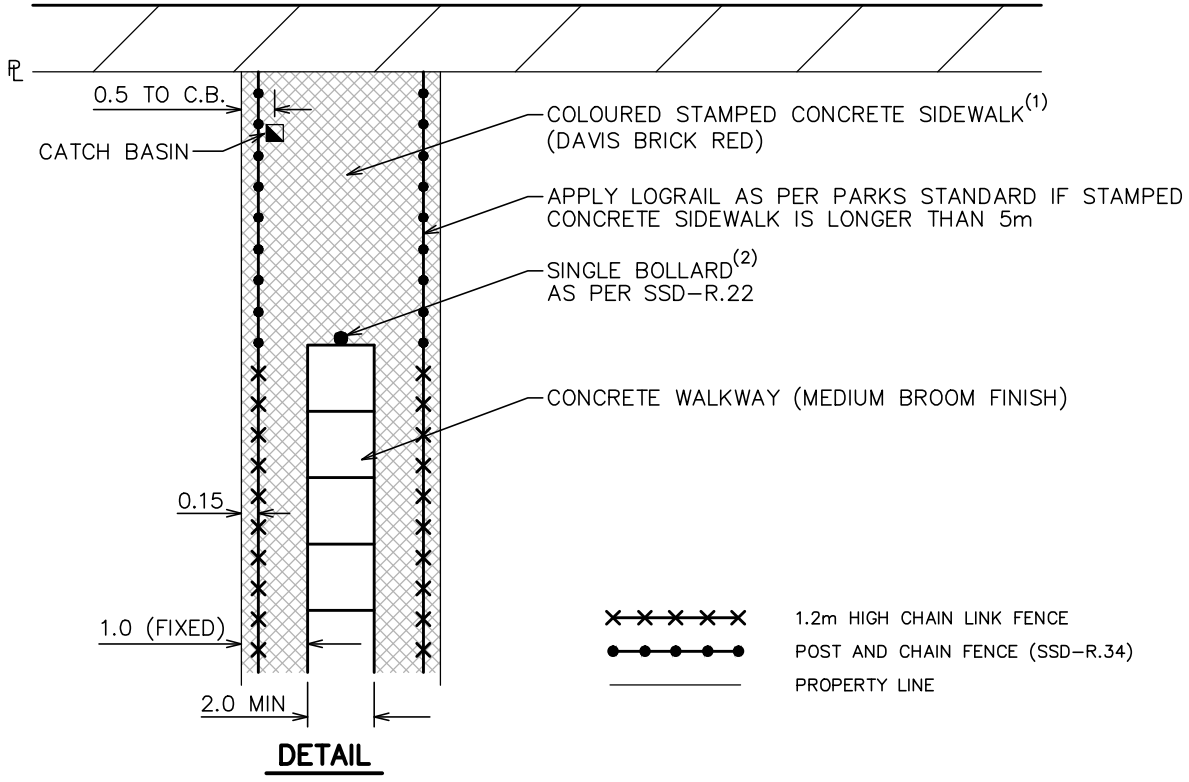
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.19.1





DETAIL

NOTES: (1) REFER TO DESIGN CRITERIA FOR LENGTH TO WIDTH RATIO.

(2) TWO BOLLARDS @ 2.0m SPACING REQUIRED FOR WALKWAYS WIDER THAN 4.0m.

(3) BAFFLE GATES MAY BE USED AS SUBSTITUTE AT THE DIRECTION OF THE CITY OF SURREY

4		
3	JANUARY 2016	JAIME BOAN
2	MARCH 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title **WALKWAYS, ENGINEERING OR EMERGENCY ACCESS**

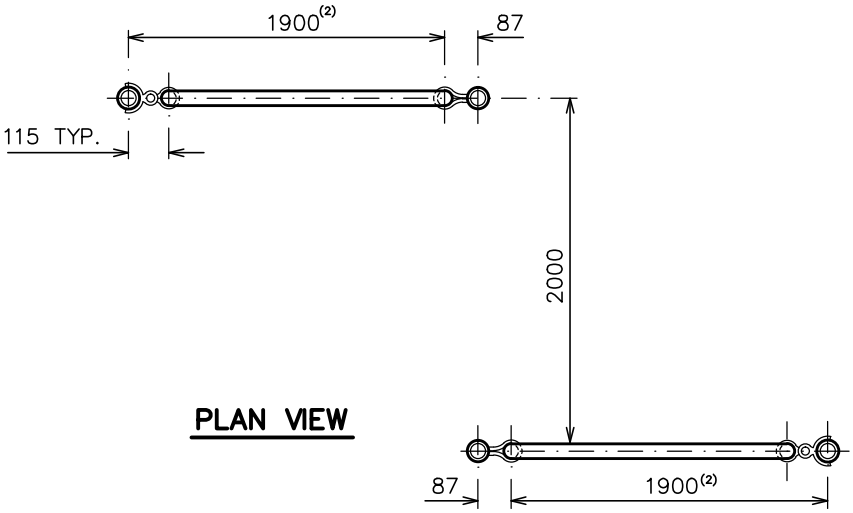
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

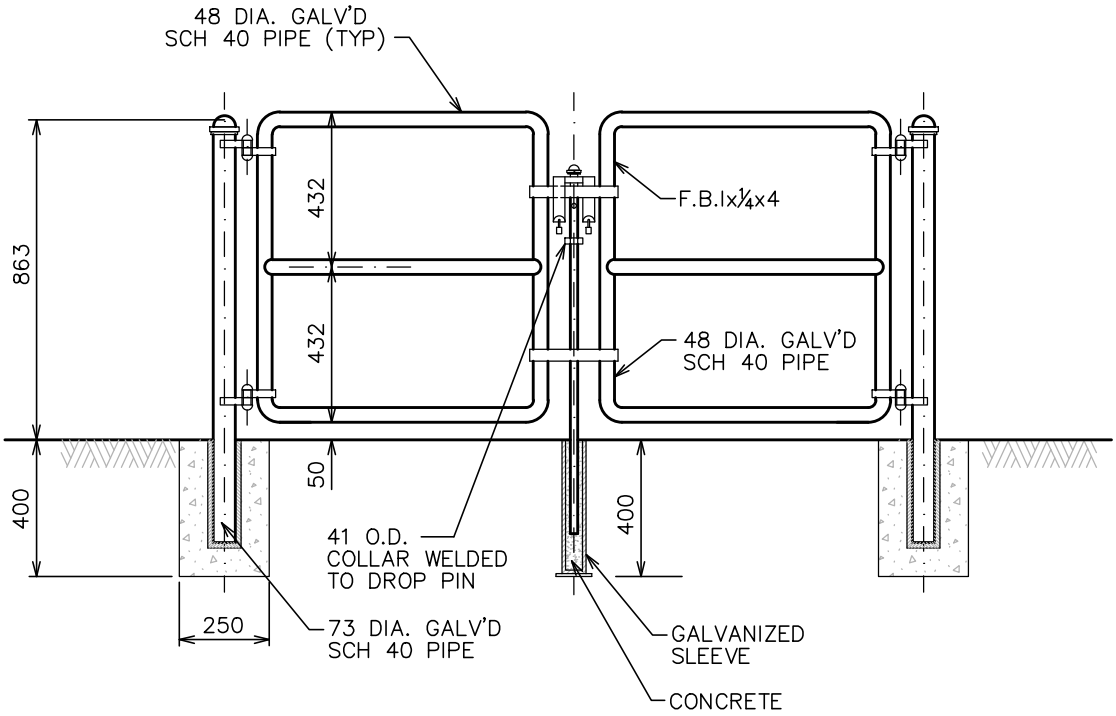
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-R.20



PLAN VIEW



ELEVATION VIEW

NOTE:

1. ALL JOINTS SEAL–WELDED AND PAINTED WITH ZINC RICH PAINT.
2. REDUCE TO 1400 FOR 3m WIDE PATHS.

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **WALKWAYS, BAFFLE GATE**

CITY OF SURREY the future lives here.

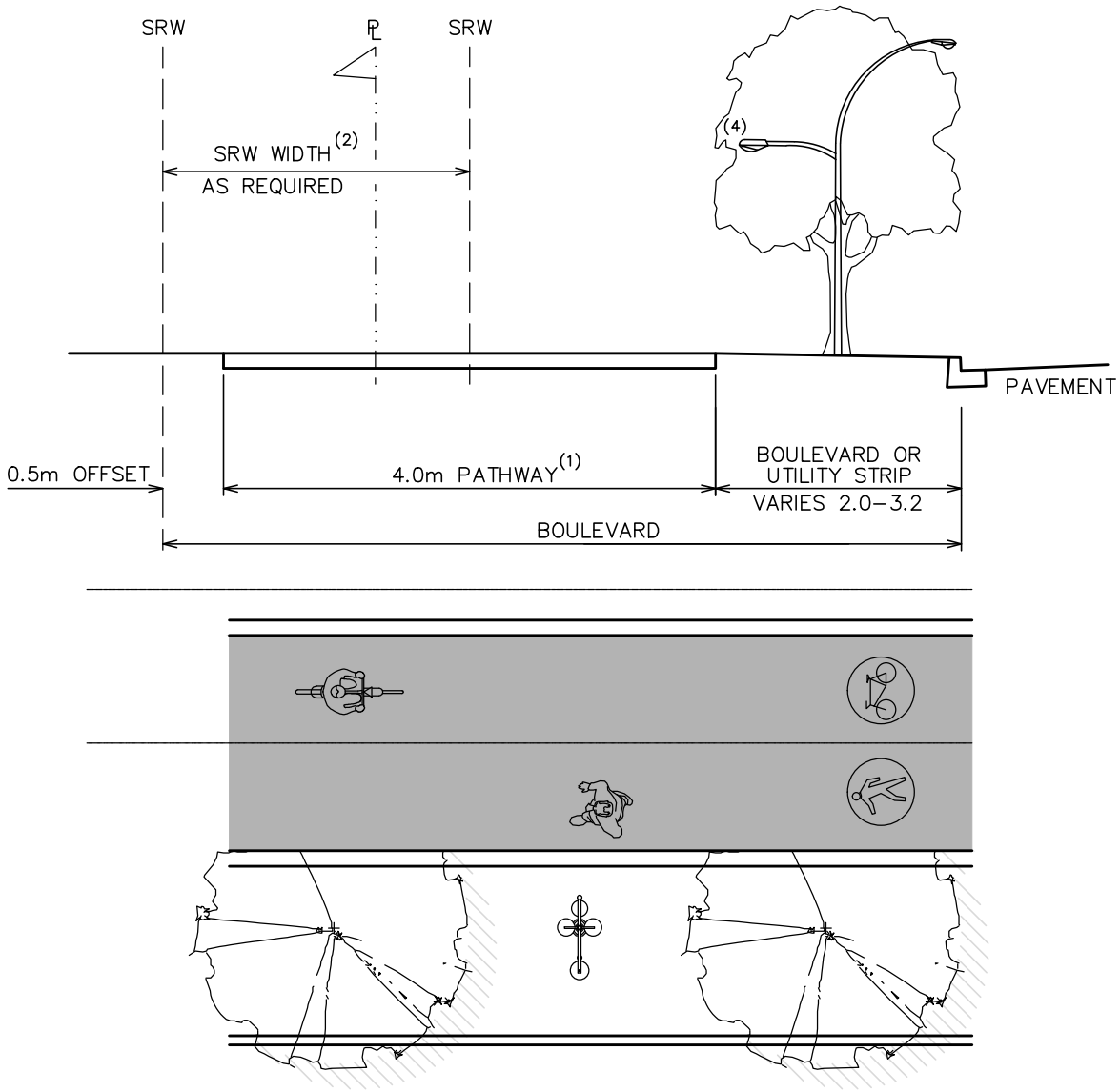
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.20.1



NOTES:

1. PATHWAY MAY CONSIST OF 4.0m ASPHALT PATHWAY (SSD–R.21.1) OR 1.5m CONCRETE SIDEWALK PLUS 2.5m ASPHALT PATHWAY AS SPECIFIED BY THE CITY OF SURREY.
2. STATUTORY RIGHT–OF–WAY (SRW) MAY BE REQUIRED IF BOULEVARD WIDTH EXCEEDS TYPICAL ROAD DEDICATION AS SPECIFIED BY THE ENGINEER/APPROVING OFFICER.
3. SINGLE LOCKING BOLLARD AS PER SSD–R.22 CENTRED IN MULTI USE PATH REQUIRED AT INTERSECTIONS AND CURB RETURN DRIVEWAYS.
4. PEDESTRIAN LIGHTING REQUIRED ALONG PATHWAY.

3		
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

PATHWAYS,
NEXT–TO–ROAD MULTI–USE DETAIL

CITY OF SURREY
the future lives here.

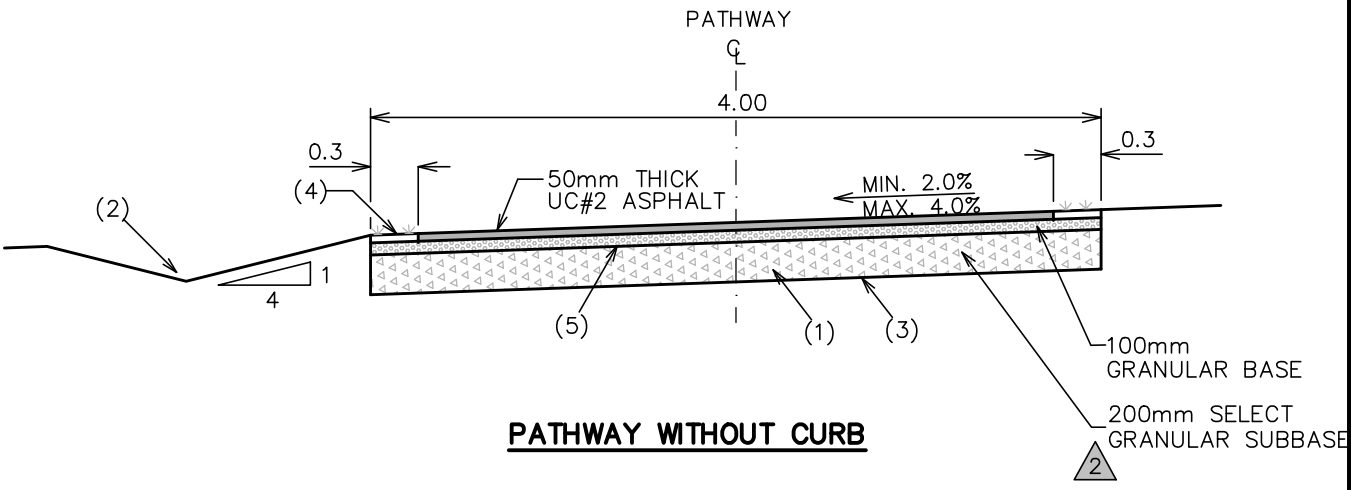
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

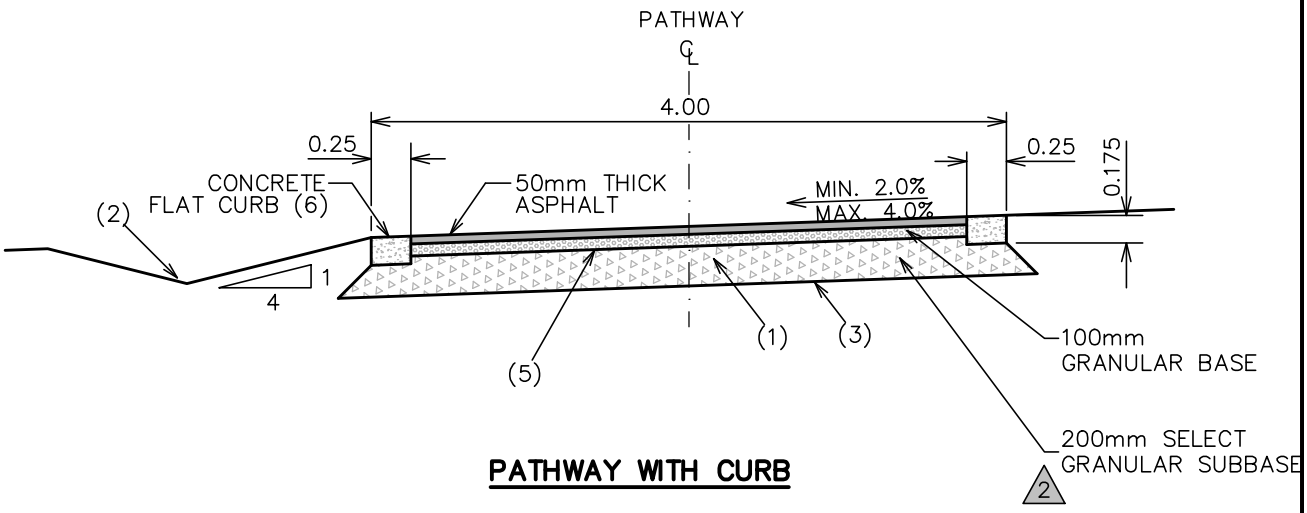
JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–R.21



PATHWAY WITHOUT CURB



PATHWAY WITH CURB

NOTES:

1. STRIPPING ZONE – STRIPPING DEPTH TO BE VARIABLE AND BASED ON ENGINEER'S RECOMMENDATIONS ON SITE. REPLACE WITH SELECT GRANULAR SUBBASE (75mm MINUS) TO 200mm DEPTH AND 75mm PIT–RUN GRAVEL BEYOND, COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
2. DITCH (0.25m MIN. DEPTH TYP.) EXISTING TOPSOIL TO BE HYDROSEEDED.
3. GEOTEXTILE (NILEX No. 4545 OR EQUIVALENT)
4. SHOULDERS TO CONSIST OF PREVIOUSLY STRIPPED TOPSOIL (HYDROSEEDED) OR SOD.
5. MIL BLACK POLYETHYLENE SHEET.
6. EXPANSION & CONTRACTION JOINTS AS PER MMCD C3.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title
PATHWAYS, MULTI–USE SECTION DETAILS

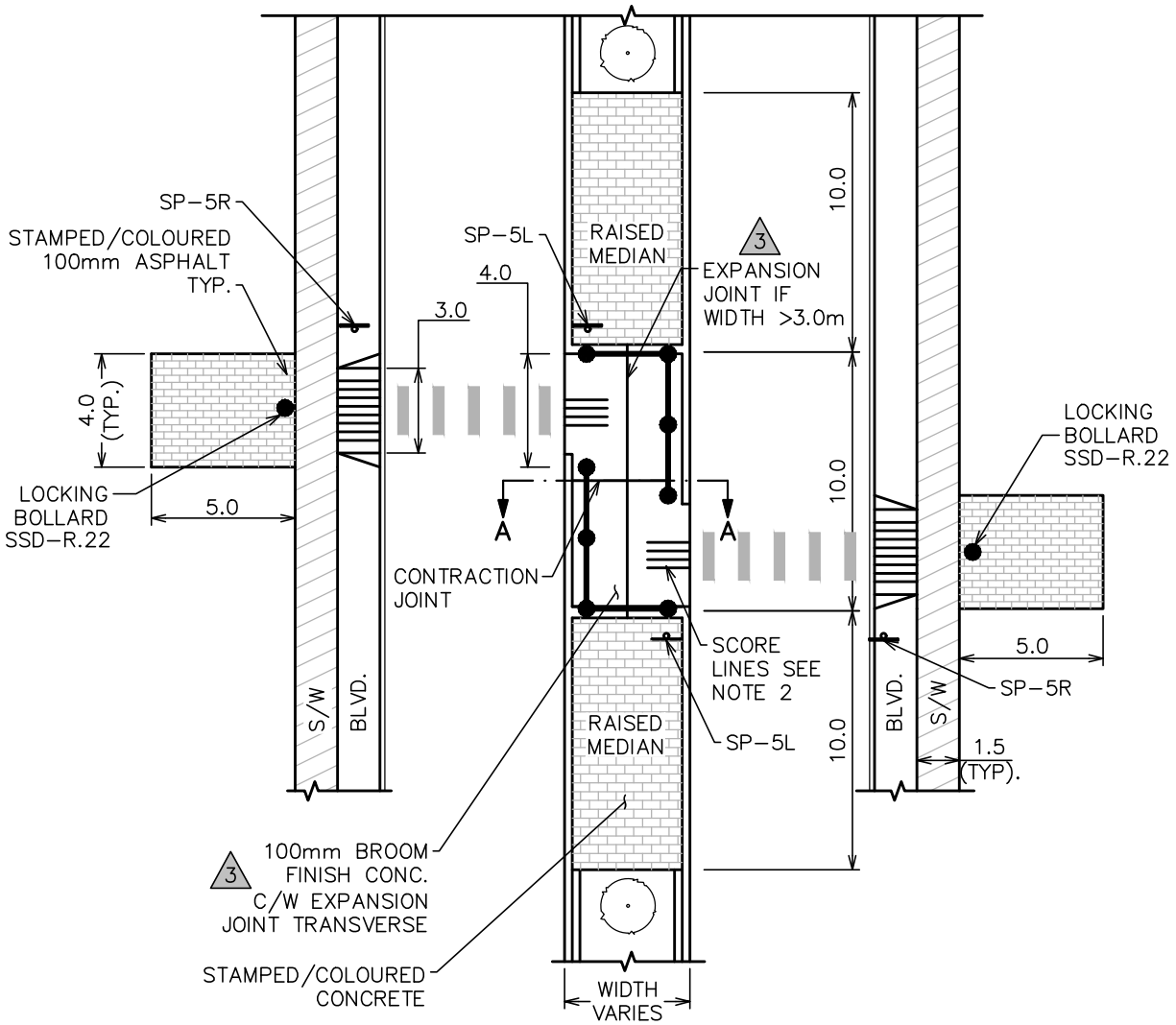
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

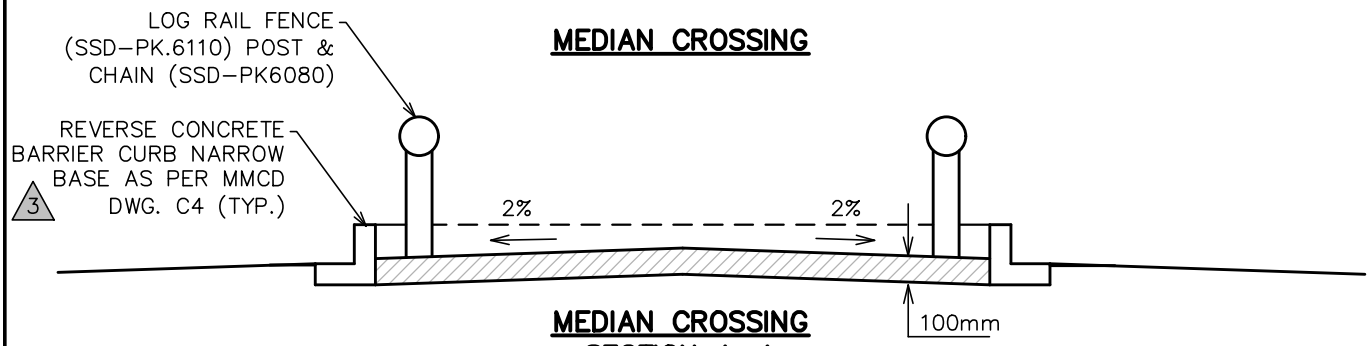
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.21.1



MEDIAN CROSSING



MEDIAN CROSSING SECTION A-A

NOTES:

1. DRAINAGE FEATURES IN THE MEDIAN AS REQUIRED.
2. SCORE LINES 40cm APART, USE 3/8" TROWEL, EDGE TO BE AS CLOSE AS FLUSH WITH BROOM FINISH (TYP.)

	Revision Date	Approved
3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	MARCH 2004	KOK KUEN LI

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

PATHWAYS, MEDIAN MID BLOCK CROSSING DETAIL

CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

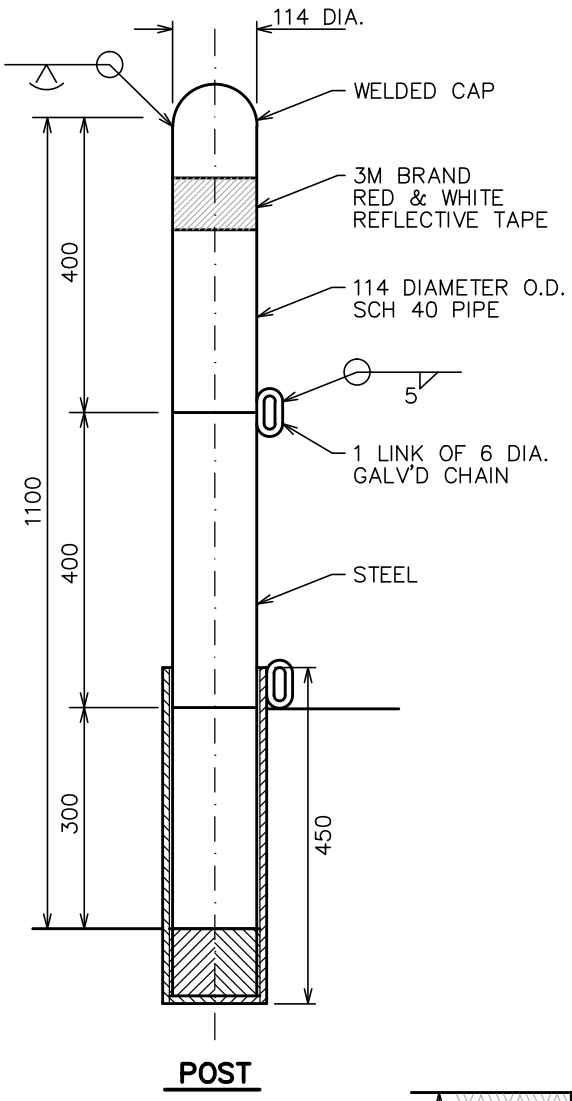
Approved By :

JANUARY 2016

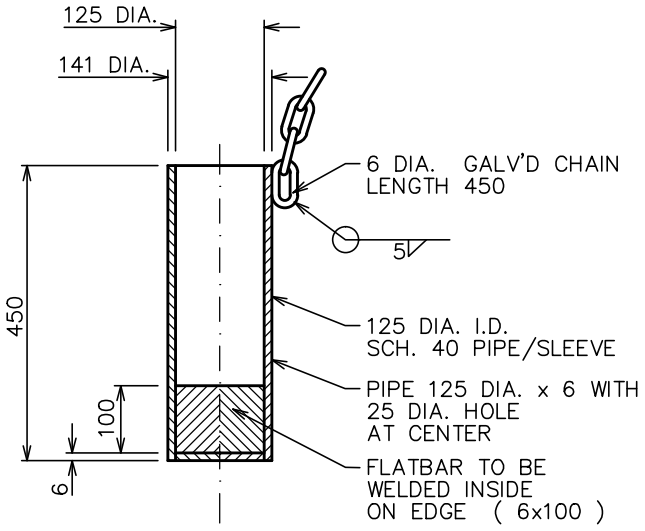
G.M. Engineering

DRAWING NUMBER

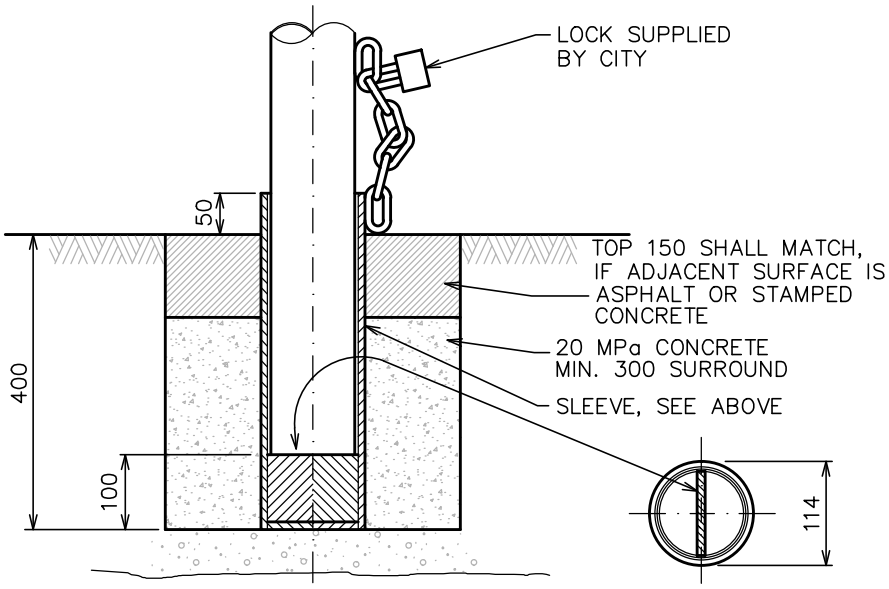
SSD-R.21.2



POST



SLEEVE



ASSEMBLY

NOTE:
1. FINISH POWDER COATED WHITE.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title
PATHWAYS, LOCKING BOLLARD

CITY OF SURREY
the future lives here.

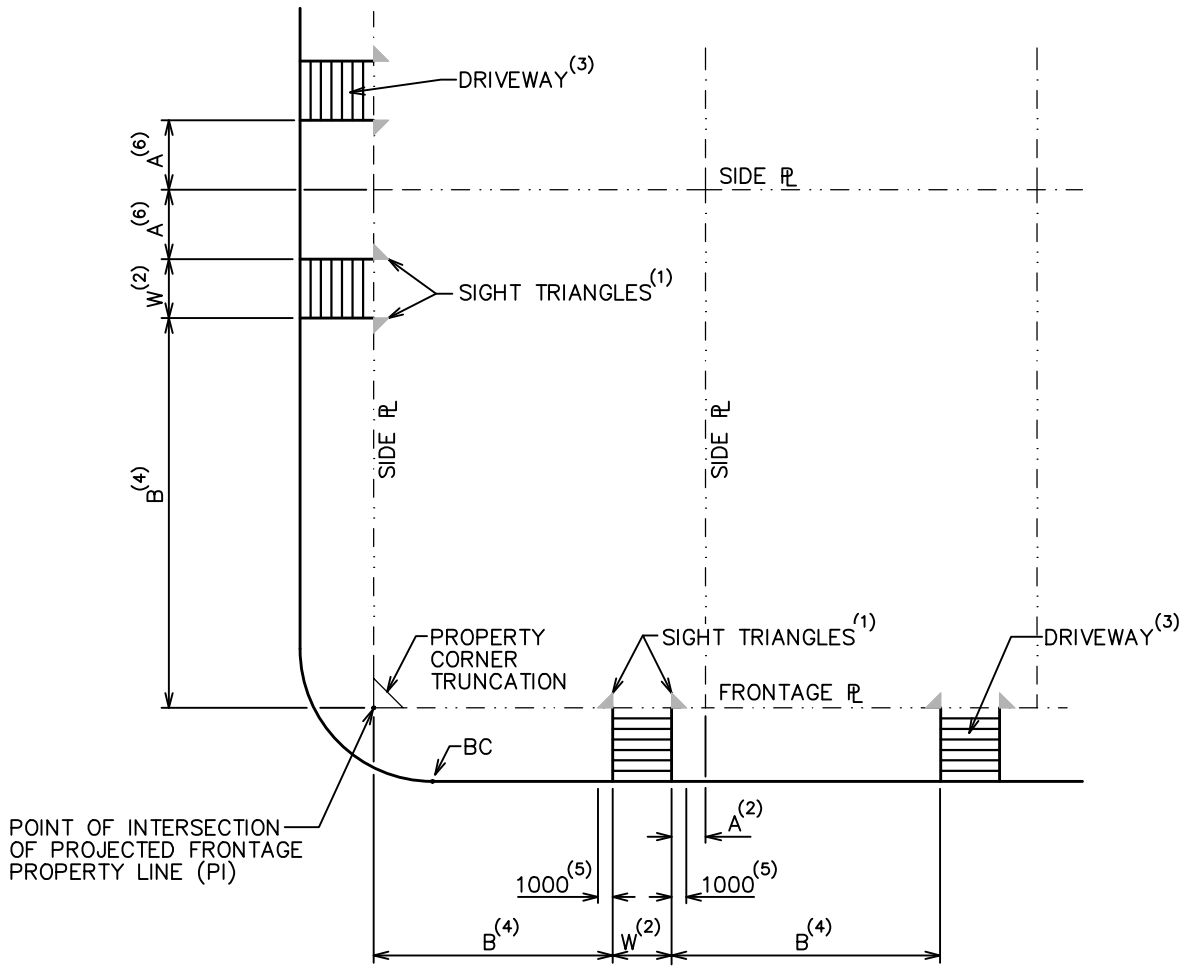
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD-R.22



NOTES:

1. SIGHT TRIANGLE:
   - 1.0m X 1.0m FOR SINGLE RESIDENTIAL ZONES.
   - USE TAC GEOMETRIC DESIGN GUIDE FOR CANADIAN ROADS, THE LATEST EDITION.
   - OBSTRUCTION TO SIGHT (EG. LANDSCAPE, FENCES, SIGNS, ETC.) SHALL NOT BE HIGHER THAN 0.5m WITHIN THE SIGHT TRIANGLE.
2. FOR DIMENSION OF 'W' AND 'A', SEE TABLE ON FOR SSD–R24.
3. CORNER LOTS IN SINGLE FAMILY ZONE, DRIVEWAYS SHALL BE LOCATED NEAR SIDE PROPERTY LINE AND AWAY FROM INTERSECTION.
4. 'B' SHALL BE MIN. 9.0m FOR LOCAL ROADS, 25.0m FOR COLLECTOR ROADS, AND 50.0m FOR ARTERIAL ROADS. DRIVEWAY SPACING MAY BE REDUCED SUBJECT TO THE APPROVAL OF THE CITY OF SURREY.
5. THE FLARE IS NOT REQUIRED FOR ROLLOVER CURBS. FLARE IS NOT REQUIRED WHERE GRASS/LANDSCAPING ABUTS A SINGLE FAMILY RESIDENTIAL DRIVEWAY. FLARE NOT PERMITTED WITH PAIRED RESIDENTIAL DRIVEWAYS EXCEPT WHERE SIDEWALK ABUTS THE CURB TO MATCH EXISTING STANDARD.
6. FOR SINGLE FAMILY RESIDENTIAL ZONE DRIVEWAYS, THE SPACING 'B' MAY BE REDUCED TO THE MIN. 'A' ON EACH SIDE OF THE PROPERTY LINE BETWEEN DRIVEWAYS, TO ALLOW FOR PAIRED DRIVEWAYS.

3		
2	JANUARY 2016	JAIME BOAN
1	MARCH 2002	
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **DRIVEWAYS, LOCATIONS & SPACING**

CITY OF SURREY the future lives here.

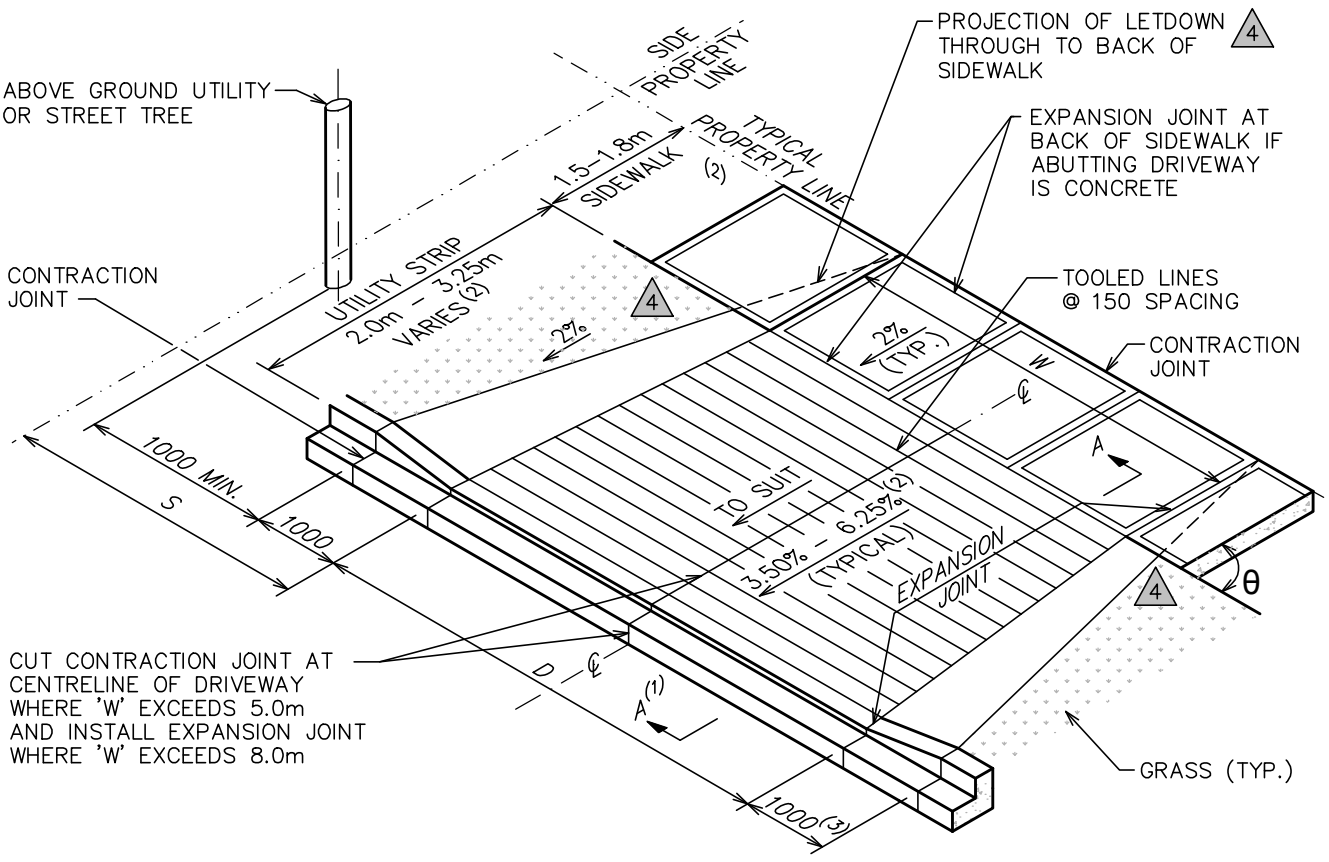
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.23



ZONE	OPERATION	W		S	θ – MIN. ANGLE BTWN. THE FRONTAGE PROP. LINE AND THE EDGE OF DRIVEWAY (DEG.)	D
		MIN. (m)	STD. (m)	MIN. DISTANCE FROM SIDE PROPERTY LINE (m)		
SINGLE FAMILY RESIDENTIAL	N/A	4.5	6.0	1.4	90	6.0 LOCAL/COLLECTOR 7.2 ARTERIAL

NOTES:

1. FOR SECTION A–A REFER TO SSD–R.24.3
2. FOR UTILITY STRIP LESS THAN 2.0m, SIDEWALK SLOPE MUST REMAIN AT 2%
3. FLARE IS NOT PERMITTED FOR SINGLE FAMILY RESIDENTIAL UNLESS DIRECTED BY CITY OF SURREY.

	Revision Date	Approved
4	JULY 2016	JAIME BOAN
3	JANUARY 2016	JAIME BOAN
2	MARCH 2004	KOK KUEN LI

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **DRIVEWAYS, SINGLE FAMILY RESIDENTIAL LETDOWN**

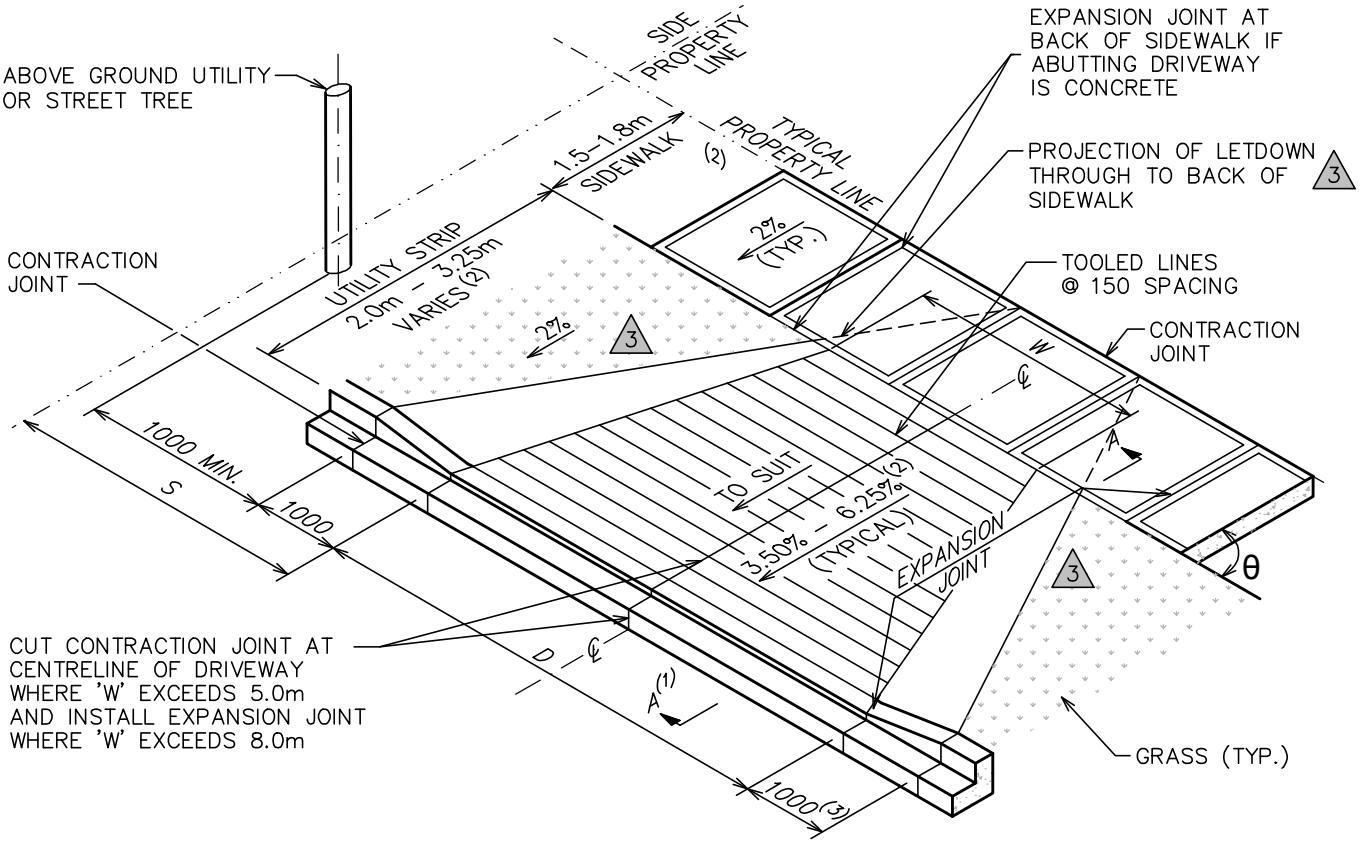
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By : G.M. Engineering

JANUARY 2016

DRAWING NUMBER SSD–R.24



ZONE	OPERATION	W		S	θ – MIN. ANGLE BTWN. THE FRONTAGE PROP. LINE AND THE EDGE OF DRIVEWAY (DEG.)	D
		MIN. (m)	STD. (m)	MIN. DISTANCE FROM SIDE PROPERTY LINE (m)		
MULTI FAMILY RESIDENTIAL	TWO WAY	N/A	7.3	2.0	90	9.7
	ONE WAY	N/A	4.5	2.0	45	
LANE	RESIDENTIAL	N/A	7.3	2.0	90	9.7
	COMMERCIAL	N/A	9.3	2.0	45	
COMMERCIAL	TWO WAY	7.3	9.0	2.0	90	11.4
	ONE WAY	N/A	4.5	2.0	45	
INDUSTRIAL	TWO WAY	9.0	11.0	2.0	90	13.4
	ONE WAY	N/A	5.0	2.0	30	

NOTES:

1. FOR SECTION A–A REFER TO SSD–R.24.3
2. FOR UTILITY STRIP LESS THAN 2.0m, SIDEWALK SLOPE MUST REMAIN AT 2%
3. FLARE IS NOT PERMITTED FOR SINGLE FAMILY RESIDENTIAL UNLESS DIRECTED BY CITY OF SURREY.

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	MARCH 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **DRIVEWAYS, MULTI–FAMILY/COMMERCIAL/INDUSTRIAL LETDOWN**

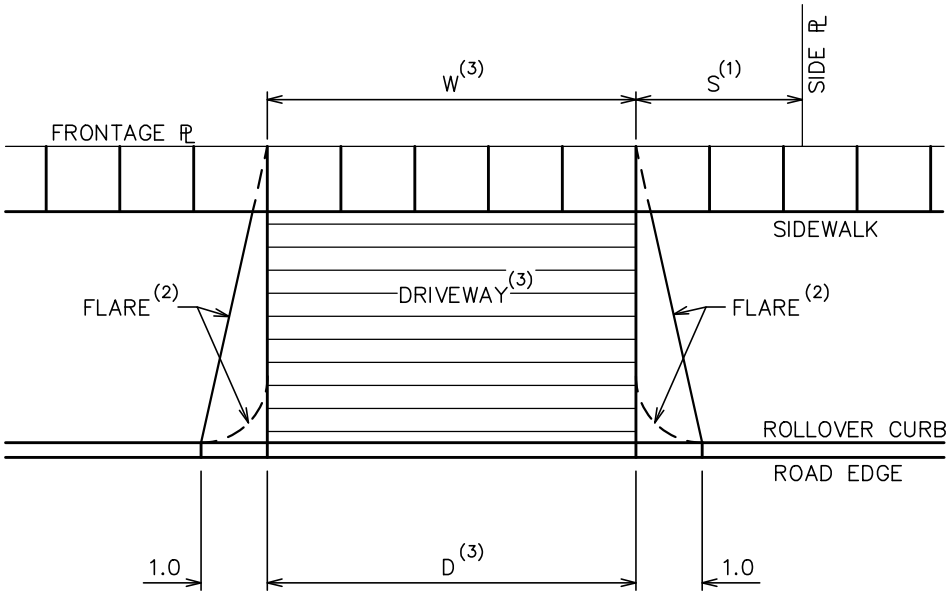
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–R.24.1



NOTES:

1. SEE TABLES ON SSD–R.24 AND SSD–R.24.1 FOR MINIMUM DISTANCE FROM SIDE PROPERTY LINE.
2. FLARE IS NOT PERMITTED FOR SINGLE FAMILY ZONES ON LOCAL OR COLLECTOR ROADS.
3. SEE TABLES ON SSD–R.24 AND SSD–R.24.1 FOR WIDTH OF DRIVEWAY.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title **DRIVEWAYS, CROSSING FOR ROLLOVER CURBS DETAILS**

CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

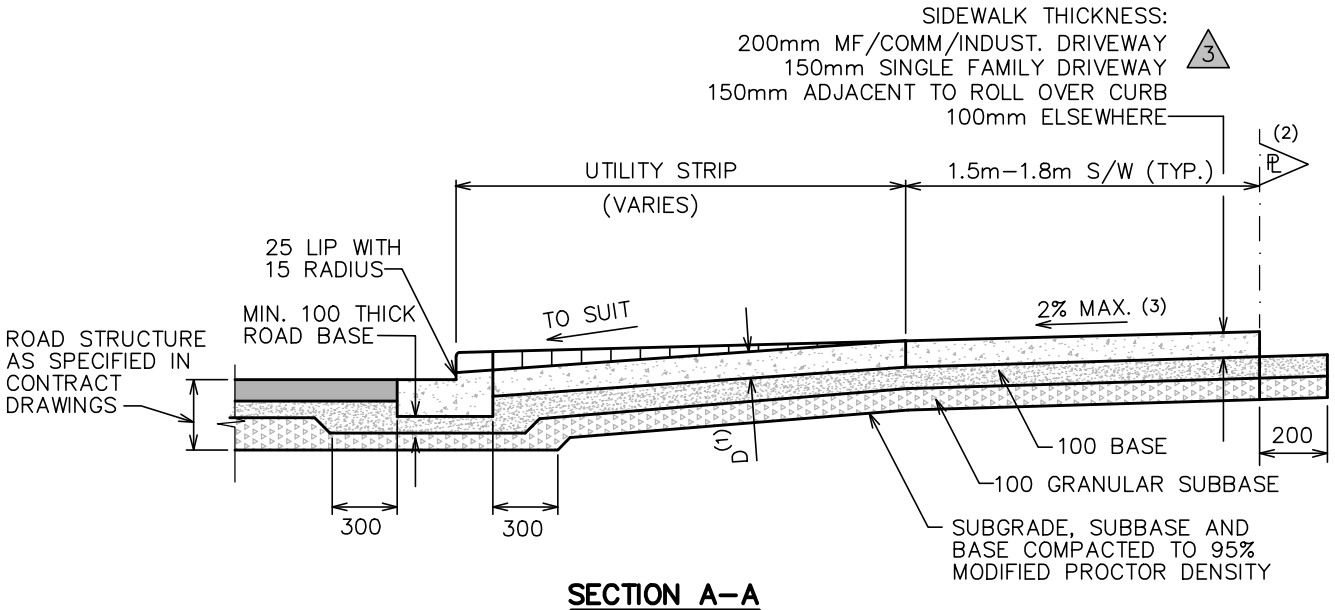
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD–R.24.2



SECTION A–A

NOTES:

1. "D"=200 EXCEPT FOR SINGLE FAMILY RESIDENTIAL WHERE "D"=150.
2. WHERE PL IS FURTHER BACK FROM SIDEWALK GRADE TO SUIT TOWARD DRIVEWAY, ENSURE POSITIVE DRAINAGE AWAY FROM PROPERTY.
3. IF SIDEWALK ADJACENT TO CURB, LETDOWN GRADE MAY VARY FROM 2.0%

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	MAY 2008	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **DRIVEWAY LETDOWNS, CROSS SECTION**

CITY OF SURREY
the future lives here.

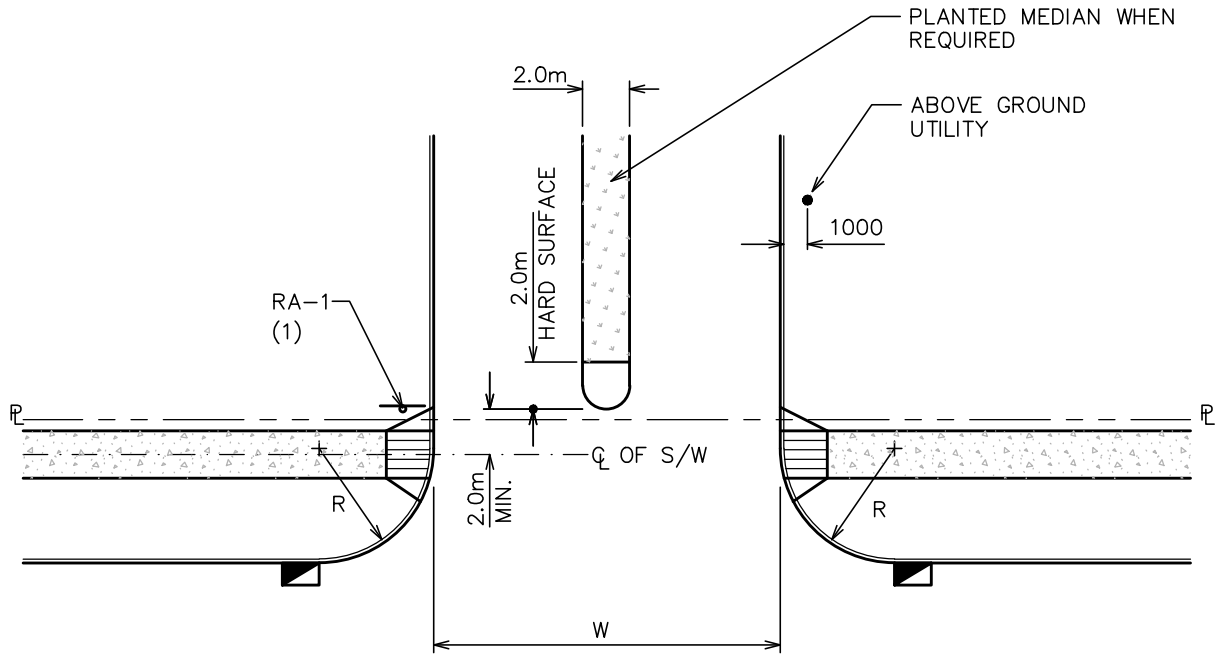
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–R.24.3



ZONE	DRIVEWAY TYPE	W		R	
		MIN. (m)	MAX. (m)	MIN.	MAX.
COMMERCIAL, MULTI-FAMILY	TWO WAY	7.3	9.0 (EXCLUDING MEDIAN)	7.0	9.0
	ONE WAY	4.5	5.5		
INDUSTRIAL ZONE	TWO WAY	7.3	11.0 (EXCLUDING MEDIAN)	9.0	12.0
	ONE WAY	4.5	6.0		

NOTES: 1) SIGN TO BE INSTALLED AND MAINTAINED BY PROPERTY OWNER

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

DRIVEWAYS, CURB RETURN CROSSING

CITY OF SURREY the future lives here.

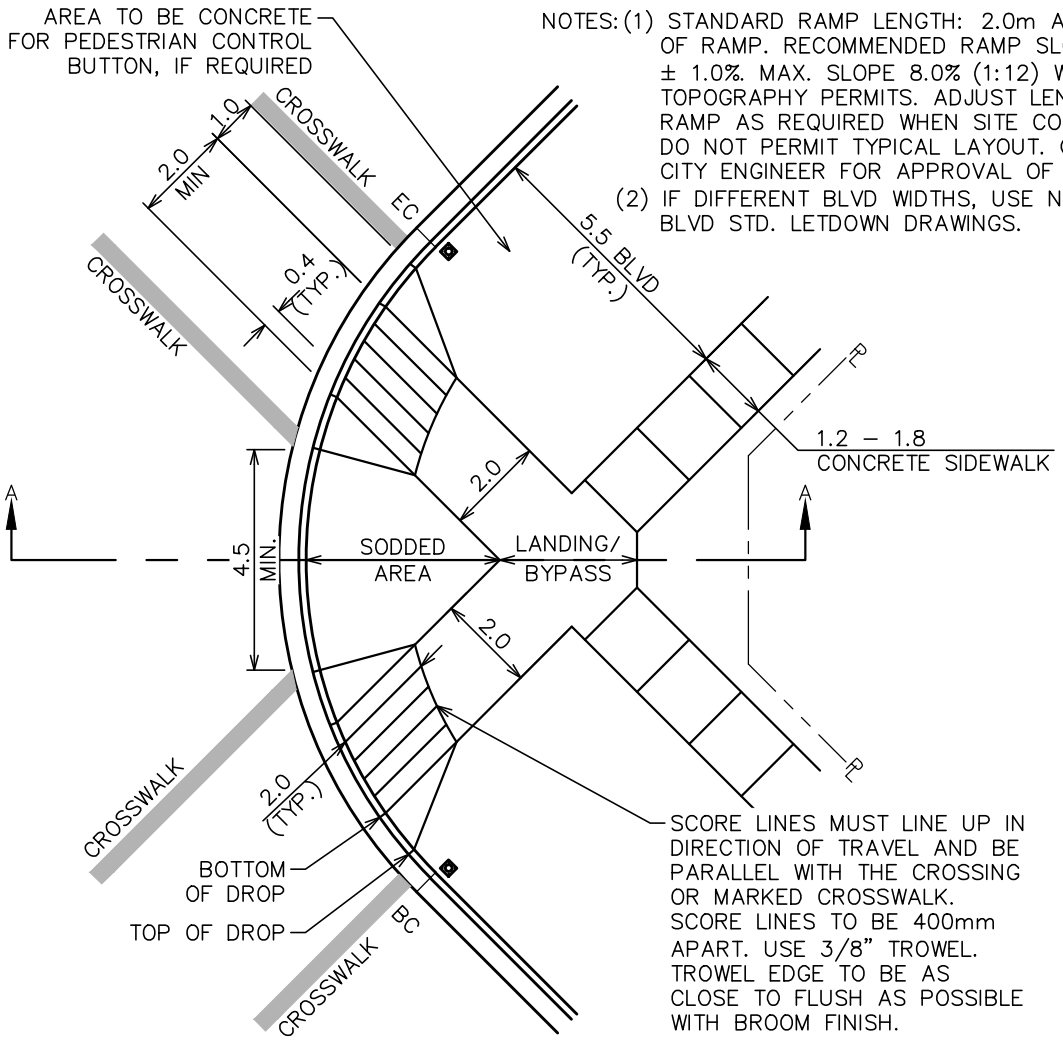
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

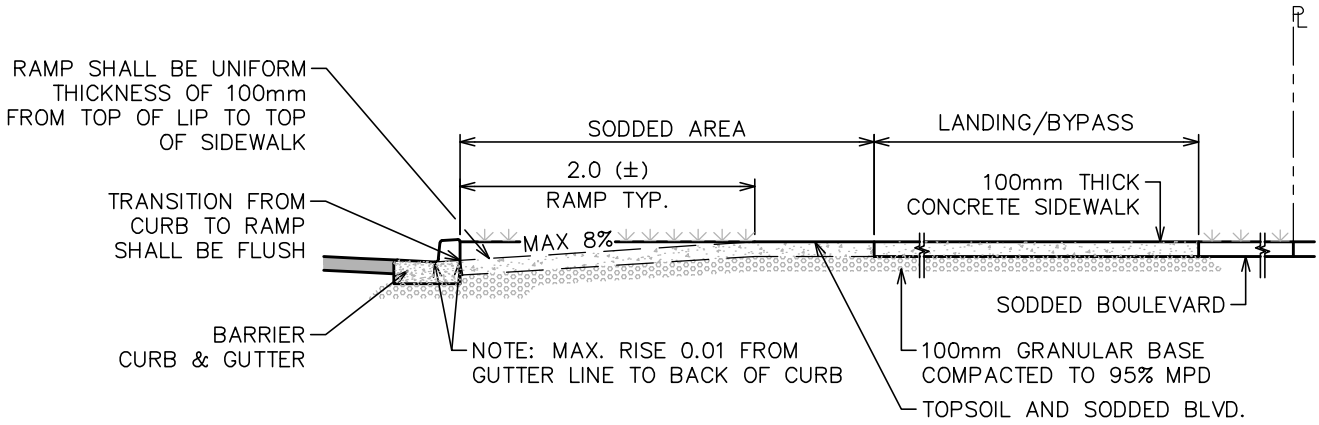
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-R.25



SPLIT LETDOWN



SECTION A–A CURB RAMP

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **SPLIT LETDOWN AT INTERSECTION. BOULEVARD GREATER THAN 4.50m**

CITY OF SURREY — the future lives here.

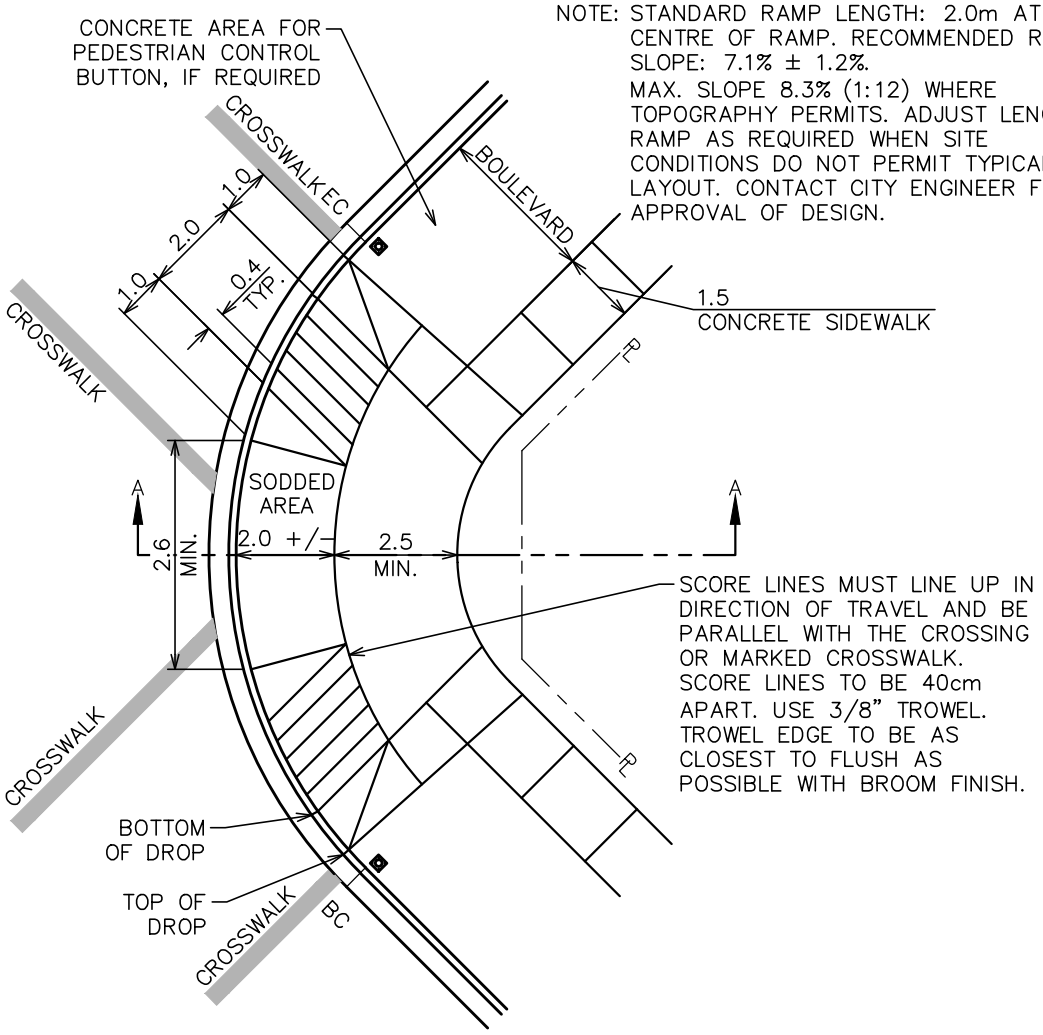
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

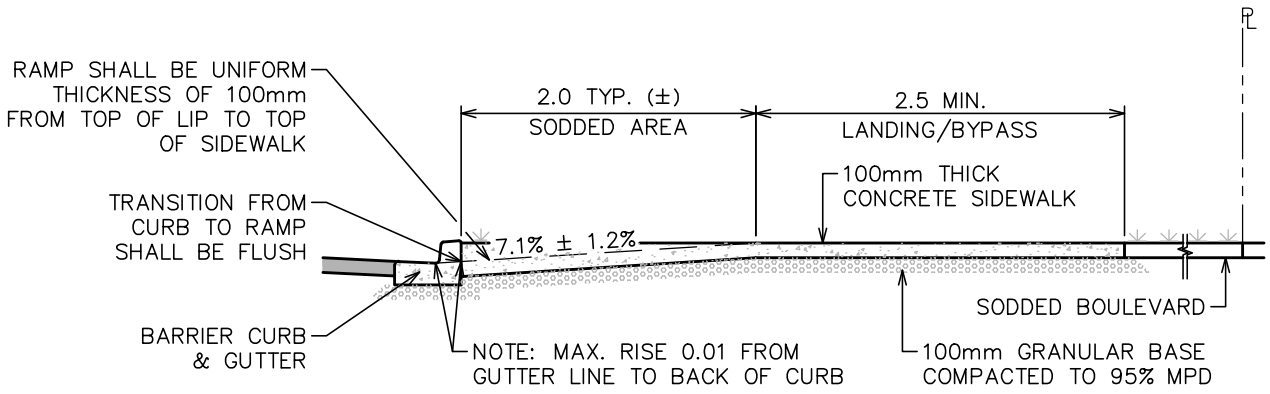
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.26



SINGLE RAMP



SECTION A–A CURB RAMP

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **SPLIT LETDOWN AT INTERSECTION. BOULEVARD 3.00–4.49m**

CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

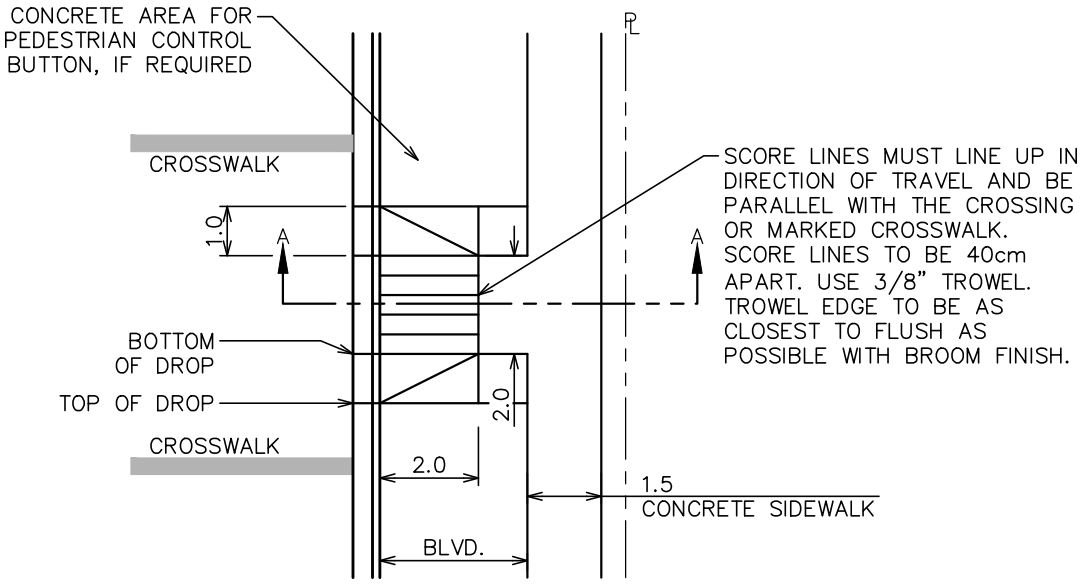
Approved By :

JANUARY 2016 G.M. Engineering

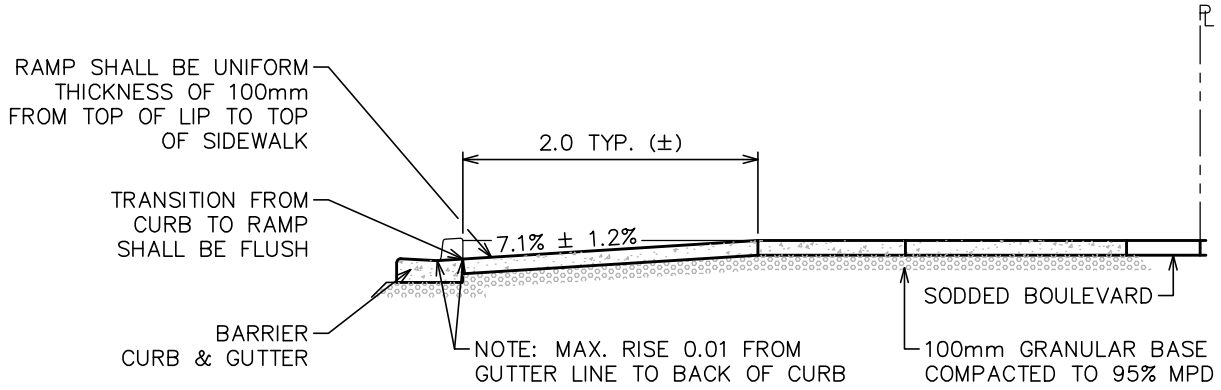
DRAWING NUMBER

SSD–R.26.1

NOTE: STANDARD RAMP LENGTH: 2.0m AT CENTRE OF RAMP.
RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS. ADJUST LENGTH OF RAMP AS REQUIRED WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT. CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.



SINGLE RAMP



SECTION A–A CURB RAMP

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JANUARY 2016	JAIME BOAN	Title: SINGLE RAMP LETDOWN WITH PARALLEL SCORING
	Revision Date	Approved	

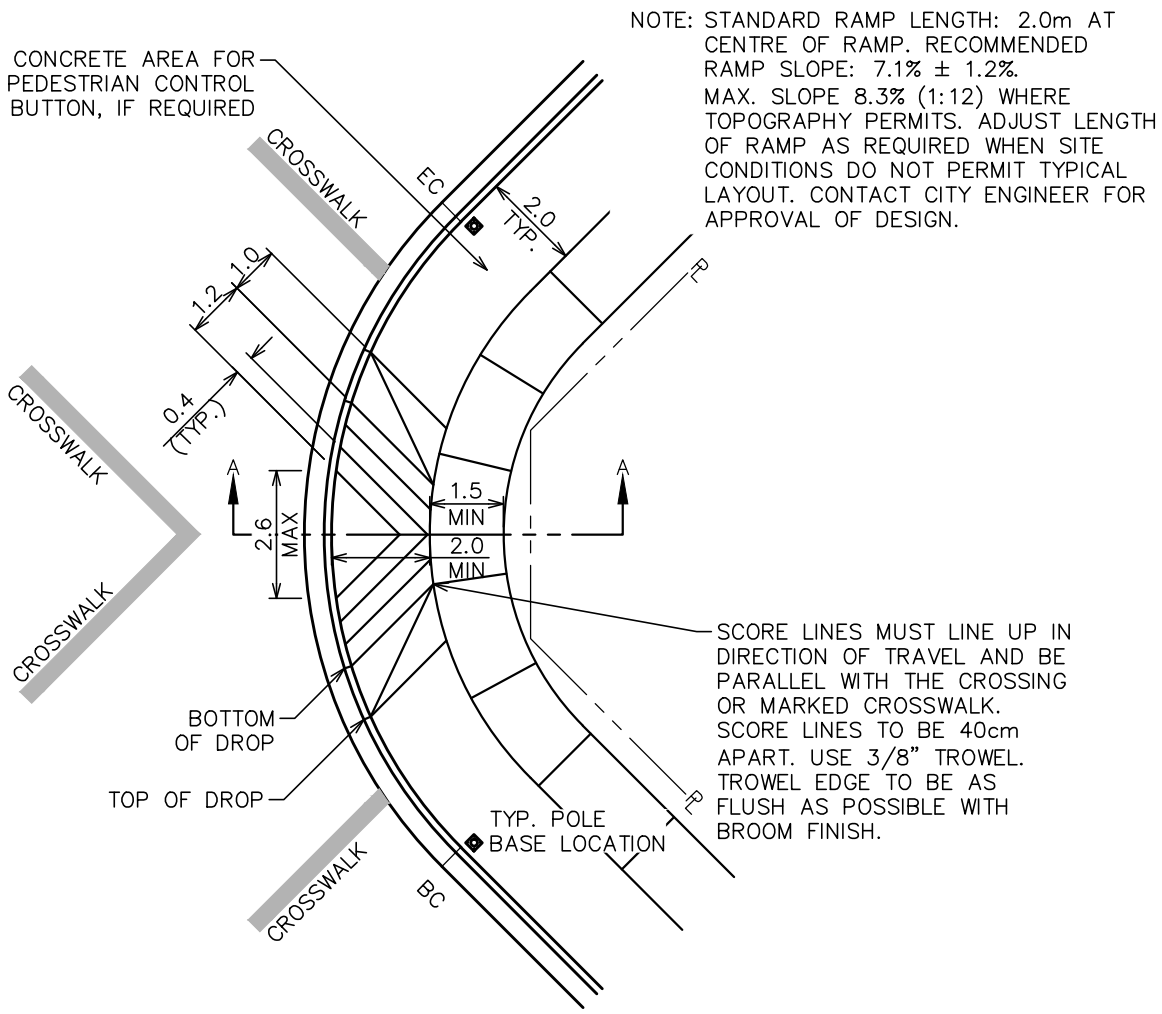
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

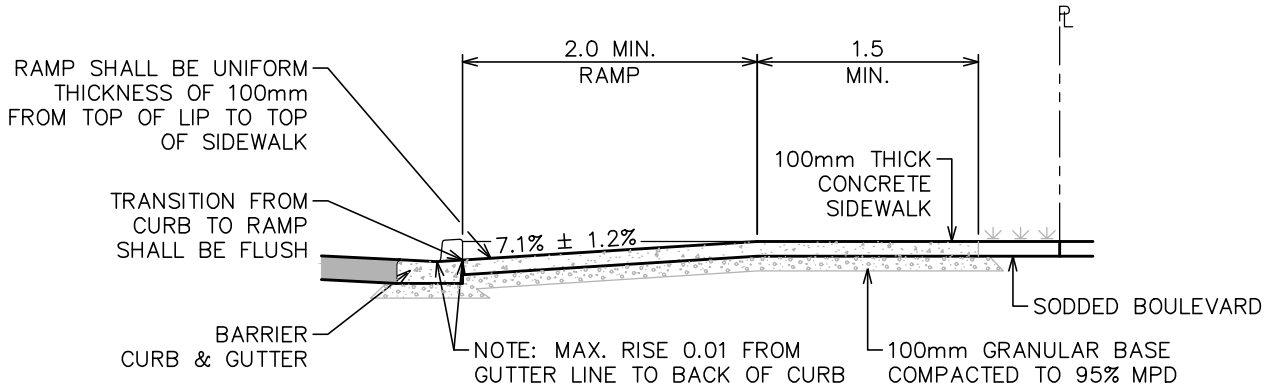
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–R.26.2



SINGLE RAMP



SECTION A–A CURB RAMP

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JANUARY 2016	JAIME BOAN	Title: SINGLE LETDOWN AT INTERSECTION. BOULEVARD LESS THAN 2.99m
	Revision Date	Approved	

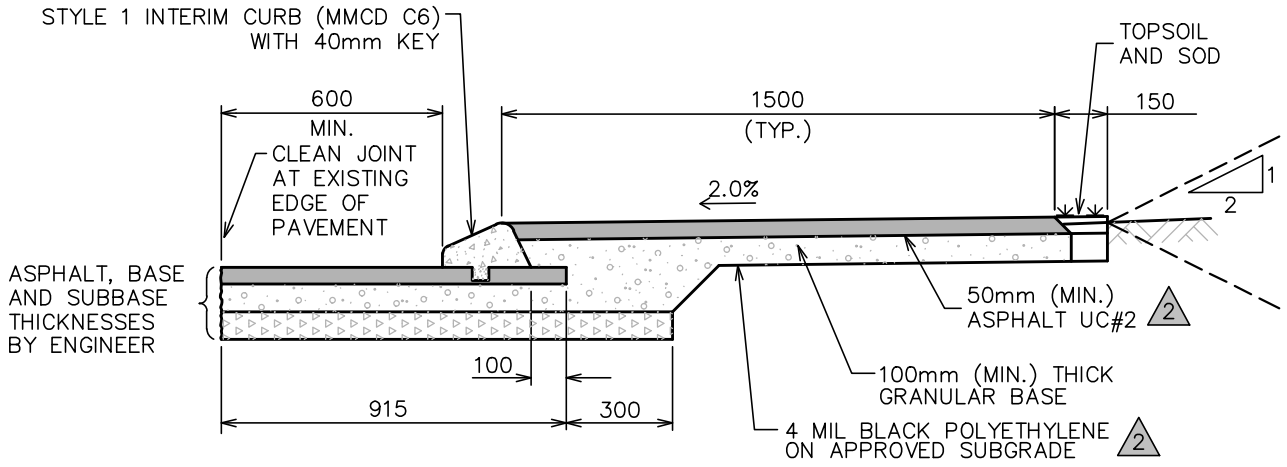
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

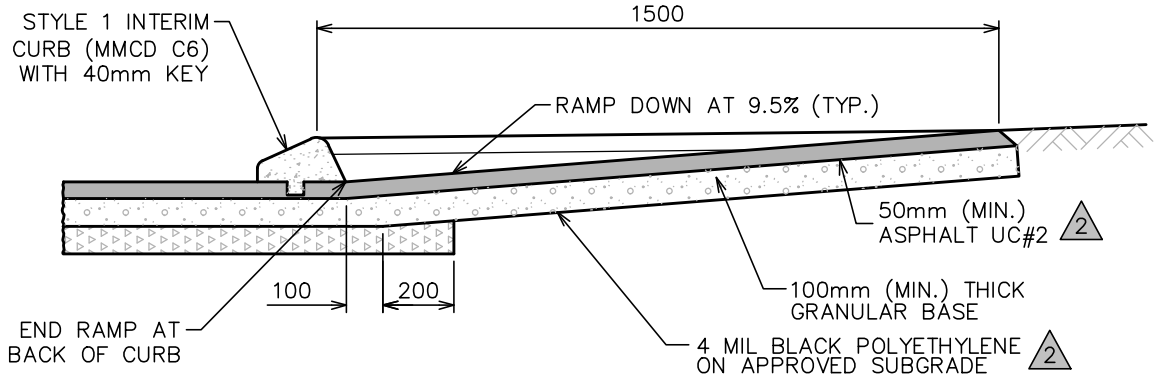
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–R.26.3



ELEVATED ASPHALT SIDEWALK



ASPHALT SIDEWALK AT WHEELCHAIR RAMP

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **SIDEWALKS, INTERIM ASPHALT**

CITY OF SURREY
the future lives here.

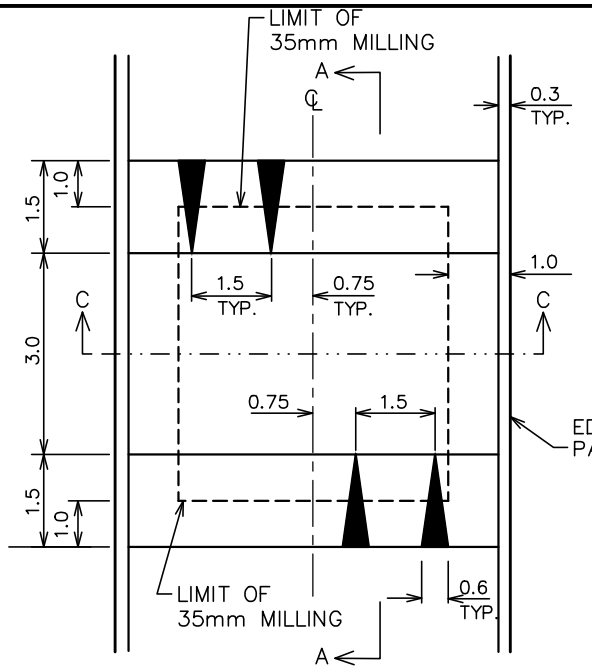
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

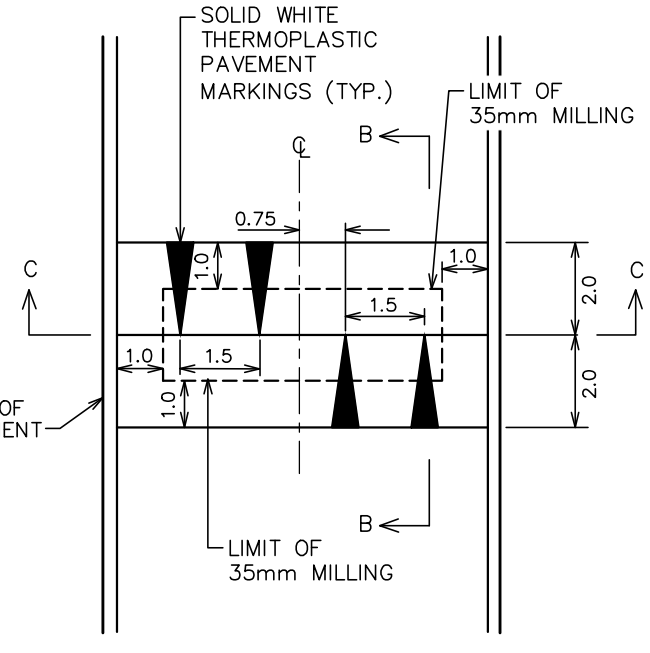
JANUARY 2016

G.M. Engineering

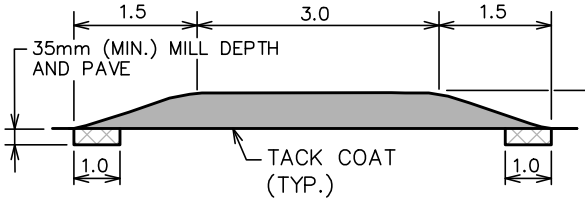
DRAWING NUMBER
SSD-R.27



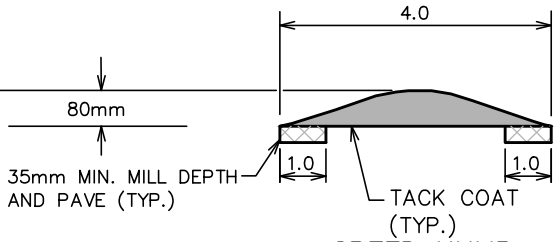
SPEED TABLE (1)



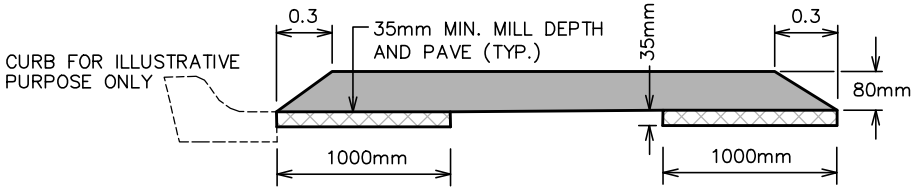
SPEED HUMP (2)



SPEED TABLE
SECTION A–A



SPEED HUMP
SECTION B–B



SECTION C–C (1)

SINUSOIDAL SPEED HUMP DEVELOPMENT

DISTANCE(m)	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000
FINISHED HEIGHT(mm)	0	1	3	7	12	18	25	32	40	48	55	62	68	73	77	79	80

NOTES: (1) USE SSD–R.28.1 SECTION A–A, FOR USE OF SPEED TABLE AS RAISED CROSSWALK.
(2) SINGLE ARROW PER DIRECTION ONLY FOR SPEED HUMPS IN LANES.
(3) SPEED HUMP TABLE TO BE SURVEYED, TO ENSURE DEVELOPMENT.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title **TRAFFIC CALMING, SPEED HUMP AND TABLE**

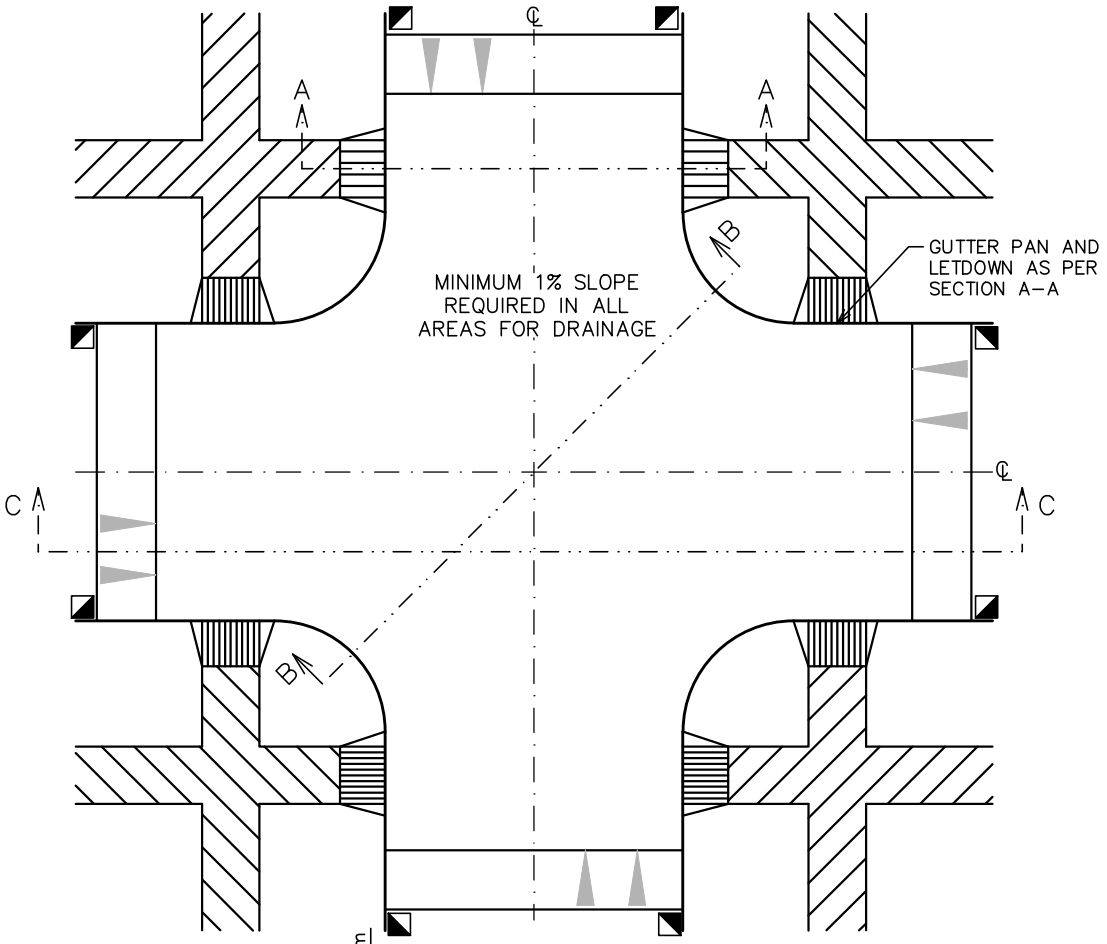
CITY OF SURREY
the future lives here.

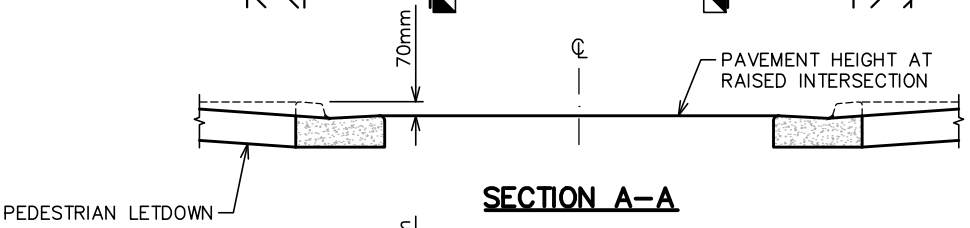
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

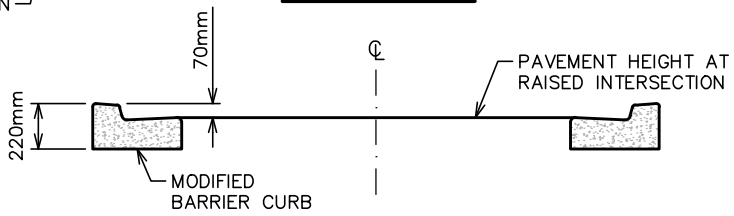
JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.28

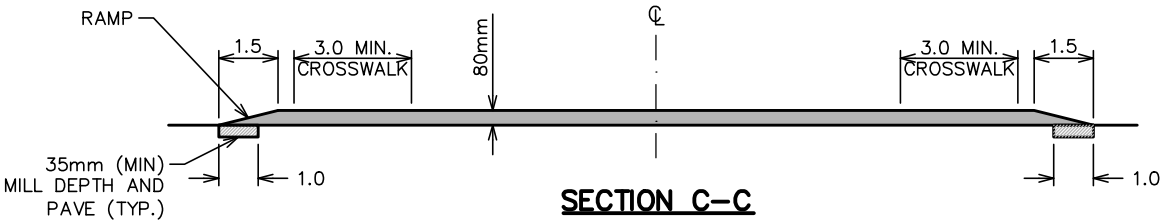




SECTION A–A



SECTION B–B



SECTION C–C

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **TRAFFIC CALMING, RAISED INTERSECTION DETAILS**

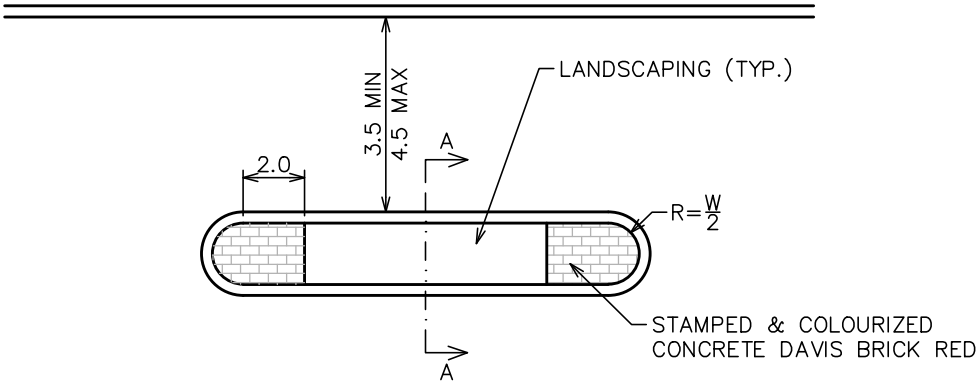
CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

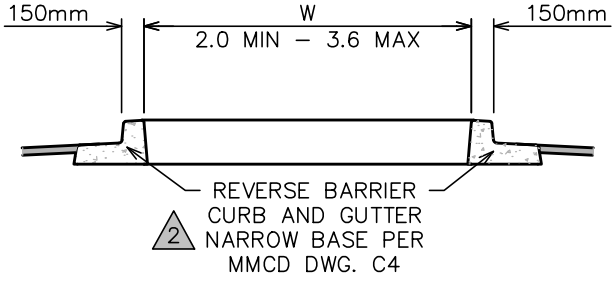
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.28.1



MEDIAN ISLAND



SECTION A–A

NOTES: (1) THE MAXIMUM LENGTH OF THE MEDIAN ISLAND IS AFFECTED BY ADJACENT DRIVEWAY AND INTERSECTION LOCATIONS.

(2) ADDITIONAL STOPPING PROHIBITED SIGNS (RB–55) MAY BE REQUIRED.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TRAFFIC CALMING, TYPICAL RAISED MEDIAN**

CITY OF SURREY the future lives here.

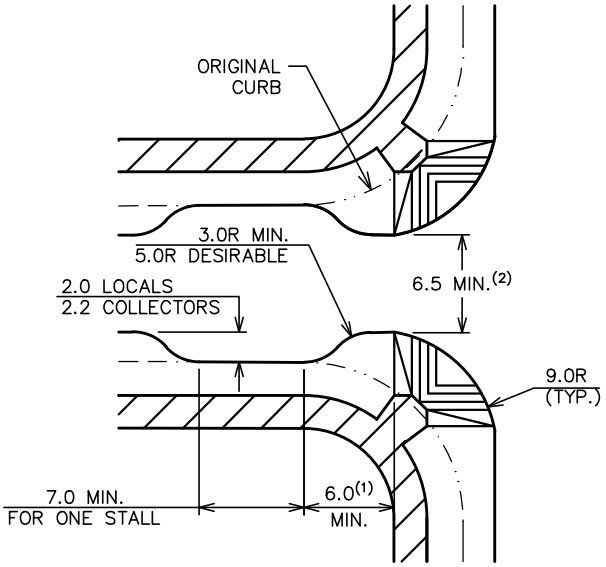
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

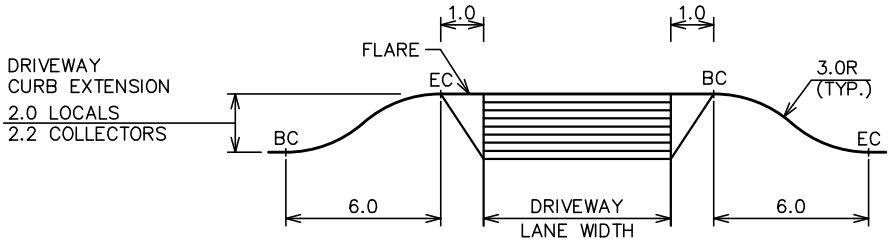
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

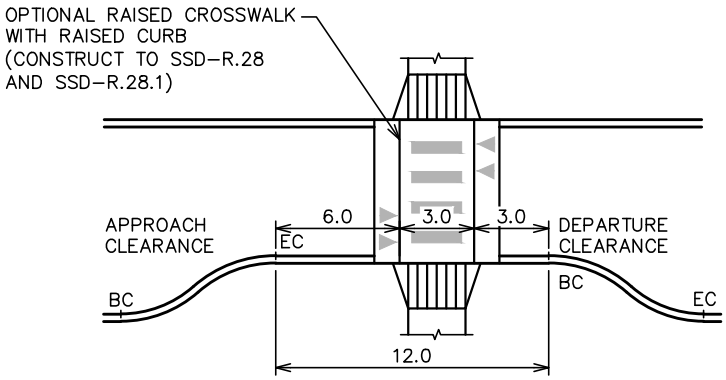
SSD–R.28.2



INTERSECTION CURB EXTENSION DETAILS



DRIVEWAY/LANE DETAIL



MIDBLOCK CROSSING DETAIL

NOTES:

1. VARY AS REQUIRED TO MEET STOPPING SIGHT DISTANCE.
2. MINIMAL INCREASES TO 8.5m FOR LOCAL TO ARTERIAL INTERSECTIONS AND NO CURB EXTENSION ON THE LOCAL ROAD DEPARTURE SIDE.
3. HYDRANTS SHOULD GENERALLY BE LOCATED WITHIN CURB EXTENSIONS. CURB EXTENSIONS MAY REQUIRE LENGTHENING TO RESTRICT PARKING WITHIN 5m OF HYDRANT.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **TRAFFIC CALMING, CURB EXTENSIONS AND ON–STREET PARKING BAY**

CITY OF SURREY the future lives here.

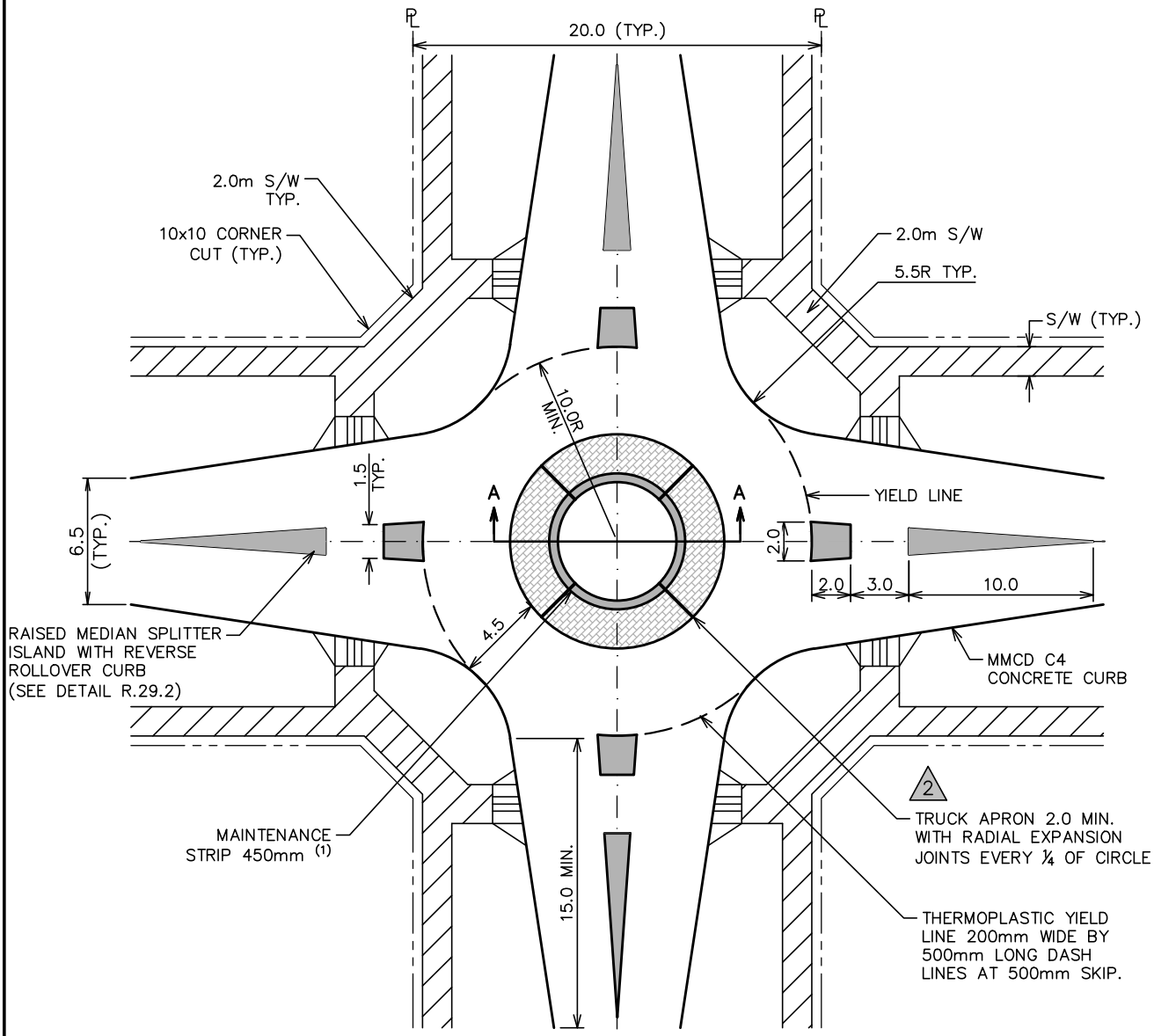
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.28.3



NOTES:

1. MINIMUM 2.0m LANDSCAPE ISLAND.
2. FOR SECTION A–A, REFER TO SSD–R.29.1.
3. EXACT SPLITTER ISLANDS DIMENSION DETAILS TO BE DETERMINED BY ENGINEER AND APPROVED BY CITY. SEE R.29.2 FOR TYPICAL SECTION.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TRAFFIC CALMING, TRAFFIC CIRCLE**

CITY OF SURREY the future lives here.

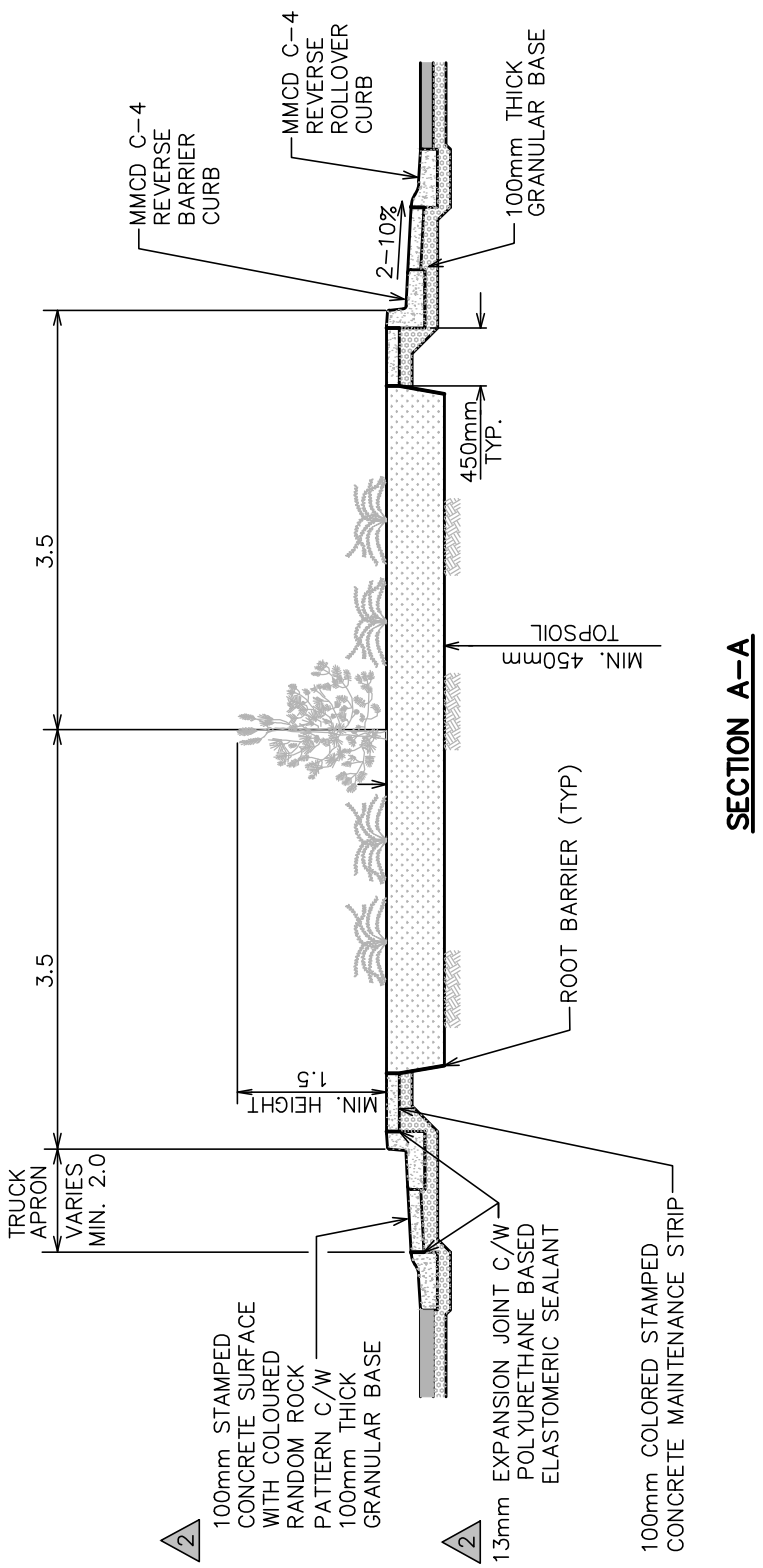
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.29



SECTION A-A

NOTES: (1) TRAFFIC CONTROL ISLAND LANDSCAPING TO BE DESIGNED BY CITY OF SURREY-PARKS, RECREATION AND CULTURE.

(2) ENSURE RADIAL EXPANSION JOINTS LINE UP WITH/THROUGH CONCRETE CURB AND INFILL JOINTS.

3		
2	JULY 2016	JAIME BOAN
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title

TRAFFIC CONTROL, CENTRE ISLAND DETAIL

CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

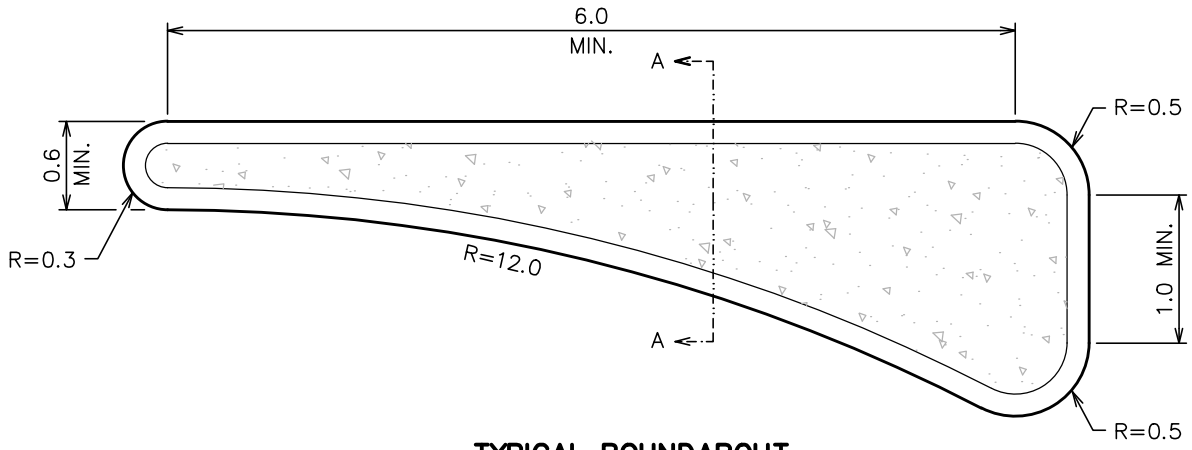
Approved By :

JANUARY 2016

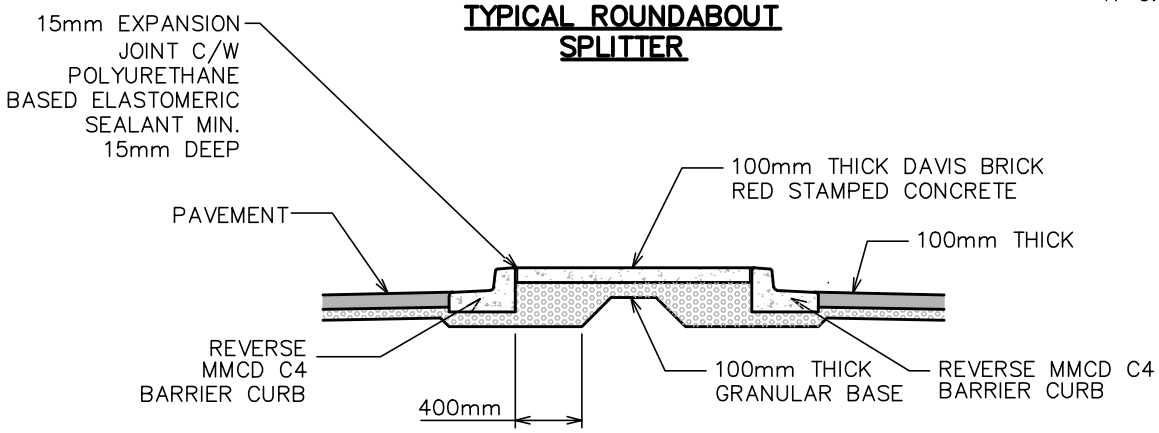
G.M. Engineering

DRAWING NUMBER

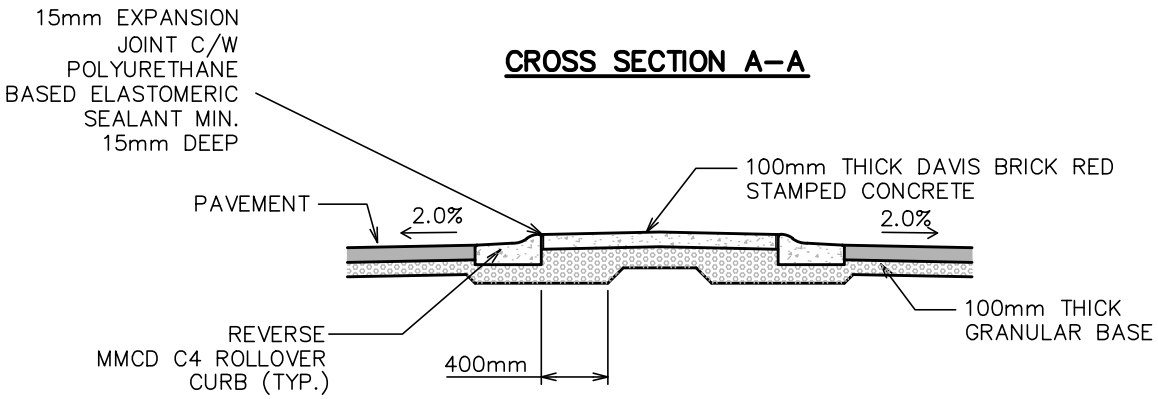
SSD-R.29.1



TYPICAL ROUNDABOUT SPLITTER



CROSS SECTION A–A



ALTERNATE
MOUNTABLE SPLITTER ISLAND

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **TRAFFIC CONTROL, SPLITTER ISLAND DETAILS**

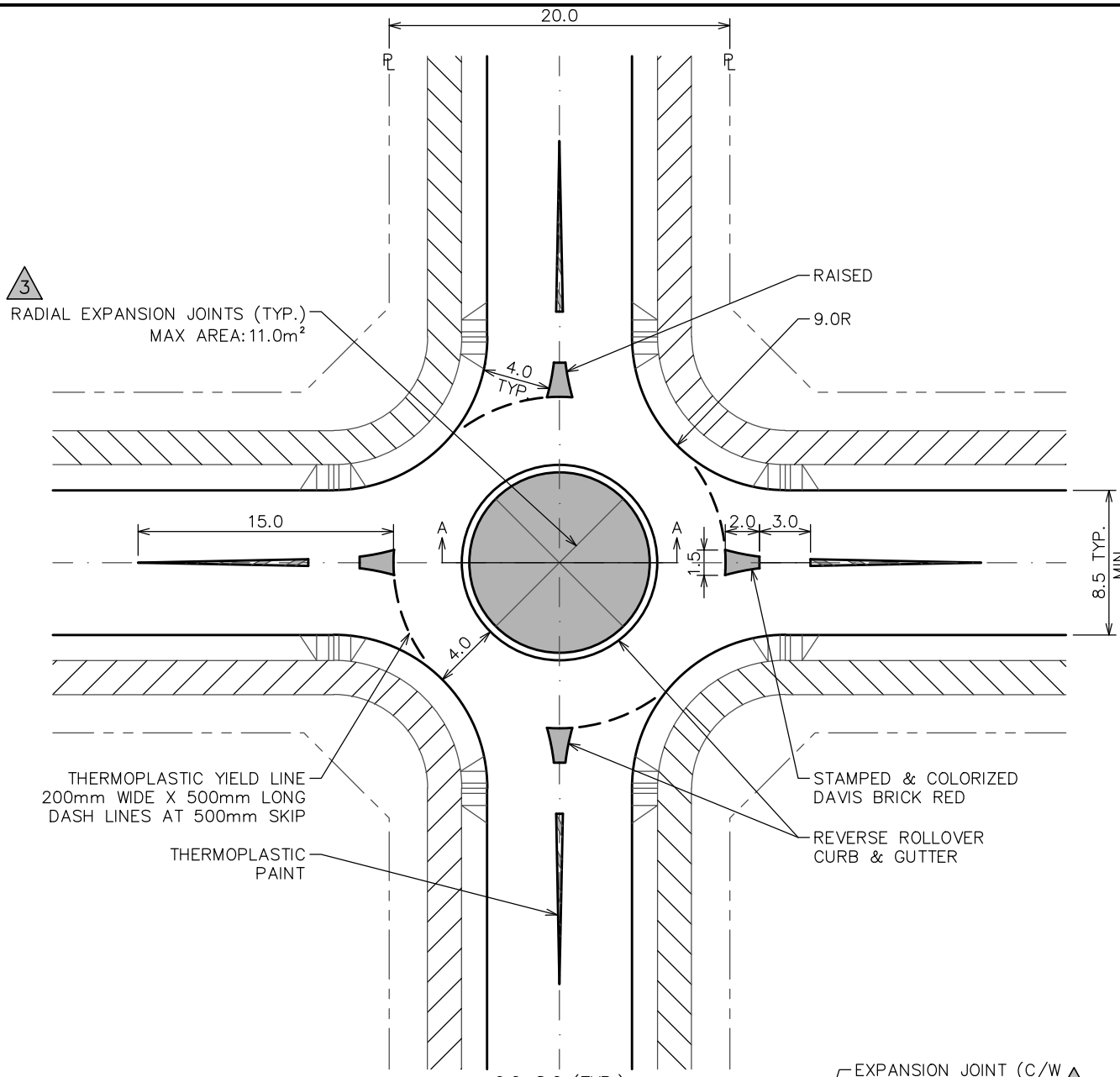
CITY OF SURREY the future lives here.

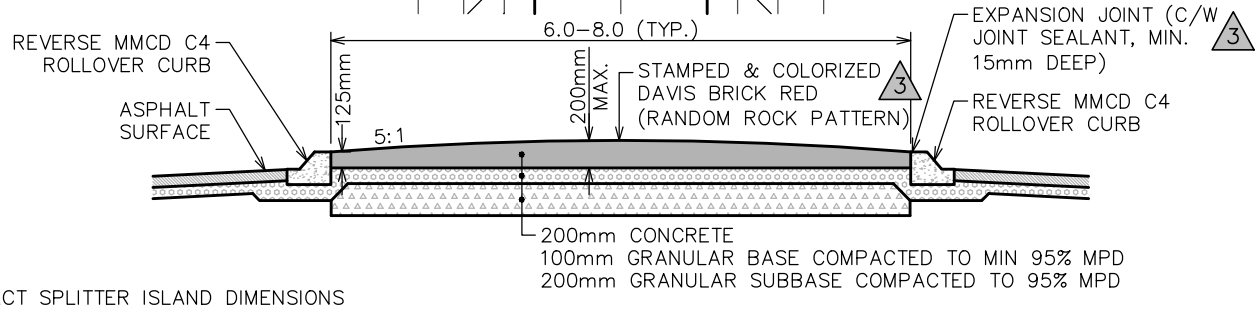
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.29.2





NOTES:

1. EXACT SPLITTER ISLAND DIMENSIONS DETAILS TO BE DETERMINED BY ENGINEER AND APPROVED BY CITY. SEE R.29.2 FOR TYPICAL SECTION

SECTION A–A

3	JULY 2016	JAIME BOAN
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TRAFFIC CONTROL, TRAFFIC BUTTON**

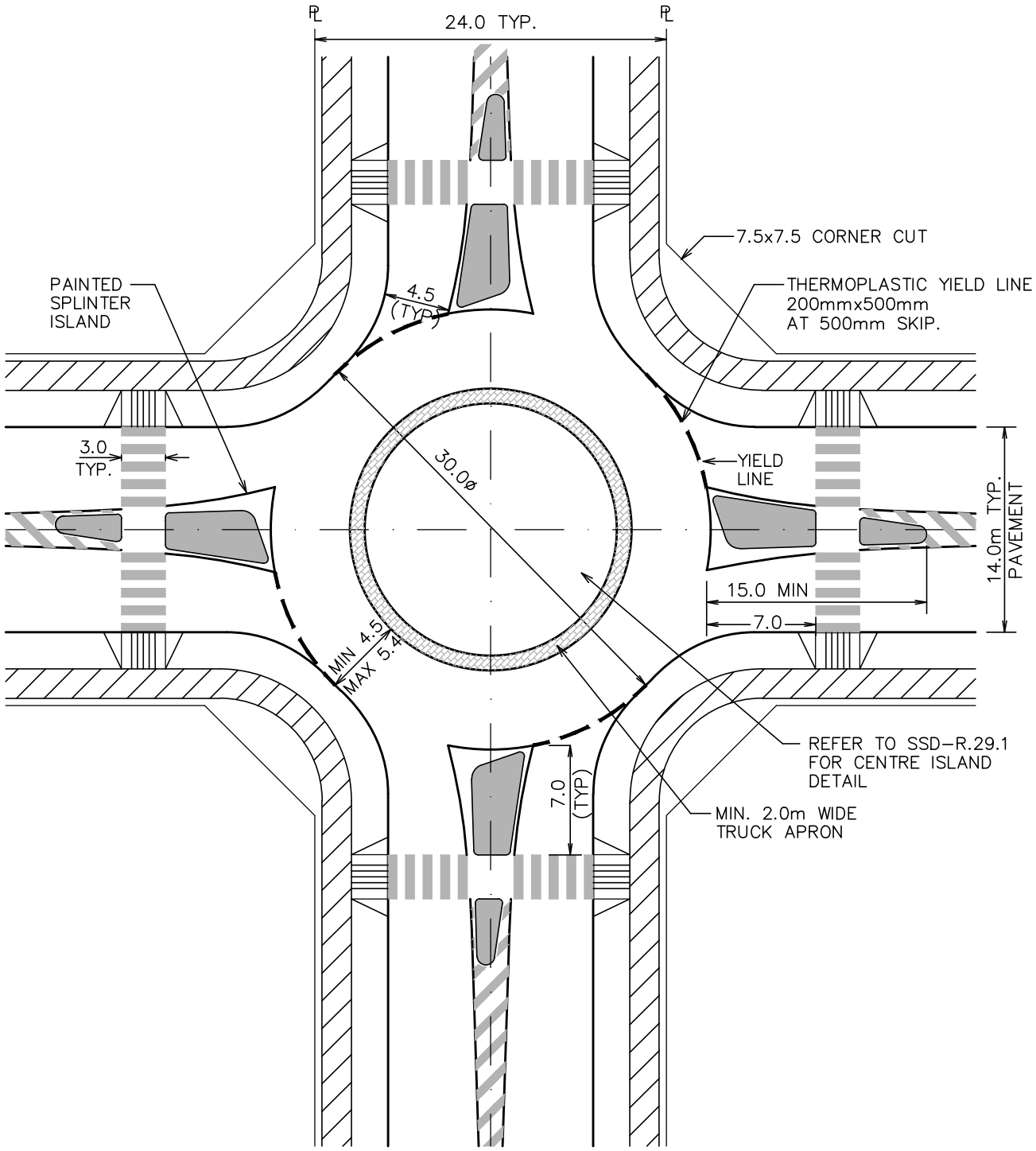
CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.30



NOTES:

1. LANE WIDTH'S TO BE DESIGNED VERIFIED BY CITY OF SURREY.
2. YIELD LINE MARKING TO BE IN THERMOPLASTIC.
3. EXACT SPLITTER ISLANDS DIMENSION DETAILS TO BE DETERMINED BY ENGINEER AND APPROVED BY CITY SEE R.29.2 FOR TYPICAL.

3		
2	JANUARY 2016	JAIME BOAN
1	JANUARY 2004	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title **TRAFFIC CONTROL, ROUNDABOUT**

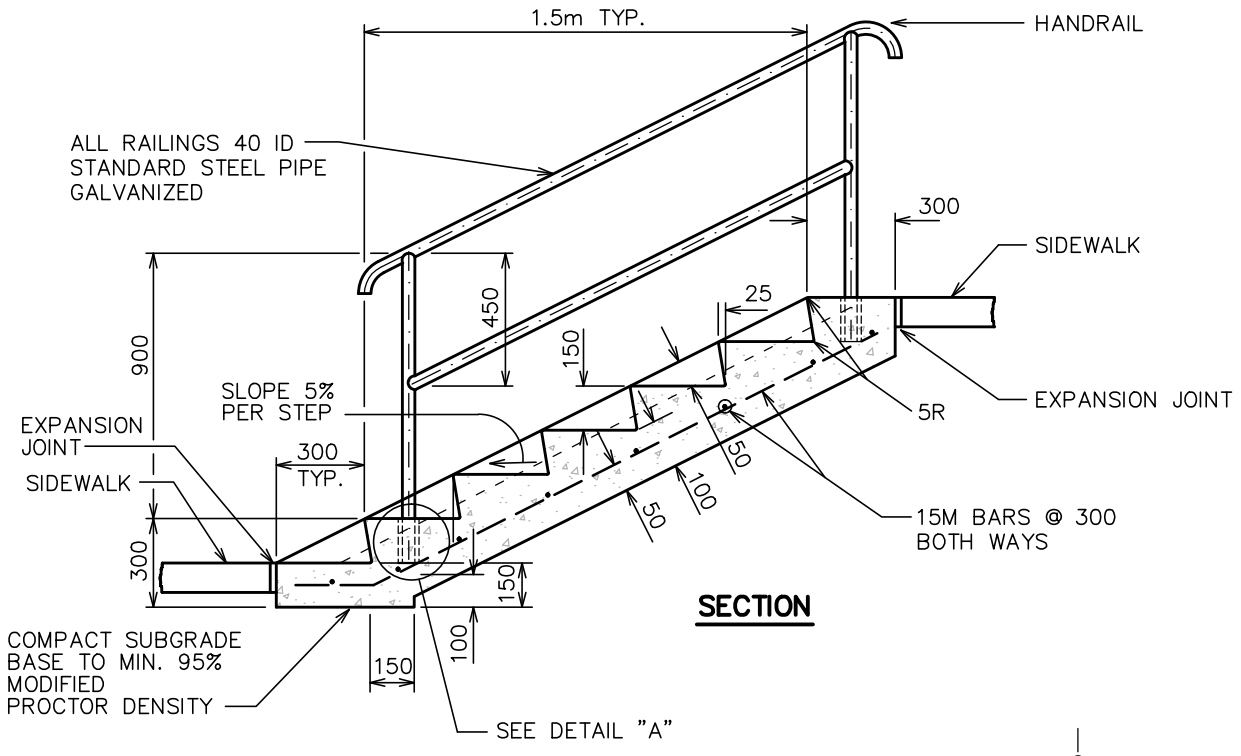
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

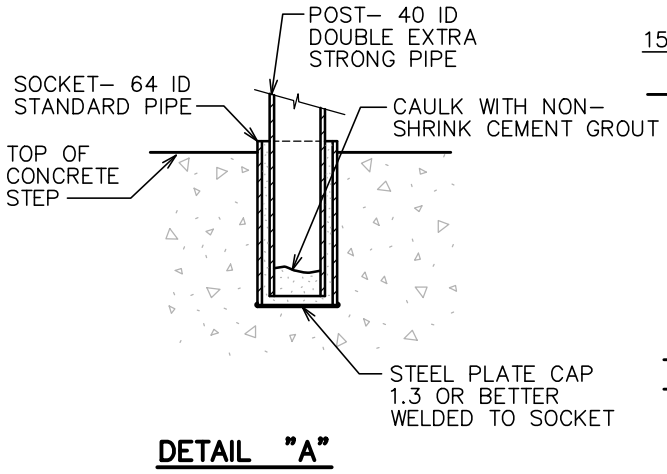
Approved By :

JANUARY 2016 G.M. Engineering

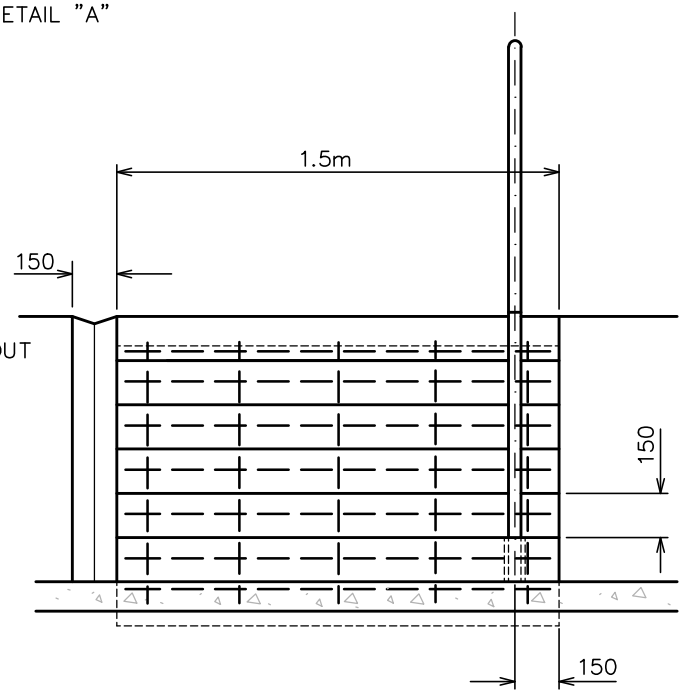
DRAWING NUMBER
SSD–R.31



SECTION



DETAIL "A"



FRONT ELEVATION

NOTE: (1) LARGER STAIRS TO BE DESIGNED BY AN ENGINEER.

3		
2	JANUARY 2016	JAIME BOAN
1	February 2002	
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title **CONCRETE STEPS WITHOUT FOOTING – WITH BICYCLE RAMP**

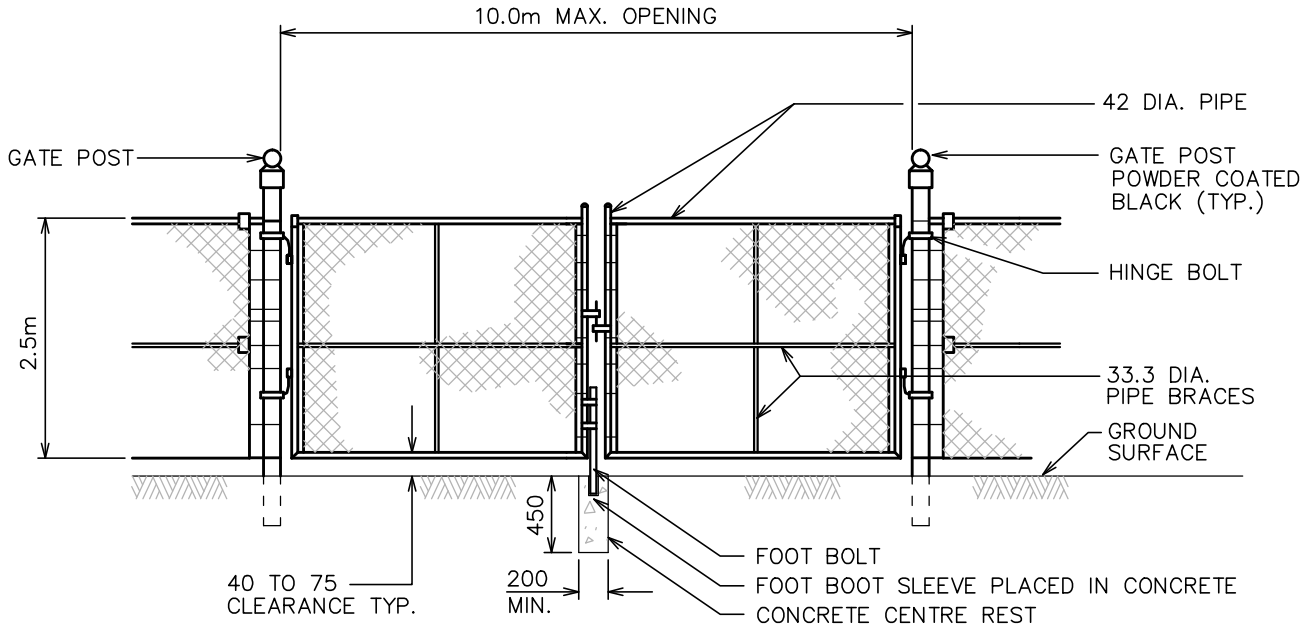
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

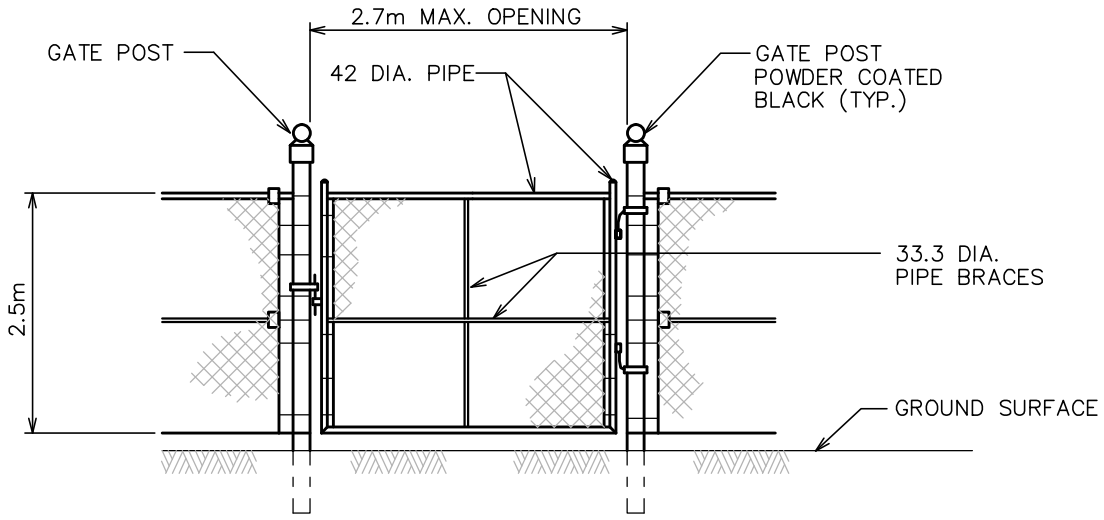
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.32



SECURITY DOUBLE GATE



SECURITY SINGLE GATE

NOTES:

1. GATE PANELS UP TO 1.8m WIDE REQUIRE HORIZONTAL BRACE ONLY.
2. GATE PANELS OVER 1.8m WIDE REQUIRE HORIZONTAL AND VERTICAL BRACES.
3. CHAIN LINK FENCE FABRIC: 6ga. 50mm BLACK VINYL COVERED WIRE MESH

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **SECURITY CHAIN–LINK FENCE – GATES**

CITY OF SURREY the future lives here.

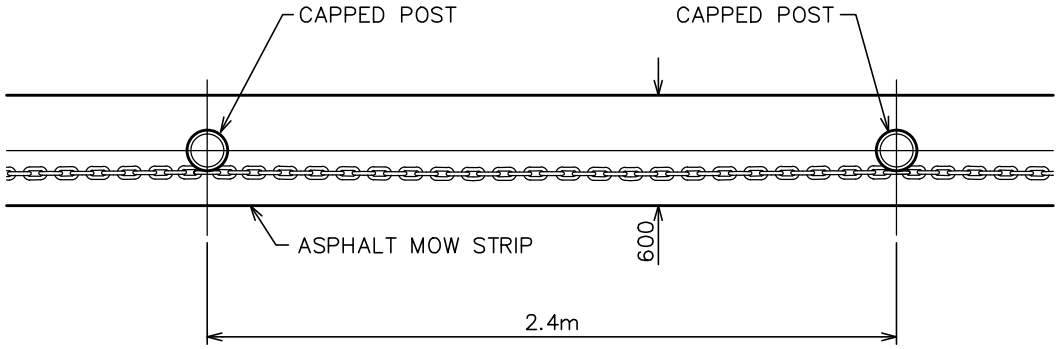
SUPPLEMENTARY STANDARD DRAWINGS

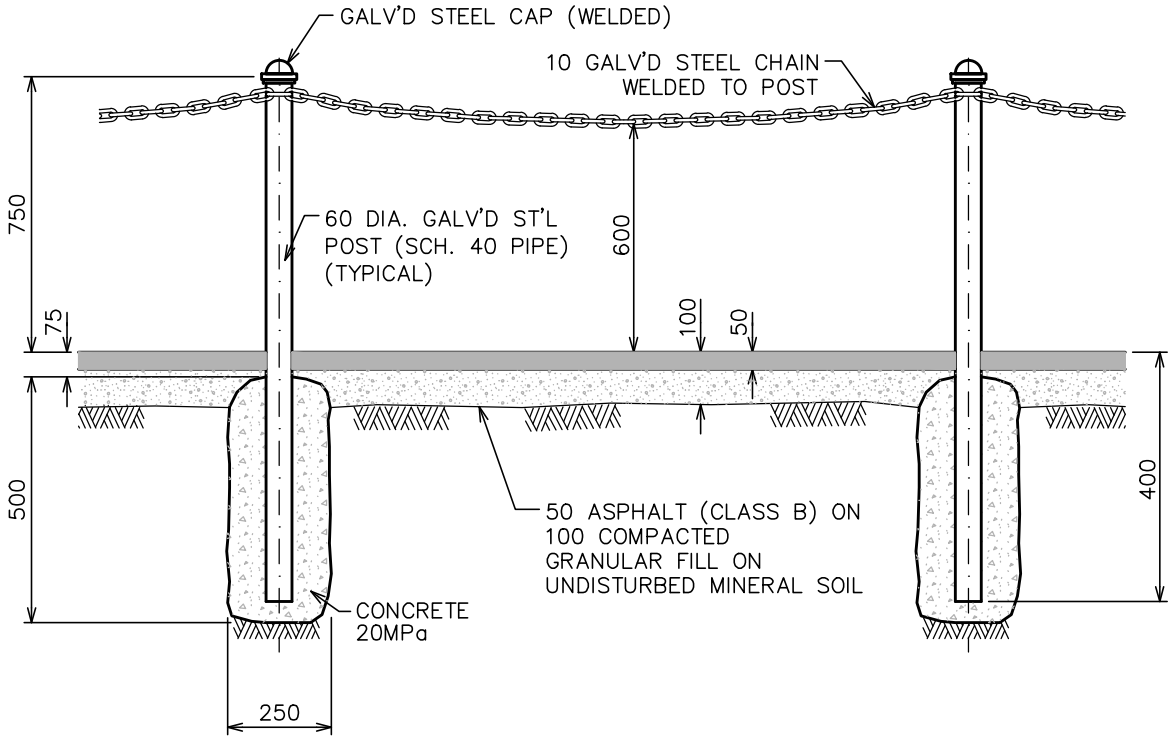
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.33





NOTES:

1. WELDS TO BE PAINTED WITH ZINC–RICH PAINT.
2. PARKING LOTS – PEDESTRIAN OPENINGS MUST BE PROVIDED EVERY 15.25m AND MUST BE 1.0m IN WIDTH.

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **DECORATIVE FENCE**

CITY OF SURREY the future lives here.

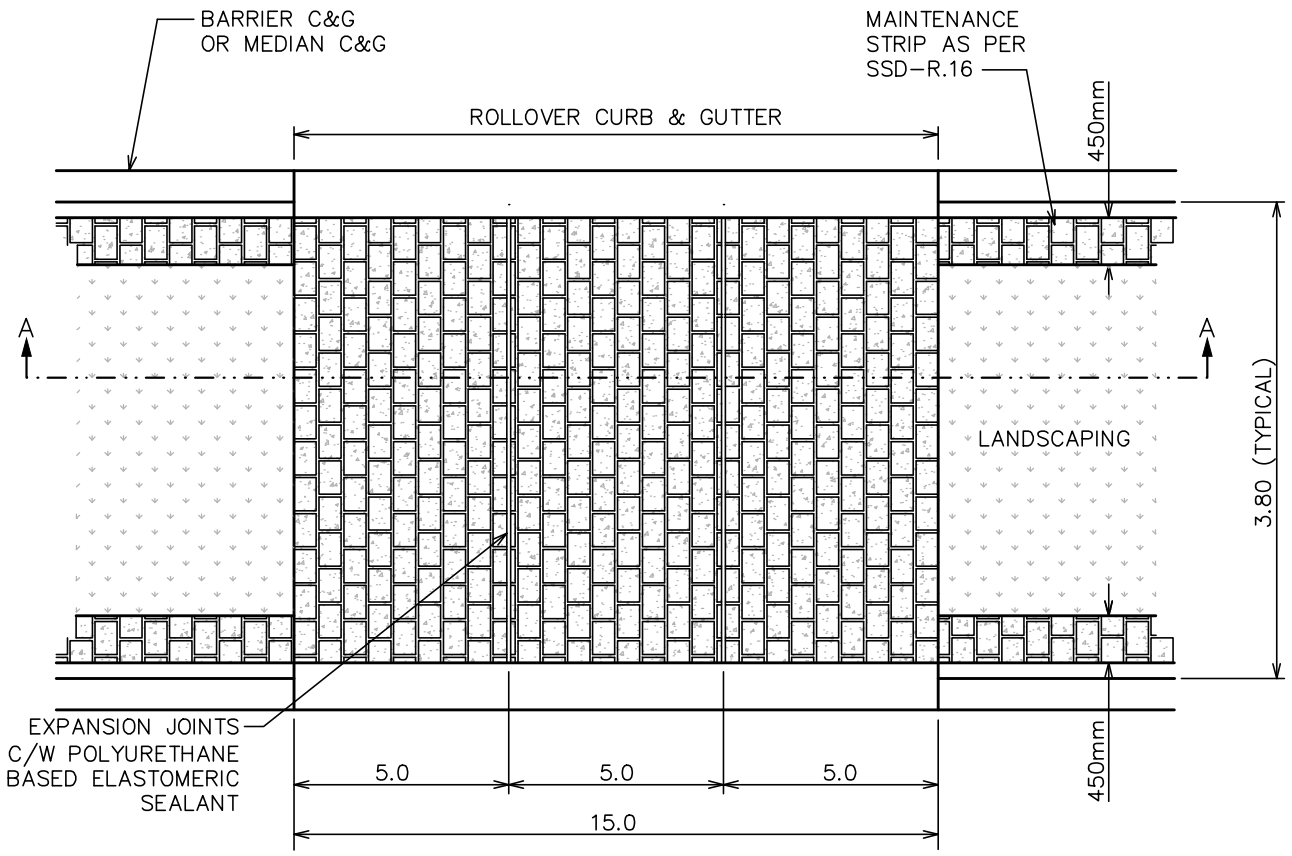
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

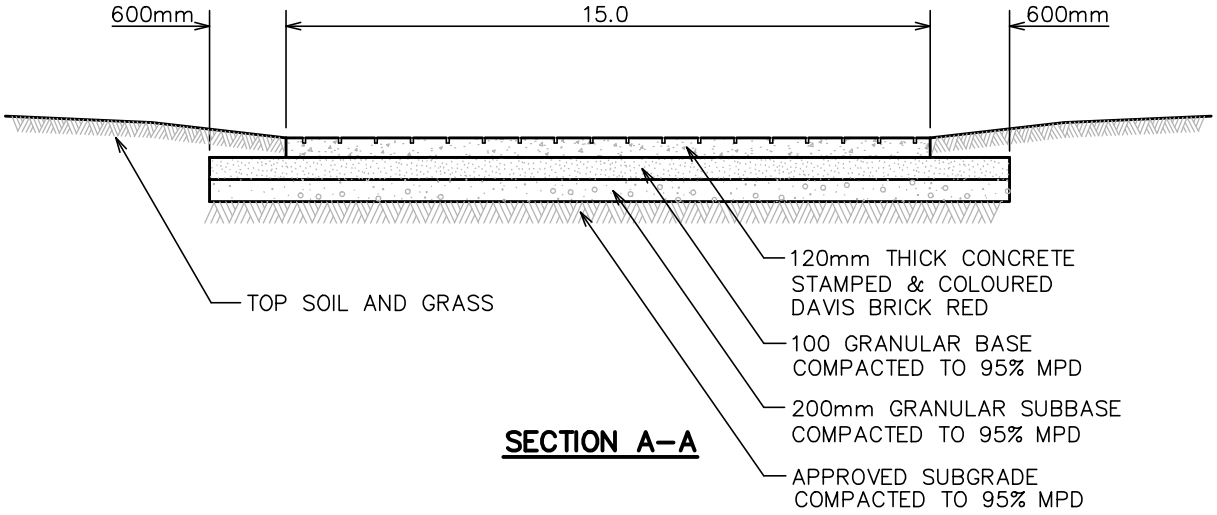
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.34



PLAN VIEW



SECTION A–A

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **RAISED MEDIAN, MAINTENANCE PAD**

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the future lives here.

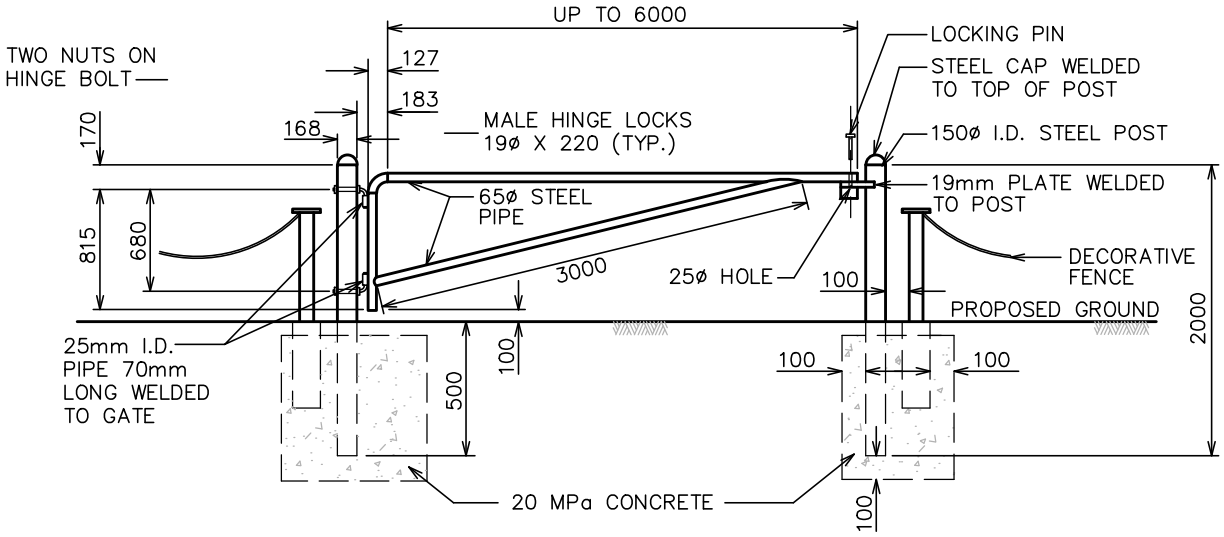
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

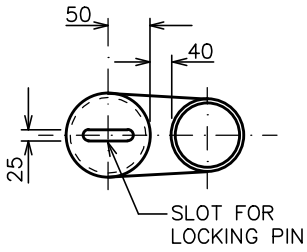
JANUARY 2016

G.M. Engineering

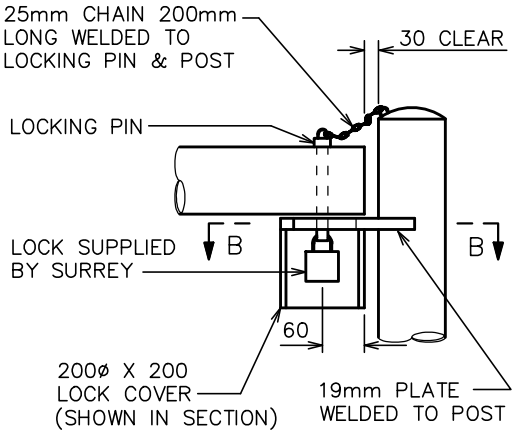
DRAWING NUMBER
SSD–R.35

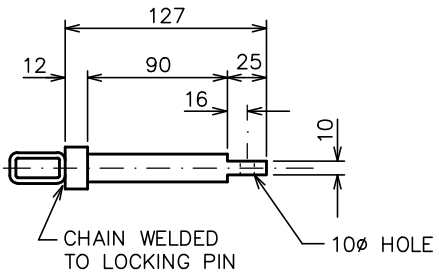


GATE DETAILS

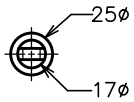


SECTION B–B





SIDE VIEW



END VIEW

GATE LOCKING PIN DETAIL

NOTES:

1. ALL GATE COMPONENTS TO HAVE PRIME COAT AND TWO COATS OF WHITE ENAMEL PAINT.
2. ALL STEEL TO BE A MINIMUM OF A36 GRADE.

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **SWING GATE DETAILS**

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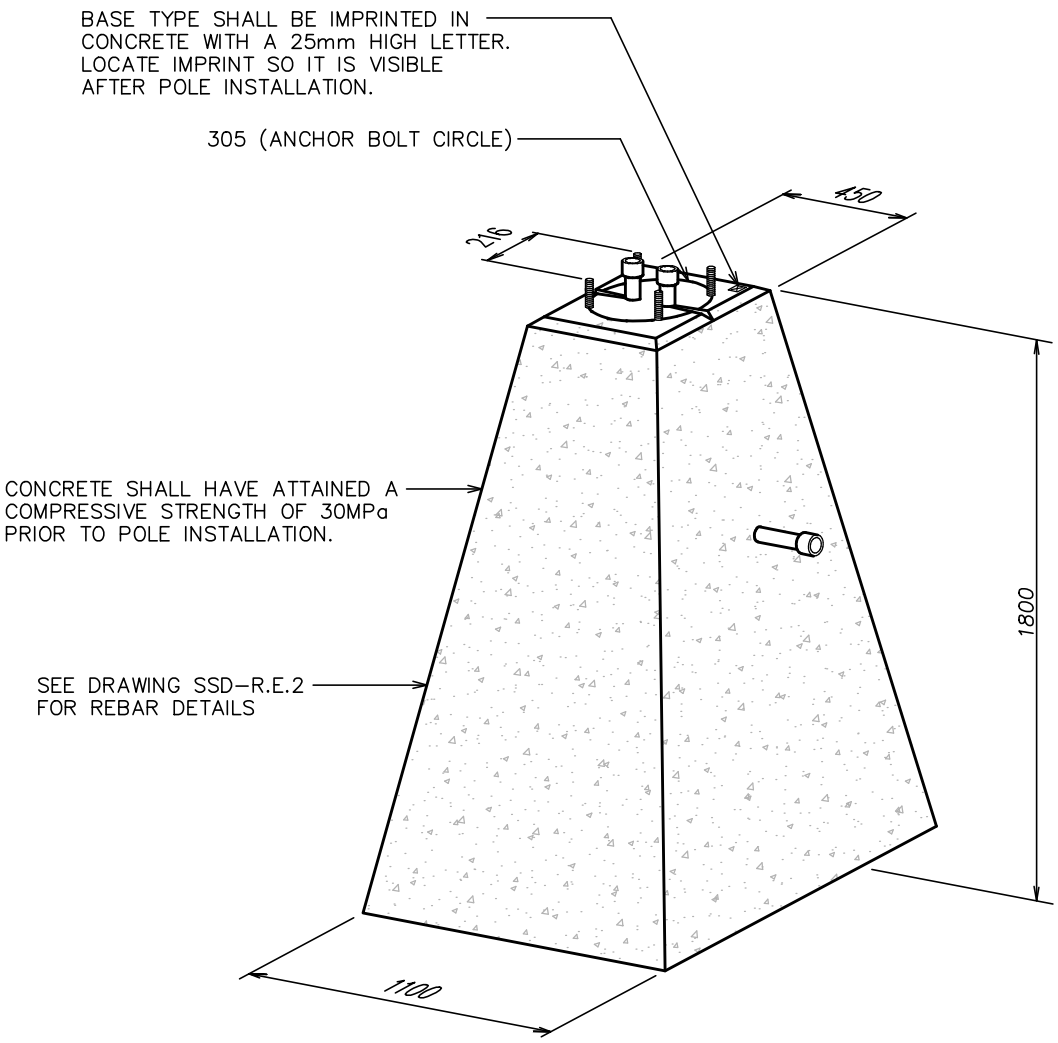
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 — G.M. Engineering

DRAWING NUMBER

SSD–R.36



PRECAST CONCRETE BASES

3			All Dimensions Shown In Millimetres, Unless Otherwise Noted
2			
1	JANUARY 2016	JAMIE BOAN	Title: TYPE D2 CONCRETE BASE FOR 13.5m DAVIT POLE PRECAST
	Revision Date	Approved	

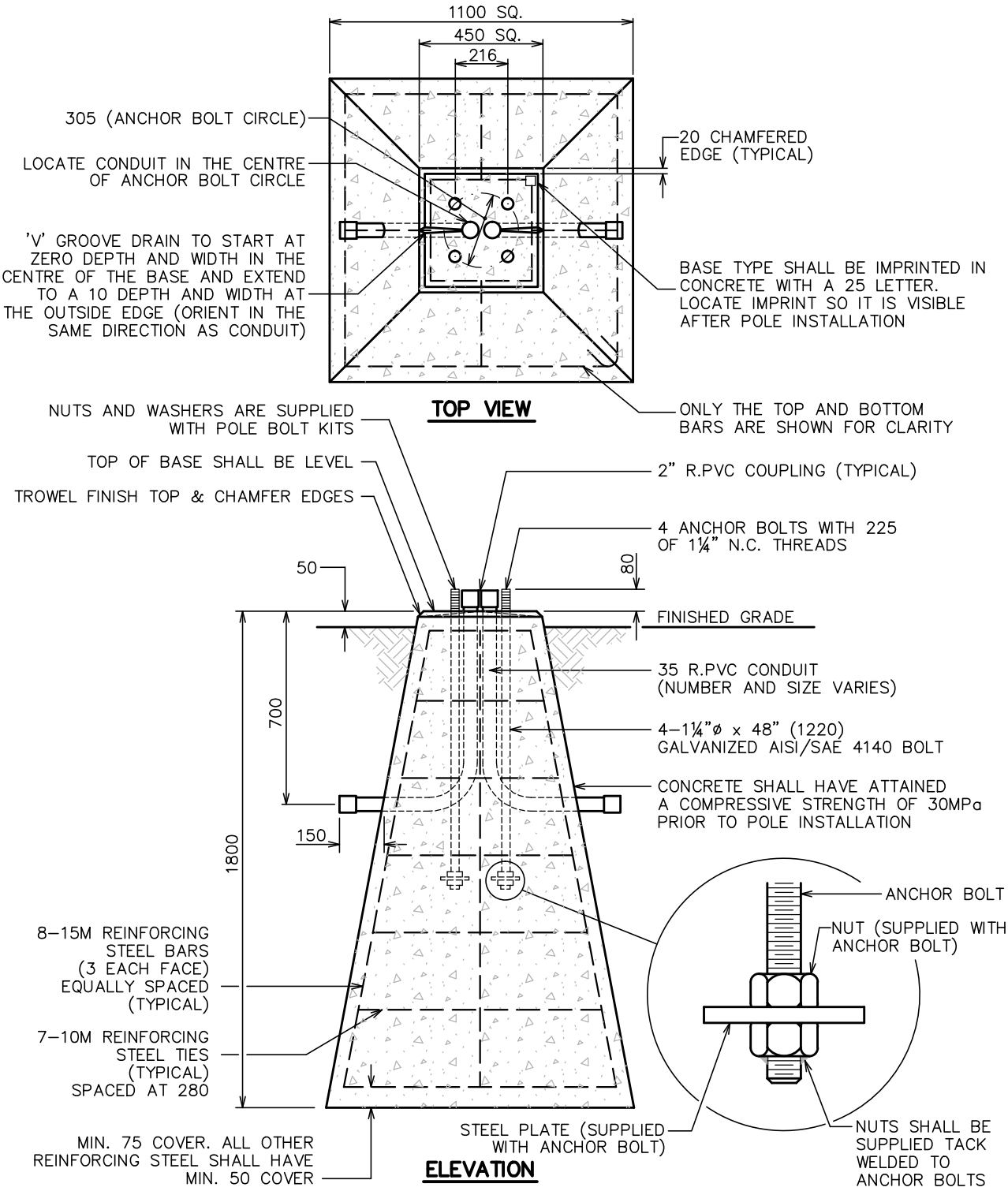
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD-R.E.1



3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **PRECAST TYPE D2 CONCRETE BASE FOR 13.5m DAVIT POLE**

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SUPPLEMENTARY STANDARD DRAWINGS

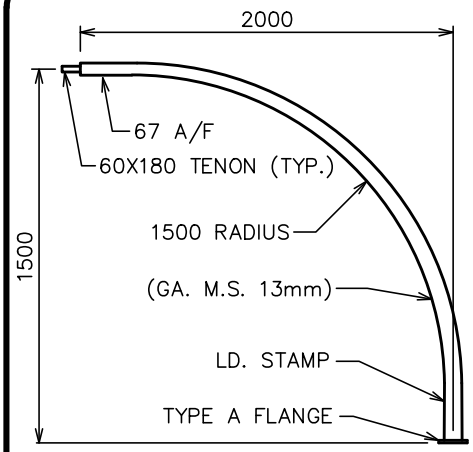
Approved By :

JANUARY 2016

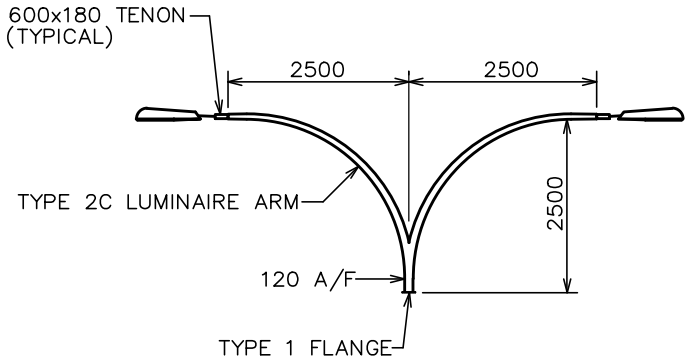
G.M. Engineering

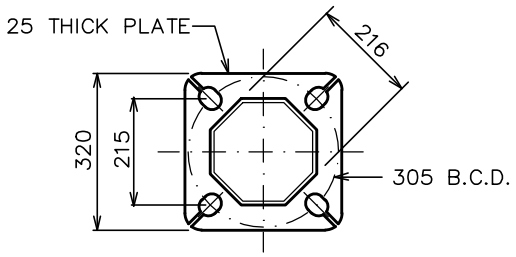
DRAWING NUMBER

SSD–R.E.2

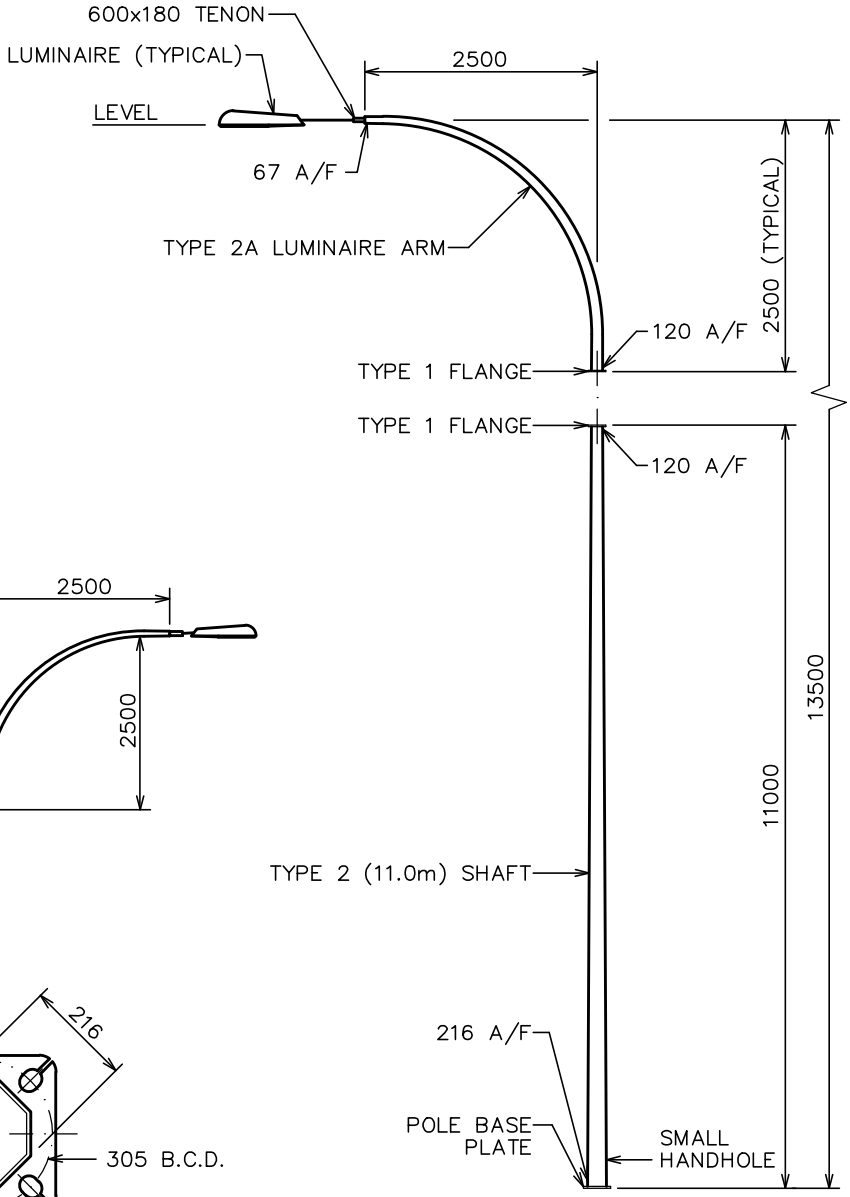


SPECIAL TYPE 2A ARM





POLE BASE PLATE



ELEVATION

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **TYPE 2 SHAFT INSTALLATION DETAILS FOR 13.5m DAVIT POLE**

CITY OF SURREY the future lives here.

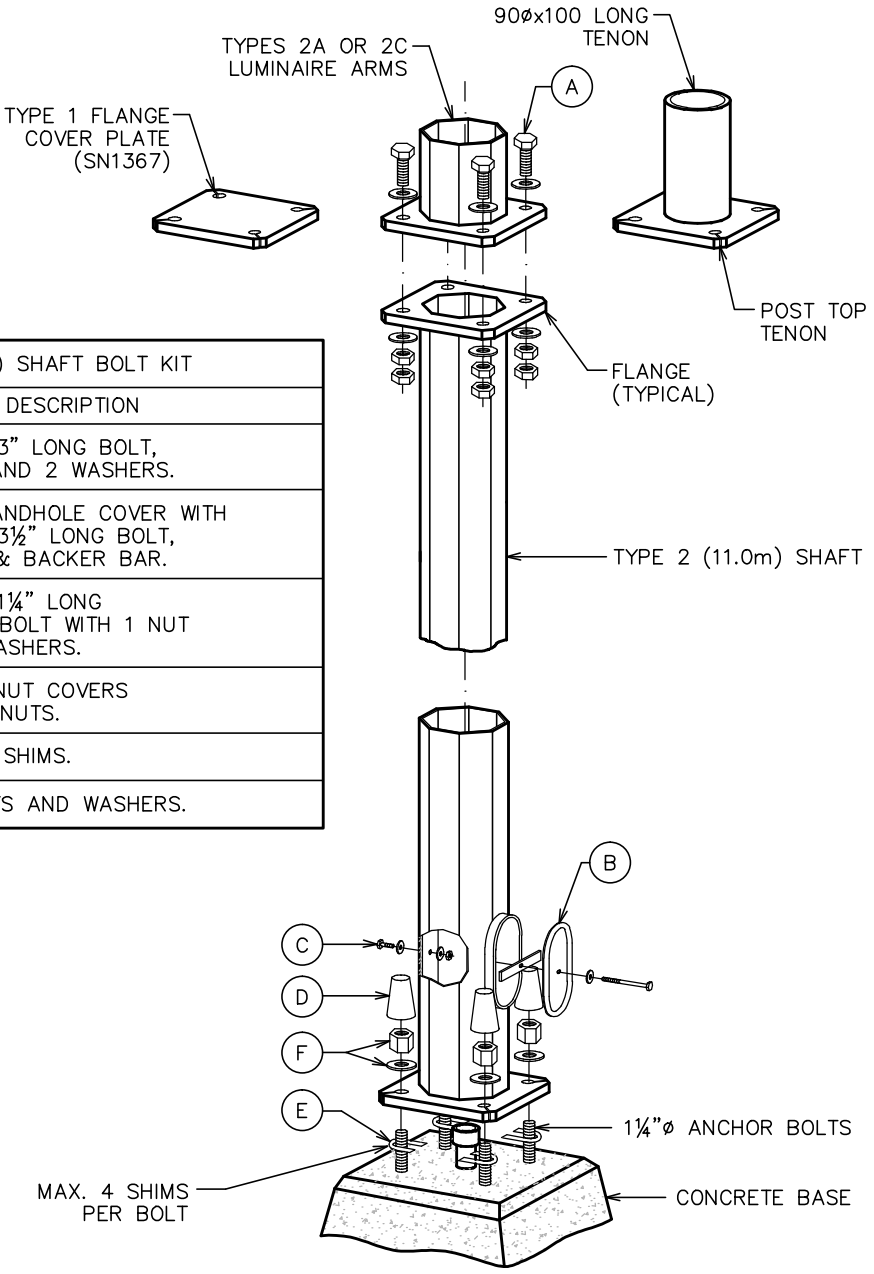
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–R.E.3

TYPE 2 (11.0m) SHAFT BOLT KIT		
ITEM	QUANTITY	DESCRIPTION
A	4	5/8"ø x 3" LONG BOLT, 2 NUTS AND 2 WASHERS.
B	1	SMALL HANDHOLE COVER WITH 3/8"ø x 3½" LONG BOLT, WASHER & BACKER BAR.
C	1	3/8"ø x 1¼" LONG BONDING BOLT WITH 1 NUT AND 2 WASHERS.
D	4	PLASTIC NUT COVERS FOR 1¼" NUTS.
E	4	LEVELING SHIMS.
F	4	1¼"ø NUTS AND WASHERS.



POLE ASSEMBLY DETAIL

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **TYPE 2 SHAFT POLE ASSEMBLY FOR 13.5m DAVIT POLE**

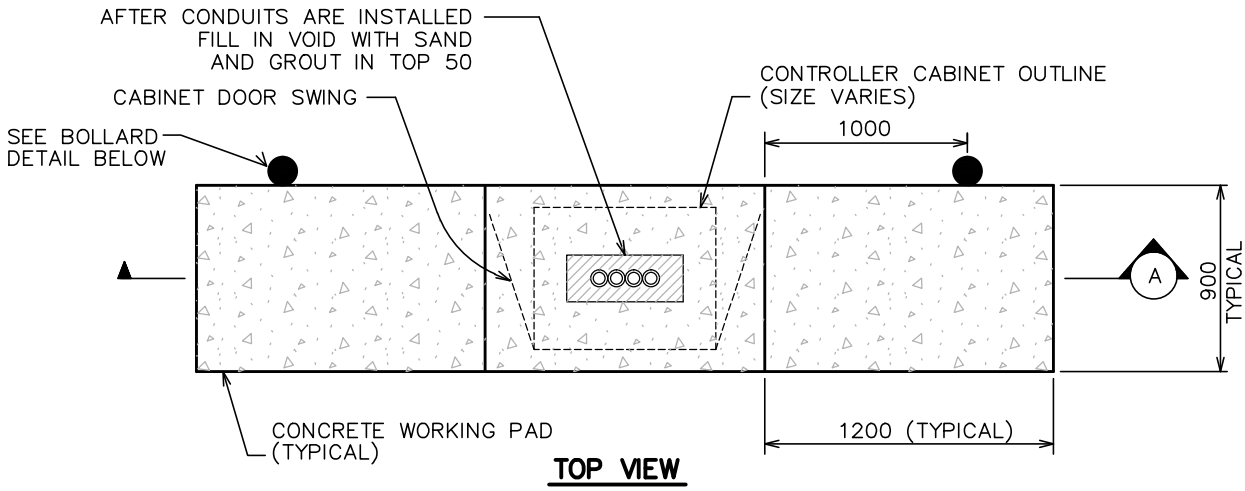
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

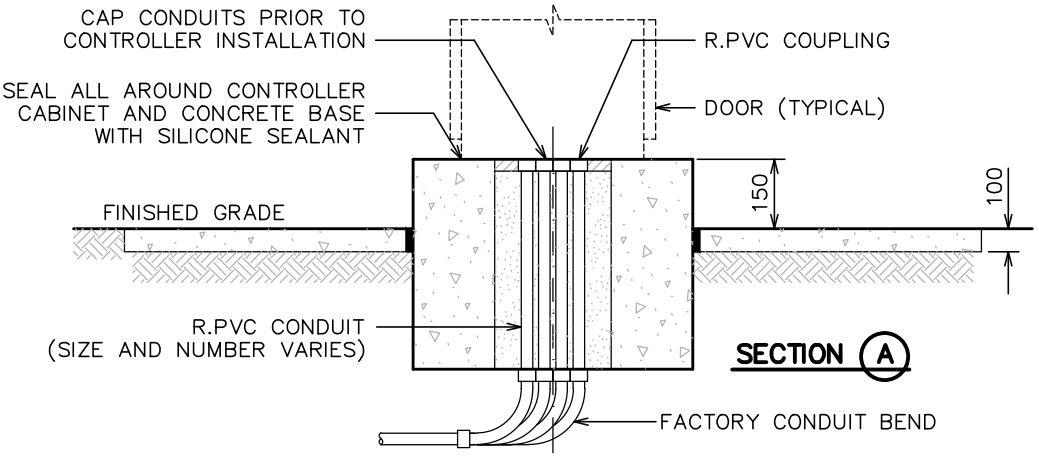
Approved By :

JANUARY 2016 G.M. Engineering

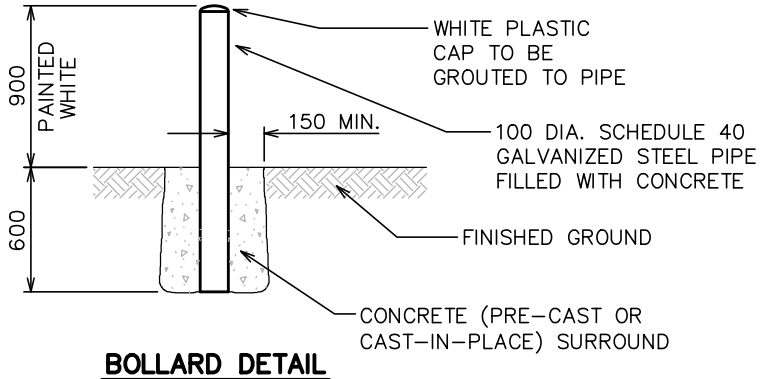
DRAWING NUMBER SSD–R.E.4



TOP VIEW



SECTION (A)



BOLLARD DETAIL

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title: **MODEL 332 TRAFFIC SIGNAL CABINET INSTALLATION**

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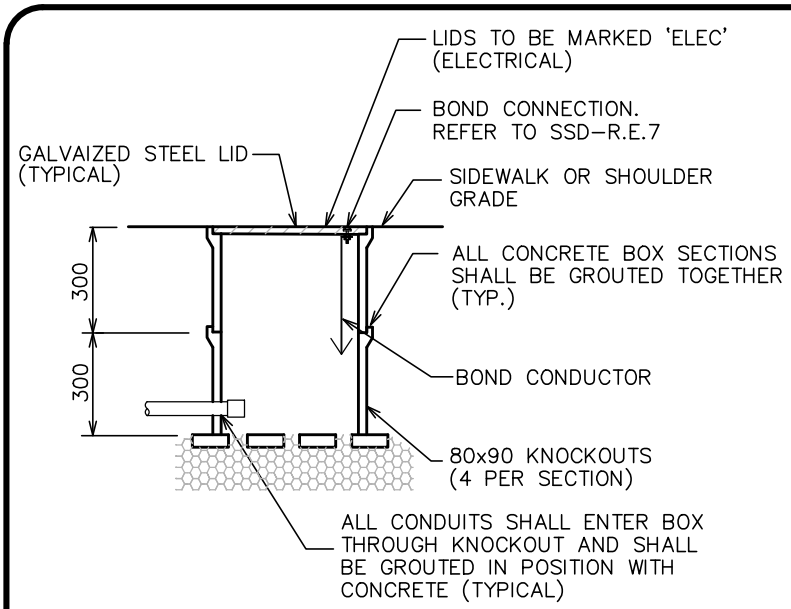
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

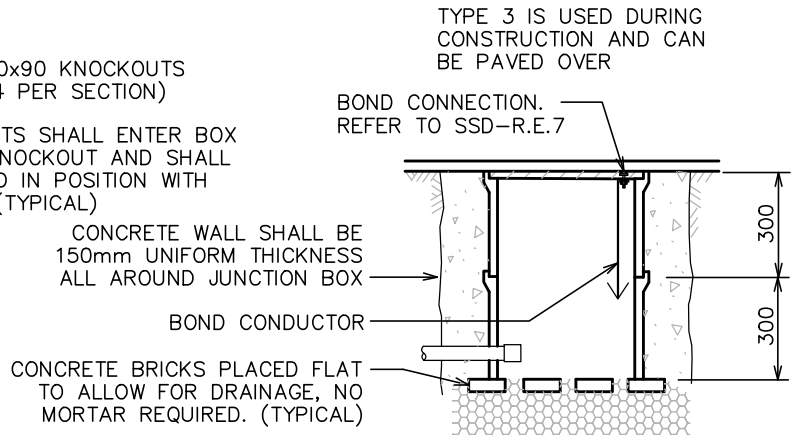
JANUARY 2016

G.M. Engineering

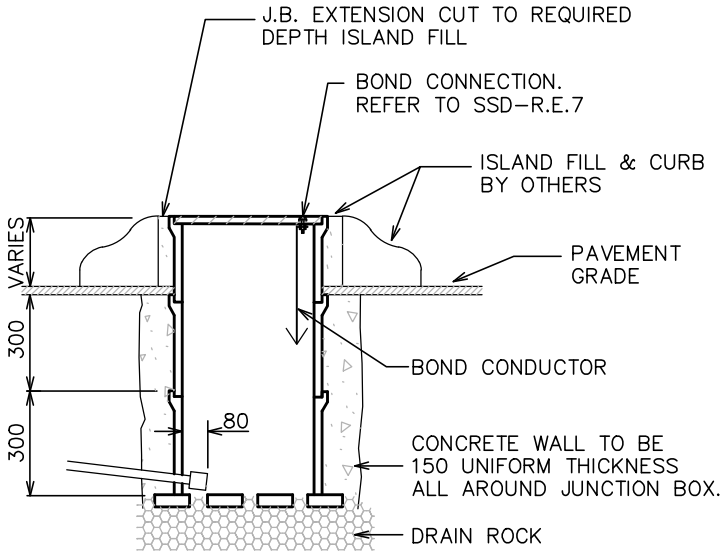
DRAWING NUMBER
SSD-R.E.5



TYPE 1 J.B.
(305x510 I.D.)



TYPE 3 J.B.
(305x510 I.D.)



TYPE 2 J.B.
(305x510 I.D.)

NOTE: (1) TYPES 1, 2, AND 3 JUNCTION BOXES SHALL BE NO.37 (OR APPROVED EQUAL).

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **TYPE 1, 2, AND 3 JUNCTION BOX DETAILS CONCRETE**

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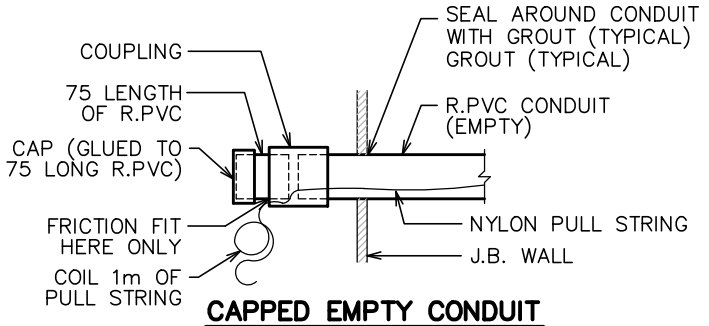
SUPPLEMENTARY STANDARD DRAWINGS

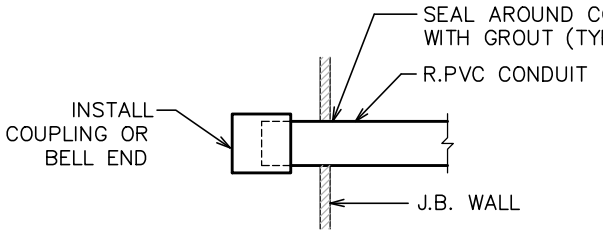
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–R.E.6

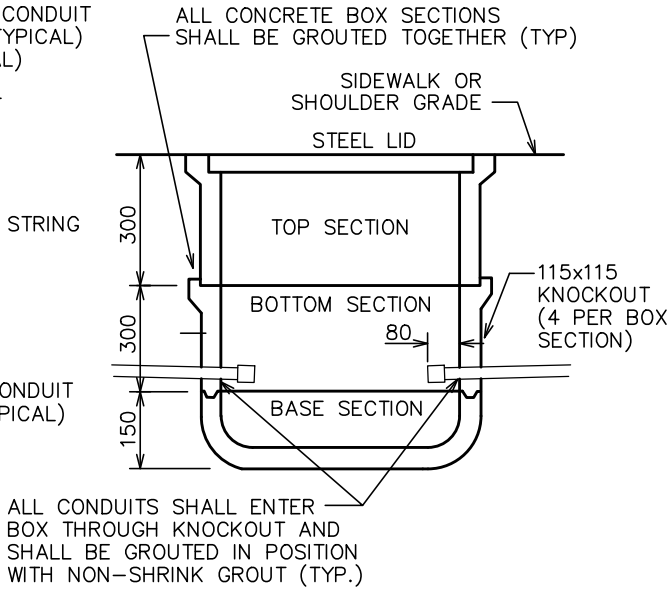


CAPPED EMPTY CONDUIT ENTRY TO J.B.



NOTE: ALL CONDUITS TO DRAIN TO J.B.

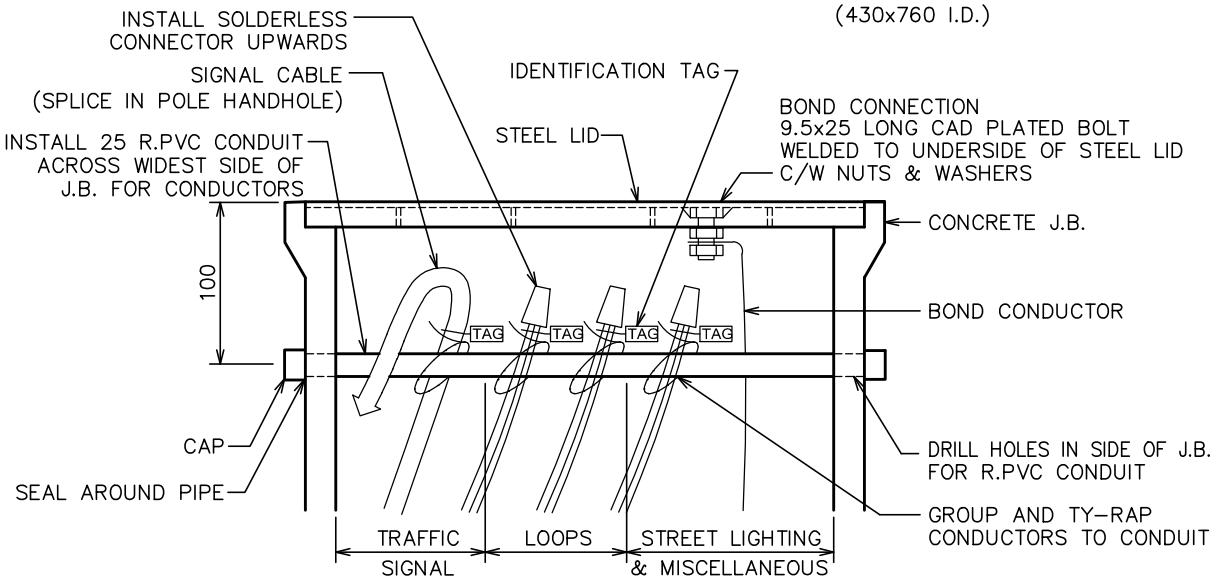
CONDUIT ENTRY TO J.B.



NOTE: TYPE 5 J.B. SHALL BE NO.66 (OR APPROVED EQUAL)

TYPE 5 JUNCTION BOX

(430x760 I.D.)



CONDUCTORS IN J.B.'S

NOTES: (1) LEAVE 1.0m OF SLACK FOR ALL CONDUCTORS IN JUNCTION BOX.

(2) GROUP AND BUNDLE ALL CONDUCTORS SEPARATELY AS FOLLOWS:
- DETECTORS LOOP CABLES
- SIGNAL CABLES
- LIGHTING AND MISCELLANEOUS CONDUCTORS

(3) IDENTIFICATION TAGS SHALL BE NEATLY MARKED WITH A BLACK INDELIBLE PEN.

(4) OFFSET R.PVC CONDUIT BAR 100 FROM SIDE OF JUNCTION BOX.

3		
2		
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	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

TYPE 5 JUNCTION BOX DETAILS (CONCRETE)

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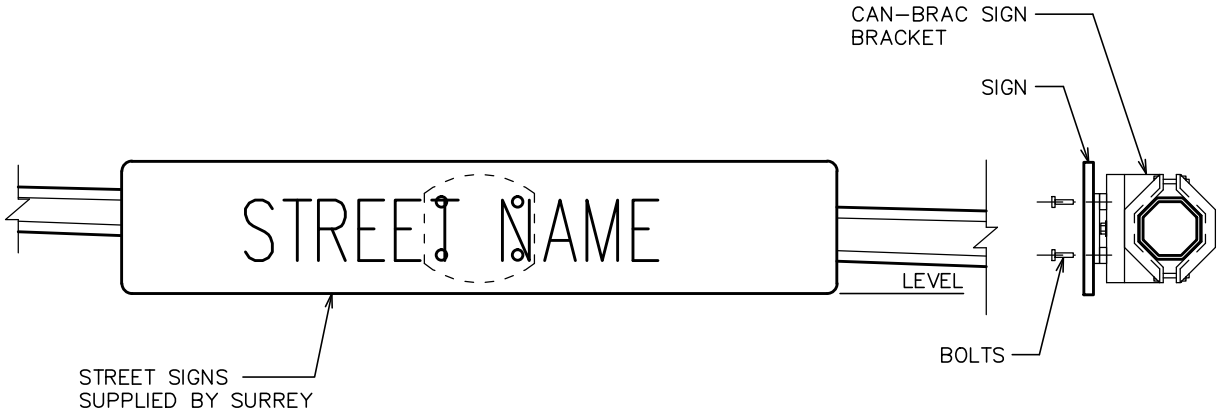
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-R.E.7



STREET NAME SIGN MOUNTING DETAIL

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title
STREET NAME SIGN MOUNTING DETAILS

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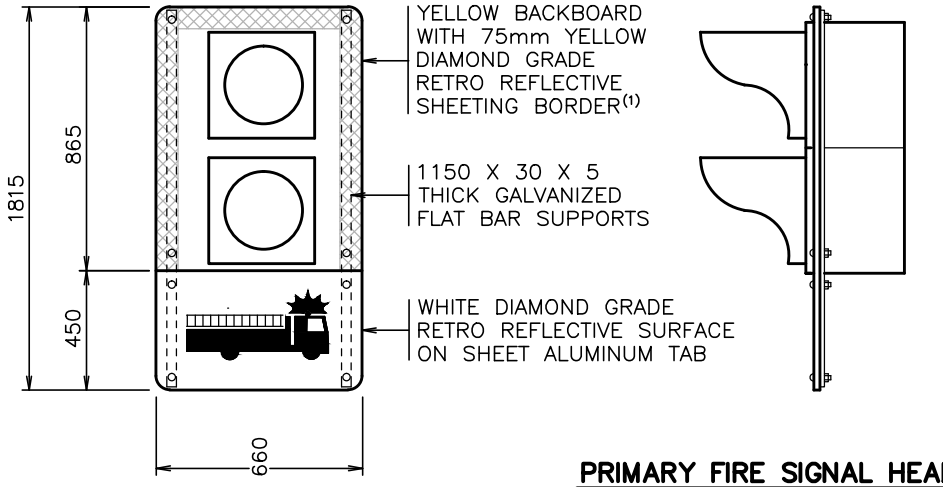
SUPPLEMENTARY
STANDARD
DRAWINGS

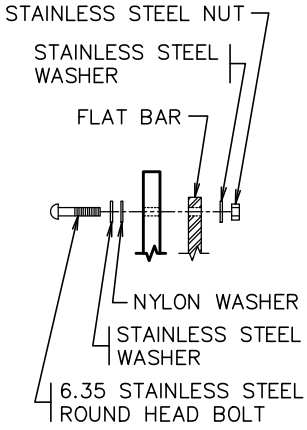
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–R.E.8

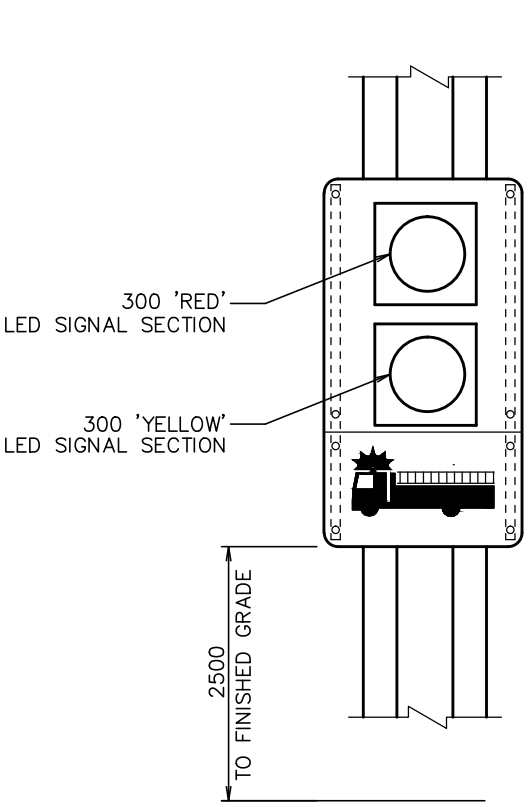


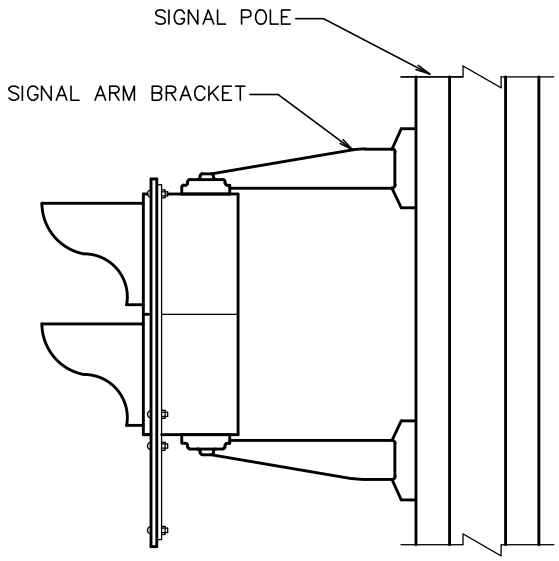


BOLT CONNECTION DETAIL

PRIMARY FIRE SIGNAL HEAD MOUNTING

SUPPLEMENTARY TAB SIGN
(ID–22SR OR ID–22SL) AS PER MUTCD





SECONDARY FIRE SIGNAL HEAD MOUNTING

NOTE: (1) SCOTCH LITE DIAMOND GRADE VIP REFLECTIVE, SERIES 3990

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **FIRE SIGNAL SIGNS**

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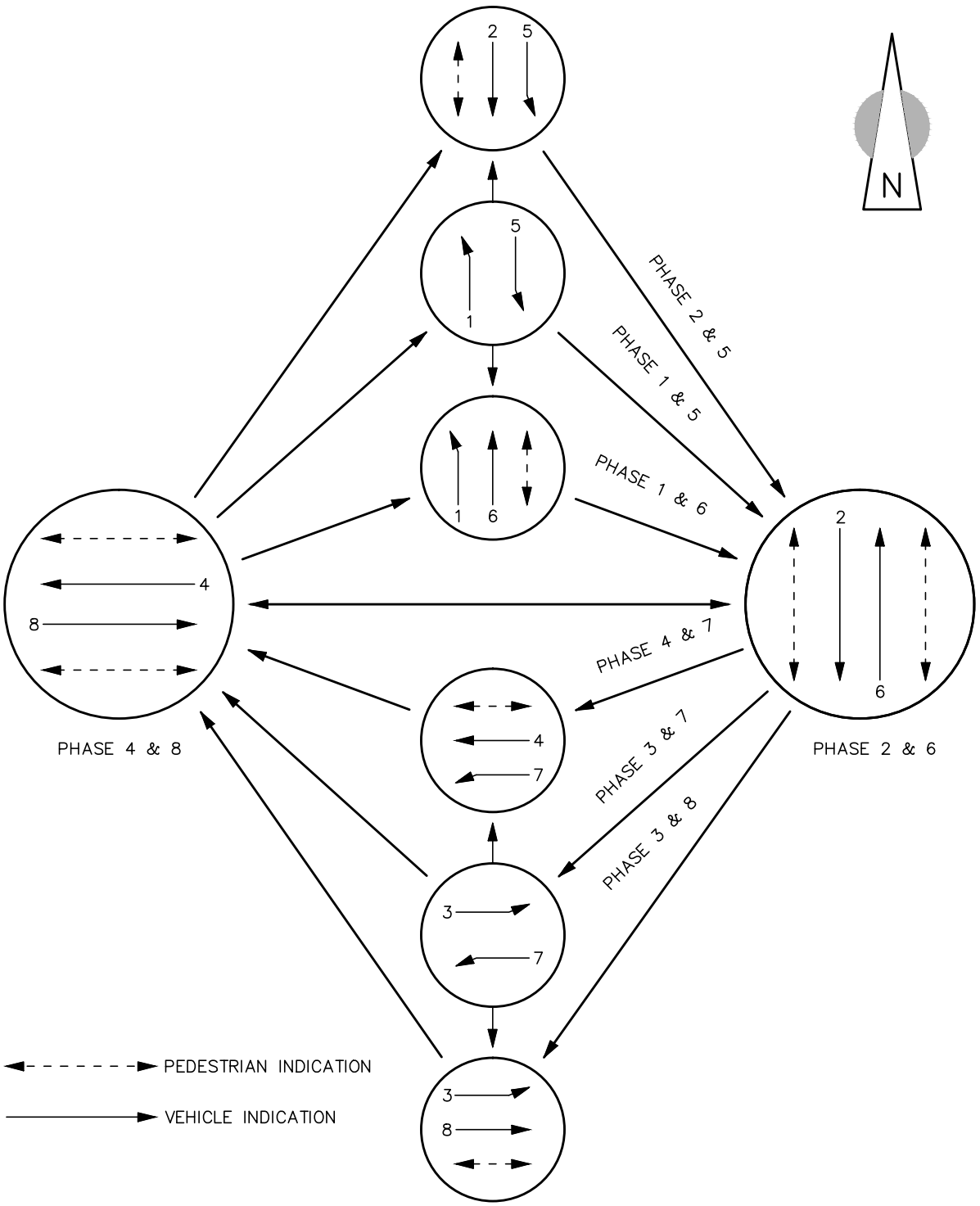
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–R.E.9



3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title
PHASING DIAGRAM FOR 8–PHASE CONTROLLER

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SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–R.E.10

UPPER	1	Phase 5 E.CT	
	2	CENTER LANE NORTH BOUND PHASE 6 E.CT TB3 (7,8)	LEFT TURN LANE NORTH BOUND PHASE 6 E.CT TB3 (5,6)
	3	PHASE 6 E	CURB LANE NORTH BOUND PHASE 6 E.CT TB3 (9,10)
	4	PHASE 6 CALL	
	5	PHASE 7 E.CT	
	6	CENTER LANE EAST BOUND PHASE 8 E.CT TB5 (11,12)	LEFT TURN LANE EAST BOUND PHASE 8 E.CT TB5 (9,10)
	7	PHASE 8 E	CURB LANE EAST BOUND PHASE 8 E.CT TB7 (1,2)
	8	PHASE 8 CALL	
	9	WB LEFT TURN PHASE 7 E.CT TB7 (11,12)	SB LEFT TURN PHASE 5 E.CT TB7 (9,10)
	10	NOT ASSIGNED	NOT ASSIGNED
	11	NOT ASSIGNED	NOT ASSIGNED
	12	EV C	EV A
	13	EV D	EV B
LOWER	14	RR 2	RR 1

INPUT FILE 'J' FRONT VIEW

UPPER	1	Phase 1 E.CT	
	2	CENTER LANE SOUTH BOUND PHASE 2 E.CT TB2 (7,8)	LEFT TURN LANE SOUTH BOUND PHASE 2 E.CT TB2 (5,6)
	3	PHASE 2 E	CURB LANE SOUTH BOUND PHASE 2 E.CT TB2 (9,10)
	4	PHASE 2 CALL	
	5	PHASE 3 E.CT	
	6	CENTER LANE WEST BOUND PHASE 4 E.CT TB4 (11,12)	LEFT TURN LANE WEST BOUND PHASE 4 E.CT TB4 (9,10)
	7	PHASE 4 E	CURB LANE WEST BOUND PHASE 4 E.CT TB6 (1,2)
	8	PHASE 4 CALL	
	9	EB LEFT TURN PHASE 3 E.CT TB6 (11,12)	NB LEFT TURN PHASE 1 E.CT TB6 (9,10)
	10	NOT ASSIGNED	NOT ASSIGNED
	11	NOT ASSIGNED	NOT ASSIGNED
	12	PED PHASE 4 TB8 (5,6)	PED PHASE 2 TB8 (4,6)
	13	PED PHASE 8 TB9 (8,9)	PED PHASE 6 TB9 (7,9)
LOWER	14	STOP TIME	FLASH SENSOR

INPUT FILE 'I' FRONT VIEW

LEGEND

EV	EMERGENCY VEHICHLE
CT	COUNT
E	EXTENSION
PED	PEDESTRIAN PUSH BUTTON
RR	RAILROAD PRE-EMPTION

THIS SIDE UP →

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **332 CONTROLLER CABINET TYPICAL LOOP, PRE-EMPTION AND PEDESTRIAN ASSIGNMENTS**

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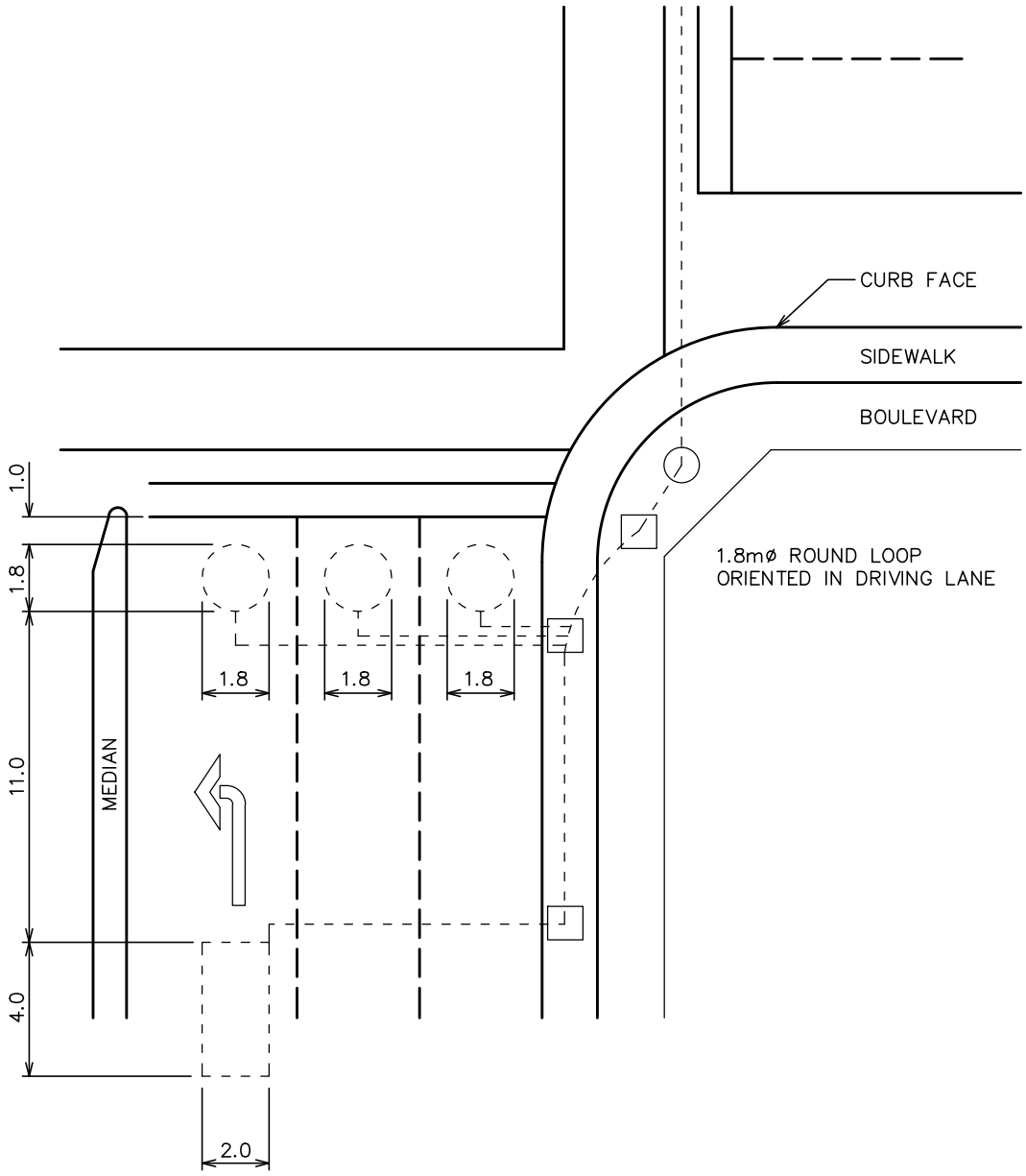
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-R.E.11



NOTES: (1) LOOPS SHALL BE LOCATED IN THE CENTRE OF EACH LANE UNLESS OTHERWISE NOTED ON CONTRACT DRAWINGS.

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TYPICAL DETECTOR LOOP LOCATIONS**

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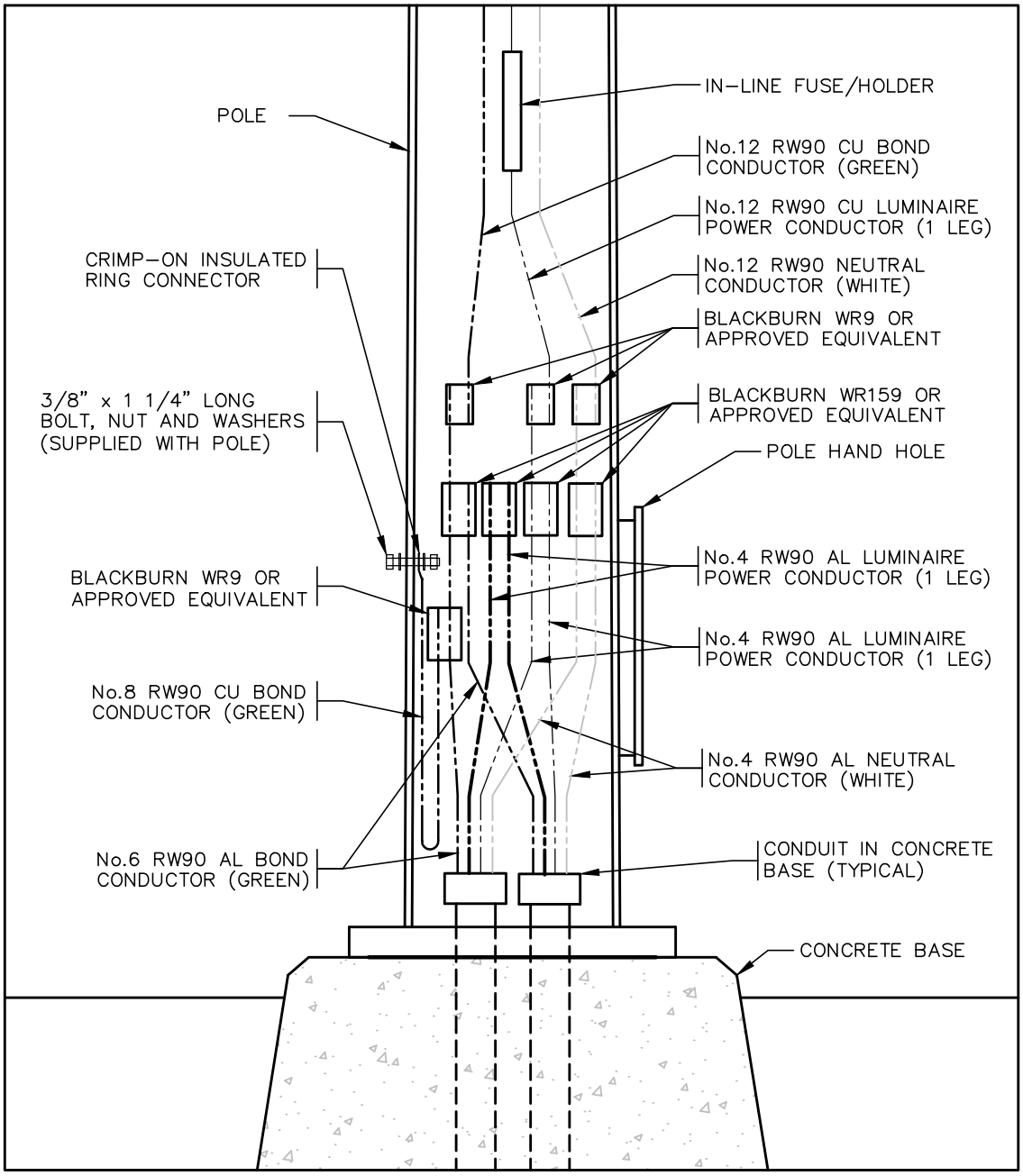
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-R.E.12



POLE ELEVATION/CROSS-SECTION

N.T.S.

LEGEND

- BOND CONDUCTOR
- POWER CONDUCTOR (1 LEG)
- POWER CONDUCTOR (1 LEG)
- NEUTRAL CONDUCTOR

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **LUMINAIRE WIRING IN POLE HAND HOLE**

CITY OF SURREY the future lives here.

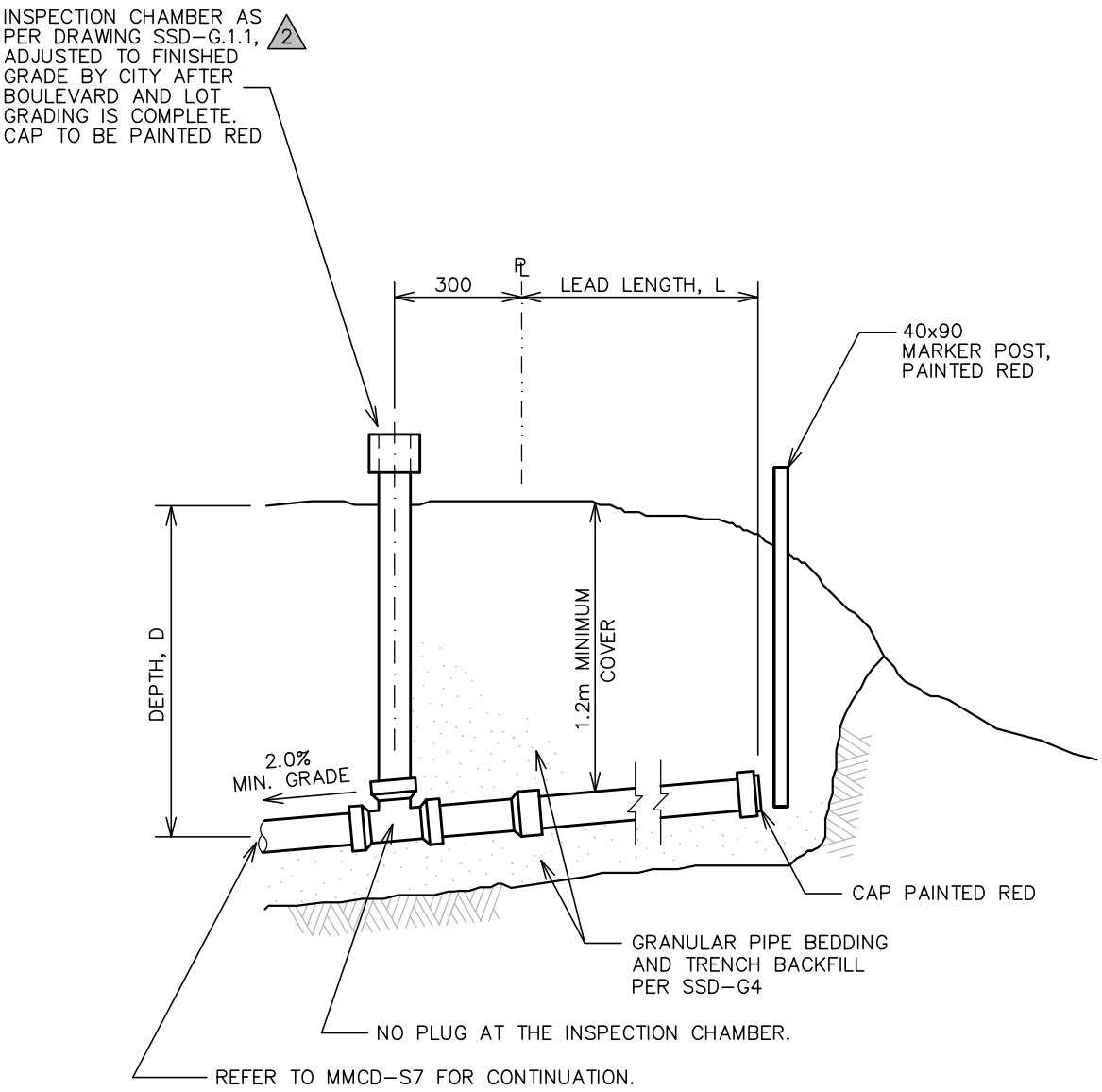
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-R.E.13



NOTES:

1. LEAD LENGTH, L = DEPTH, D OR 2.0m WHICHEVER IS GREATER.
2. SERVICE LEADS TO BE 100mm DIA. DR28 (WHITE) FOR SINGLE FAMILY RESIDENTIAL AND 150mm FOR COMMERCIAL/INDUSTRIAL OR AS SPECIFIED ON CONTRACT DRAWINGS.
3. FACTORY INSTALLED PLUG SHOULD NOT BE INSTALLED AT THE INSPECTION CHAMBER
4. (2) REFER TO DESIGN CRITERIA MANUAL, SECTION 4.0 4.3.4.1, FOR TRIGGER WHEN LARGE SERVICE CONNECTIONS REQUIRE A MANHOLE AT PROPERTY LINE OR MAIN.

3		
2	JULY 2016	ROBERT LEE
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **SANITARY SEWER SERVICE LEAD AT PROPERTY**

CITY OF SURREY the future lives here.

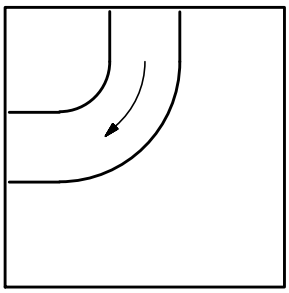
SUPPLEMENTARY STANDARD DRAWINGS

Approved By : G.M. Engineering

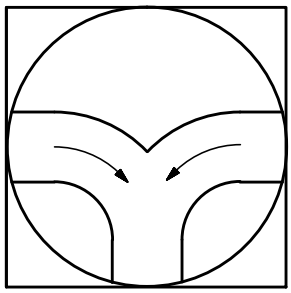
JANUARY 2016

DRAWING NUMBER

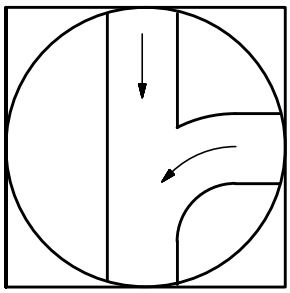
SSD–S.1



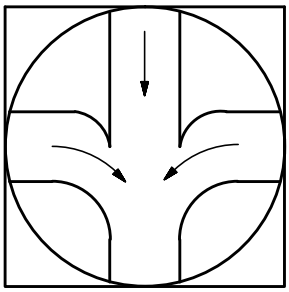
1. RIGHT ANGLE BEND



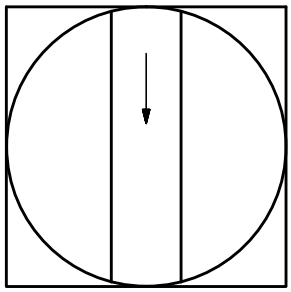
2. TEE CONNECTION



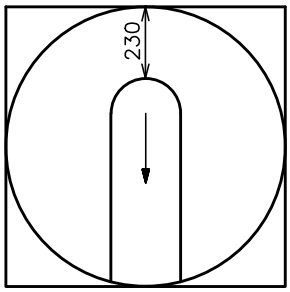
3. THREE WAY JUNCTION



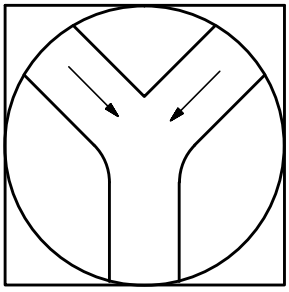
4. FOUR WAY JUNCTION



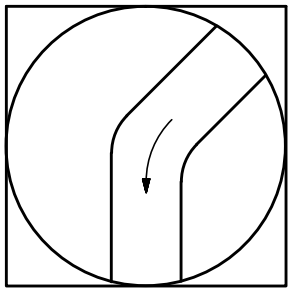
5. STRAIGHT THROUGH



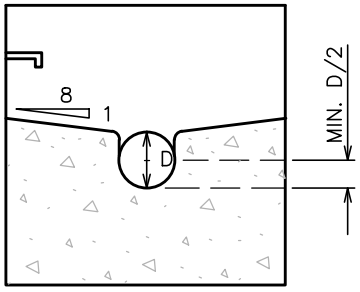
6. DEAD END



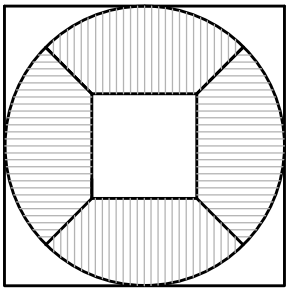
7. WYE CONNECTION



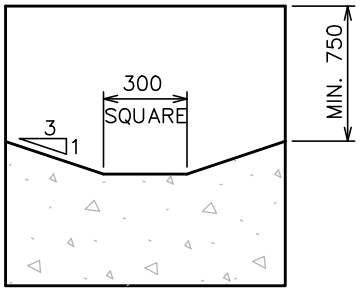
8. 45° BEND



SECTION



SUMP



SECTION

SUMP DETAIL

NOTES: (1) BENCHING DETAILS ARE CONCEPTUAL ONLY.
BENCHING CONFIGURATION AND INVERTS SHALL BE CHECKED FOR HYDRAULIC ADEQUACY.

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title
MANHOLE BENCHING DETAILS

CITY OF SURREY
the future lives here.

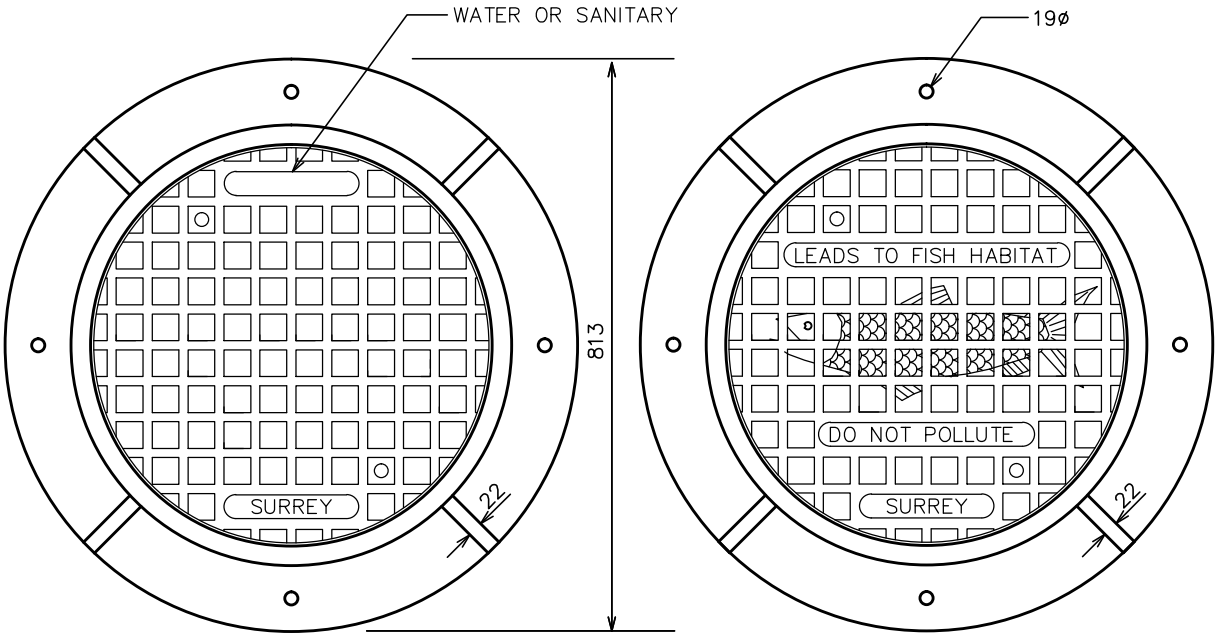
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016

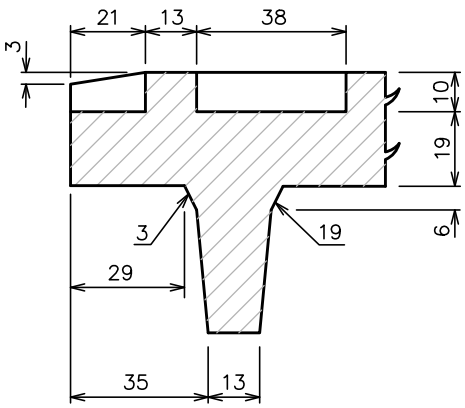
G.M. Engineering

DRAWING NUMBER
SSD–S.2



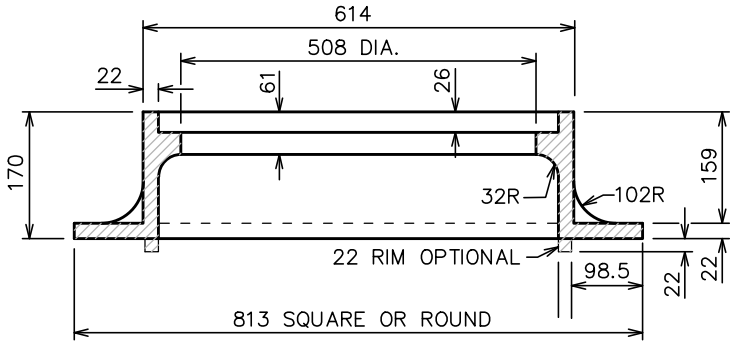
ROUND FRAME & COVER

ROUND FRAME & COVER

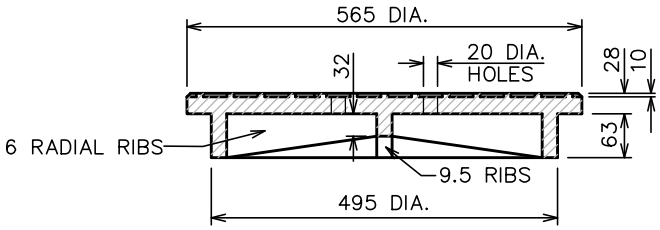


DETAIL OF RIM

MATERIAL : CAST IRON



SECTION THRU FRAME



SECTION THRU COVER

NOTES:

1. ON ARTERIAL ROADS, USE TYPE 1 ADJUSTABLE MH FRAME PER SSD–S2.2
2. ON COLLECTOR ROADS, USE EITHER TYPE 1 OR TYPE 2 ADJUSTABLE MH FRAME AS PER SSD–S2.2
3. ON LOCAL ROADS USE STANDARD MH FRAME AND COVER WITH CONCRETE GRADES RINGS/RISER RINGS.
4. USE DUCTILE IRON FRAME AND COVER ON ARTERIAL ROADS.
5. SYMBOL OF FISH TO BE RAISED ON TOP OF COVER BY 8mm.

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

MANHOLE FRAMES AND COVER

CITY OF SURREY the future lives here.

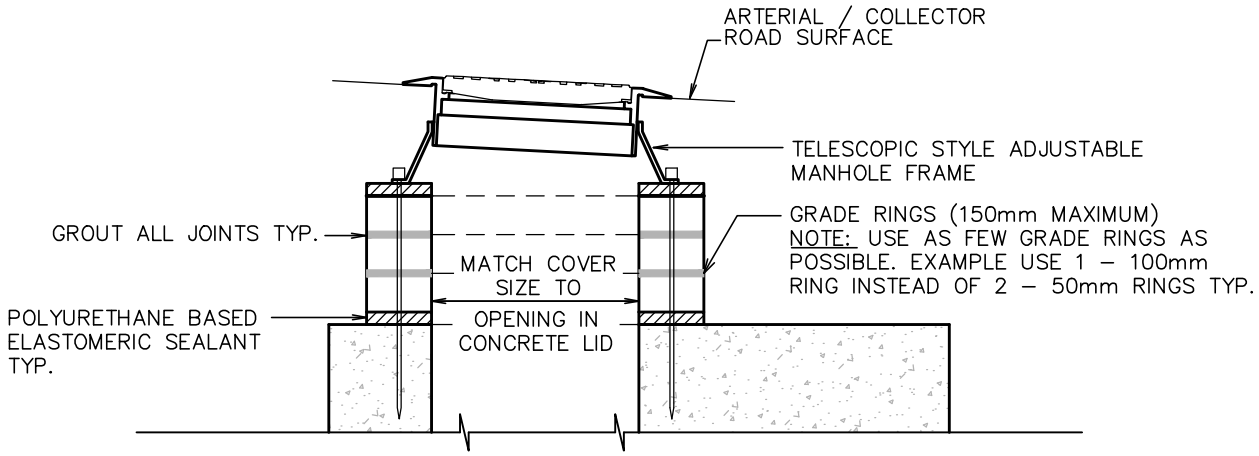
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

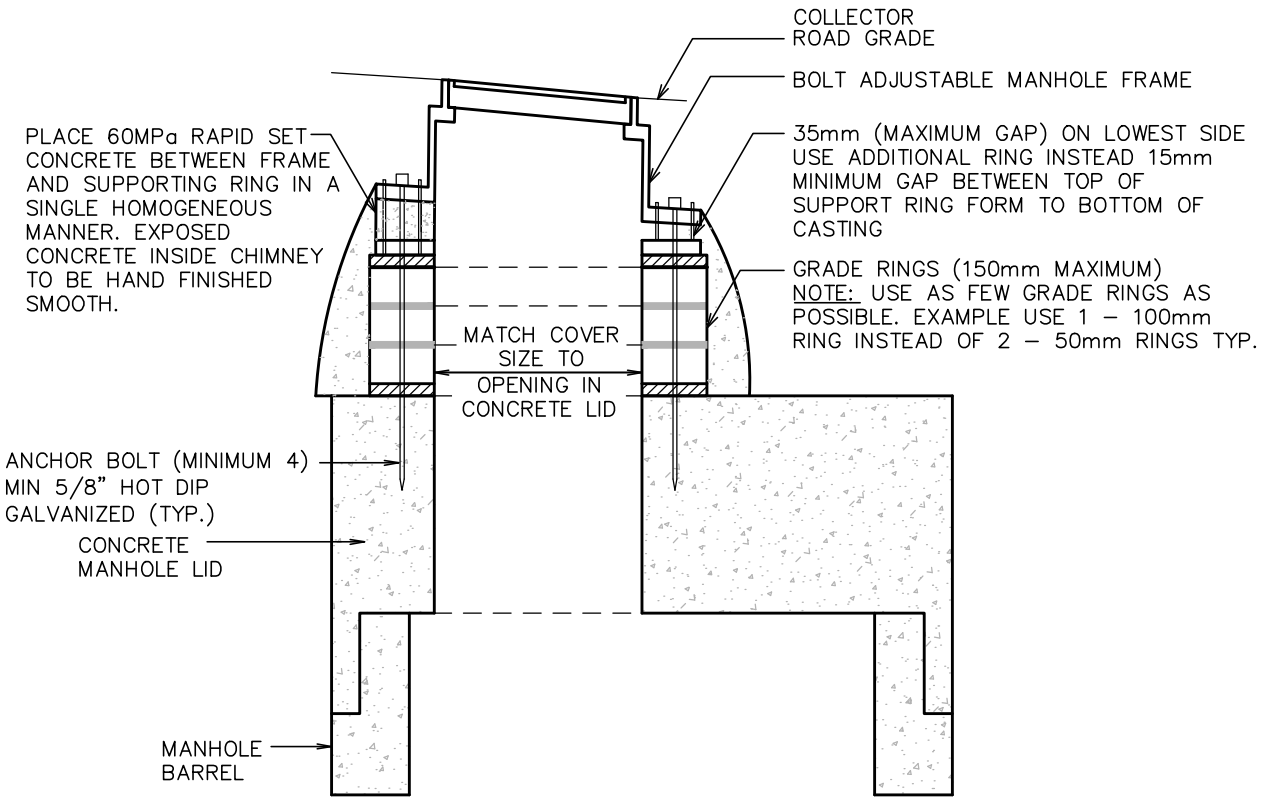
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–S.2.1



TYPE I HEIGHT ADJUSTABLE MANHOLE FRAME AND COVER



TYPE II HEIGHT ADJUSTABLE MANHOLE FRAME AND COVER

NOTES: 1. FOR ROAD GRADES GREATER THAN 8%, SLOPE GRADE RINGS SHALL BE USED.

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **TYPE I & II HEIGHT ADJUSTABLE MANHOLE FRAME AND COVER**

CITY OF SURREY the future lives here.

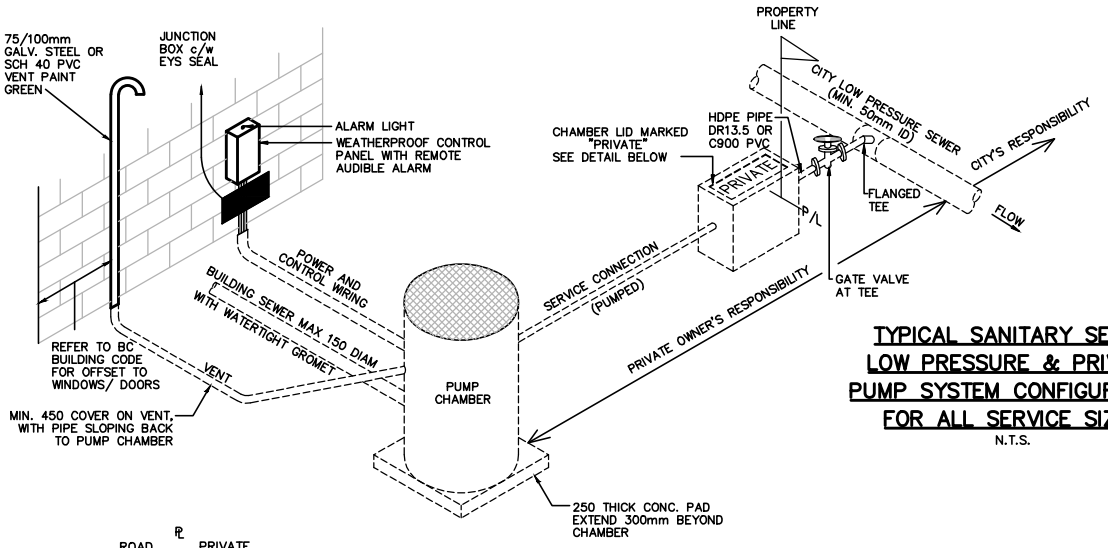
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

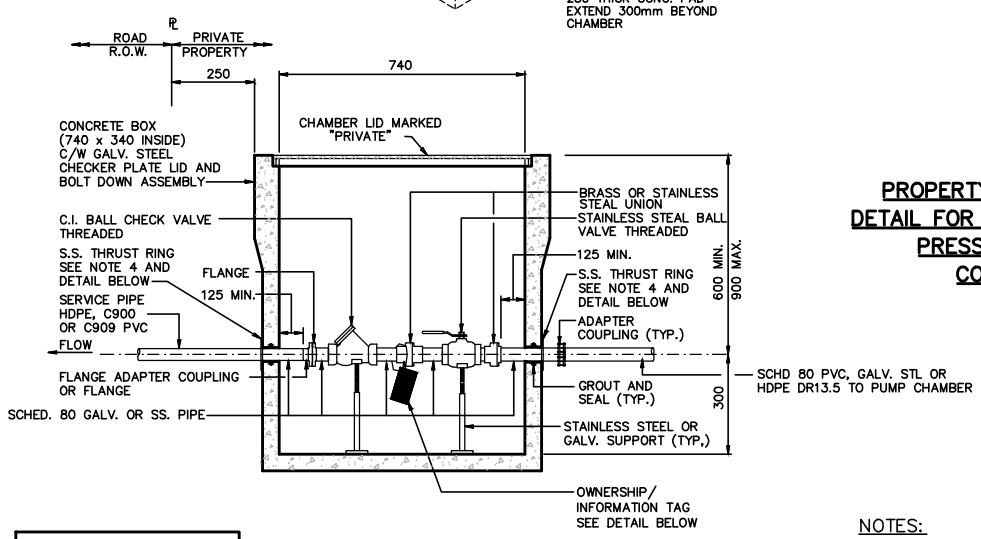
DRAWING NUMBER

SSD–S.2.2



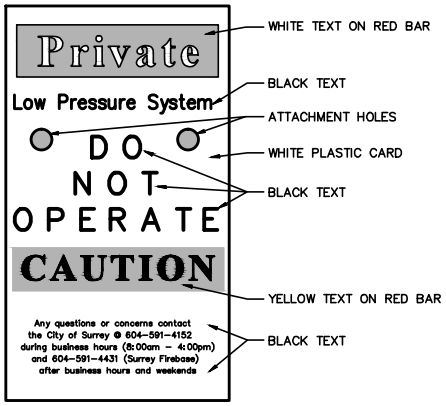
TYPICAL SANITARY SEWER LOW PRESSURE & PRIVATE PUMP SYSTEM CONFIGURATION FOR ALL SERVICE SIZES

N.T.S.



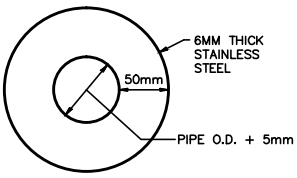
PROPERTY LINE CHAMBER DETAIL FOR UP TO 75mm LOW PRESSURE SERVICE CONNECTION

N.T.S.



OWNERSHIP/INFORMATION TAG DETAIL

N.T.S.



THRUST RING DETAIL

N.T.S.

NOTES:

(1) CONTROL PANEL MAY BE LOCATED INSIDE BUILDING OR ON POST ADJACENT TO PUMP CHAMBER IF APPROVED BY CITY.

(2) VENT MAY BE CONNECTED TO BUILDING VENT SYSTEM OR LOCATED ADJACENT TO PUMP CHAMBER IF APPROVED BY CITY.

(3) ALL PIPE SIZES REFER TO INSIDE DIAMETER (I.D.).

(4) THRUST RING SLIPPED OVER PIPE AND HELD IN PLACE BY COUPLING OR FLANGE.

(5) PROPERTY OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL SEWER CONNECTION COMPONENTS INCLUDING PIPE BETWEEN PROPERTY LINE AND THE CITY SEWER.

(6) CHAMBER ACCESS IS TO BE UNOBSTRUCTED.

(7) CITY STAFF OR AGENTS ARE ALLOWED UNRESTRICTED ACCESS TO CHAMBER.

(8) SS TO BE GRADE 304 OR 316.

3		
2	JANUARY 2016	ROBERT LEE
1	FEBRUARY 2007	
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title **PRIVATE PUMP SYSTEM CONFIGURATION UP TO 75mm**

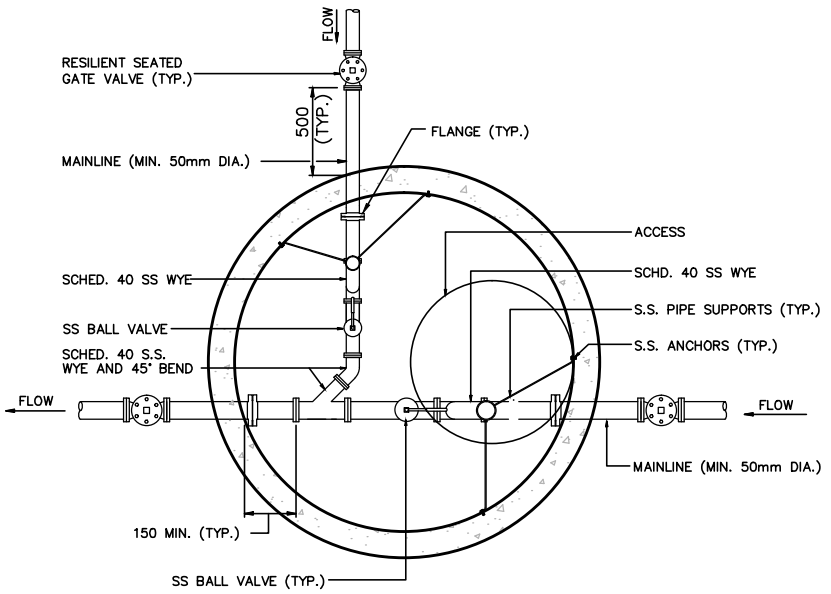
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

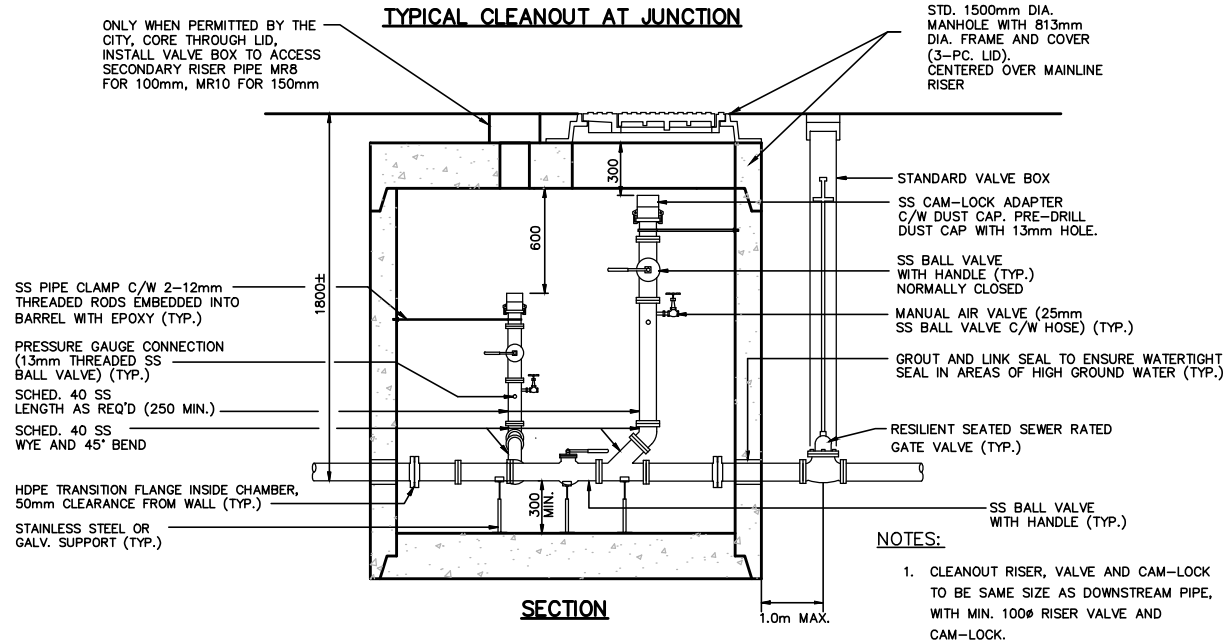
Approved By :

JANUARY 2016 G.M. Engineering

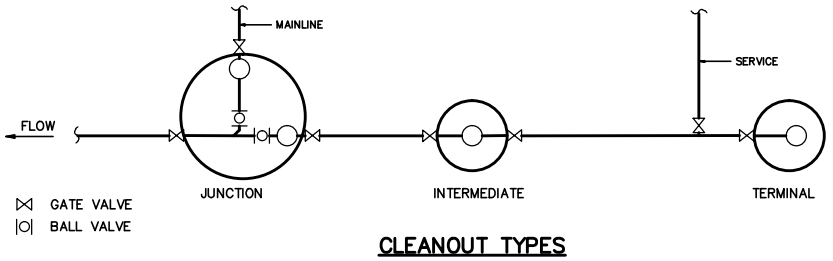
DRAWING NUMBER SSD-S.3



TYPICAL CLEANOUT AT JUNCTION



SECTION



CLEANOUT TYPES

NOTES:

1. CLEANOUT RISER, VALVE AND CAM-LOCK TO BE SAME SIZE AS DOWNSTREAM PIPE, WITH MIN. 100ø RISER VALVE AND CAM-LOCK.
2. CLEANOUT RISER, FITTING AND VALVE DETAILS COMMON FOR ALL CLEANOUT TYPES.
3. BALL VALVES TO BE FULL PORTED.
4. ALL FITTINGS TO BE FLANGED.
5. 1500mm DIA. MANHOLE REQUIRED FOR 100mm AND 75mm FORCEMAINS AS SHOWN. ADJUST AS REQUIRED FOR DIFFERENT SIZES.
6. SEE MMCD STANDARD MANHOLE DRAWING FOR RUNGS AND OTHER DETAILS. SEAL RISER JOINTS TO ENSURE WATERTIGHT.
7. DESIGN ENG ENSURE ALL COMPONENTS FIT INSIDE MH AND IN COMPLIANCE WITH WCB REQUIREMENTS.
8. SS TO BE GRADE 304 OR 316

3		
2	JANUARY 2016	ROBERT LEE
1	DECEMBER 2006	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **CLEANOUT MANHOLE FOR LOW PRESSURE SEWERS**

CITY OF SURREY the future lives here.

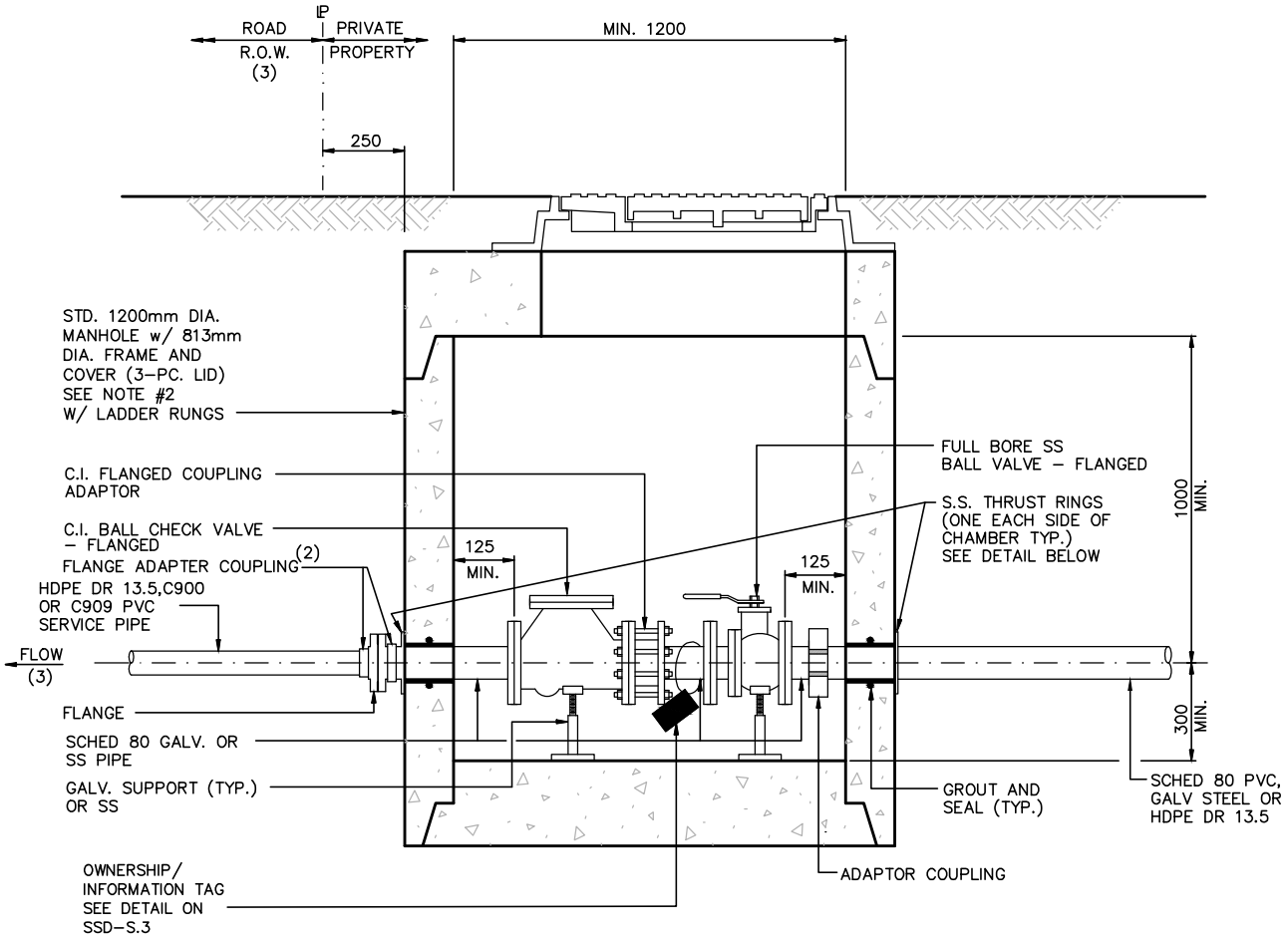
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-S.3.1



PROPERTY LINE CHAMBER DETAIL FOR 100mm AND LARGER

N.T.S.

NOTES:

1. SS GRADE 304 OR 316.
2. ONLY REQUIRED FOR CONNECTING FLANGE TO PVC PIPE.
3. VALVE REQUIRED, ON SERVICE CONNECTION, AT MAIN LINE TEE/WYE.

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title **TYPICAL LOW PRESSURE SEWER CONNECTION**
PROPERTY LINE CHAMBER, 100mm AND LARGER SERVICE

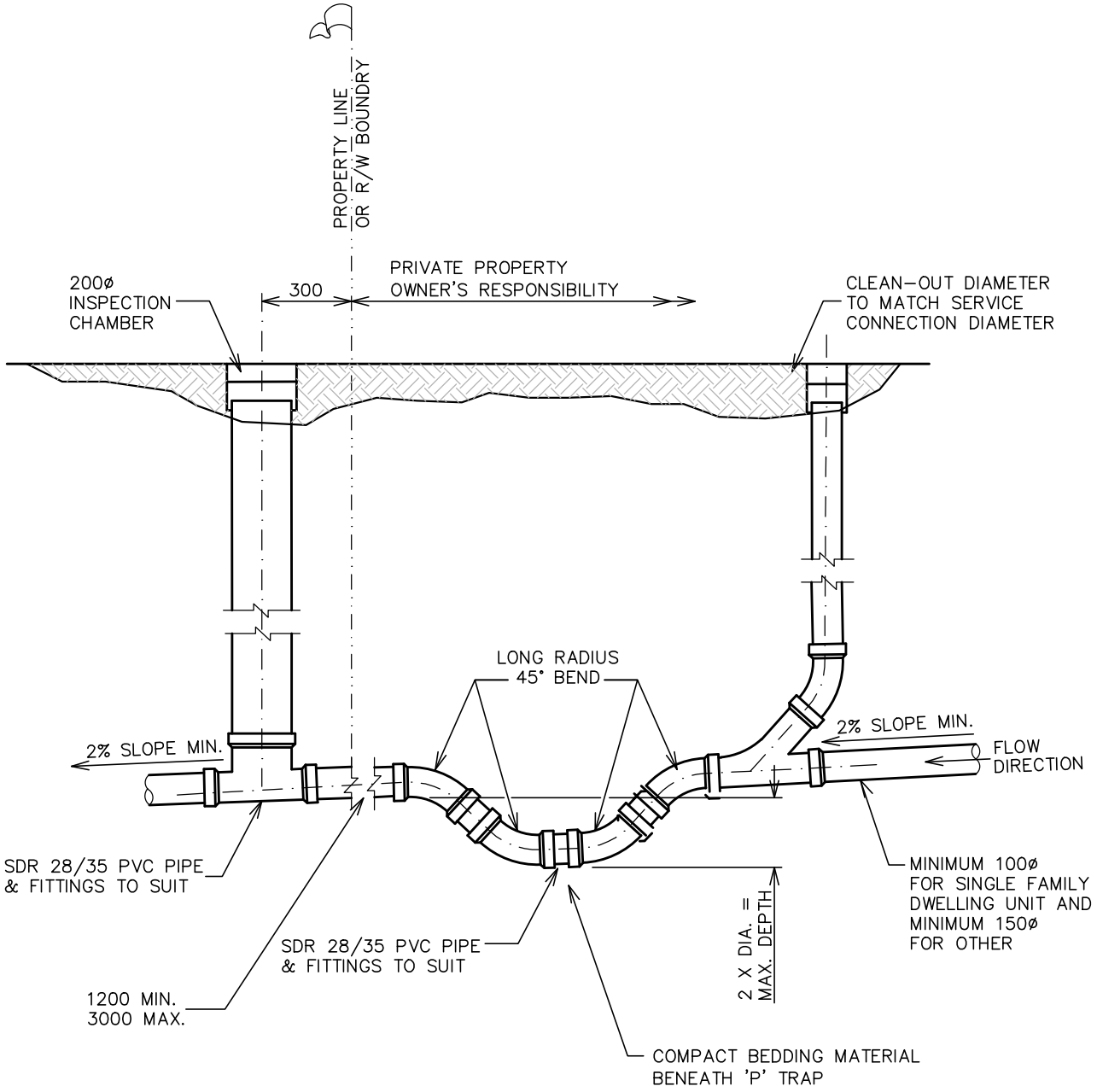
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-S.3.2



SERVICE CONNECTION P-TRAP ON PRIVATE PROPERTY
(GUIDELINE ONLY – SLOPES LESS THAN 10%)

NOTES: 1) P-TRAP OFFSET FROM PL TO BE 1/3 HOUSE SET BACK DISTANCE, AND MIN 1200mm

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title: **SERVICE CONNECTION P-TRAP PRIVATE PROPERTY**

CITY OF SURREY the future lives here.

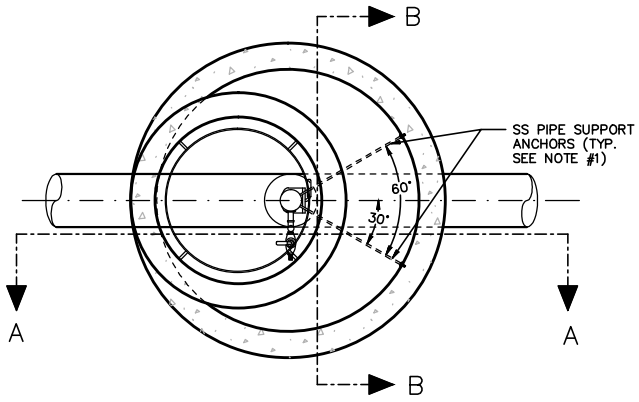
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

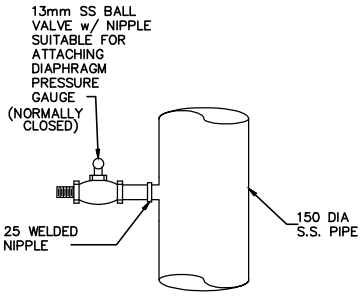
JANUARY 2016 G.M. Engineering

DRAWING NUMBER

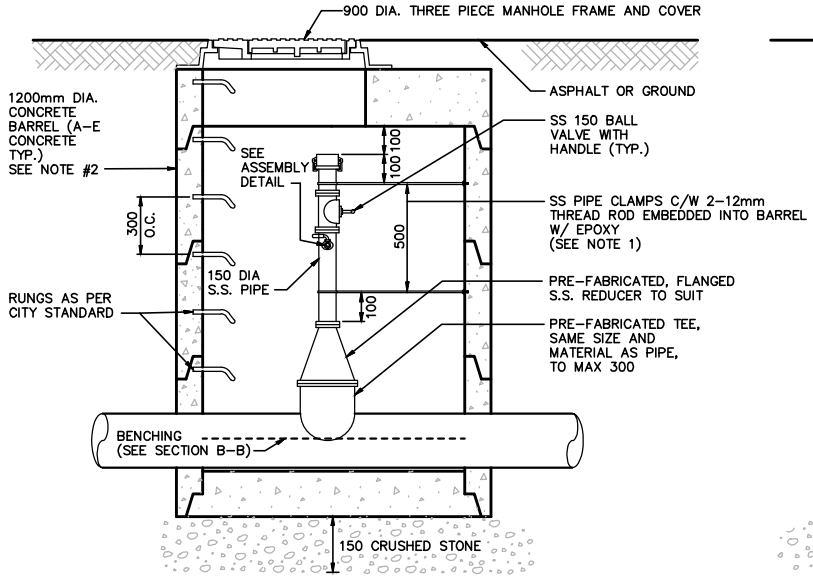
SSD-S.4



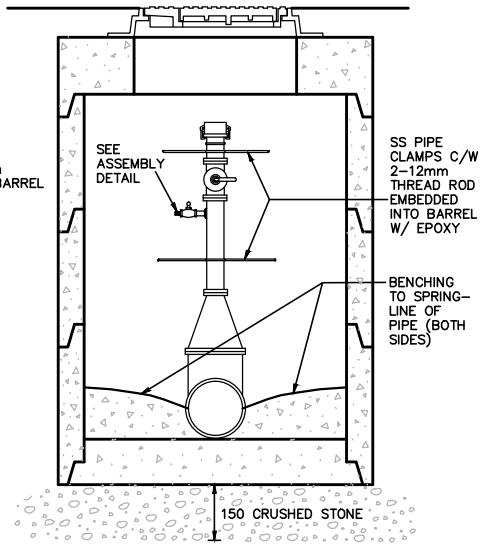
PLAN VIEW



ASSEMBLY DETAIL



SECTION A-A



SECTION B-B

NOTES:

1. WHEN PLACING PIPE SUPPORT, CONSIDER MAINTENANCE ACCESS AND ADJUST LOCATIONS ACCORDINGLY.
2. ALL JOINTS TO BE SEALED TO MAKE MANHOLE WATER-TIGHT.
3. DESIGN ENGINEER TO ENSURE COMPONENTS FIT INSIDE THE MANHOLE DEPTH.

3		
2		
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

MANHOLE FOR PRESSURE SEWERS

CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

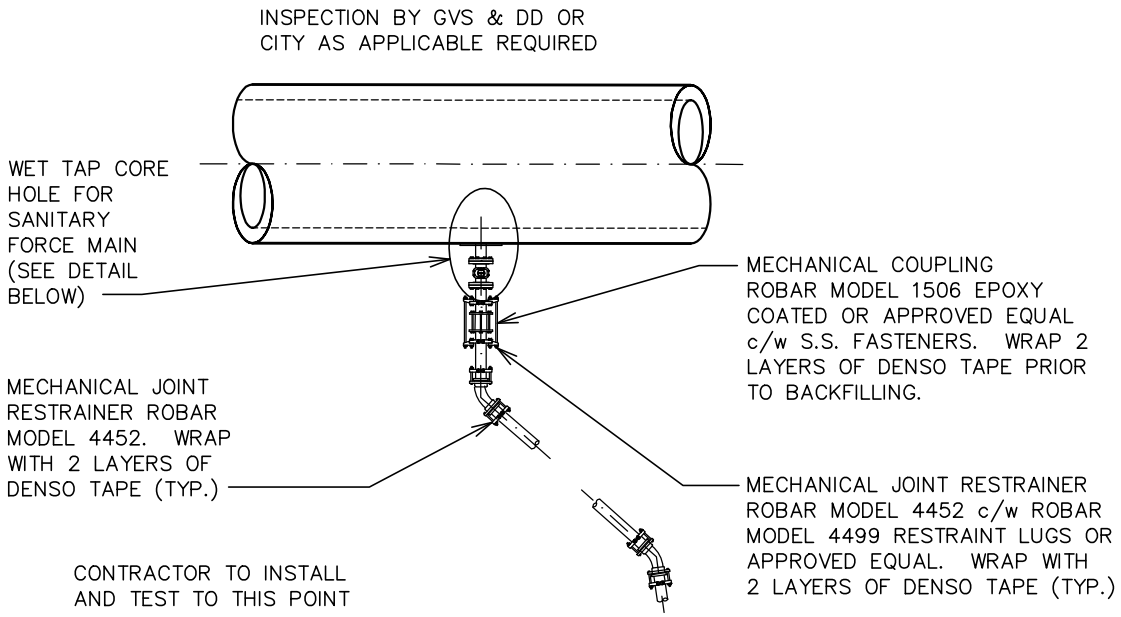
Approved By :

JANUARY 2016

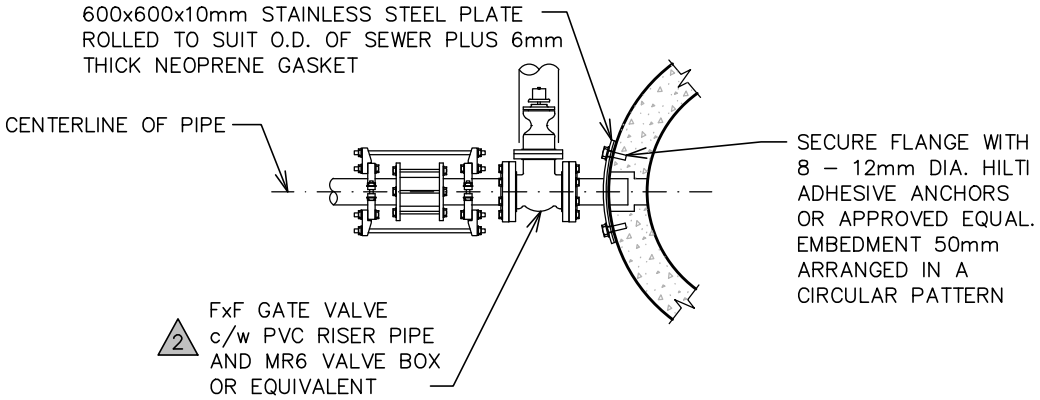
G.M. Engineering

DRAWING NUMBER

SSD-S.5



DETAIL AT INTERCEPTOR OR TRUNK



WET TAP CONNECTION DETAIL – SECTION

3		
2	MAY 2016	ROBERT LEE
1	JANUARY 2016	ROBERT LEE
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TYPICAL FORCEMAIN CONNECTION WET TAP CORING**

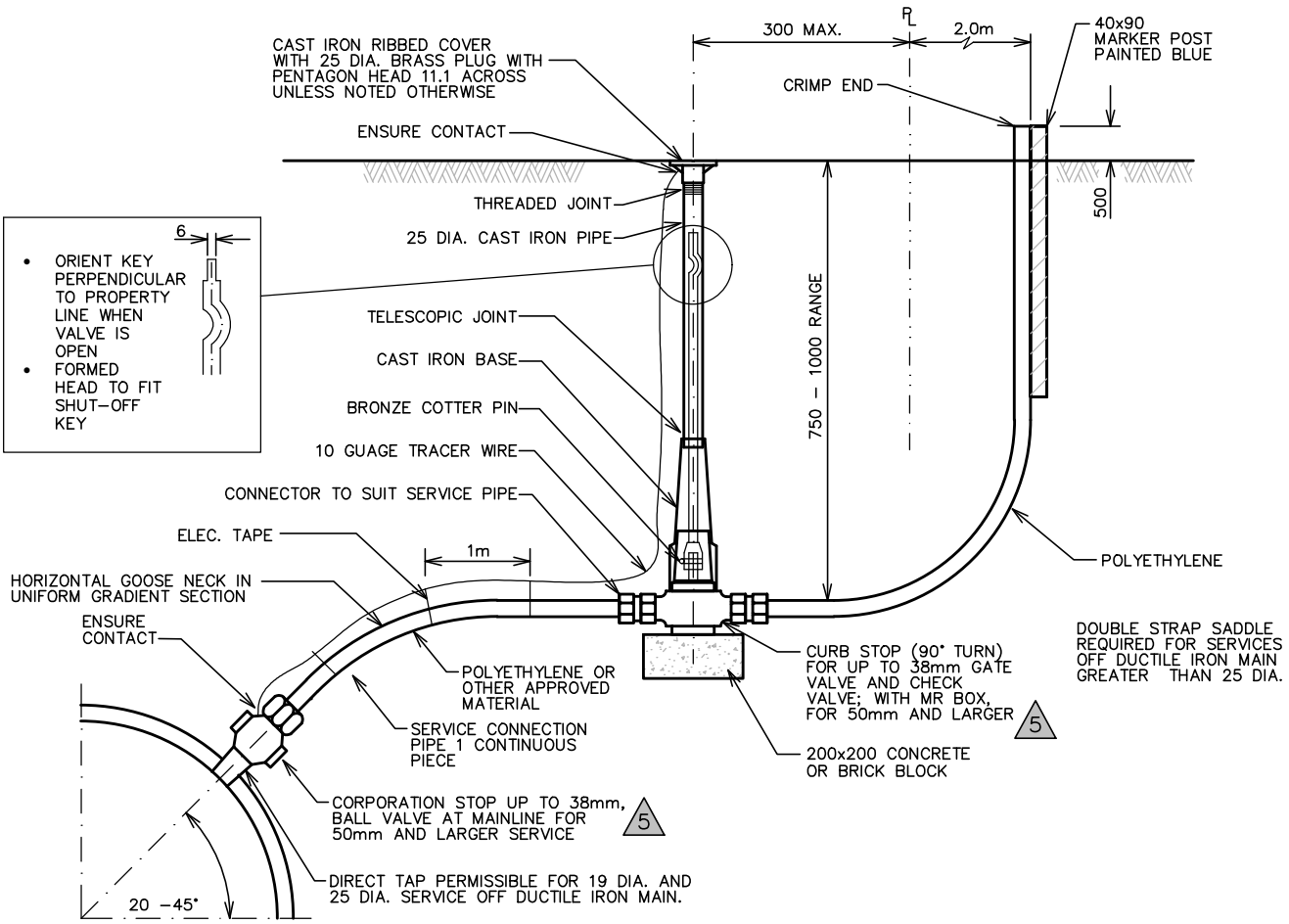
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER SSD–S.6



NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE SURREY DOCUMENT, "WATER METER INSTALLATION STANDARDS AND SPECIFICATIONS."
2. FOR WATER METERS REFER TO TABLE 1 OF THE "WATER METER INSTALLATION STANDARDS AND SPECIFICATIONS."
3. CONNECTIONS GREATER THAN 50 SHALL BE RESTRAINED TO THE CITY WATER MAIN.
4. ALL FITTINGS OVER 50 DIAMETER SHALL HAVE FLANGE OR HUB JOINTS.
5. CHAMBERS AND VAULTS SIZED AS SPECIFIED IN TABLE 3 OF "WATER METER INSTALLATION STANDARDS AND SPECIFICATIONS."
6. FOR INSTALLATIONS INSIDE BUILDING REFER TO "WATER METER INSTALLATION STANDARDS AND SPECIFICATIONS".
7. WHEN CURB STOP INSTALLED IN DRIVEWAY PLACE IN CHAMBER. COVER MARKED 'WATER' SEE MMCD DRAWING S9 FOR TYPICAL DETAIL.
8. OPERATING ROD DIAMETERS – 14mm FOR 25mm OR SMALLER CURB STOPS
   – 19mm FOR 32mm TO 38mm CURB STOPS
9. TRACER WIRE SHALL BE ATTACHED TO CORP AND CURB STOPS WITH ANODE NUTS AND SECURED TO SERVICE PIPE @ 1m INCREMENTS USING ELECTRICAL TAPE, DO NOT COIL AROUND SERVICE PIPE.

	Revision Date	Approved
5	JULY 2016	KOK KUEN LI
4	JANUARY 2016	KOK KUEN LI
3	DECEMBER 2003	KOK KUEN LI

All Dimensions Shown In Millimeters, Unless Otherwise Noted

Title: **WATER SERVICE CONNECTION 19mm TO 50mm ONLY**

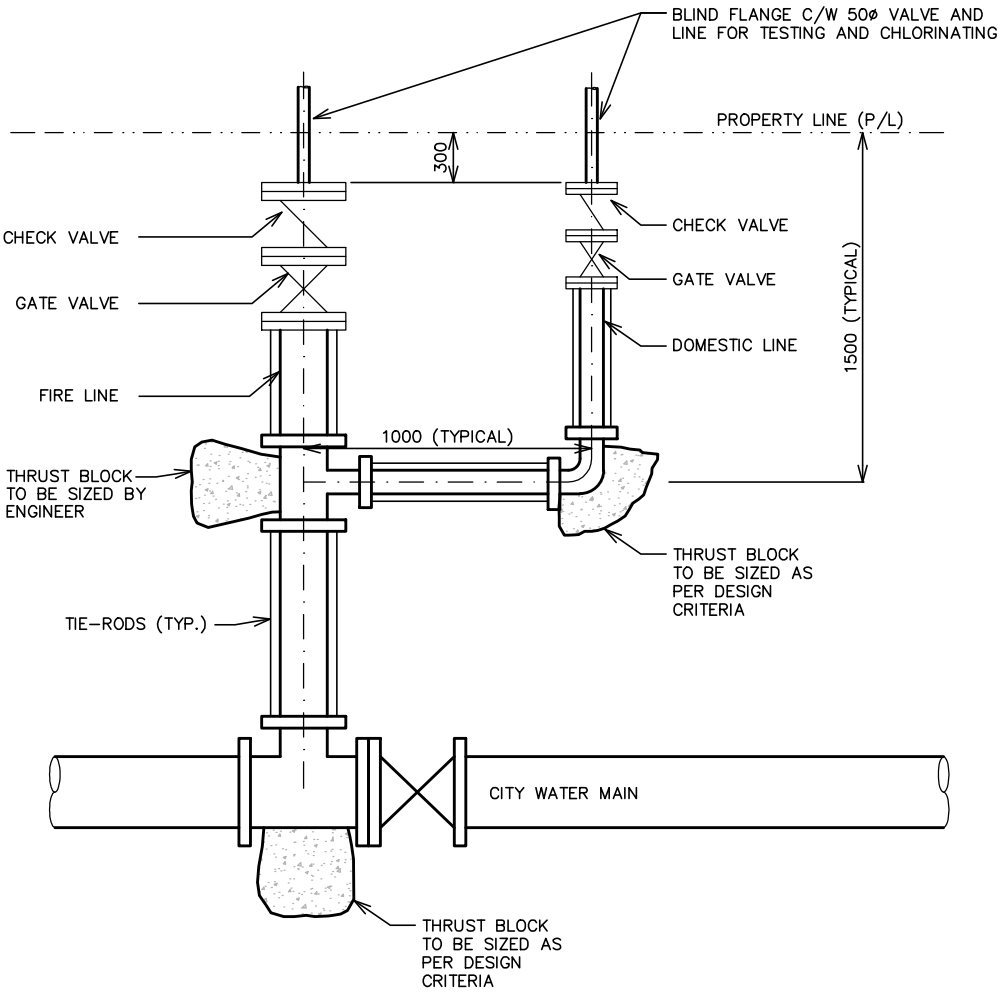
CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–W.1



FIRELINE/DOMESTIC SERVICE CONNECTION
GREATER THAN OR EQUAL TO 100mm

NOTES:
1. ALL CONNECTIONS TO BE CONTINOUSLY RESTRAINED TO THE CITY WATER MAIN.

3		All Dimensions Shown In Millimeters, Unless Otherwise Noted
2		
1	JANUARY 2016	KOK KUEN LI
	Revision Date	Approved

Title **FIRELINE/DOMESTIC SERVICE CONNECTION GREATER THAN OR EQUAL TO 100mm**

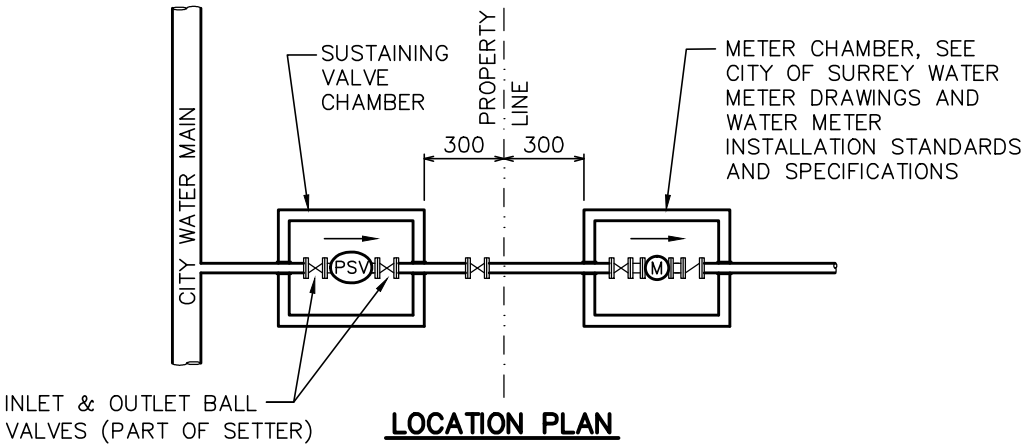
CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

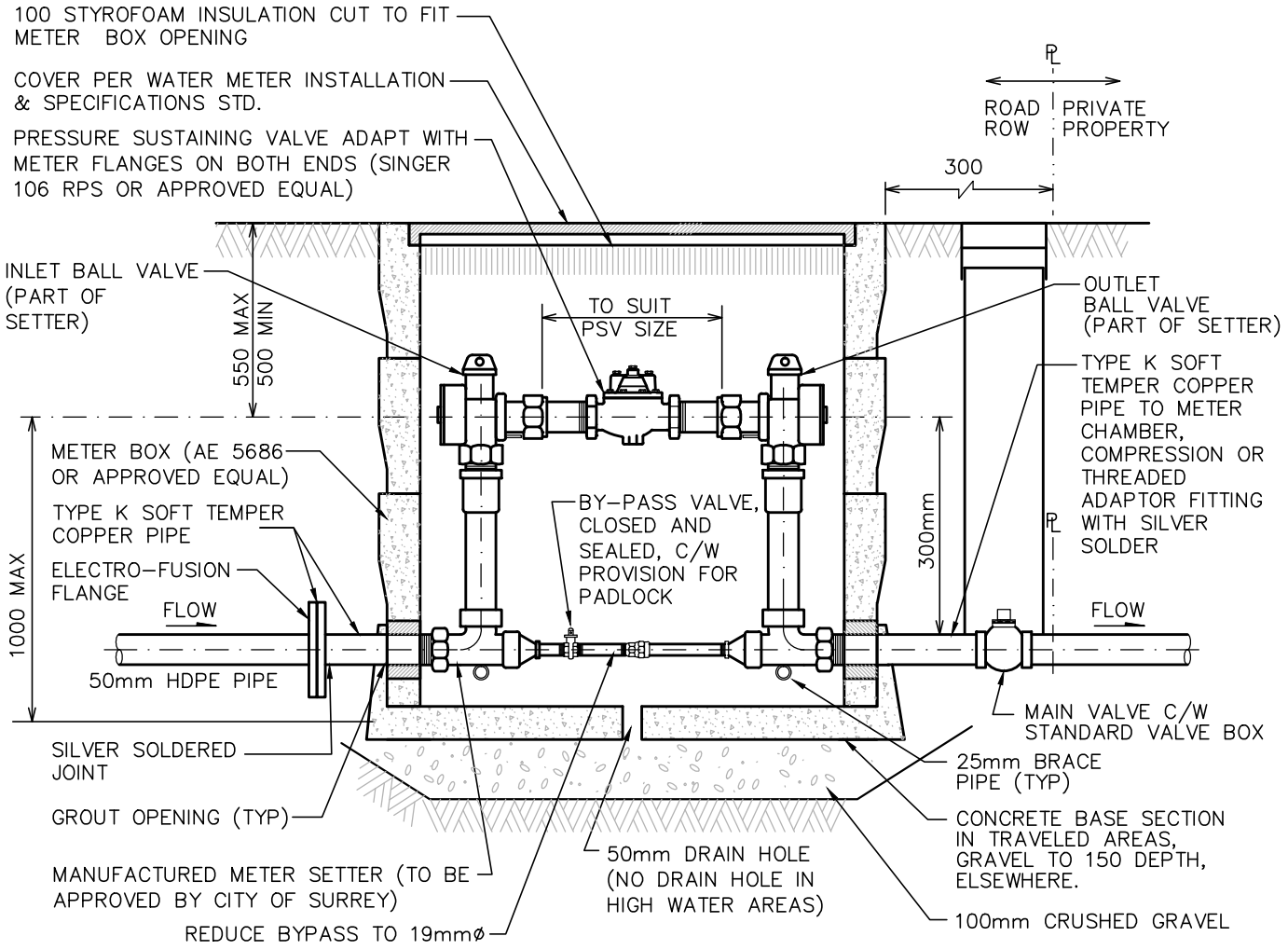
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD-W.2



LOCATION PLAN



NOTES: (1) THIS DRAWING SHOULD BE REVIEWED IN CONJUNCTION WITH THE DOCUMENT "WATER METER INSTALLATION STANDARDS AND SPECIFICATIONS".

(2) NO THREADED CONNECTION ALLOWED DIRECTLY IN SOIL.

3		
2		
1	JANUARY 2016	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Millimeters, Unless Otherwise Noted

Title **50mm PRESSURE SUSTAINING VALVE & CHAMBER INSTALLATION**

CITY OF SURREY the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER **SSD-W.3**

NOTES:
1. TEMPORARY BLOW-OFFS PIPE MATERIAL TO BE GALVANIZED INSTEAD OF BRASS.
2. DOUBLE NUT TIE RODS AT REVERSE ANCHOR PLATES & CAP.
3. THRUST BLOCKS OF 20MPa CONCRETE TO BE PLACED AGAINST UNDISTURBED GROUND.

3		
2	JULY 2016	KOK KUEN LI
1	JANUARY 2016	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Millimeters, Unless Otherwise Noted

Title

BLOW-OFF CHAMBER

CITY OF SURREY
the future lives here.

SUPPLEMENTARY STANDARD DRAWINGS

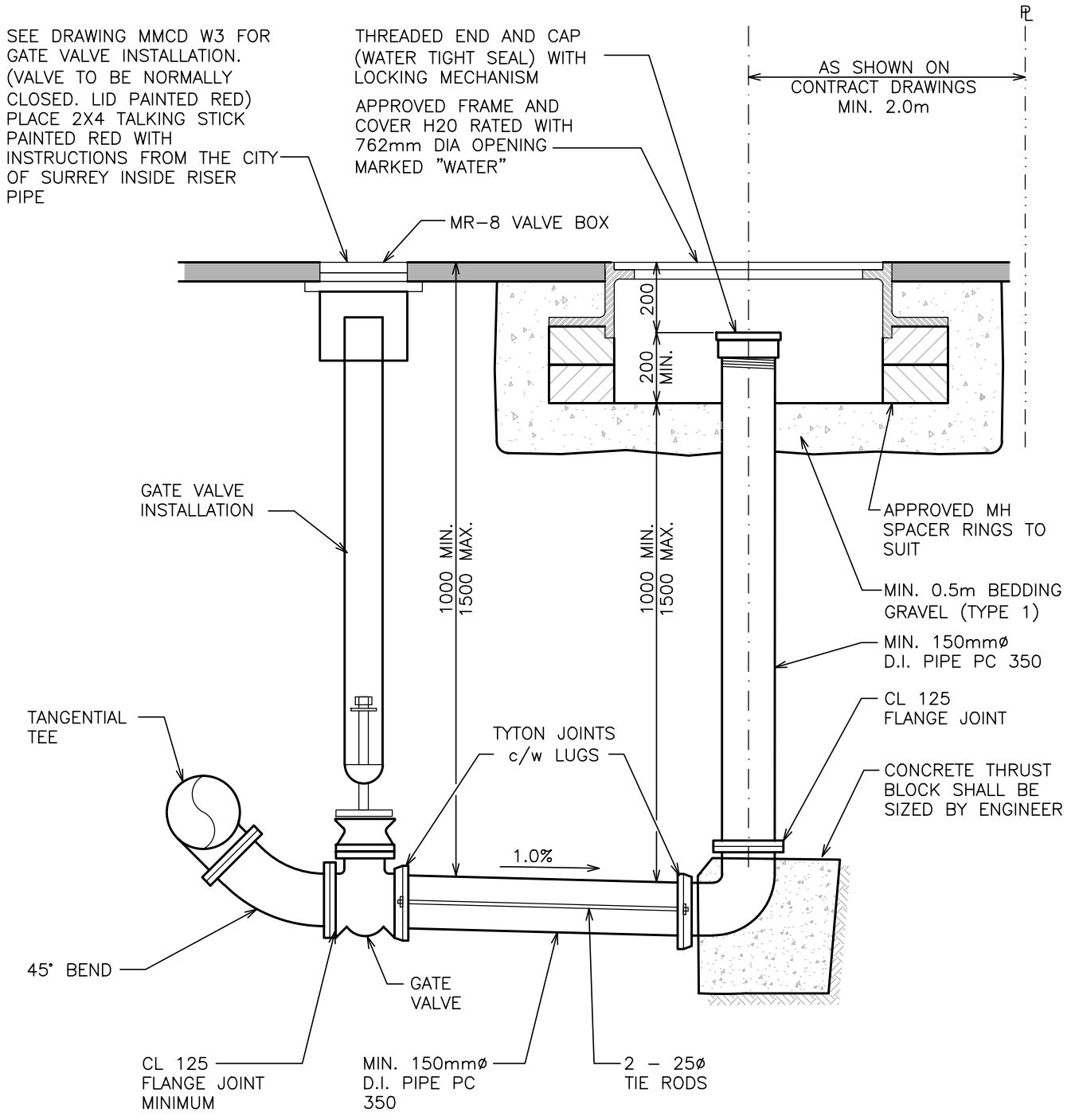
Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER

SSD-W.4



NOTES: (1) COMBINATION AIR VALVE & CHAMBER IS REQUIRED AT THE HIGH END OF THE ISOLATED SECTION OF WATERMAIN TO BE BLOWN DOWN.

3		
2		
1	JANUARY 2016	KOK KUEN LI
	Revision Date	Approved

All Dimensions Shown In Millimeters, Unless Otherwise Noted

Title

BLOW DOWN CHAMBER

CITY OF SURREY the future lives here.

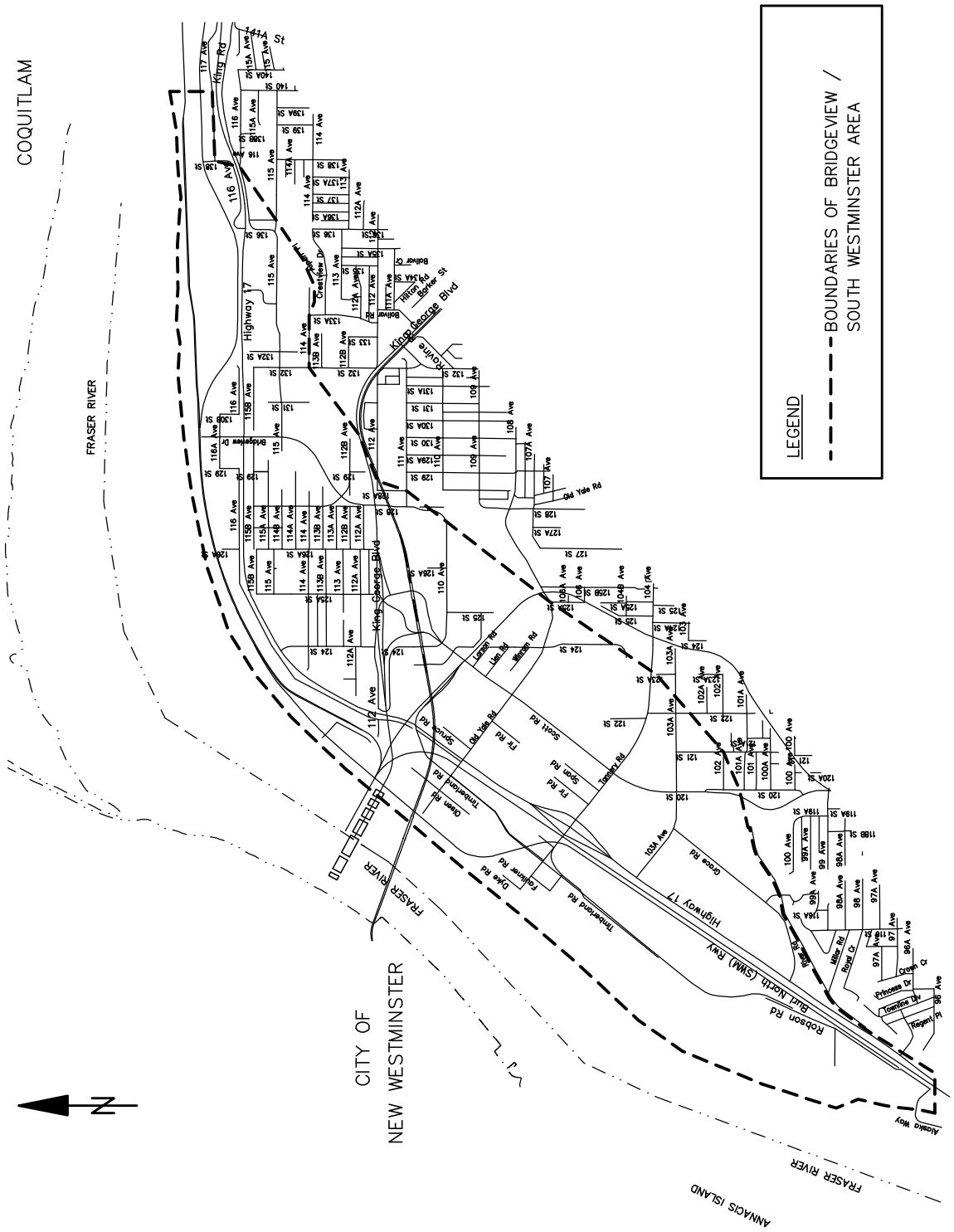
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD-W.5



3		
2		
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

BRIDGEVIEW / SOUTH WESTMINSTER AREA

CITY OF SURREY
the future lives here.

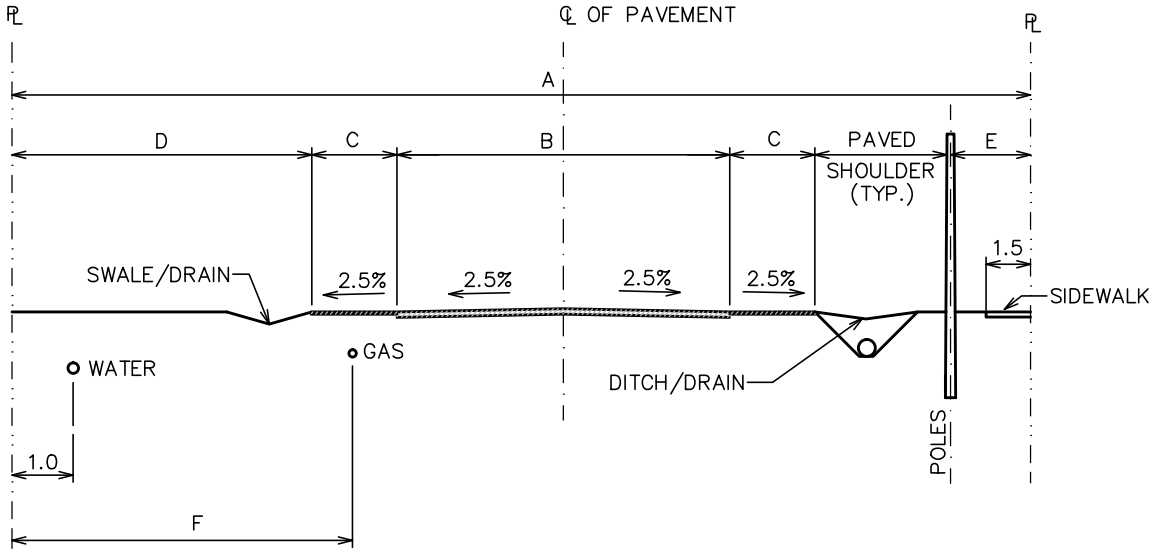
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.1.1



A	B	C	D	E	F
20	11.0	2.0	1.75	1.8	2.75
20	12.2	2.0	1.2	1.8	2.2
24	14.0	2.0	3.0	1.8	4.0

BRIDGEVIEW–SOUTH WESTMINSTER(1)
EXCEPT RF (F) ROADS

NOTES: (1) INTERIM STANDARD FOR ROADS NOT PRELOADED IN BRIDGEVIEW AND SOUTH WESTMINSTER; BUILT SUBJECT TO THE APPROVAL OF THE ENGINEER.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

Title **TYPICAL SECTION, ROAD WITHOUT CURB BRIDGEVIEW & SOUTH WESTMINSTER**

CITY OF SURREY the future lives here.

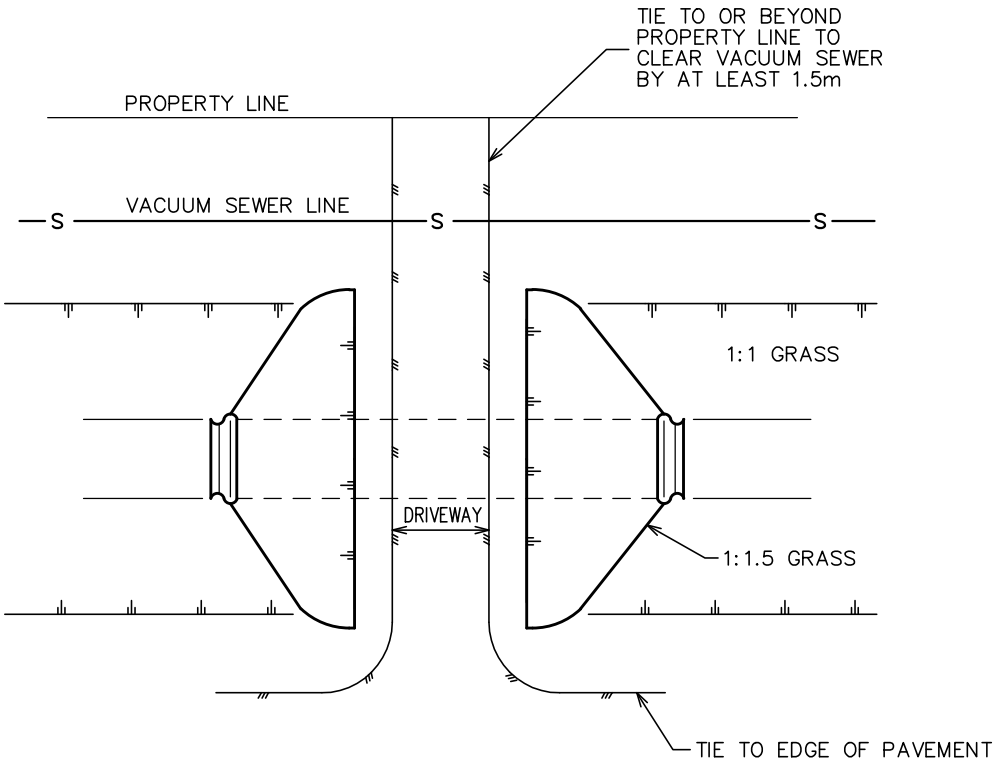
SUPPLEMENTARY STANDARD DRAWINGS

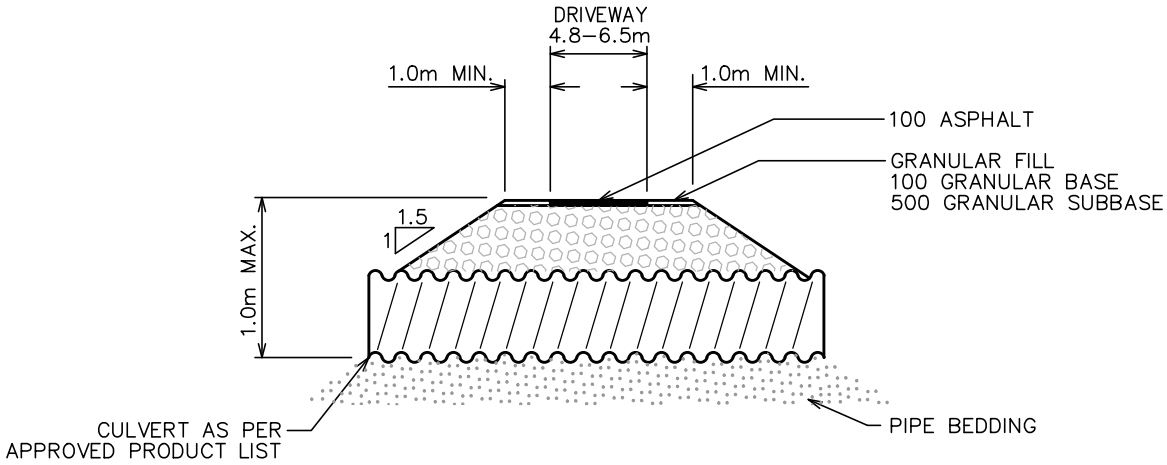
Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.1.2





DRIVEWAY CROSSING

3		
2		
1	JANUARY 2016	CAROLYN BARON
	Revision Date	Approved

All Dimensions Shown In Millimetres,
Unless Otherwise Noted

Title: **RESIDENTIAL DRIVEWAY CROSSING**
BRIDGEVIEW & SOUTH WESTMINSTER

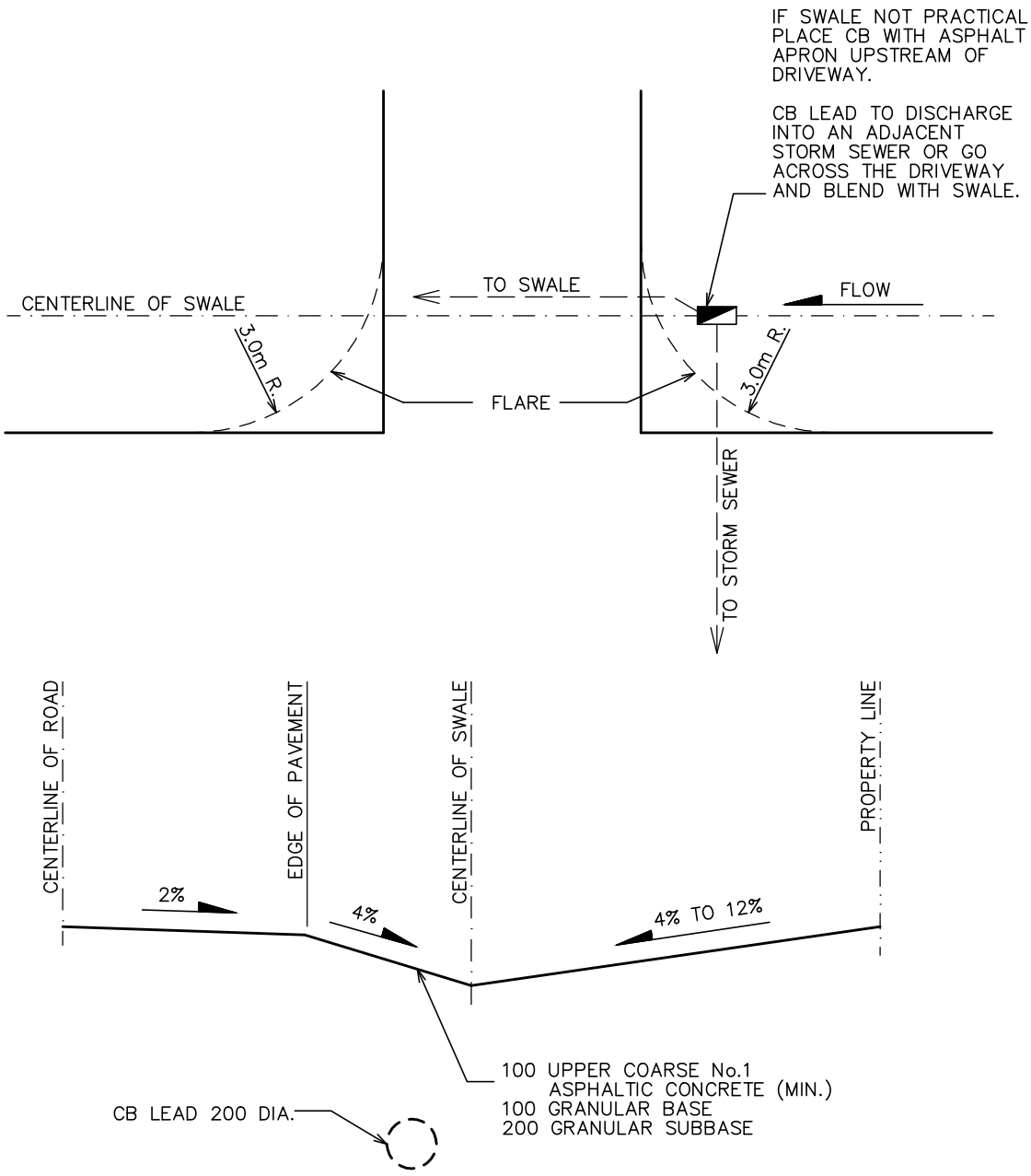
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–U.1.3



SECTION THROUGH DRIVEWAY

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title **DRIVEWAY FOR ROADS WITHOUT CURBS & SWALE BRIDGEVIEW & SOUTH WESTMINSTER**

CITY OF SURREY the future lives here.

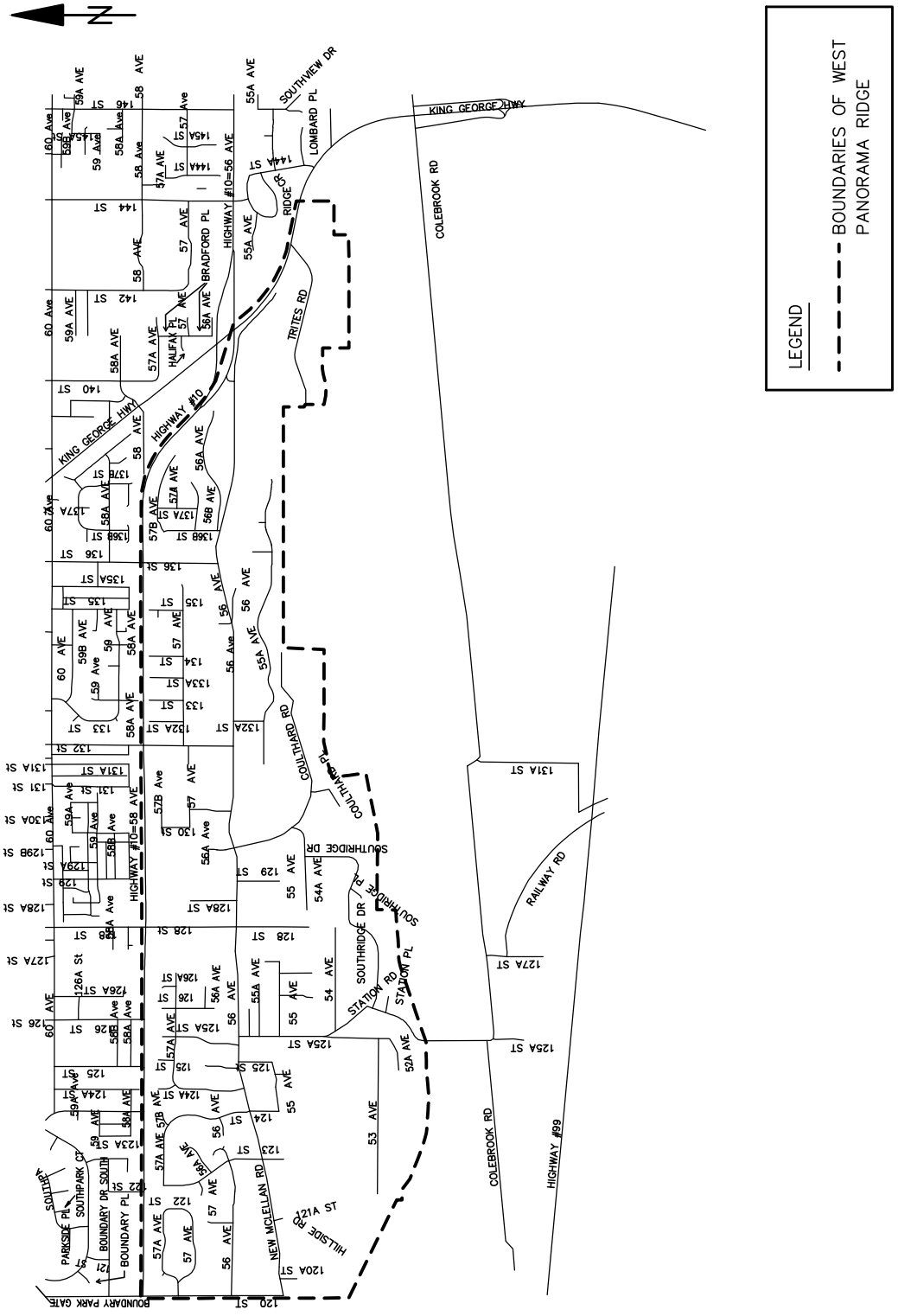
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.1.4



3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

Title: **WEST PANORAMA RIDGE AREA**

CITY OF SURREY
the future lives here.

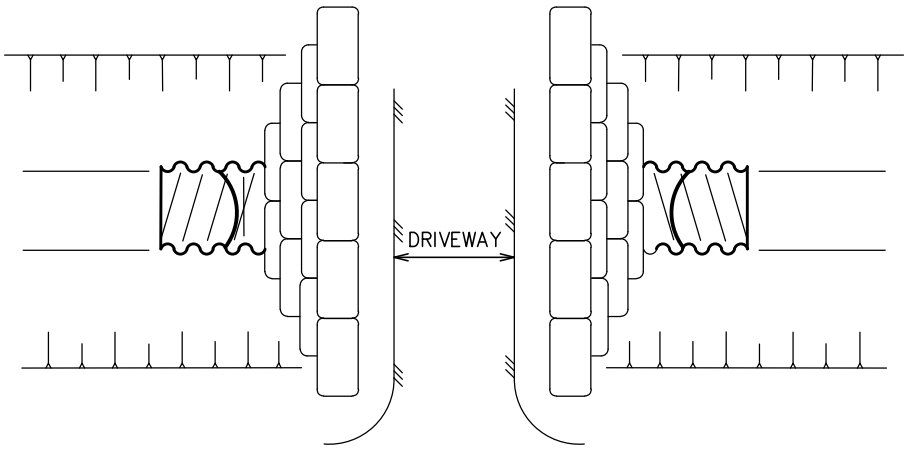
SUPPLEMENTARY STANDARD DRAWINGS

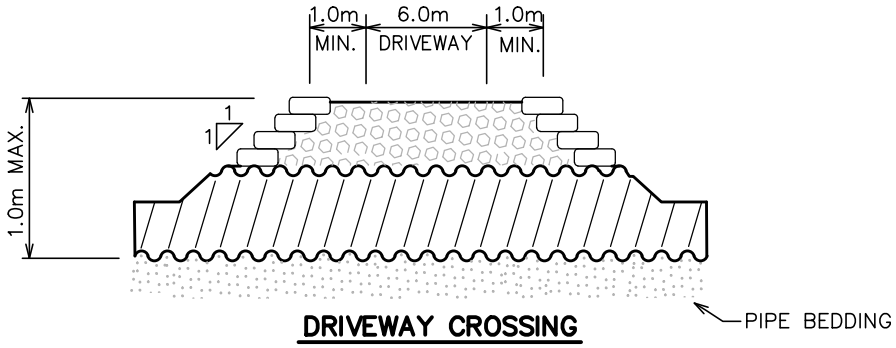
Approved By :

JANUARY 2016

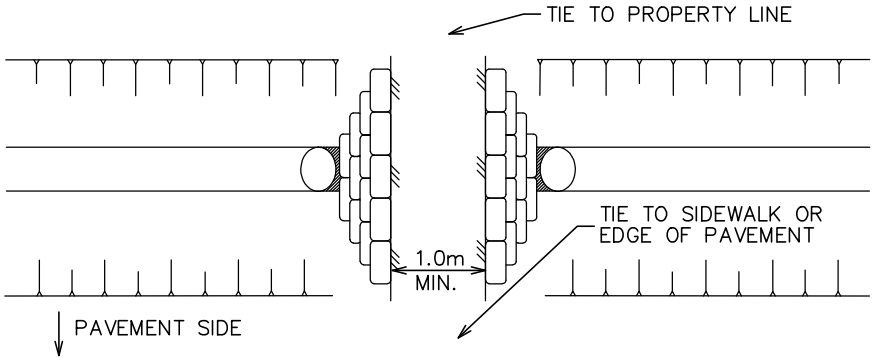
G.M. Engineering

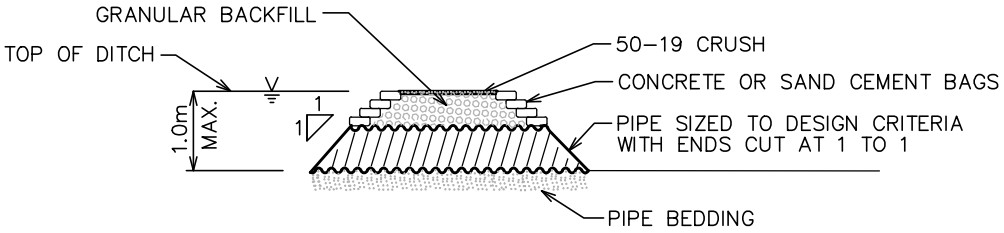
DRAWING NUMBER
SSD–U.2





DRIVEWAY CROSSING





PEDRESTRIAN DITCH CROSSING

3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **DITCH CROSSING WEST PANORAMA RIDGE**

CITY OF SURREY the future lives here.

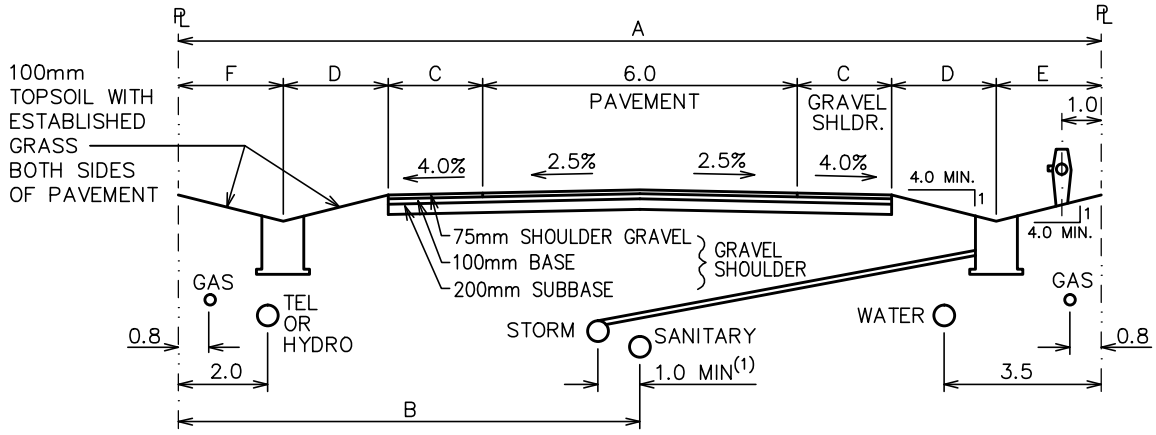
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

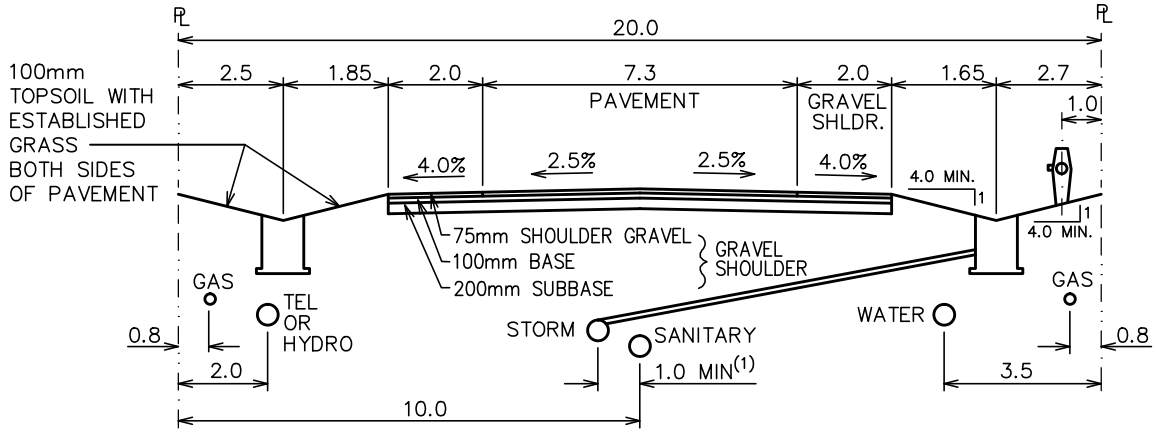
DRAWING NUMBER

SSD–U.2.1



LOCAL

A	B	C	D	E	F
16.5	8.25	2.0	1.5	1.8	1.7
20.0	10.0	2.0	2.4	2.7	2.5



COLLECTOR

3		
2		
1	JANUARY 2016	JAMIE BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title: **TYPICAL ROAD SECTIONS**
WEST PANORAMA RIDGE

CITY OF SURREY
the future lives here.

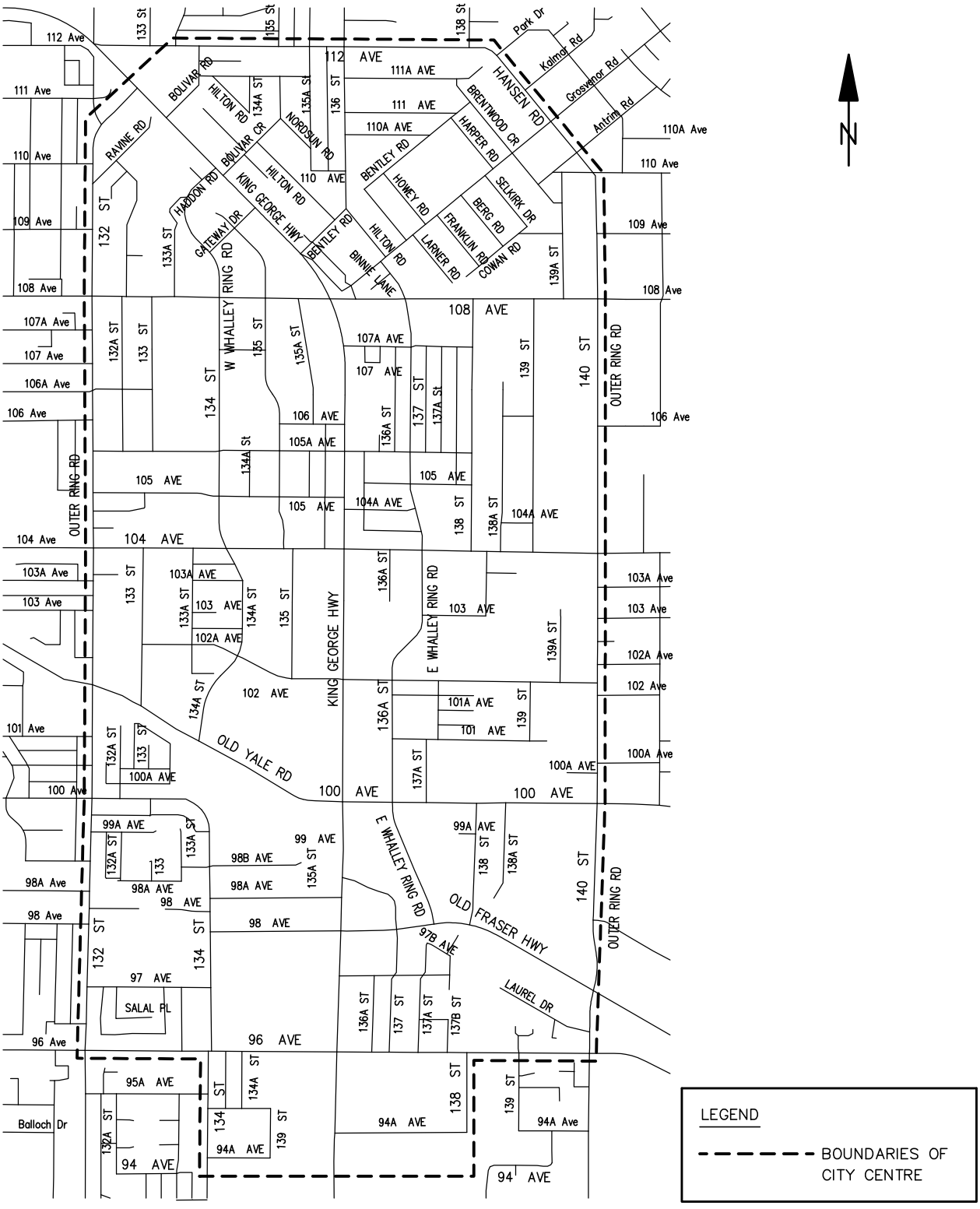
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD-U.2.2



3		All Dimensions Shown In Millimetres, Unless Otherwise Noted
2		
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

Title

SURREY CITY CENTRE AREA

CITY OF SURREY
the future lives here.

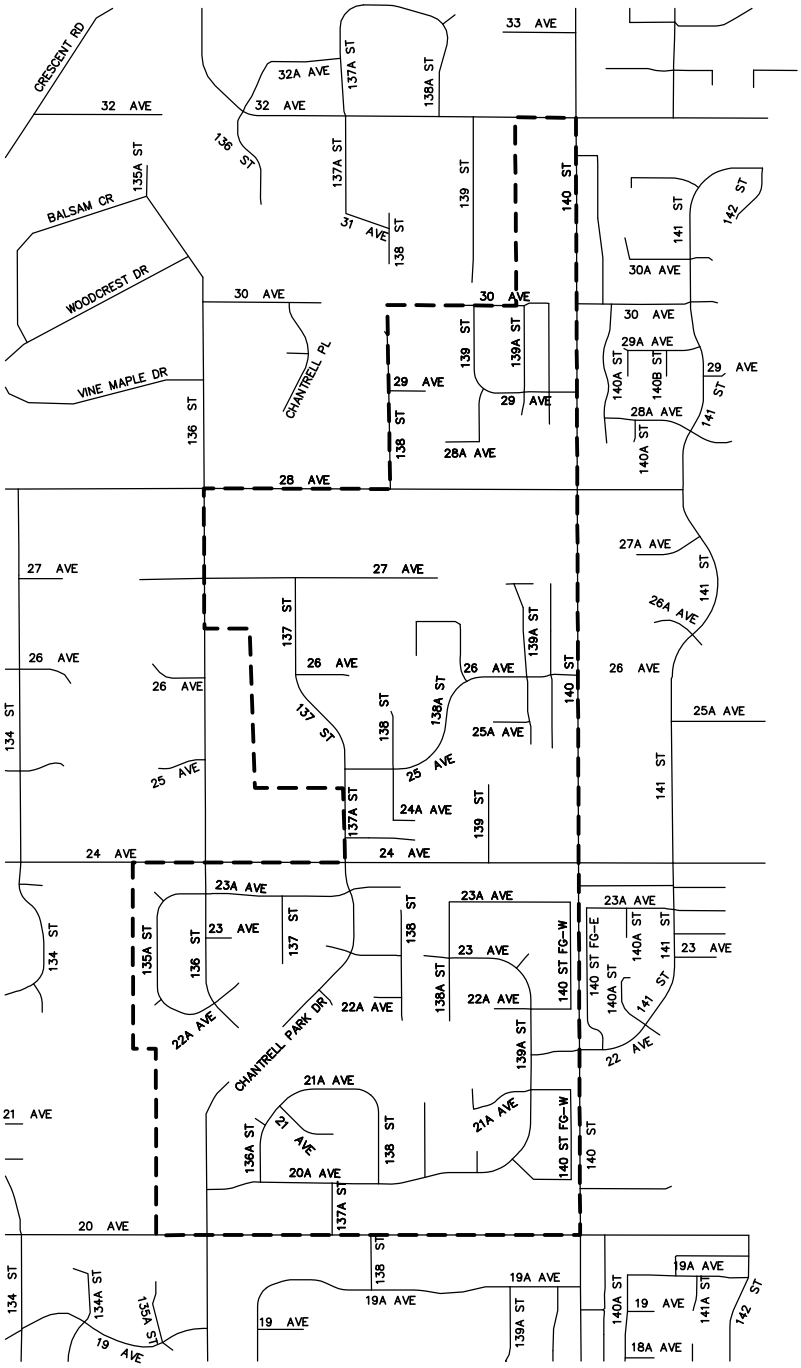
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.3



LEGEND

BOUNDARIES OF SEMIAHMOO

3		
2		
1	JANUARY 2016	SCOTT NEUMAN
	Revision Date	Approved

All Dimensions Shown In Millimetres, Unless Otherwise Noted

Title

CENTRAL SEMIAHMOO AREA

CITY OF SURREY
the future lives here.

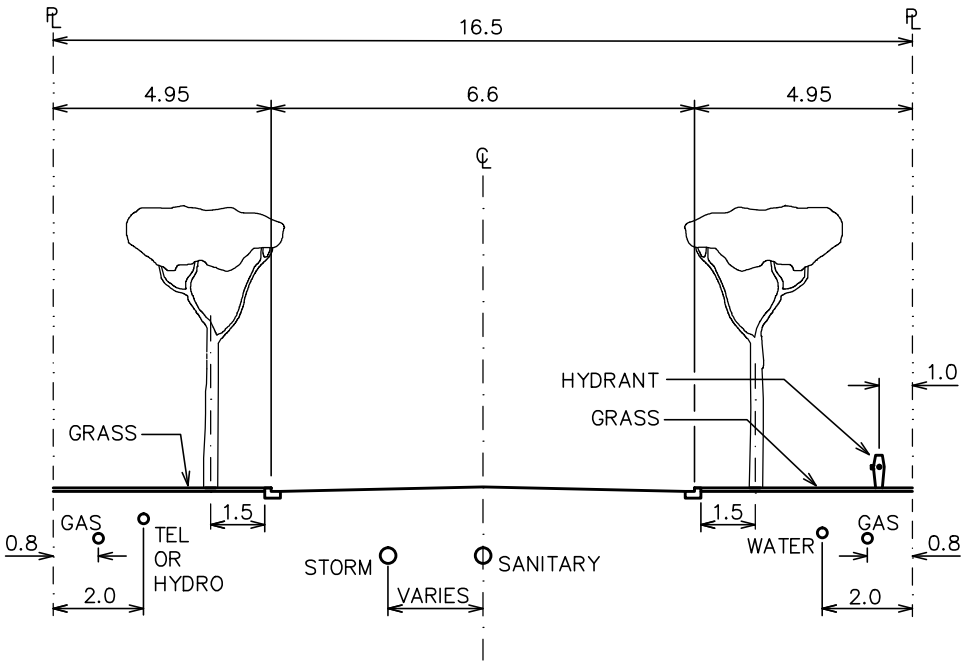
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.4



PROPOSED

NOTES: (1) STREET LIGHTS LOCATED 0.8m BACK FROM FACE OF CURB.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

Title: **LIMITED LOCAL ROAD SECTION, CENTRAL SEMIAHMOO**

CITY OF SURREY the future lives here.

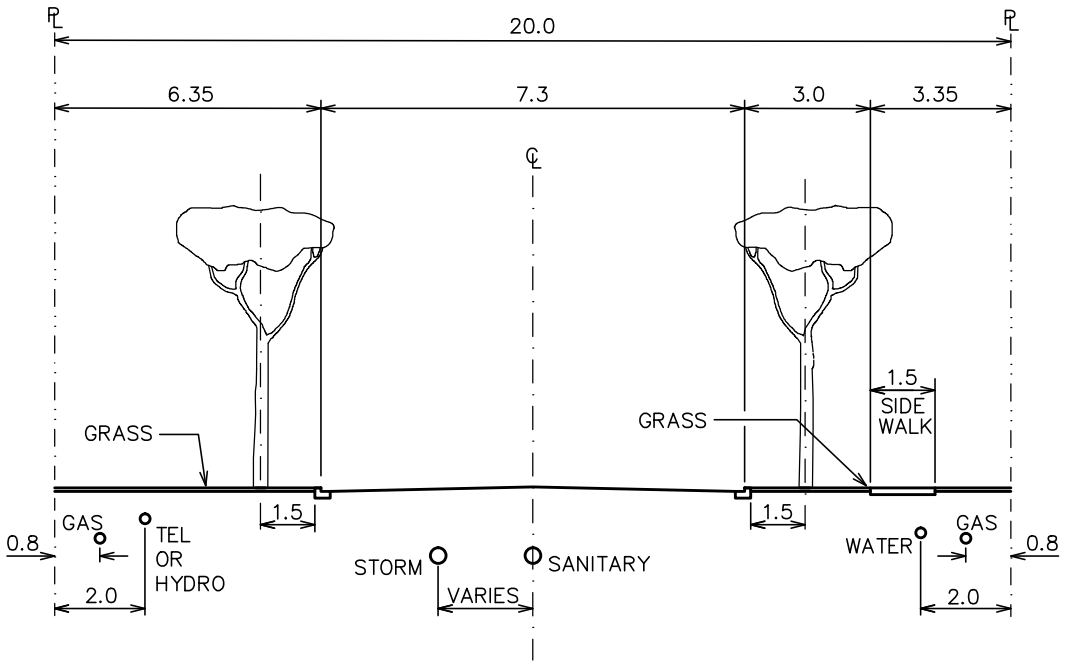
SUPPLEMENTARY STANDARD DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER

SSD–U.4.1



PROPOSED

NOTES: (1) STREET LIGHTS LOCATED 0.8m BACK FROM FACE OF CURB.
(2) HYDRANTS LOCATED 1.0m INTO BOULEVARD FROM EDGE OF SIDEWALK.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title **LOCAL THROUGH ROAD SECTION, CENTRAL SEMIAHMOO**

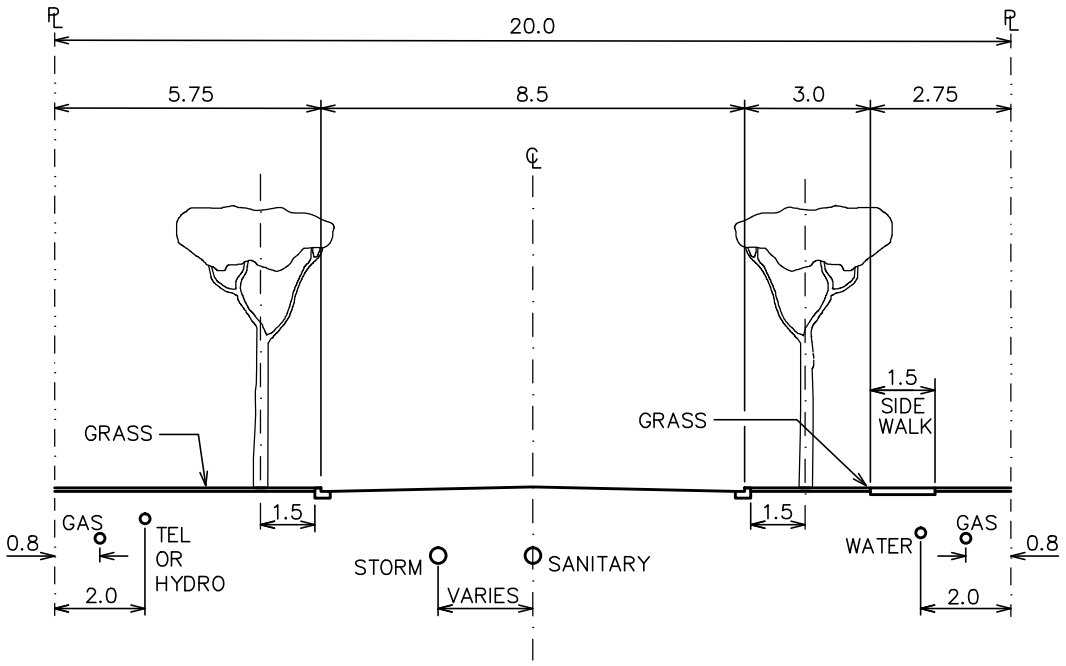
CITY OF SURREY
the future lives here.

SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016 G.M. Engineering

DRAWING NUMBER
SSD–U.4.2



PROPOSED

NOTES: (1) STREET LIGHTS LOCATED 0.8m BACK FROM FACE OF CURB.
(2) HYDRANTS LOCATED 1.0m INTO BOULEVARD FROM EDGE OF SIDEWALK.

3		
2		
1	JANUARY 2016	JAIME BOAN
	Revision Date	Approved

All Dimensions Shown In Metres,
Unless Otherwise Noted

Title
LIMITED OR THROUGH COLLECTOR ROAD SECTION, CENTRAL SEMIAHMOO

CITY OF SURREY
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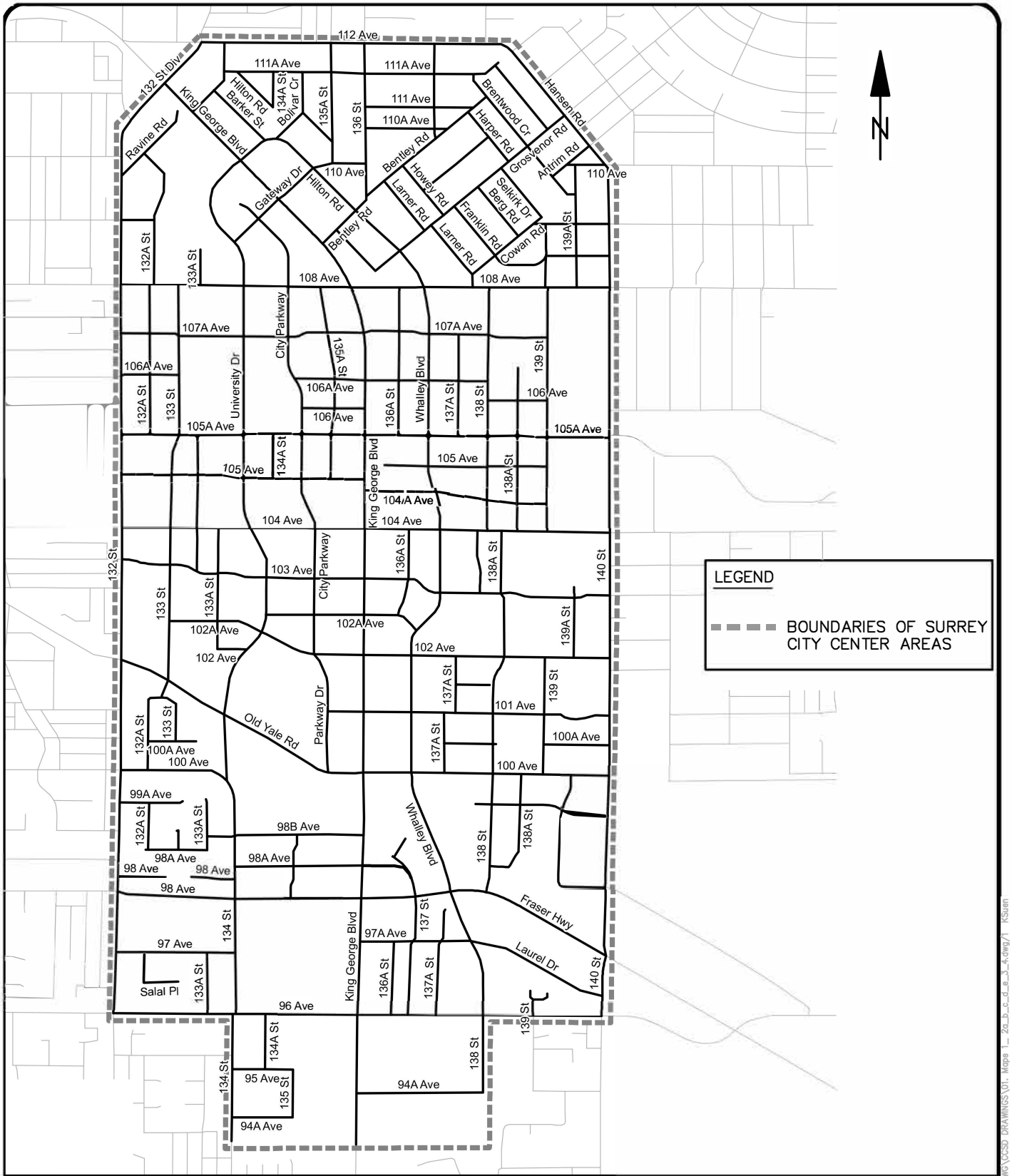
SUPPLEMENTARY
STANDARD
DRAWINGS

Approved By :

JANUARY 2016

G.M. Engineering

DRAWING NUMBER
SSD–U.4.3



3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: BOUNDARY DELINEATION MAP
	Revision Date / Approved	

CITY OF SURREY
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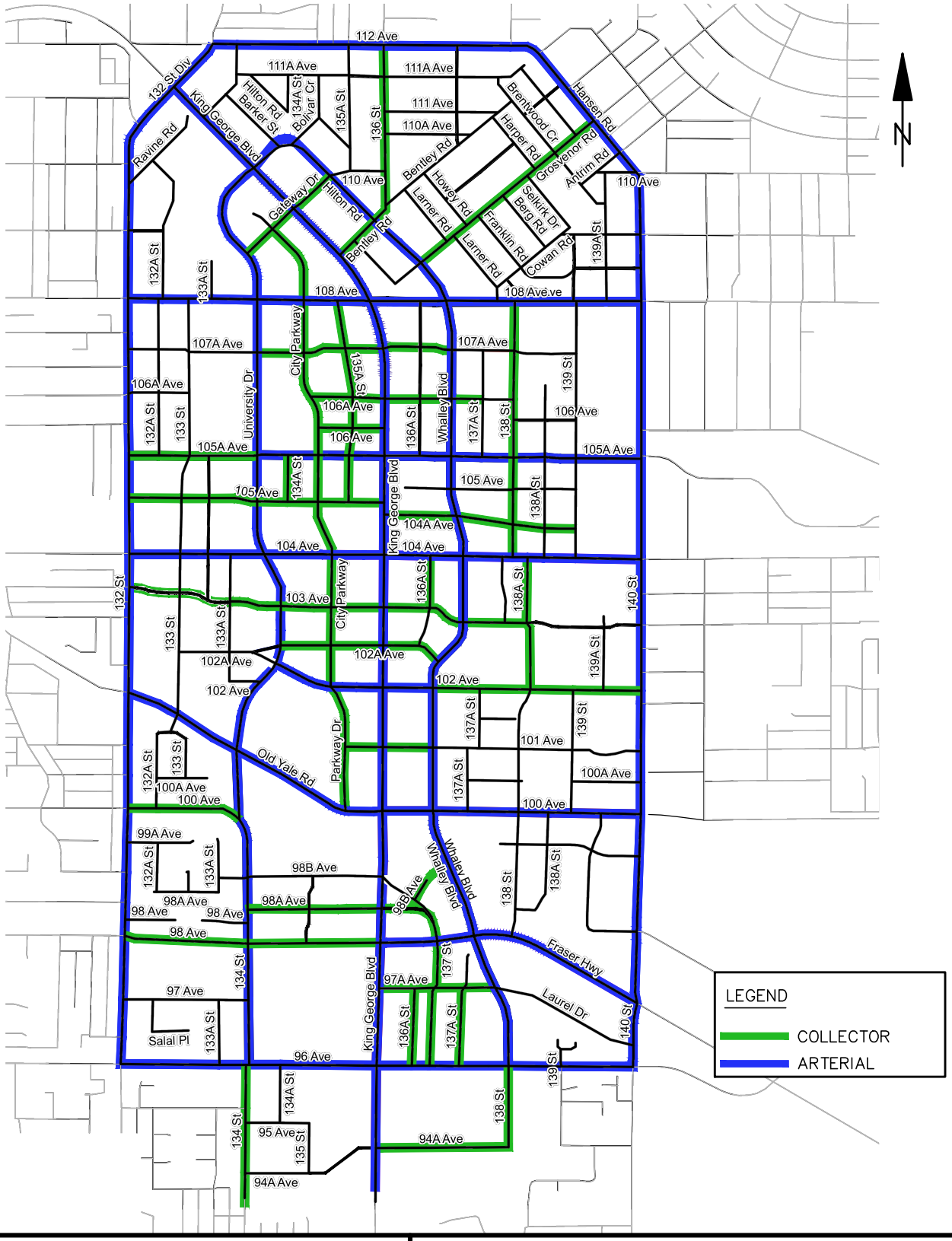
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–1



3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: ROAD CLASSIFICATION MAP
	Revision Date / Approved	

CITY OF SURREY
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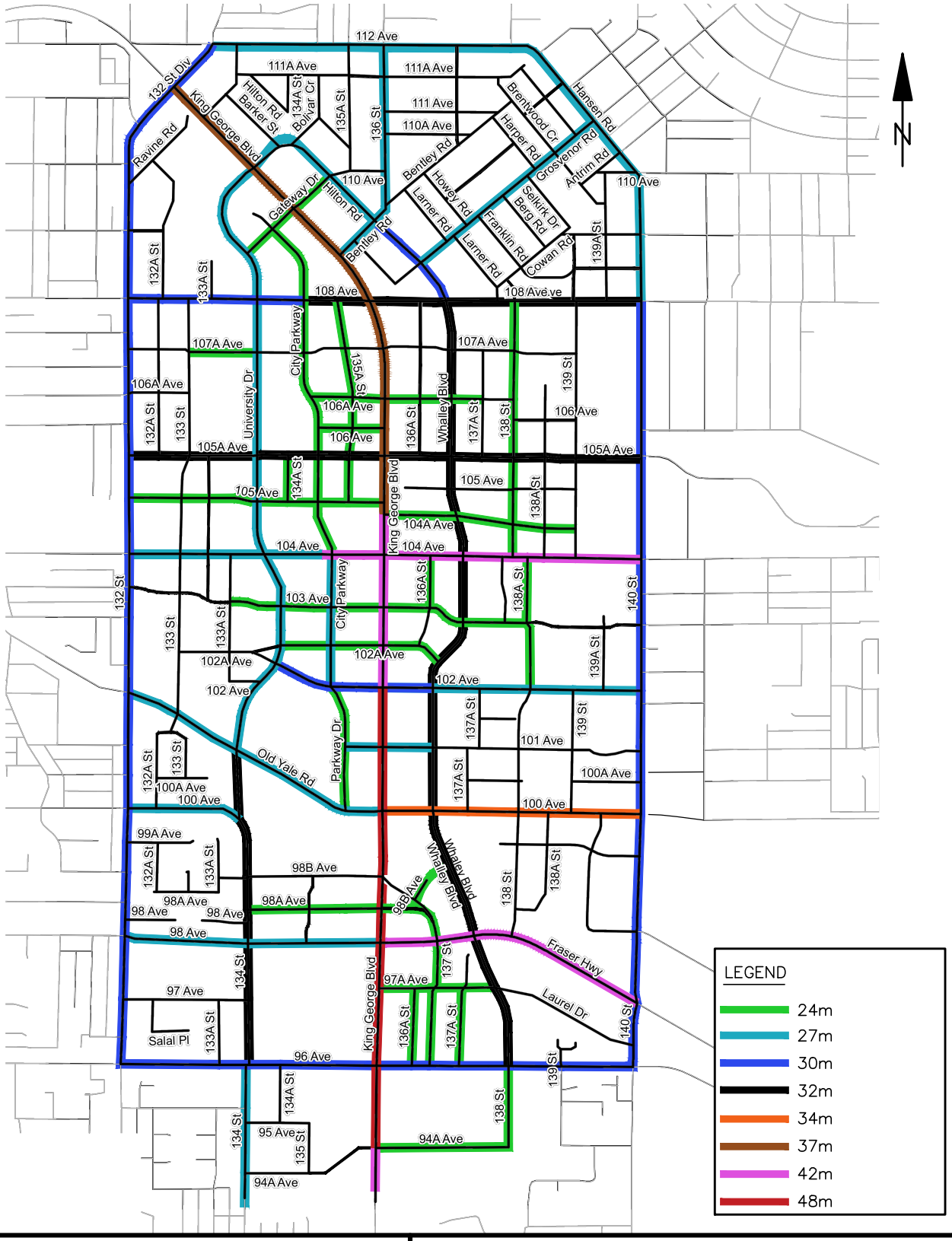
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–2a



3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: ROAD R.O.W. WIDTH MAP
	Revision Date / Approved	

CITY OF SURREY
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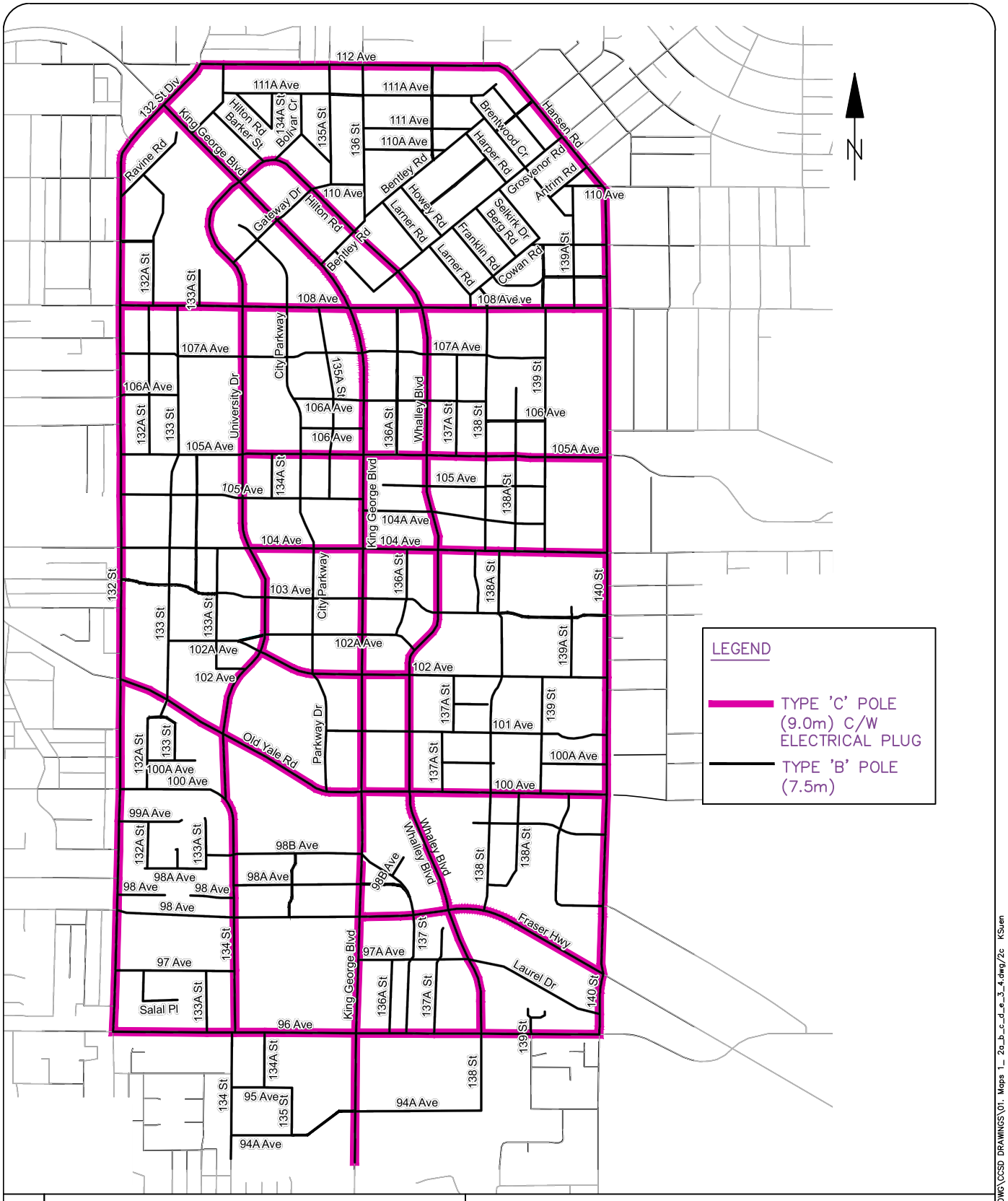
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–2b



3		All Dimensions Shown In Metres, Unless Otherwise Noted	
2			
1	JULY 2017	Title	STREETLIGHT TYPE MAP
	Revision Date / Approved		

CITY OF SURREY
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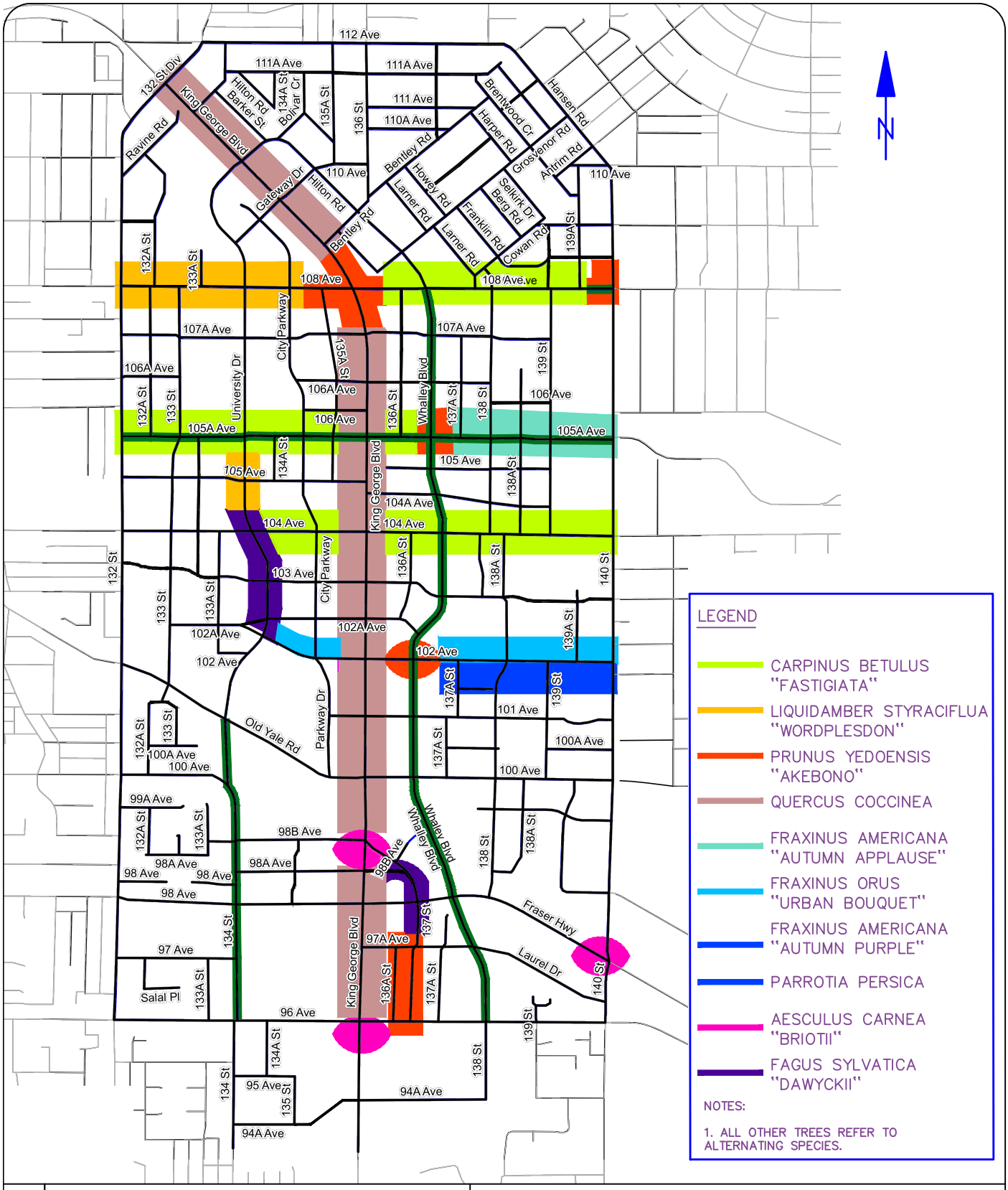
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–2c

Jul 19 2017 – 2:00pm M:\2012\12-177\DWG\CCSD DRAWINGS\01. Maps 1_ 2a_b_c_d_e_3_4.dwg/2c KSuen



3		All Dimensions Shown In Metres, Unless Otherwise Noted	
2			
1	JULY 2017	Title	STREET – TREE TYPE MAP
	Revision Date / Approved		

CITY OF SURREY
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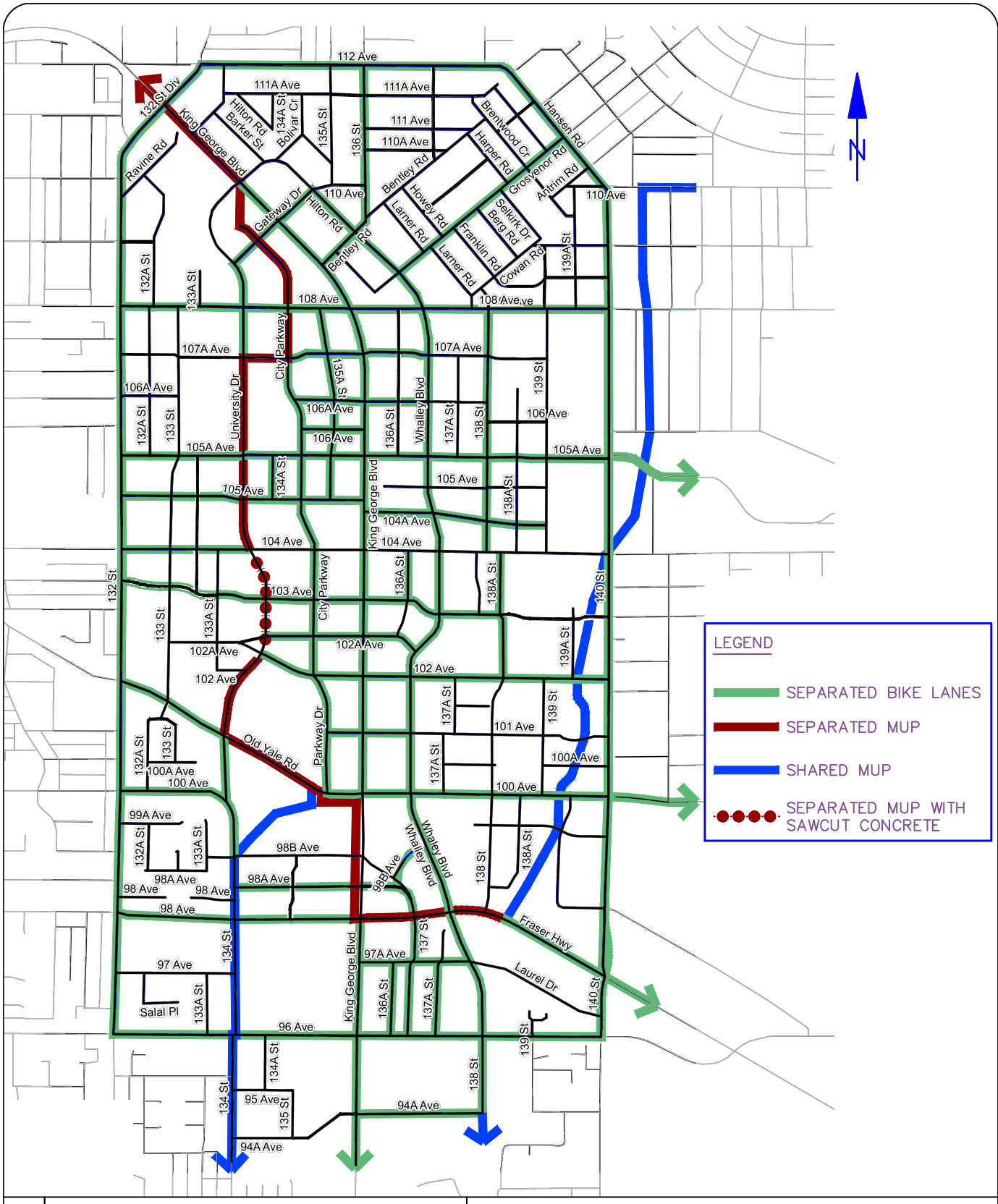
CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–3
Drawn By	Surrey Engineering	



3		All Dimensions Shown In Metres, Unless Otherwise Noted	
2			
1	JULY 2017	Title	SEPERATED CYCLING PATHS
	Revision Date / Approved		

CITY OF SURREY
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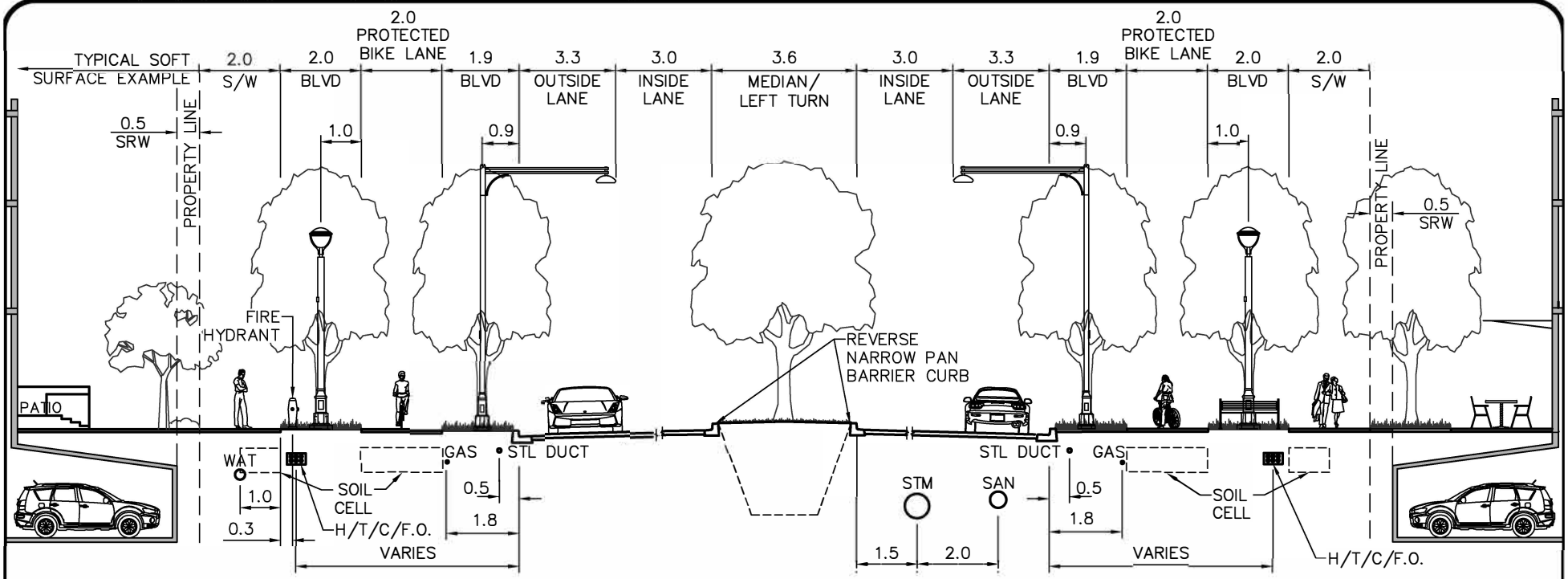
CITY CENTRE STANDARD DRAWINGS

		DRAWING NUMBER
Approved		CCSD-4
Date	JULY 2017	
Drawn By	Surrey Engineering	



NOTE: UNDERGROUND PARKING TO BE CROPPED BELOW ADJACENT STREET GARDEN

BOULEVARD SECTION

N.T.S

NOTES:

(1) LANDSCAPED MEDIAN AS PER SSD–R16, LEFT TURN BAY AS PER SSD–R15.

(2) REFER TO SPECIFIC TREATMENT OPTION FOR CIVIC CENTRE, COMMERCIAL, AND RESIDENTIAL FRONTAGE.

(3) DISTRICT ENERGY UTILITY LOCATION TO BE CONFIRMED BY ENGINEERING.

3		
2		
1	JULY 2017	
	Revision Date	Approved

CITY OF SURREY the future lives here.

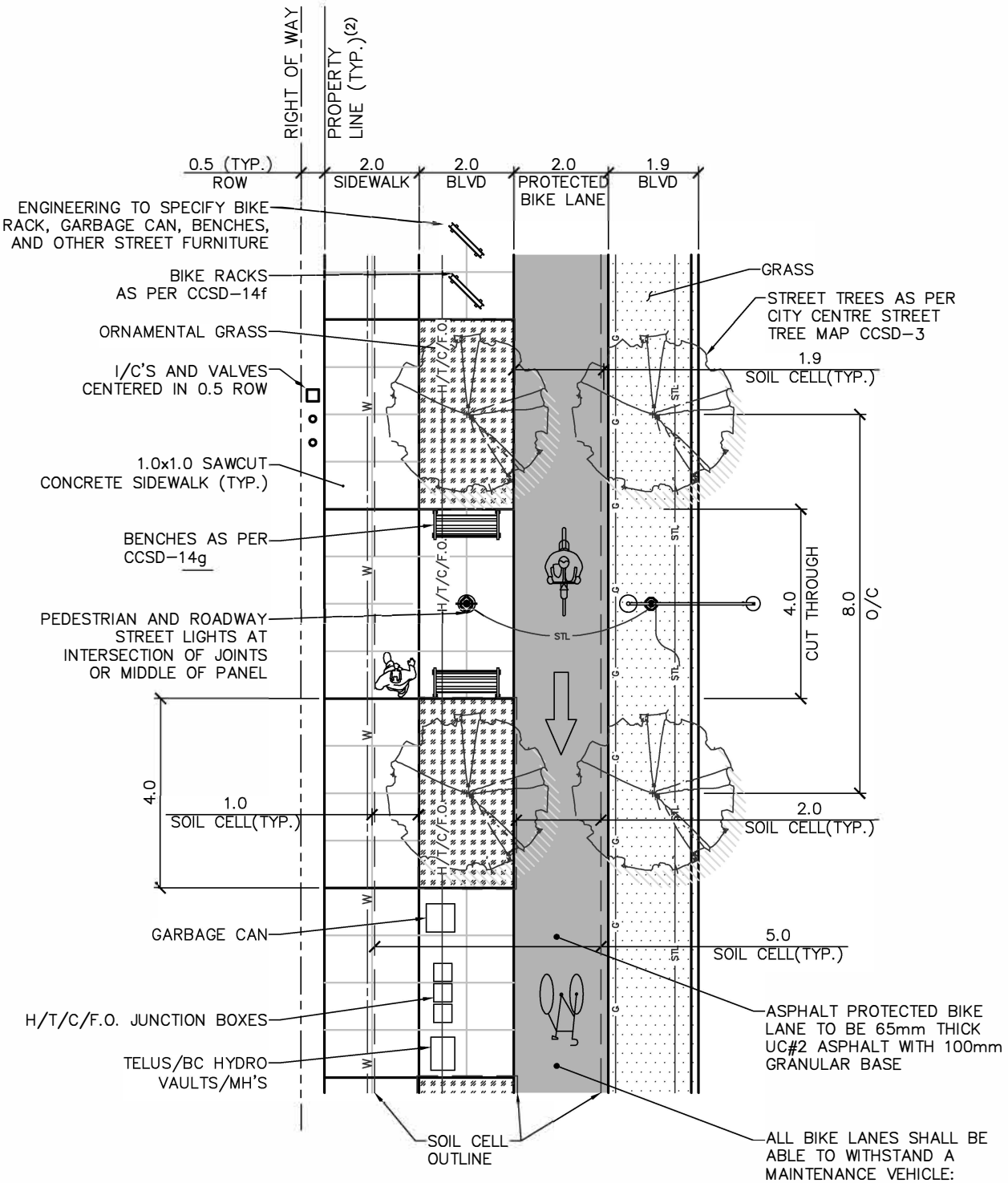
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TYPICAL ARTERIAL ROAD CROSS SECTION 32m ROW**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–5a



NOTES:
(1) 0.5m SRW FOR I/C & MAINS.
(2) IF BUILDING NOT ADJACENT TO SIDEWALK, ADD ON ADDITIONAL 0.5m TO ROW

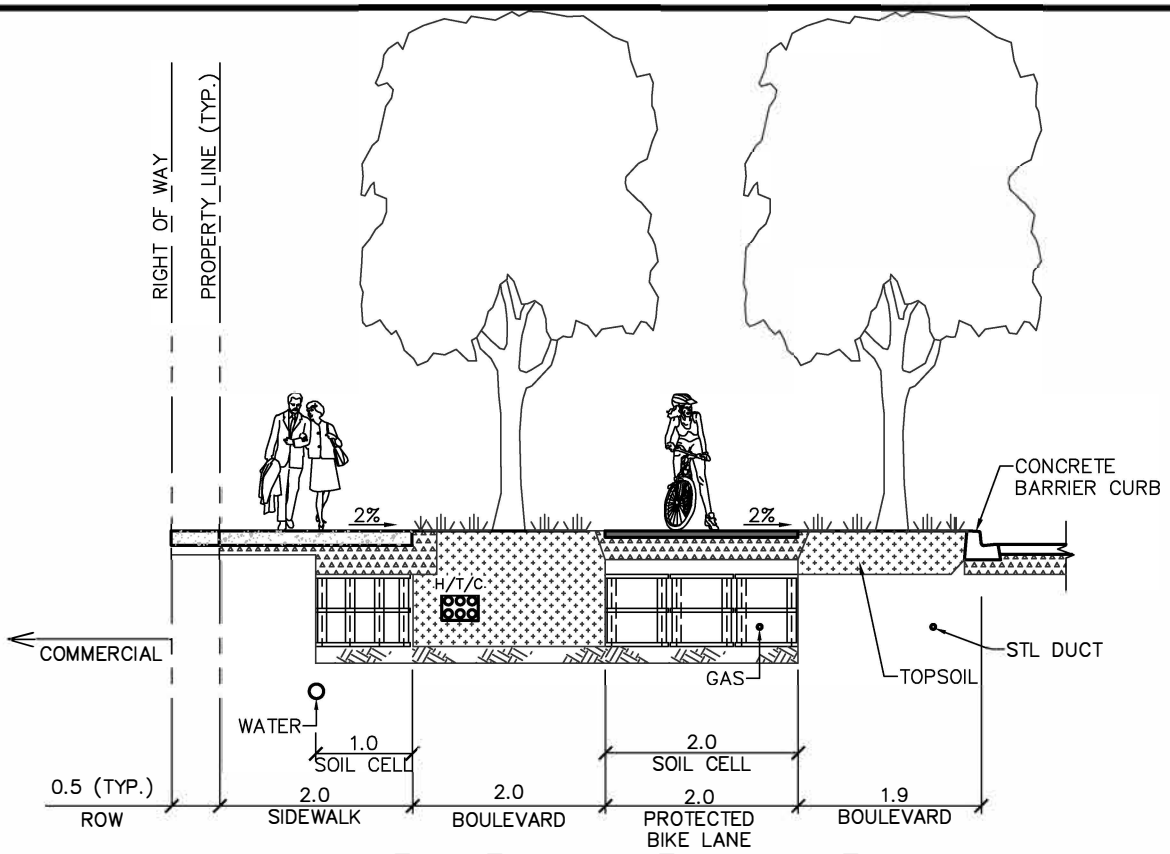
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: PROTECTED BIKE LANE PLAN VIEW 32m ROW
	Revision Date / Approved	

CITY OF SURREY the future lives here.

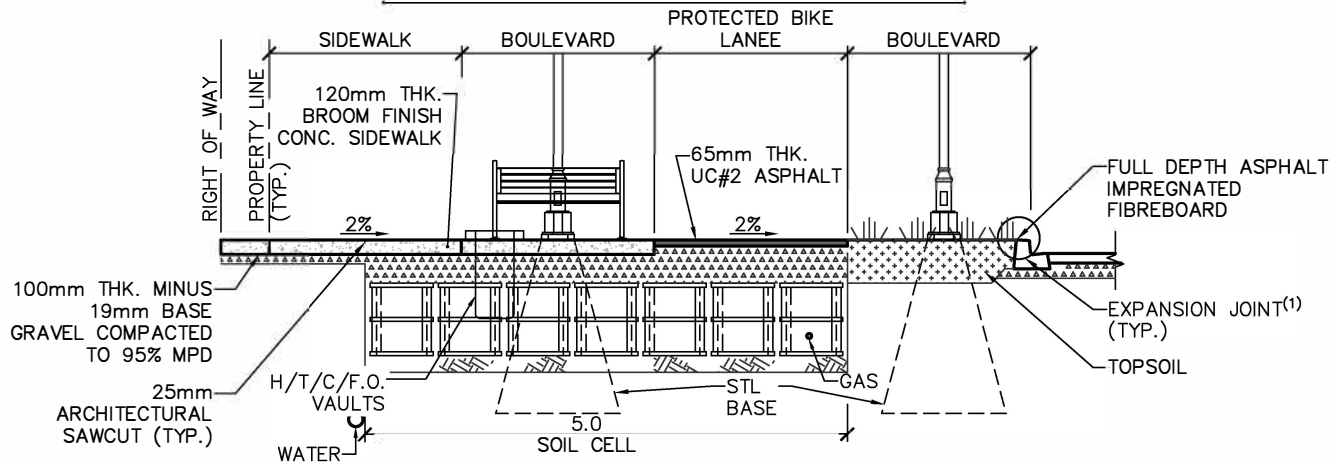
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER CCSD–5b



SECTION THROUGH TREE PLANTING



SECTION THROUGH CUT THROUGH

NOTES:

(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.

(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.

(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.

(4) CONCRETE EDGE ALONG PROPERTY LINE TO HAVE 150mm TROWEL FINISH. ALL SCORELINES TO STOP PRIOR TO TROWELED EDGE.

(5) INSTALL SOIL CELL AS PER MANUFACTURERS RECOMMENDATIONS.

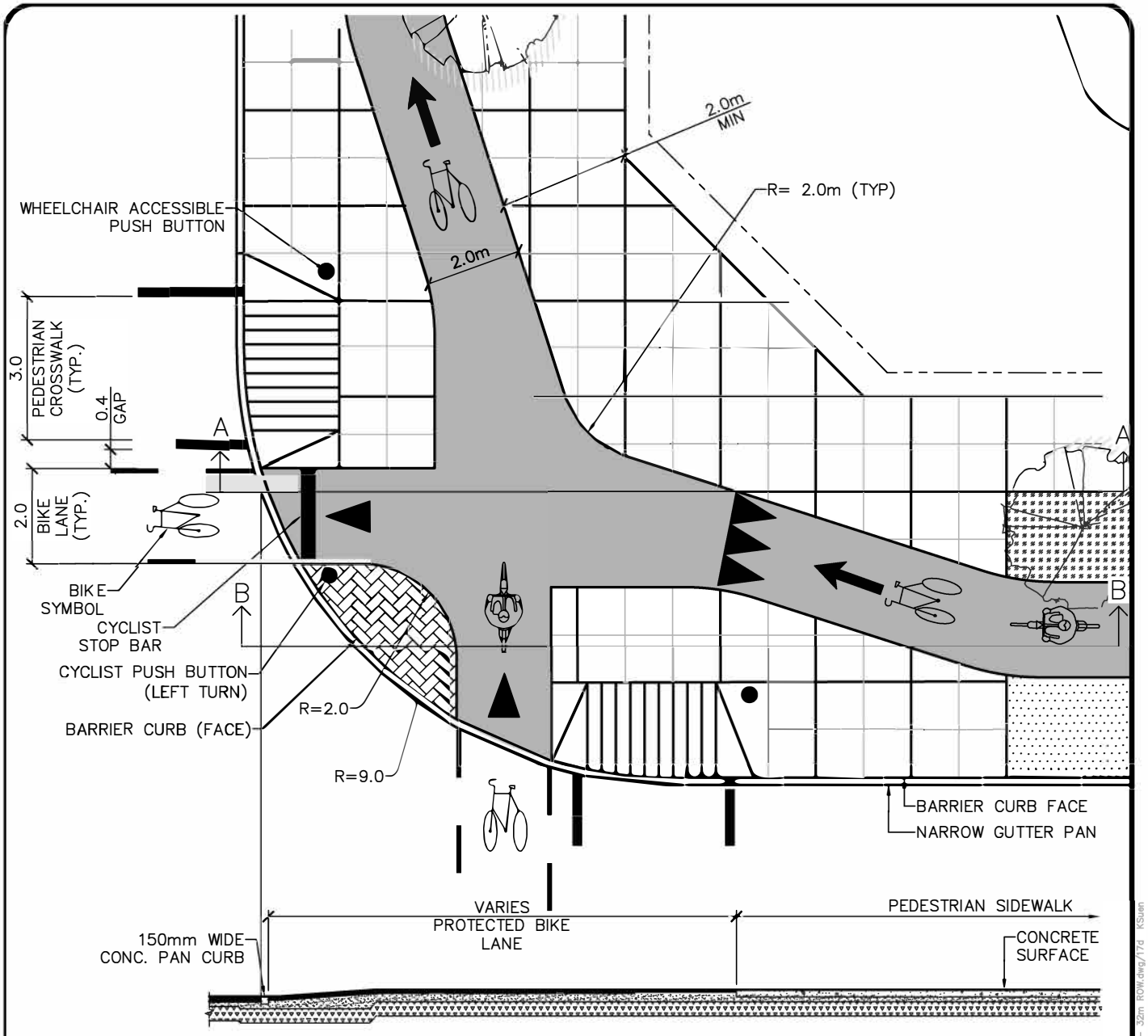
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	
	Revision Date / Approved	Title: PROTECTED BIKE LANE CROSS SECTION 32m ROW

CITY OF SURREY the future lives here.

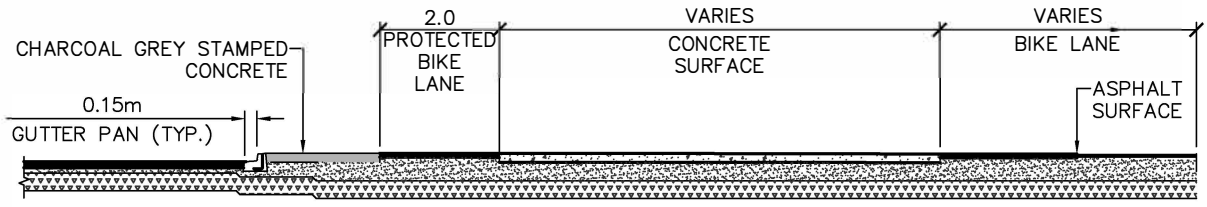
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-5c



SECTION A



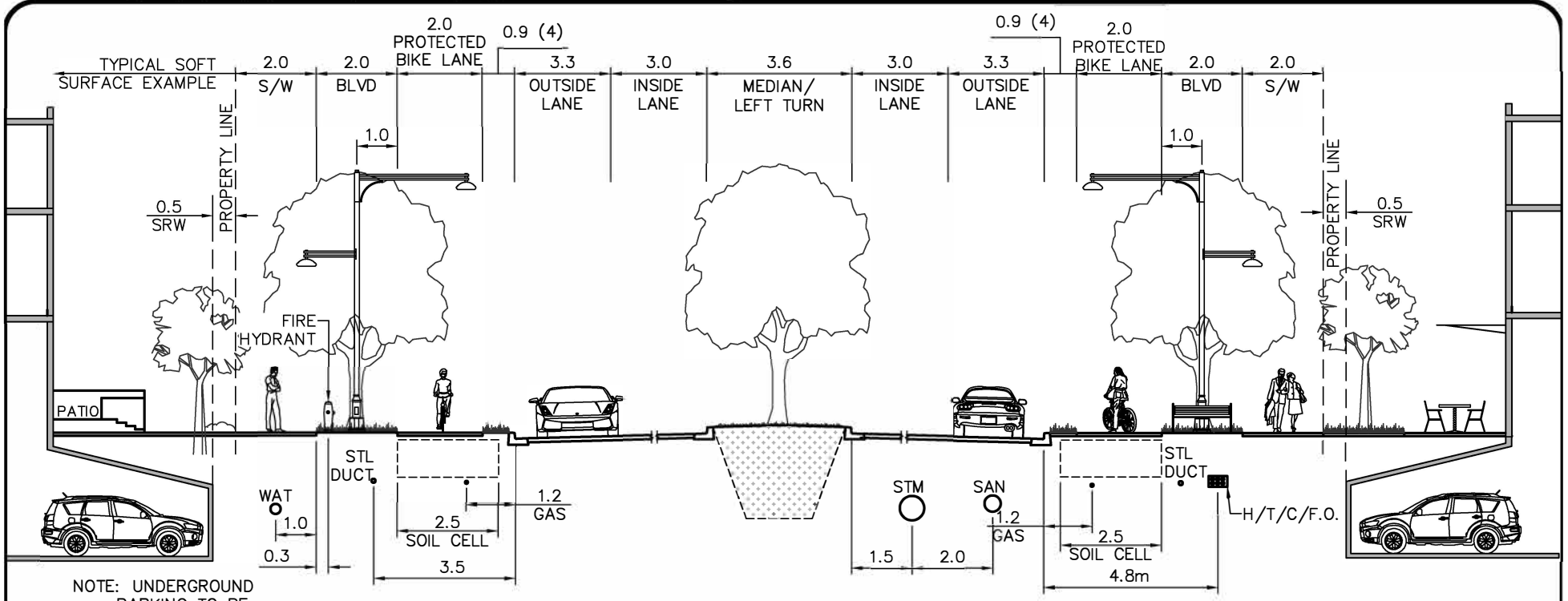
SECTION B

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: PROTECTED BIKE LANE INTERSECTION PLAN VIEW – 32m ROW
	Revision Date	Approved	

CITY OF SURREY
the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–5d
Drawn By	Surrey Engineering	



BOULEVARD SECTION

N.T.S

NOTES:

(1) LANDSCAPED MEDIAN AS PER SSD–R16, LEFT TURN BAY AS PER SSD–R15.

(2) REFER TO SPECIFIC TREATMENT OPTION FOR CIVIC CENTRE, COMMERCIAL, AND RESIDENTIAL FRONTAGE.

(3) DISTRICT ENERGY UTILITY LOCATION TO BE CONFIRMED BY ENGINEERING.

(4) BUFFER SEPARATION BETWEEN TRAVEL LANES AND CYCLE TRACK.

3		
2		
1	JULY 2017	
	Revision Date	Approved

CITY OF SURREY
the future lives here.

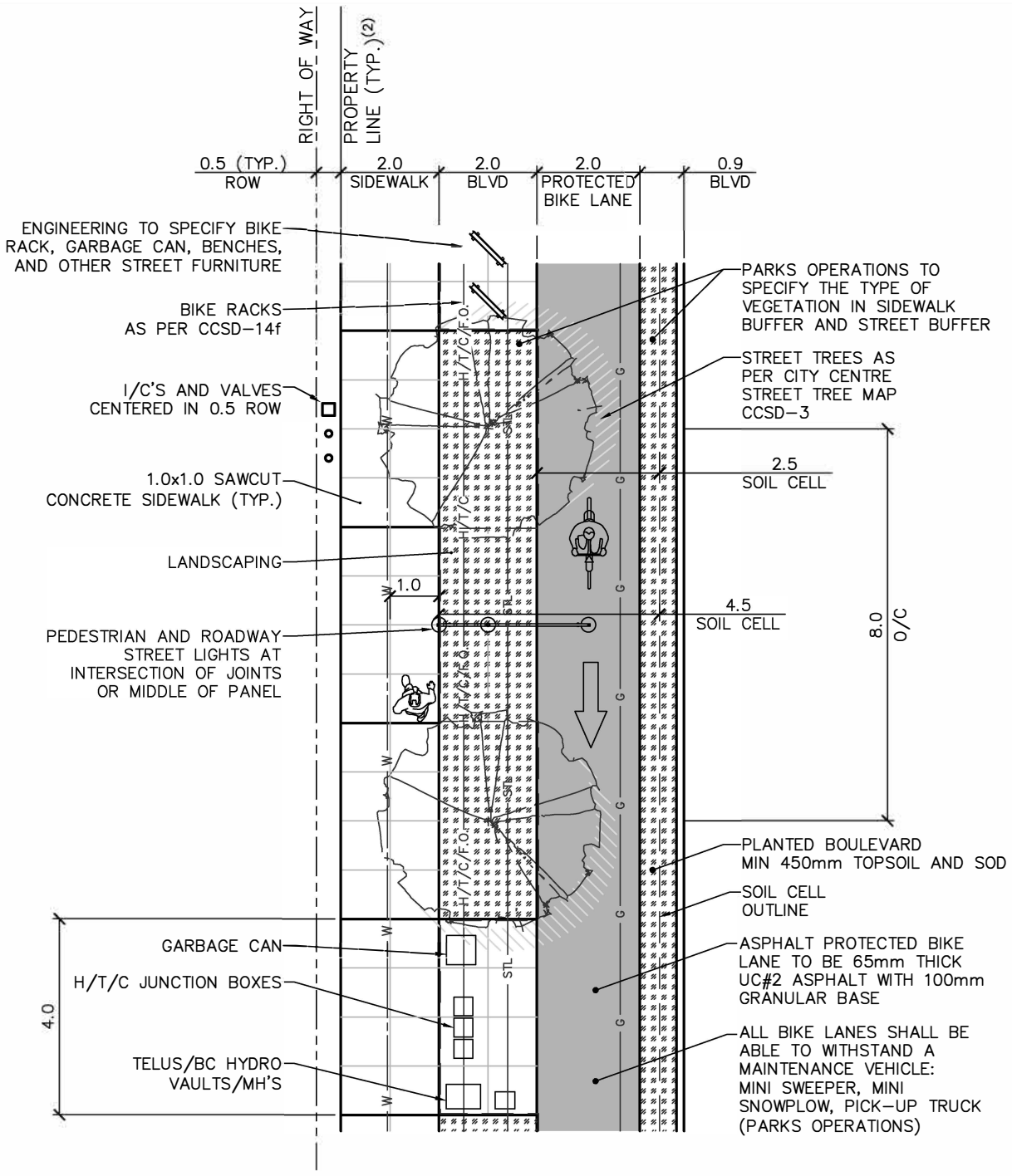
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title **TYPICAL ARTERIAL ROAD CROSS SECTION (30m) ROW**

Approved	
Date	JU LY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–6a



NOTES:
(1) 0.5m SRW FOR I/C & MAINS.
(2) IF BUILDING NOT ADJACENT TO SIDEWALK, ADD ON ADDITIONAL 0.5m TO ROW

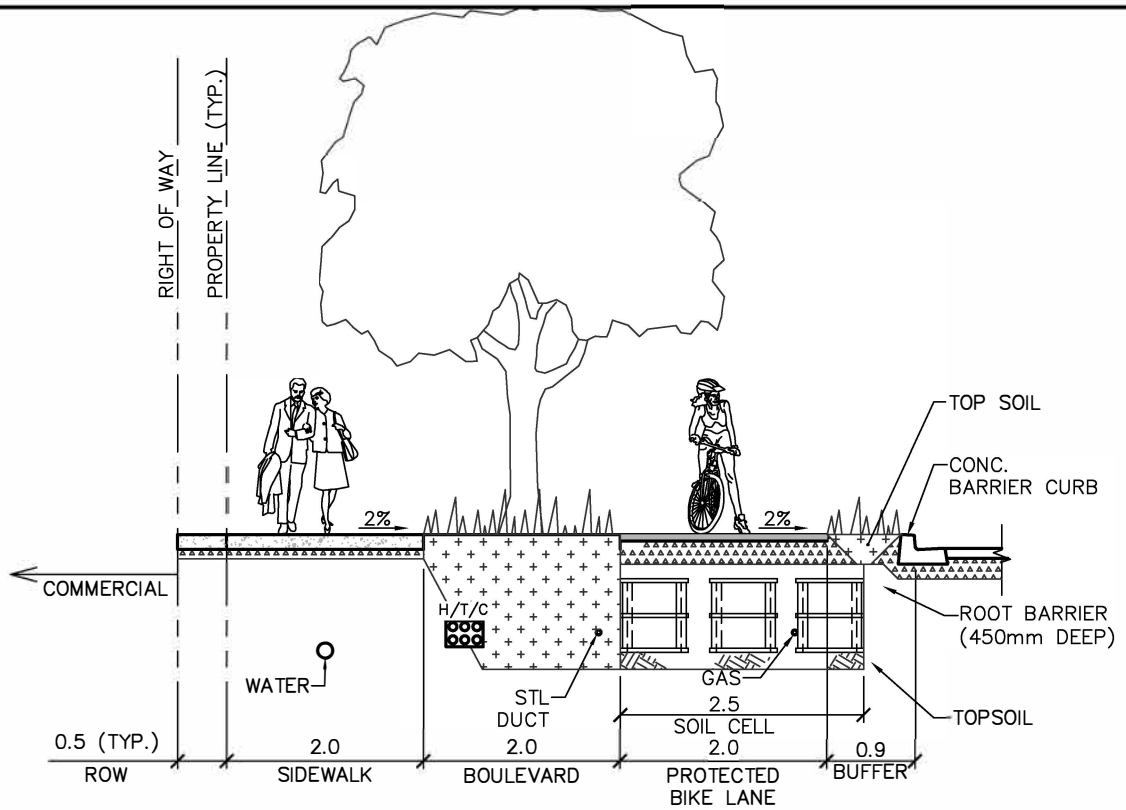
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: PROTECTED BIKE LANE PLAN VIEW (30m) ROW
	Revision Date / Approved	

CITY OF SURREY the future lives here.

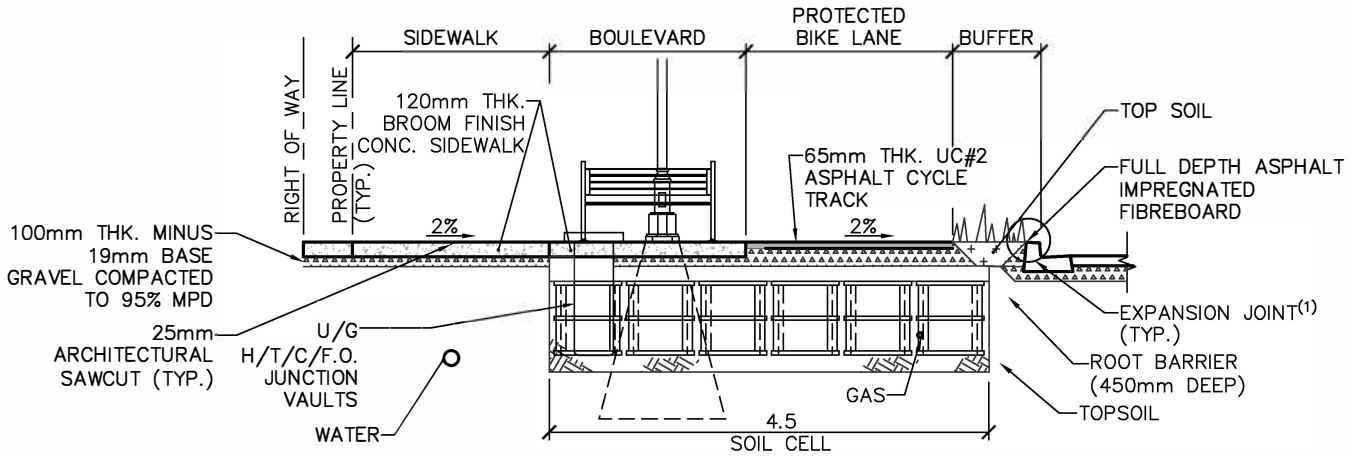
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-6b



SECTION THROUGH TREE PLANTING



SECTION THROUGH CUT THROUGH

NOTES:

(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.

(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.

(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.

(4) CONCRETE EDGE ALONG PROPERTY LINE TO HAVE 150mm TROWEL FINISH. ALL SCORELINES TO STOP PRIOR TO TROWELED EDGE.

(5) INSTALL SOIL CELL AS PER MANUFACTURERS RECOMMENDATIONS.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: PROTECTED BIKE LANE CROSS SECTION (30m) ROW
	Revision Date / Approved	

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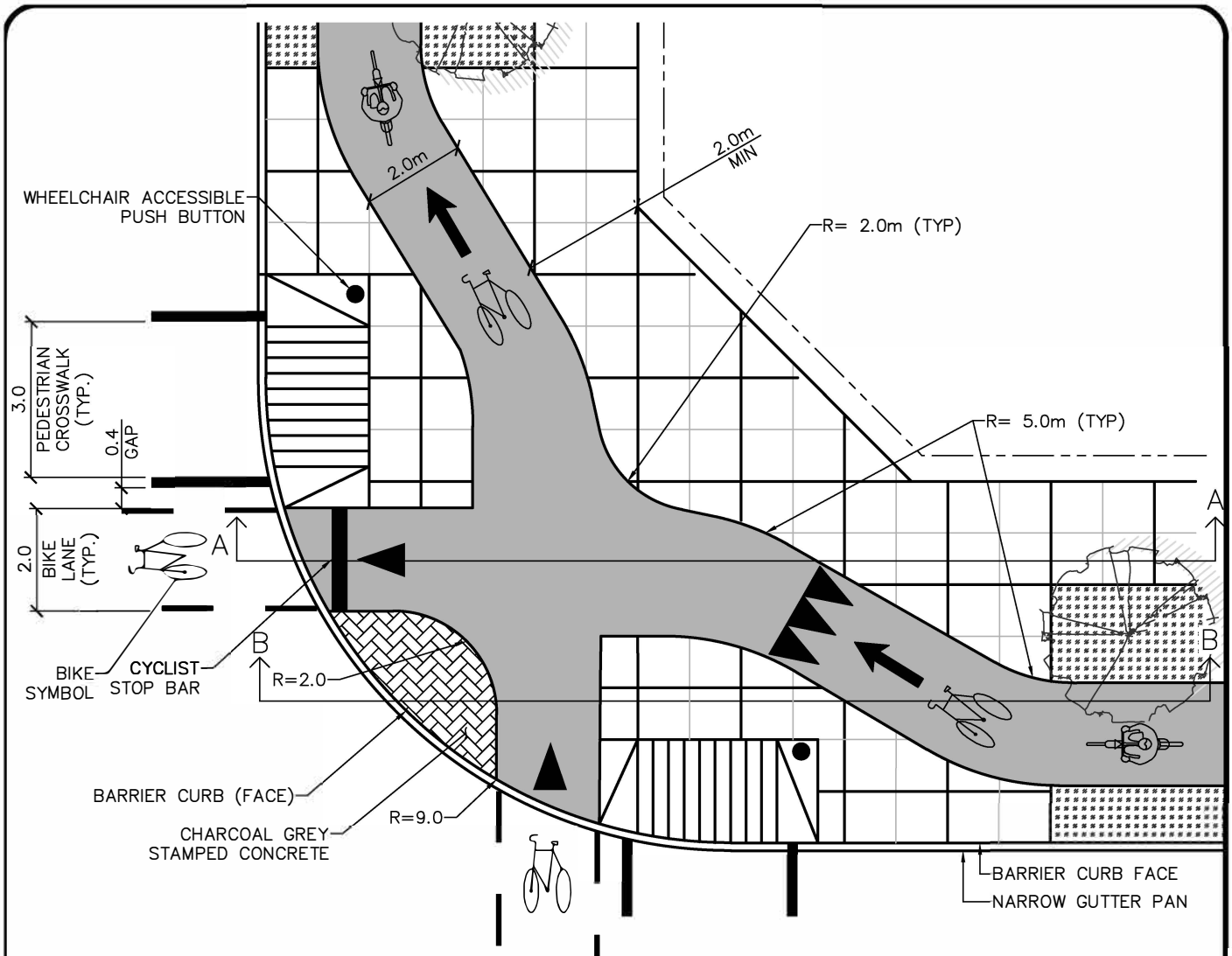
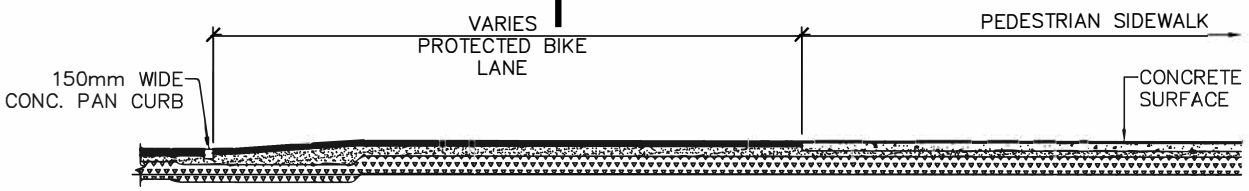
CITY CENTRE STANDARD DRAWINGS

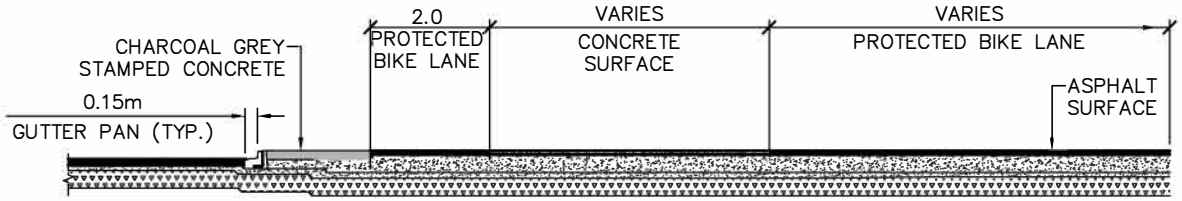
Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-6c





SECTION A



SECTION B

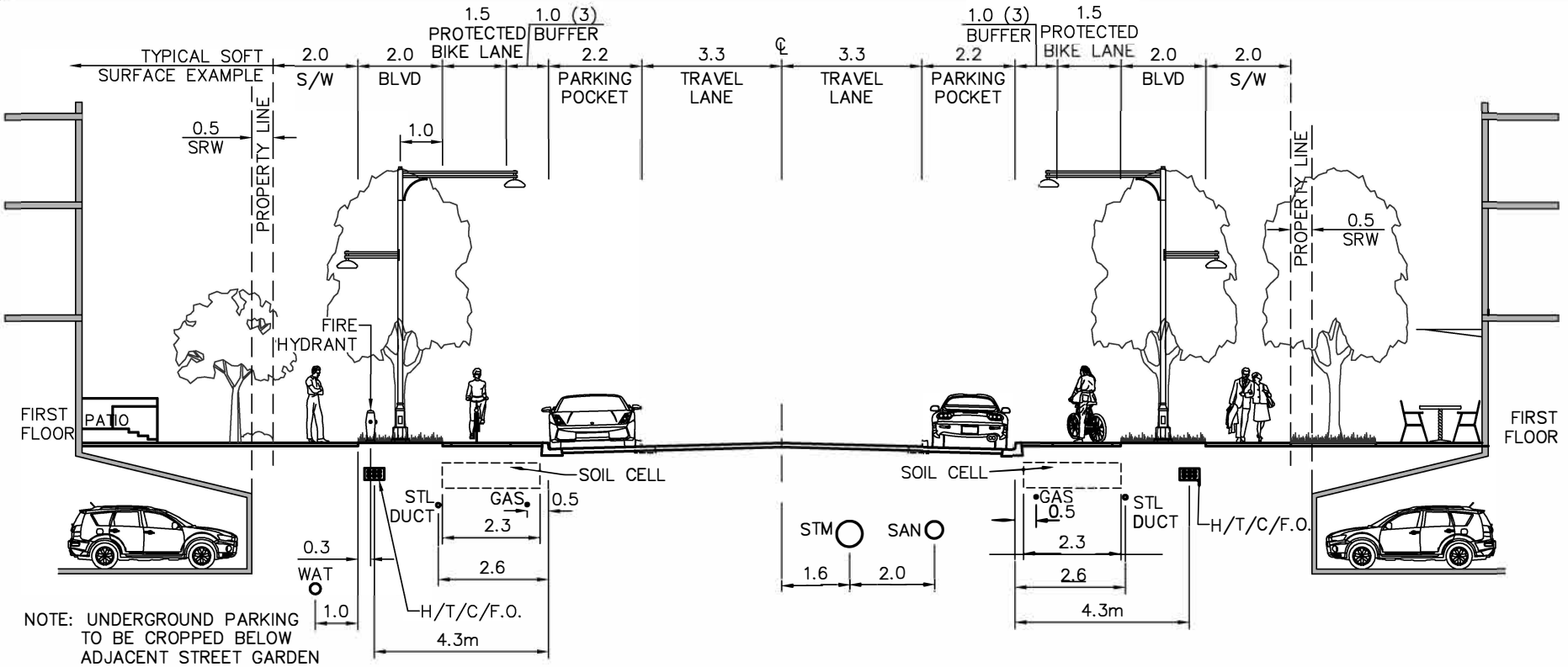
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: PROTECTED BIKE LANE INTERSECTION PLAN (30m) ROW
	Revision Date / Approved	

CITY OF SURREY
the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD-6d



BOULEVARD SECTION

N.T.S

NOTES:

(1) LANDSCAPED MEDIAN AS PER SSD–R16, LEFT TURN BAY AS PER SSD–R15.

(2) REFER TO SPECIFIC TREATMENT OPTION FOR CIVIC CENTRE, COMMERCIAL, AND RESIDENTIAL FRONTAGE.

(3) BUFFER SEPARATION BETWEEN TRAVEL LANES AND CYCLE TRACK.

(4) DISTRICT ENERGY UTILITY LOCATION TO BE CONFIRMED BY ENGINEERING.

3		
2		
1	JULY 2017	
	Revision Date	Approved

CITY OF SURREY the future lives here.

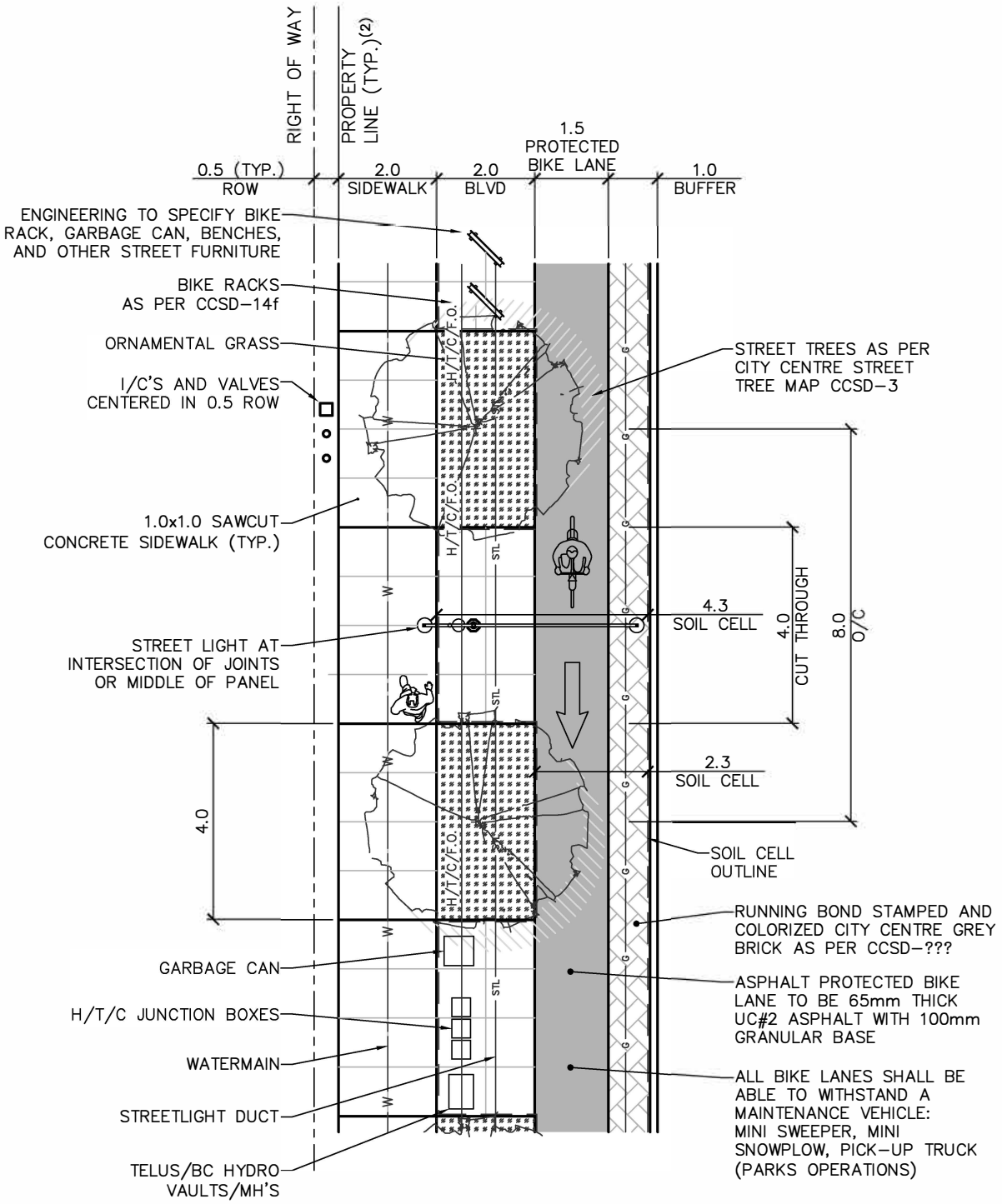
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TYPICAL COLLECTOR ROAD CROSS SECTION (24m) ROW**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–7a



NOTES:
(1) 0.5m SRW FOR I/C & MAINS.
(2) IF BUILDING NOT ADJACENT TO SIDEWALK, ADD ON ADDITIONAL 0.5m TO ROW

3		
2		
1	JULY 2017	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

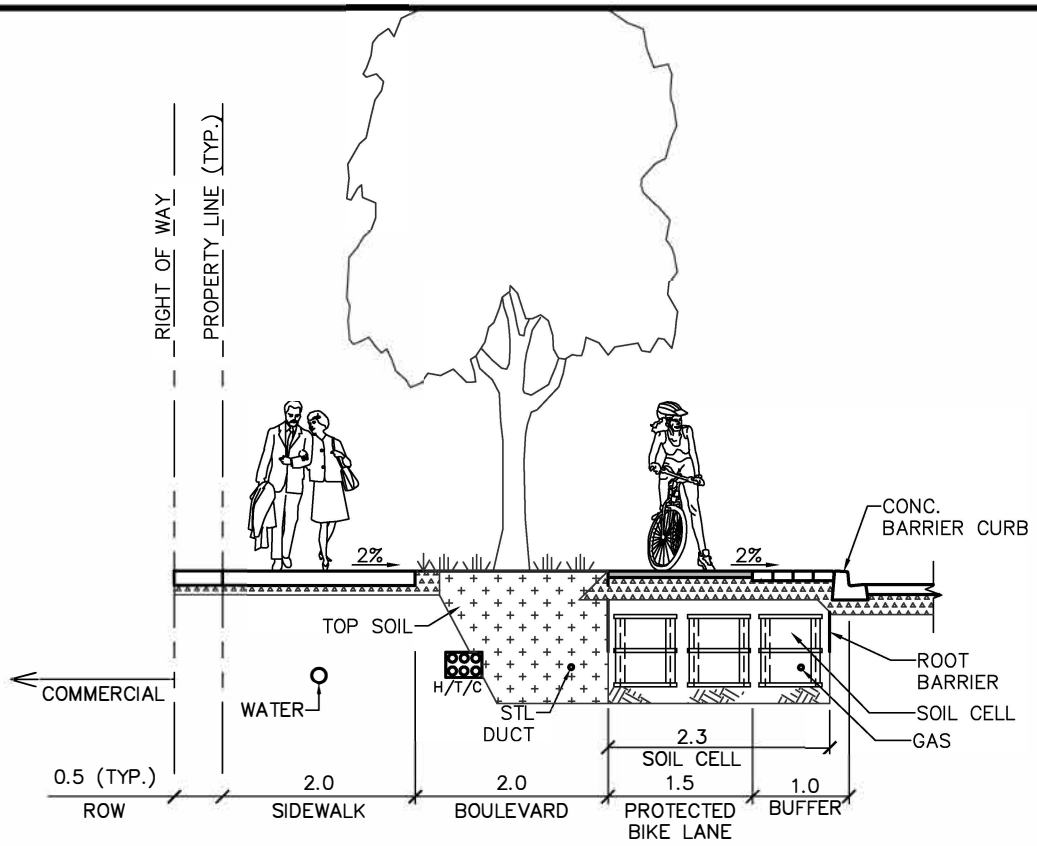
Title: **PROTECTED BIKE LANE PLAN VIEW (24m) ROW**

CITY OF SURREY the future lives here.

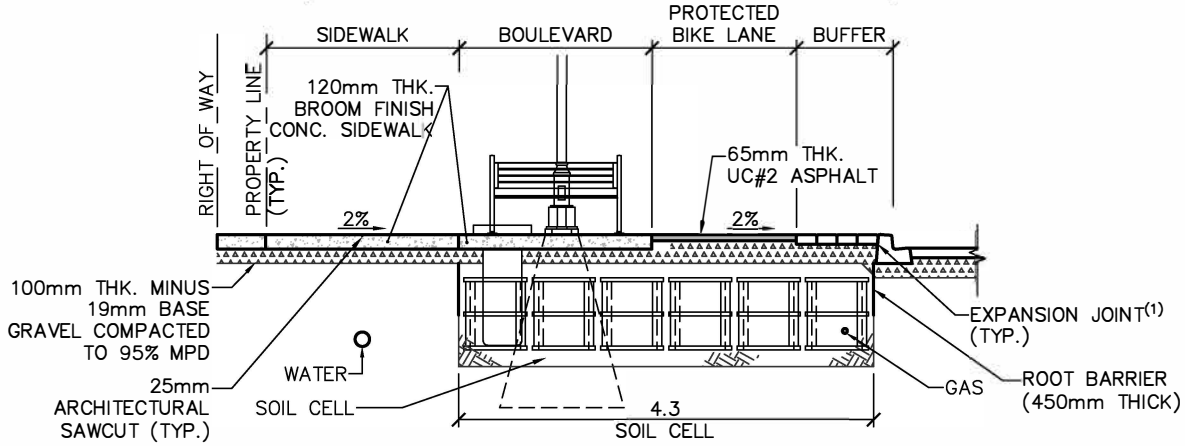
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-7b



SECTION THROUGH TREE PLANTING



SECTION THROUGH CUT THROUGH

NOTES:

(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.

(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.

(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.

(4) CONCRETE EDGE ALONG PROPERTY LINE TO HAVE 150mm TROWEL FINISH. ALL SCORELINES TO STOP PRIOR TO TROWELED EDGE.

(5) INSTALL SOIL CELL AS PER MANUFACTURERS RECOMMENDATIONS.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	
	Revision Date	Approved

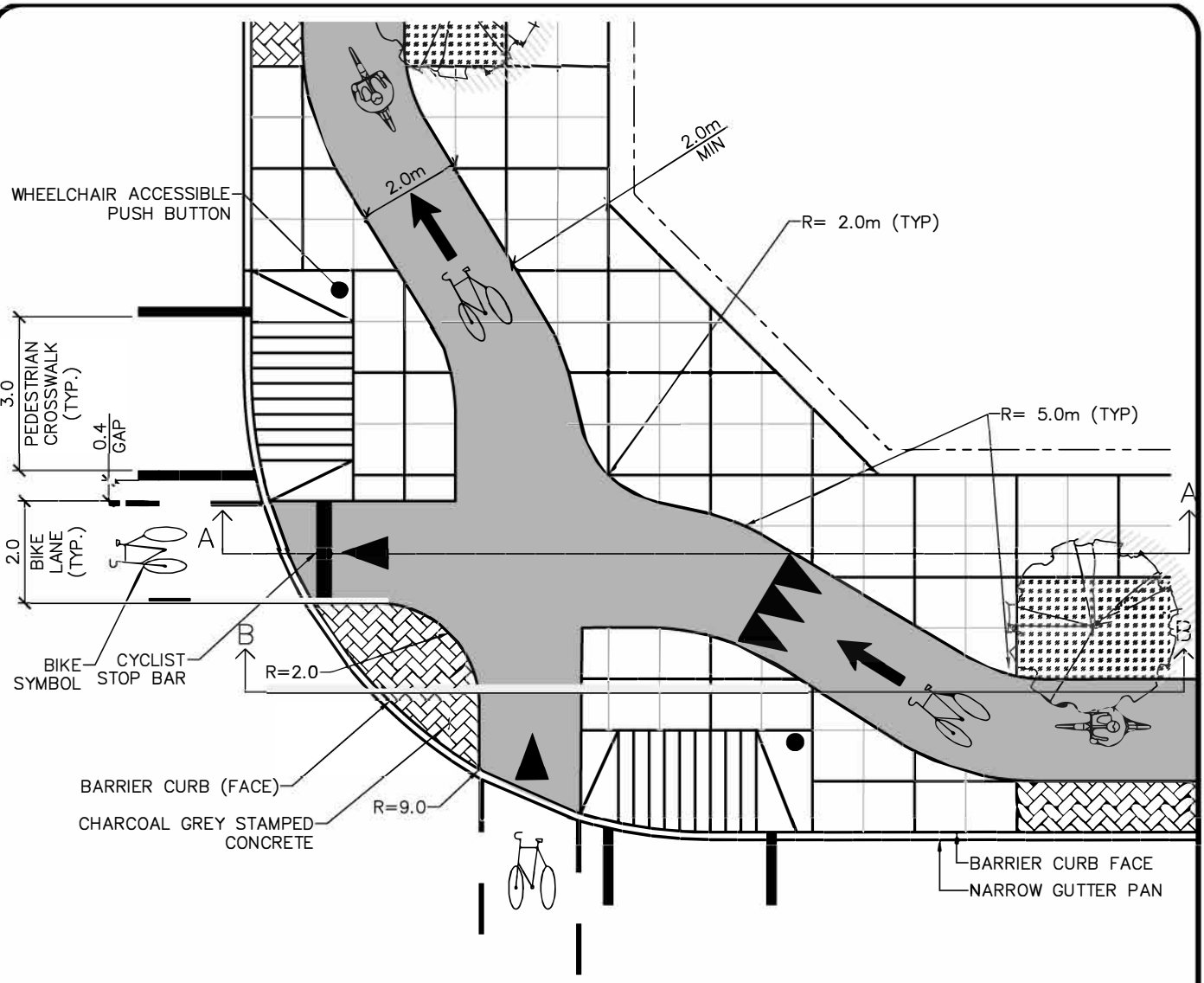
Title: **PROTECTED BIKE LANE CROSS SECTION (24m) ROW**

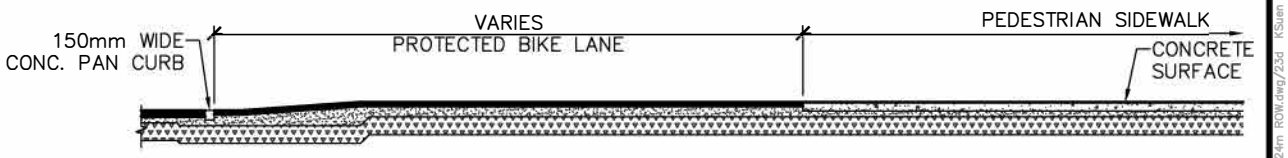
CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

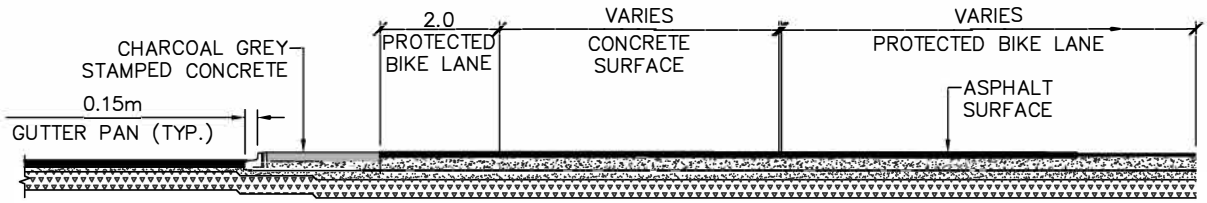
Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-7c





SECTION A



SECTION B

3		
2		
1	JULY 2017	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

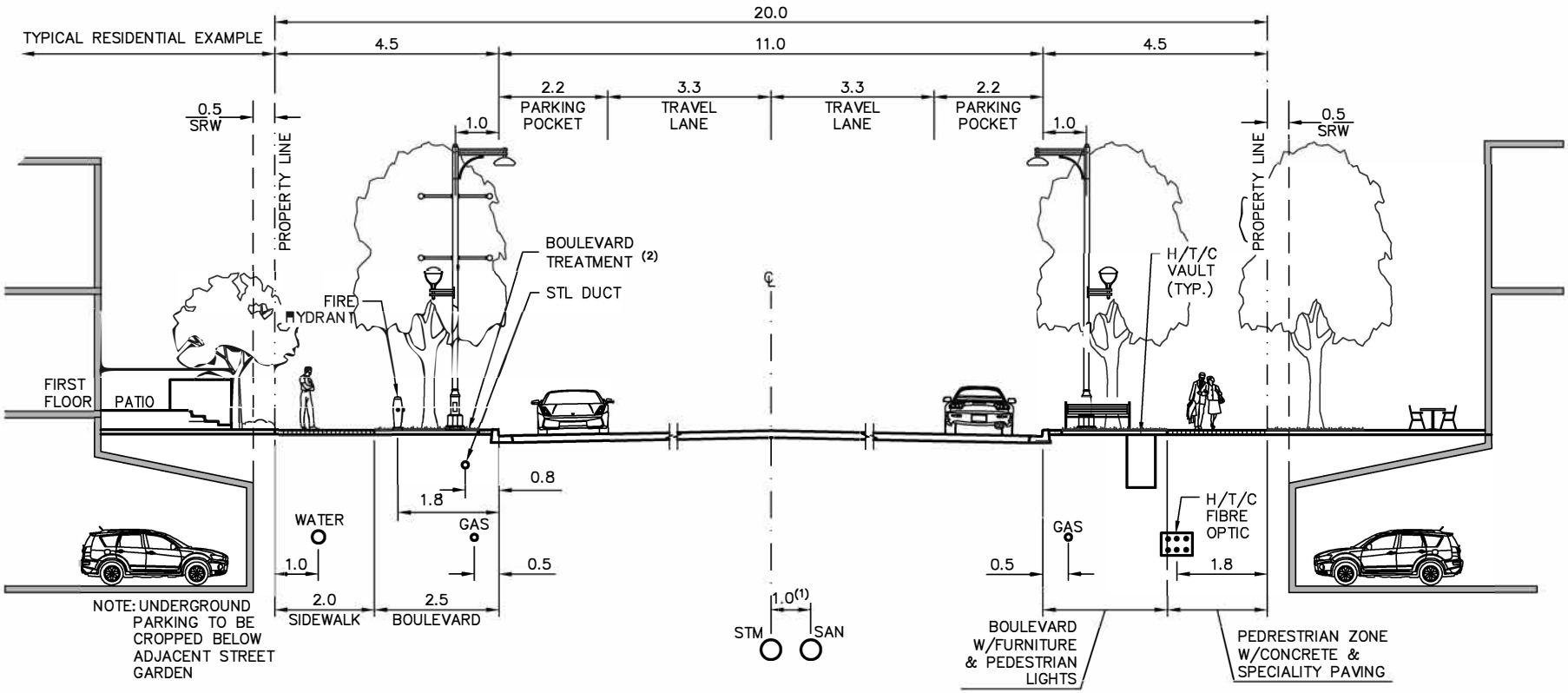
Title: **PROTECTED BIKE LANE INTERSECTION PLAN VIEW (24m) ROW**

CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: **CCSD-7d**



NOTES: (1) REFER TO MINIMUM SPACING BETWEEN SEWERS IN THE COMMON TRENCH DRAWING SSD–G.3.
(2) REFER TO SPECIFIC TREATMENT OPTION FOR CIVIC CENTRE, COMMERCIAL, AND RESIDENTIAL FRONTAGE.

3		
2		
1	JULY 2017	
	Revision Date	Approved

CITY OF SURREY
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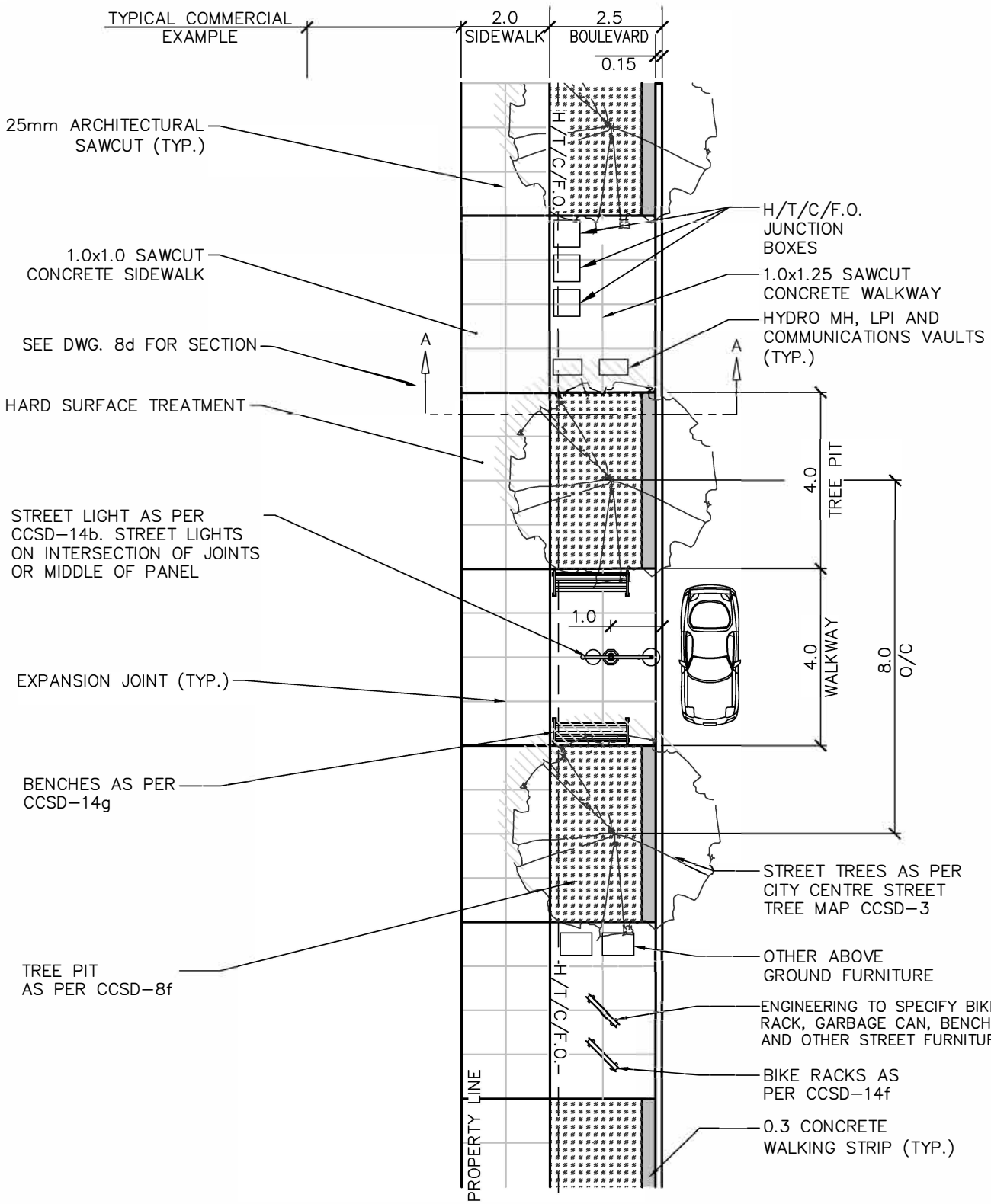
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **TYPICAL LOCAL ROAD CROSS SECTION**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–8a



PLAN

3		
2		
1	JULY 2017	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

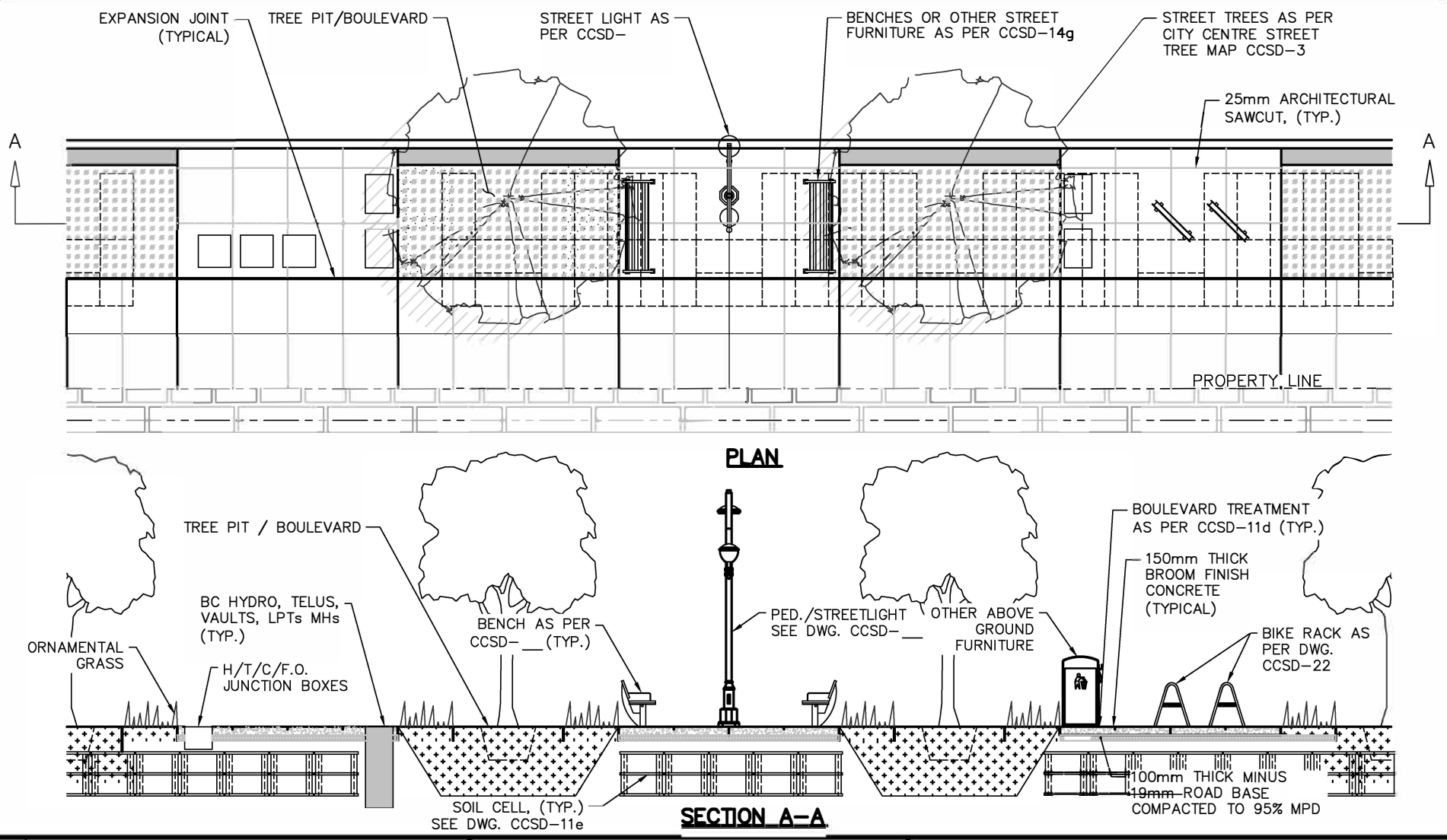
Title: **LOCAL BOULEVARD FOR 20M ROW HARDSCAPE FRONTAGE**

CITY OF SURREY
the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-8b



3		
2		
1	JULY 2017	
	Revision Date	Approved

CITY OF SURREY
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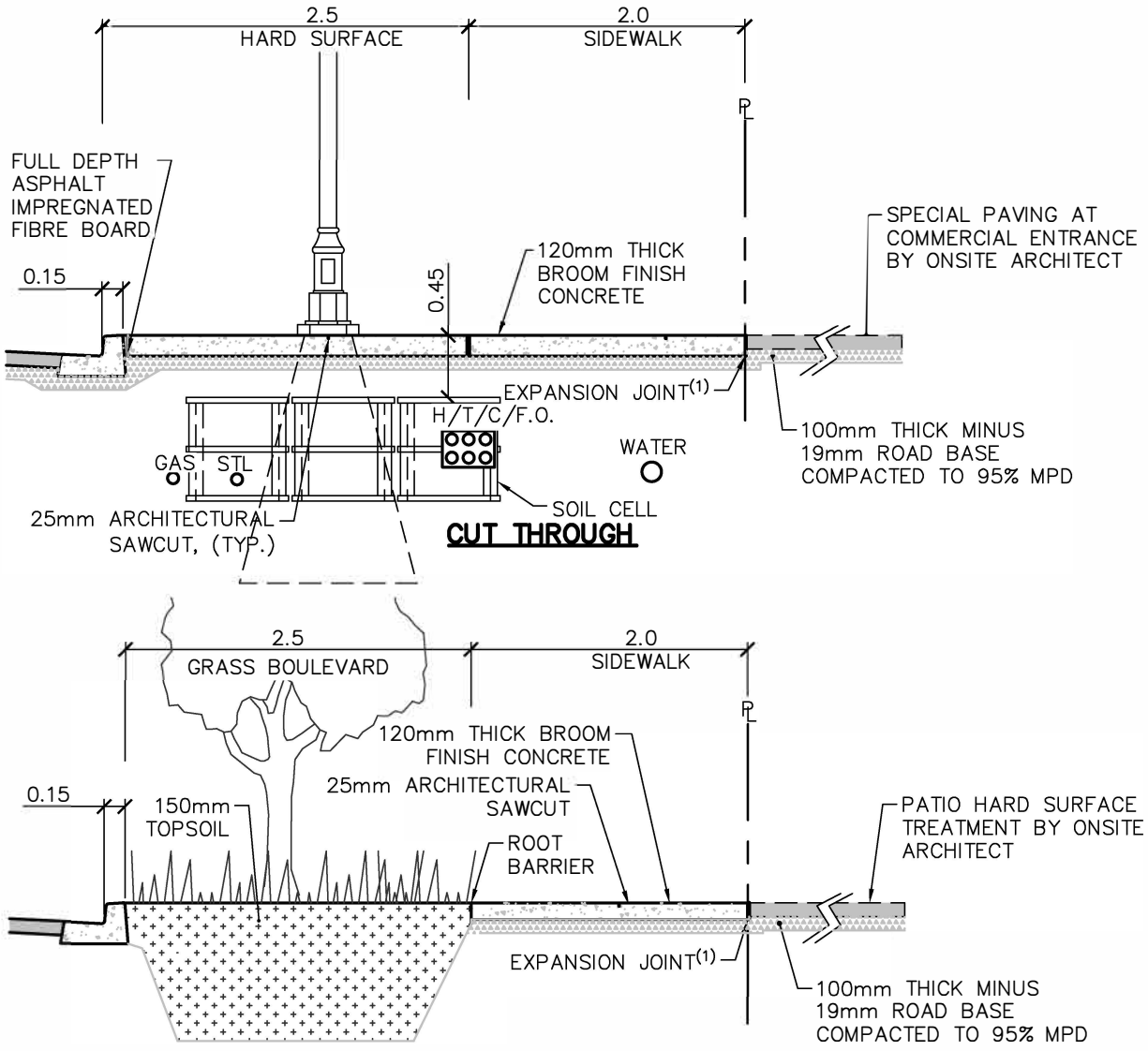
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title **LOCAL BOULEVARD FOR 20m ROW BLVD TREATMENT PLAN & SECTION**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD-8c



TREE PLANTING

NOTES:
(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.
(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.
(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.
(4) INSTALL SOIL CELL AS PER MANUFACTURE RECOMMENDATION.

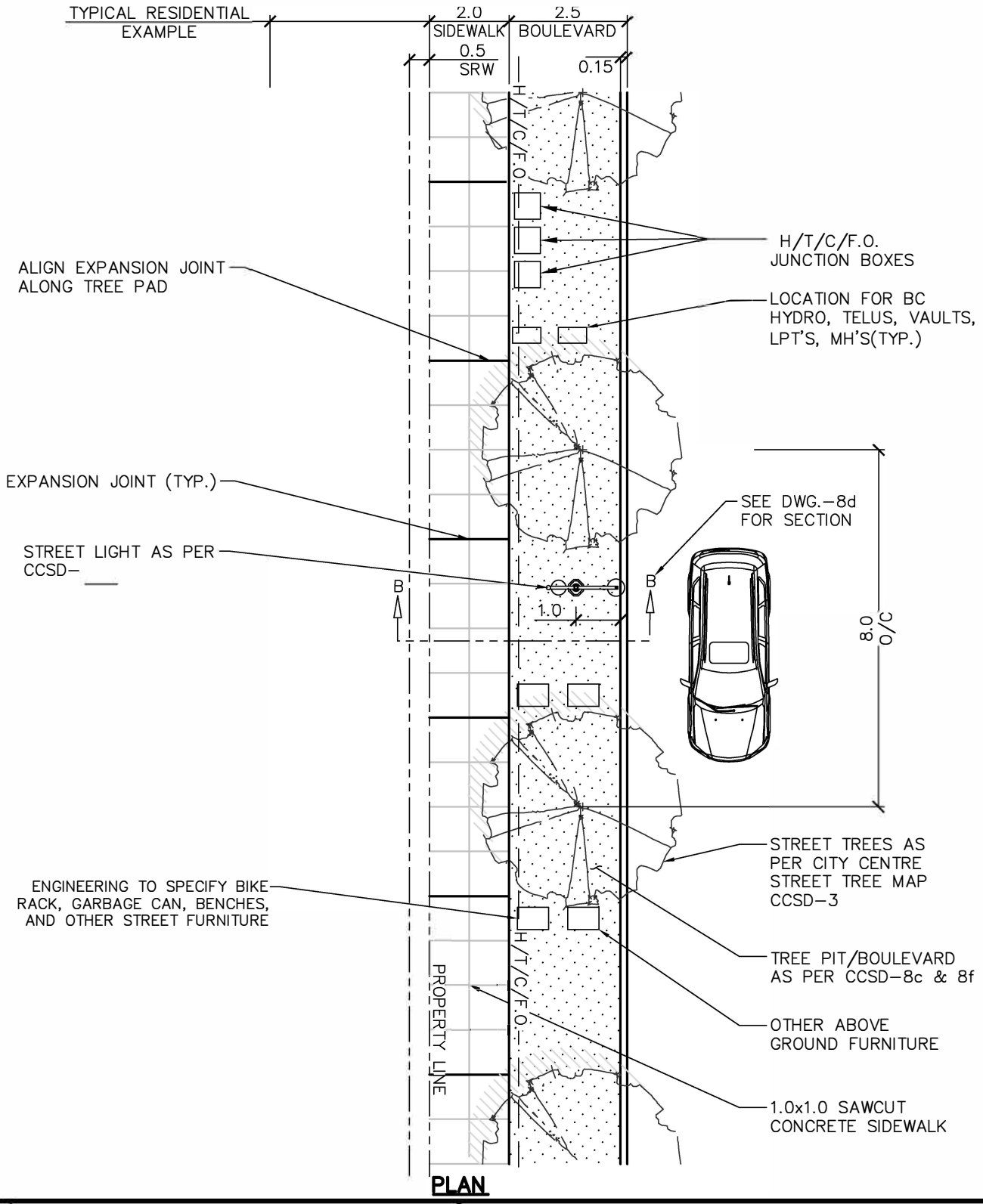
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: LOCAL BOULEVARD FOR 20m ROW TYPICAL HARDSCAPE SECTION (4.5m) BLVD
	Revision Date / Approved	

CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-8d



PLAN

3		
2		
1	JULY 2017	
	Revision Date	Approved

All Dimensions Shown In Metres, Unless Otherwise Noted

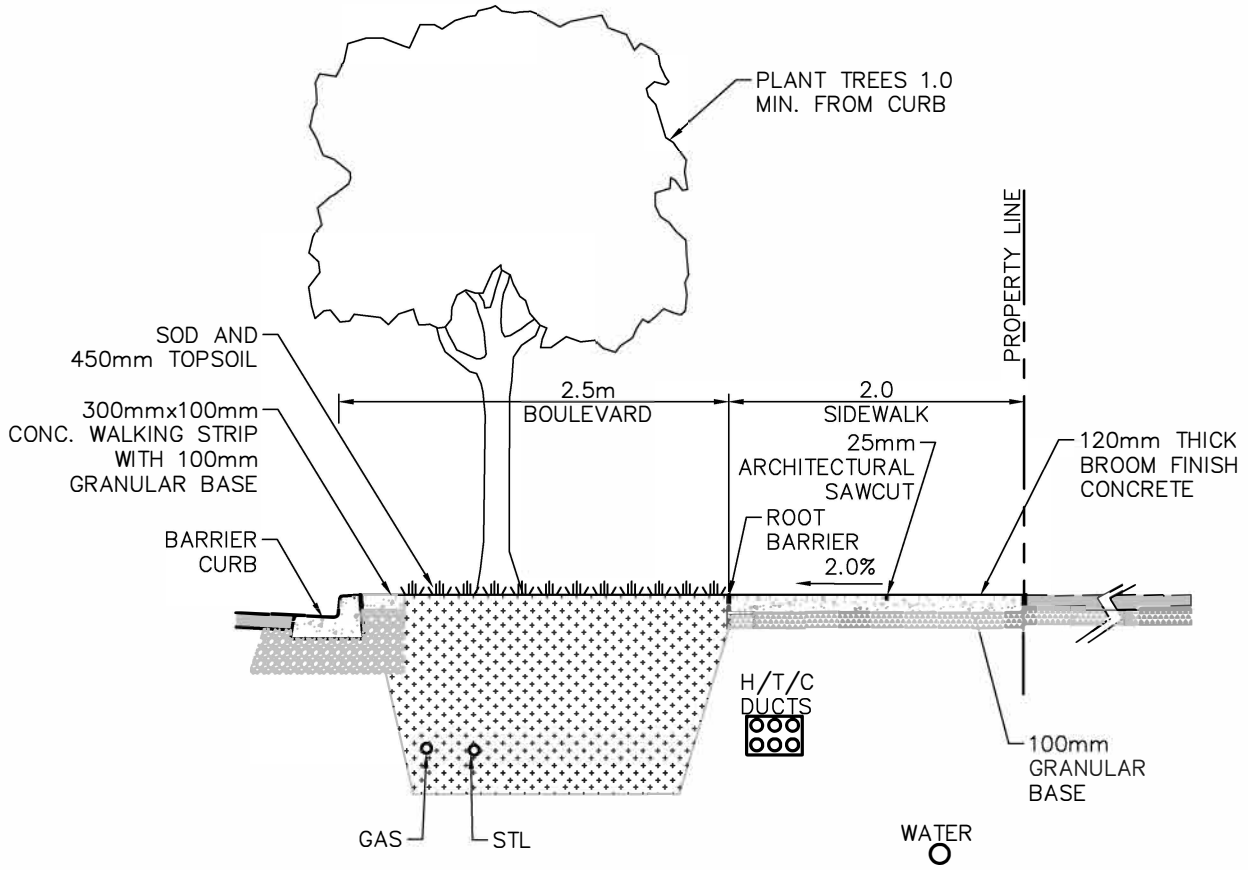
Title **LOCAL BOULEVARD FOR 20m ROW SOFTSCAPE FRONTAGE**

CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER **CCSD–8e**



NOTES:
(1) PLANT MATERIAL TO BE SELECTED FROM LIST OF ACCEPTABLE PLANT MATERIAL CITY OF SURREY PARKS DIVISION STANDARD CONSTRUCTION DOCUMENTS.
(2) PROTECT PLANT MATERIAL FROM DAMAGE DURING TRANSPORTATION AND PLANTING.
(3) LOCATE AND FLAG ALL BURIED UTILITIES IN PLANTING BEDS PRIOR TO DIGGING ENSURE THAT UTILITIES ARE PROTECTED DURING CONSTRUCTION.
(4) DO NOT EXPOSE PLANTS TO DIRECT SUN OR FROST.
(5) PRUNE ONLY IN ACCORDANCE WITH STANDARD CONSTRUCTION DOCUMENTS.

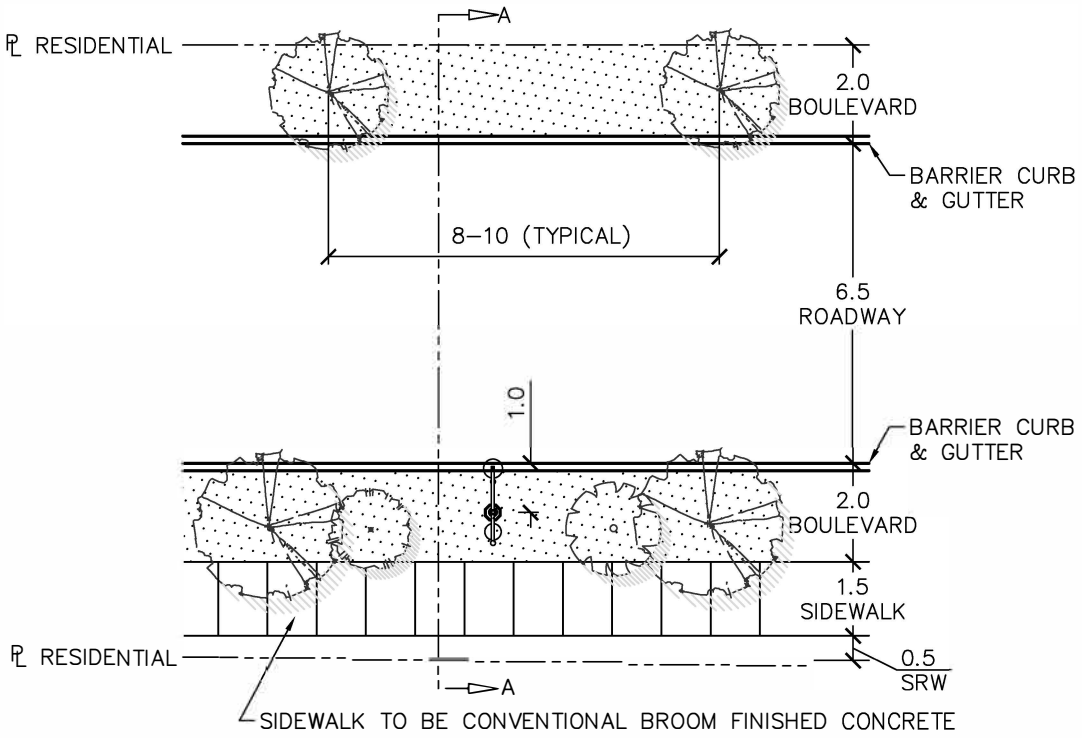
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: LOCAL BOULEVARD FOR 20m ROW TYPICAL SOFTSCAPE SECTION (4.5m) BLVD
	Revision Date / Approved	

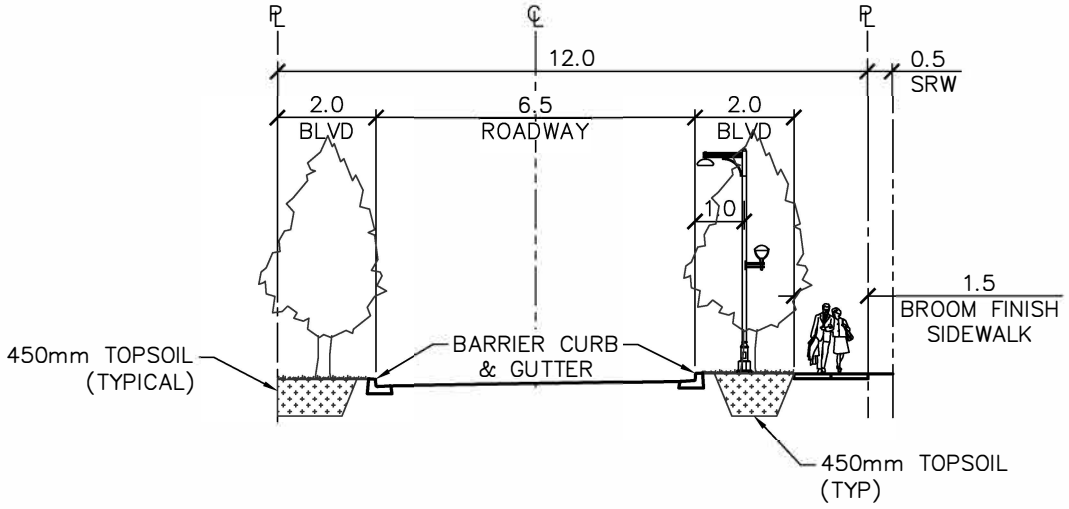
CITY OF SURREY
the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-8f





SECTION A–A

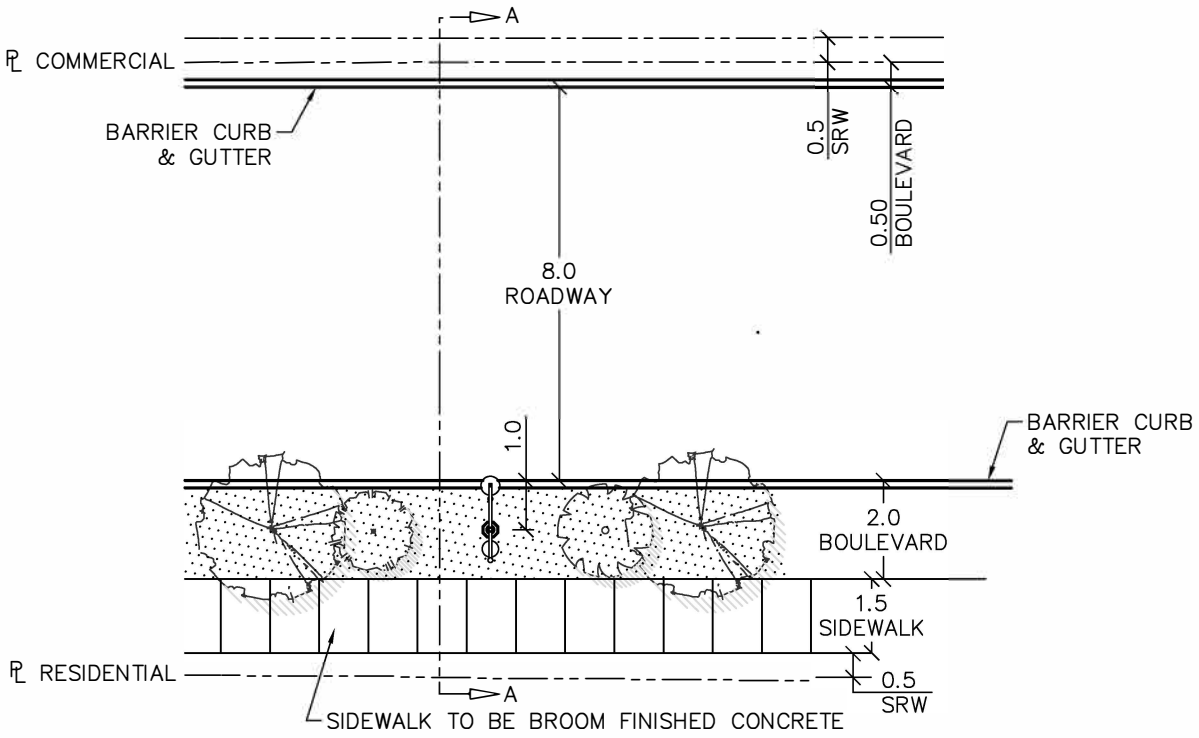
NOTES: (1) TREE SPECIES TO BE AS PER CITY CENTRE STREET TREE AREA MAP CCSD–4.
(2) BOULEVARD TO BE SODDED WITH MIN. 450mm THICK ABSORBANT TOPSOIL.
(3) COLUMNER STREET TREES

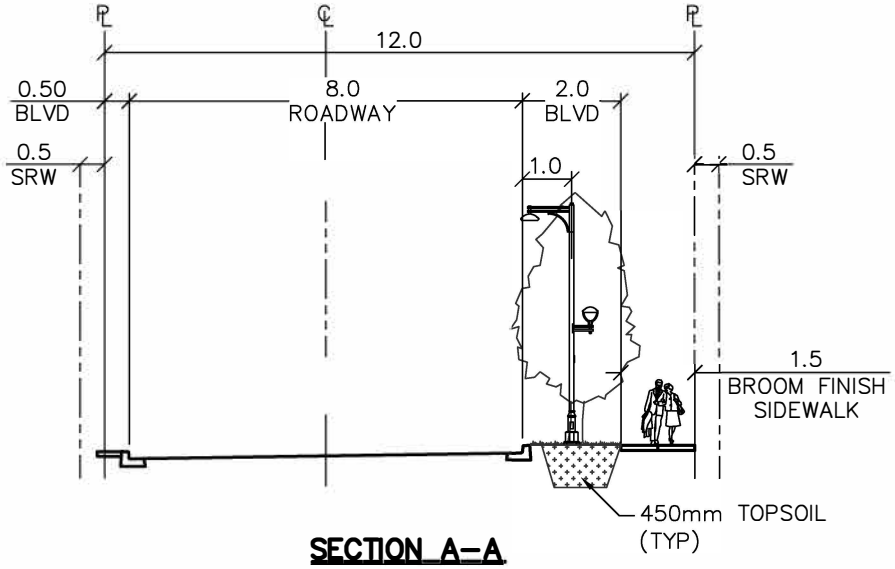
3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: TYPICAL CROSS SECTION GREEN LANES (6.5m) PAVEMENT
	Revision Date	Approved	

CITY OF SURREY the future lives here

CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–9a
Drawn By	Surrey Engineering	





SECTION A–A

NOTES:
(1) TREE SPECIES TO BE AS PER CITY CENTRE STREET TREE AREA MAP CCSD–4.
(2) BOULEVARD TO BE SODDED WITH MIN. 450mm THICK ABSORBANT TOPSOIL.
(3) ADDITIONAL STREET TREES MAY BE PLACED IN SMALL GROUPINGS WITH A MIXTURE OF LARGE CANOPY AND MEDIUM UNDERSTORY TREES IN CURB EXTENSION AS DIRECTED BY ENGINEER.
(4) PARKING MAY BE PERMITTED IN LANE AS DIRECTED BY ENGINEER.

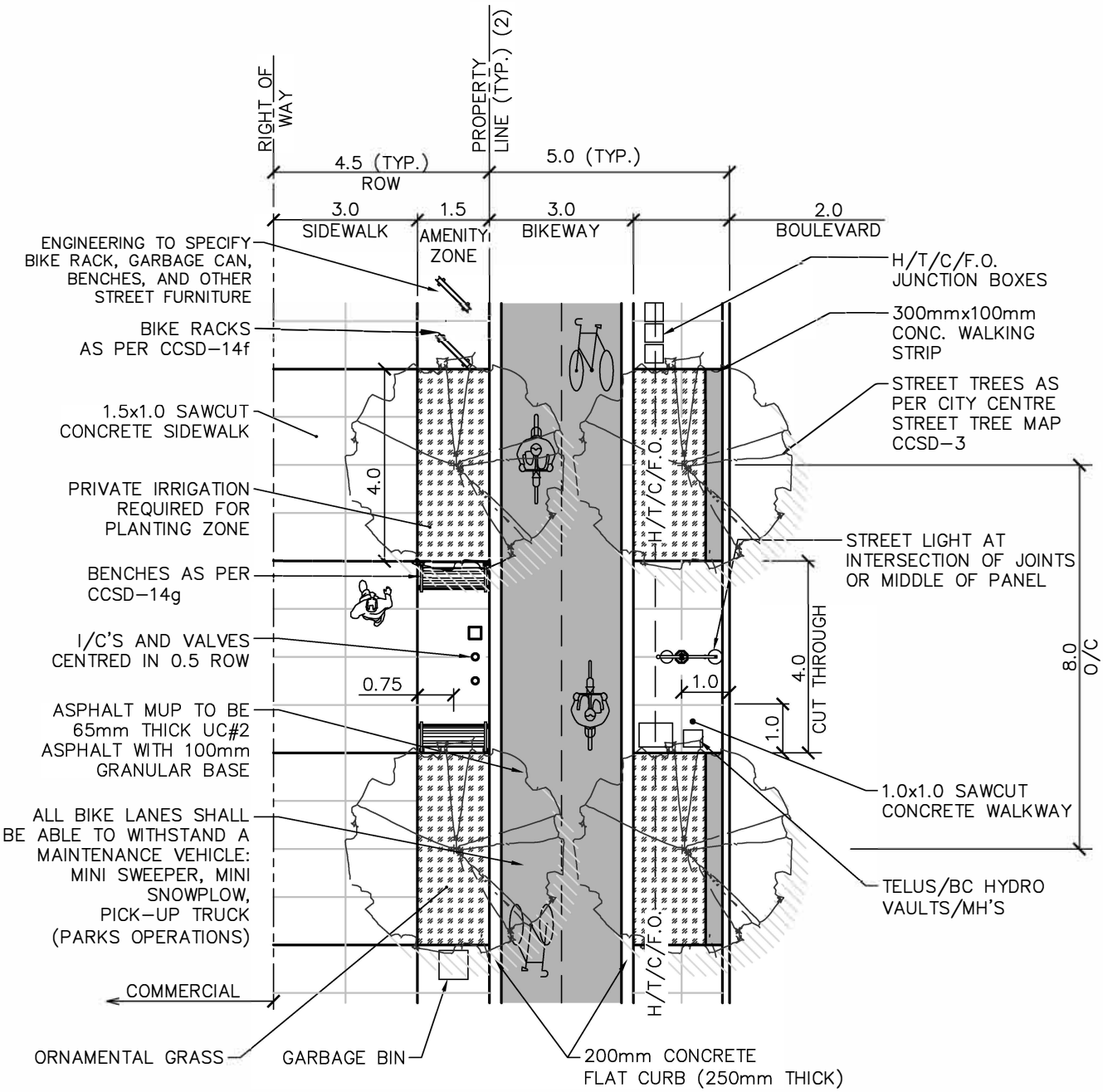
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: TYPICAL CROSS SECTION GREEN LANES (8.0m) PAVEMENT
	Revision Date / Approved	

CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–9b



NOTES: (1) 0.5m SRW FOR I/C & MAINS
(2) IF BUILDING NOT ADJACENT TO SIDEWALK, ADD ON ADDITIONAL 0.5m TO ROW

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	
	Revision Date	Approved

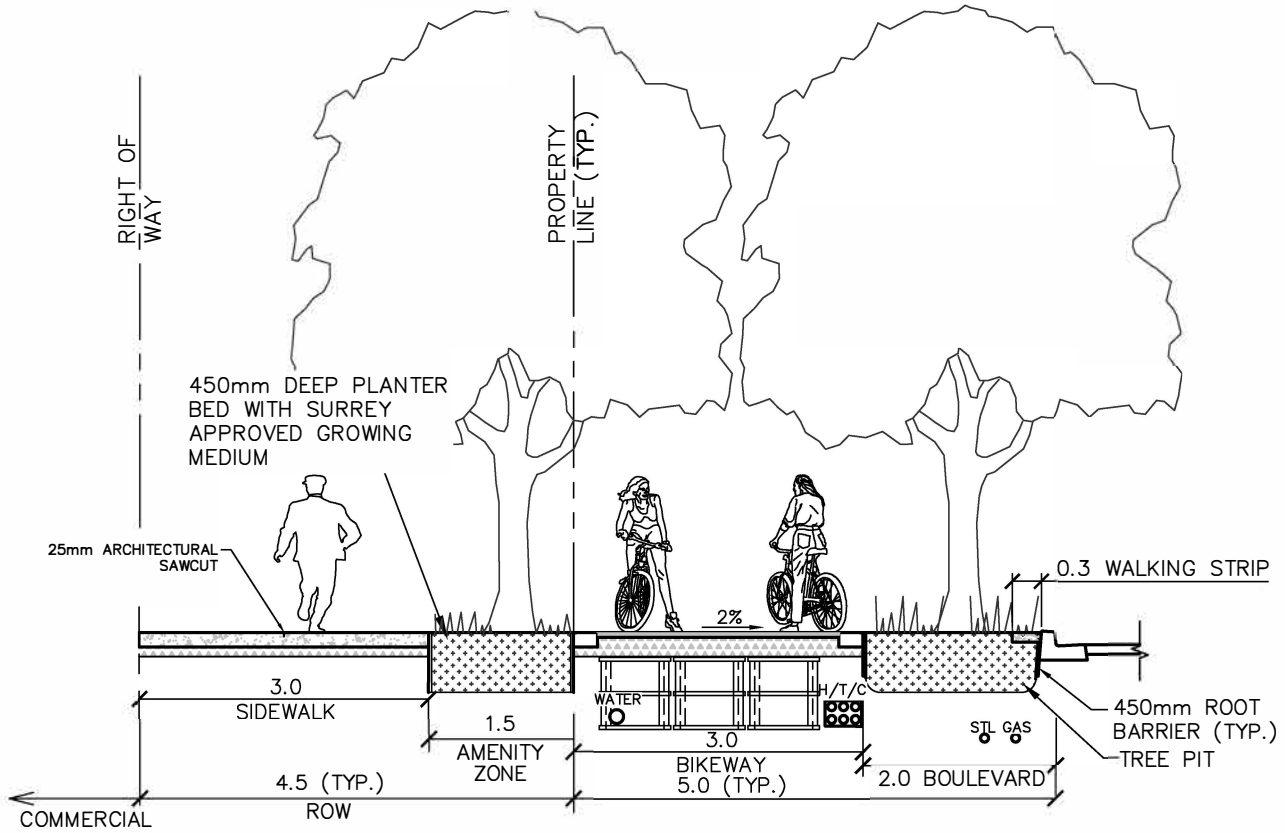
Title: **BC PARKWAY WITH HARDSCAPE BOULEVARD**

CITY OF SURREY the future lives here.

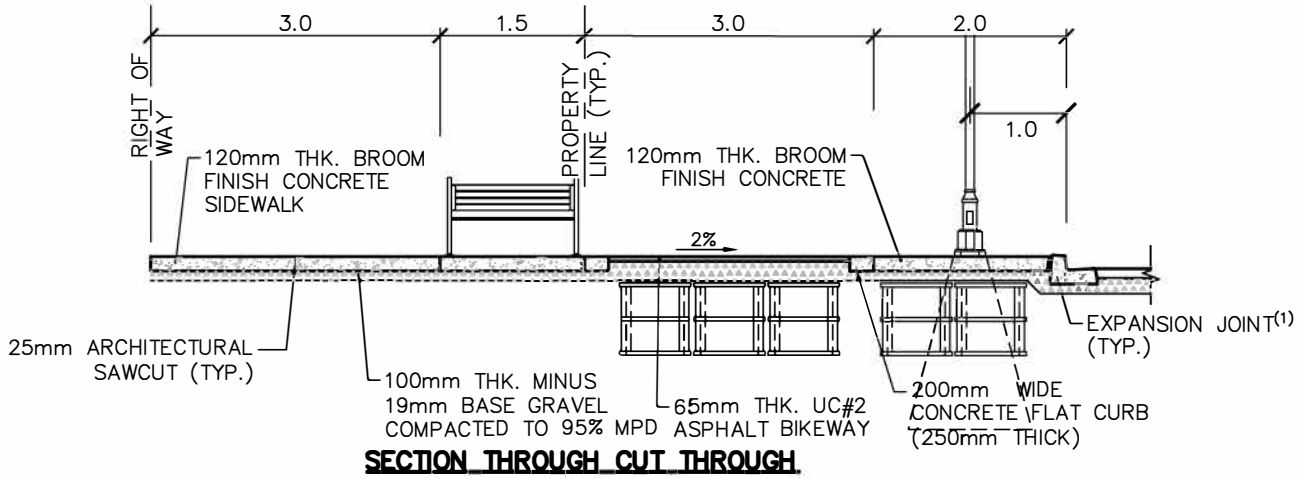
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–10a



SECTION THROUGH TREE PLANTING



SECTION THROUGH CUT THROUGH

NOTES:
(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.
(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.
(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.
(4) CONCRETE EDGE ALONG PROPERTY LINE TO HAVE 150mm TROWEL FINISH. ALL SCORELINES TO STOP PRIOR TO TROWELED EDGE.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	
	Revision Date	Approved

Title: **BC PARKWAY WITH HARDSCAPE BLVD – CROSS SECTION**

CITY OF SURREY
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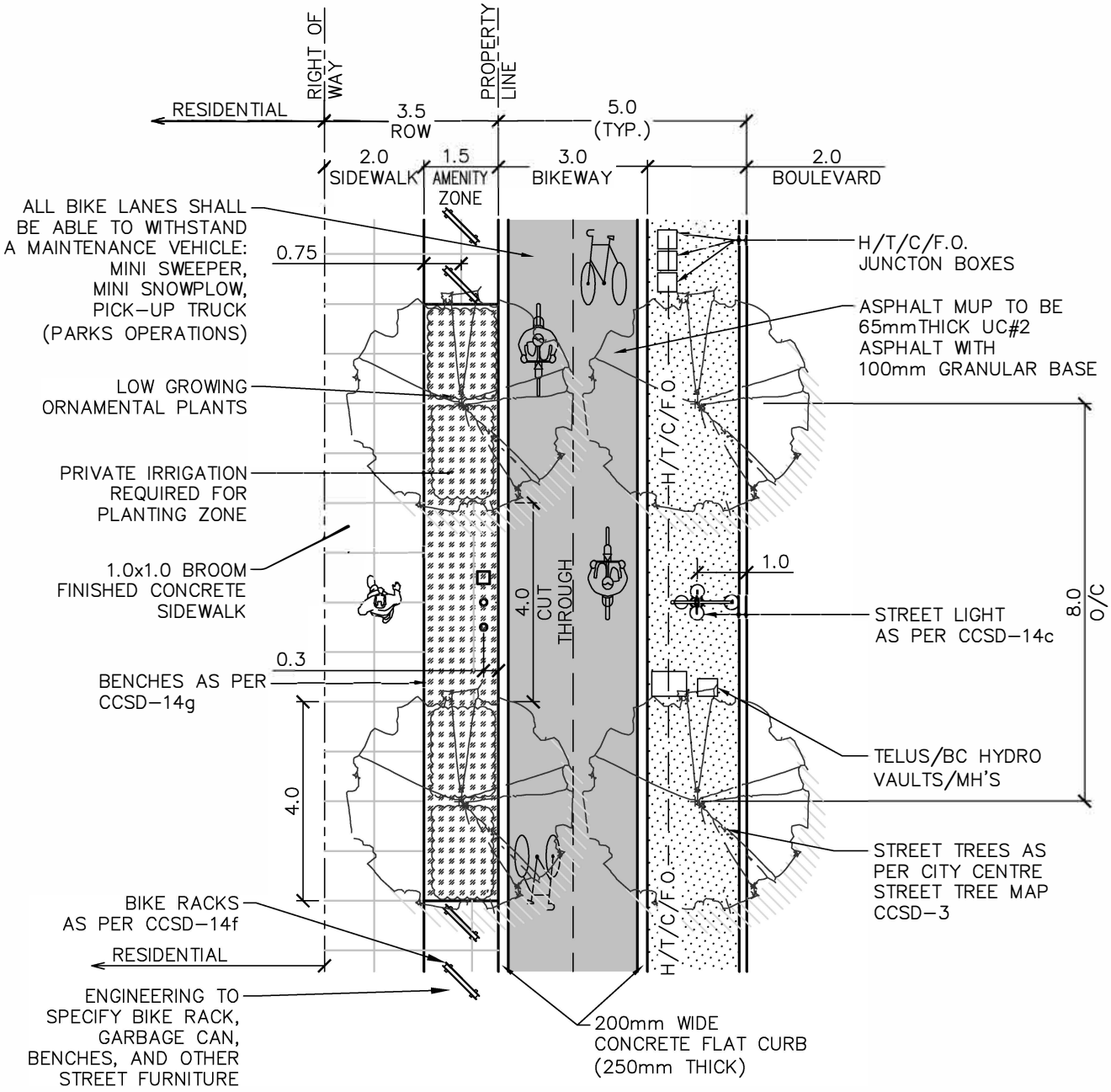
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–10b



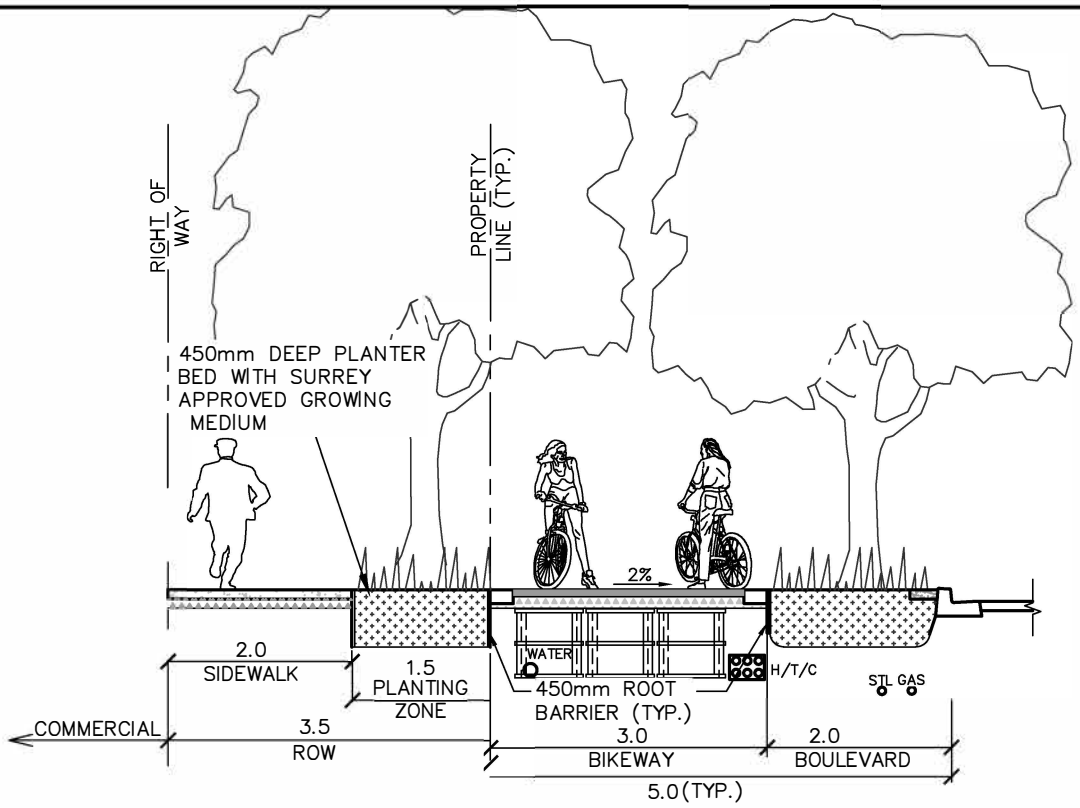
3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	J ULY2017	Title: BC PARKWAY WITH SOFTSCAPE
	Revision Date / Approved	

CITY OF SURREY the future lives here.

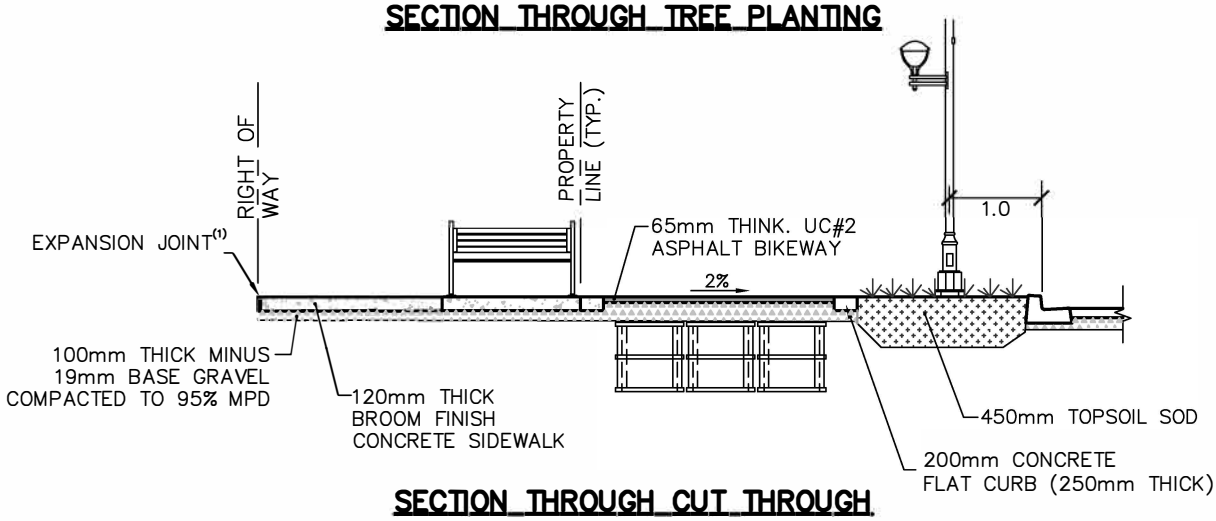
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	J LY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-10c



SECTION THROUGH TREE PLANTING



SECTION THROUGH CUT THROUGH

NOTES:
(1) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS. 50mm SMOOTH TROWEL ON BOTH SIDES OF EXPANSION JOINT.
(2) CONTROL JOINTS SHALL HAVE A MAXIMUM 3m SPACING. CONTROL JOINTS SHALL BE SAWCUT ONLY.
(3) CONTROL JOINT AND EXPANSION JOINT LAYOUTS TO BE CHALK MARKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO COMPLETION.
(4) CONCRETE FINISH TO MATCH EXISTING CONCRETE SIDEWALK FINISH
(5) CONCRETE EDGE ALONG PROPERTY LINE TO HAVE 150mm TROWEL FINISH. ALL SCORELINES TO STOP PRIOR TO TROWELED EDGE.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: BC PARKWAY WITH SOFTSCAPE – CROSS SECTION
	Revision Date / Approved	

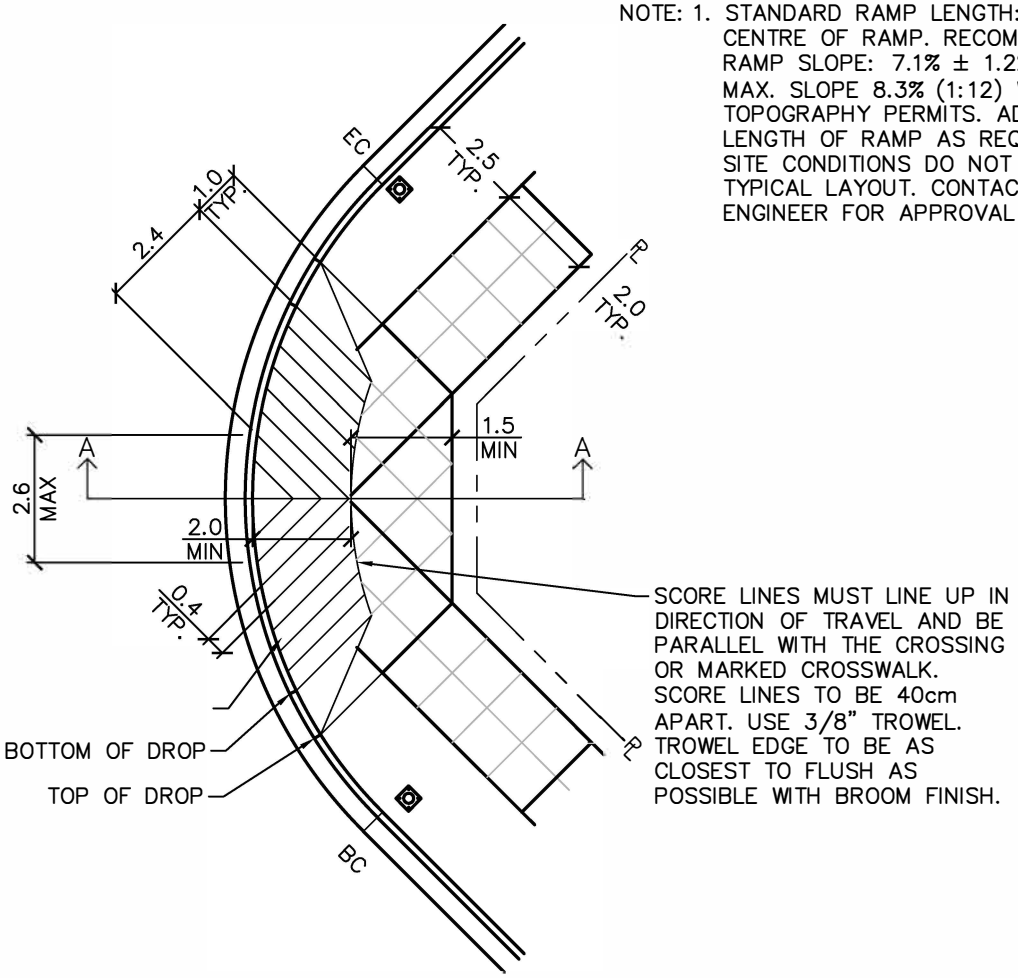
CITY OF SURREY the future lives here.

CITY CENTRE STANDARD DRAWINGS

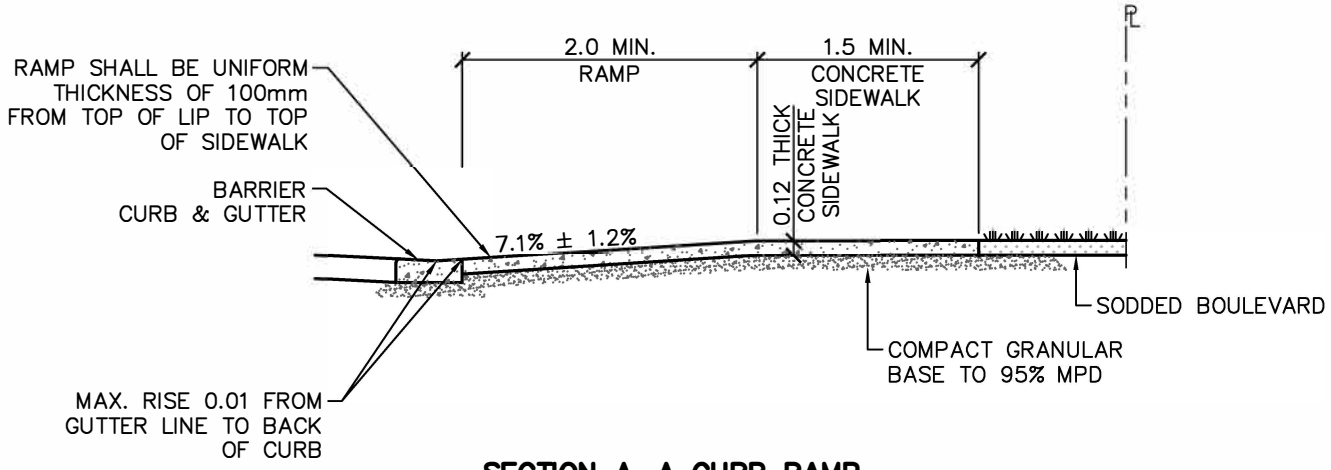
Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–10d

NOTE: 1. STANDARD RAMP LENGTH: 2.0m AT CENTRE OF RAMP. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS. ADJUST LENGTH OF RAMP AS REQUIRED WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT. CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.



SINGLE RAMP



SECTION A–A CURB RAMP

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: SINGLE LETDOWN AT INTERSECTION BOULEVARD
	Revision Date	Approved	

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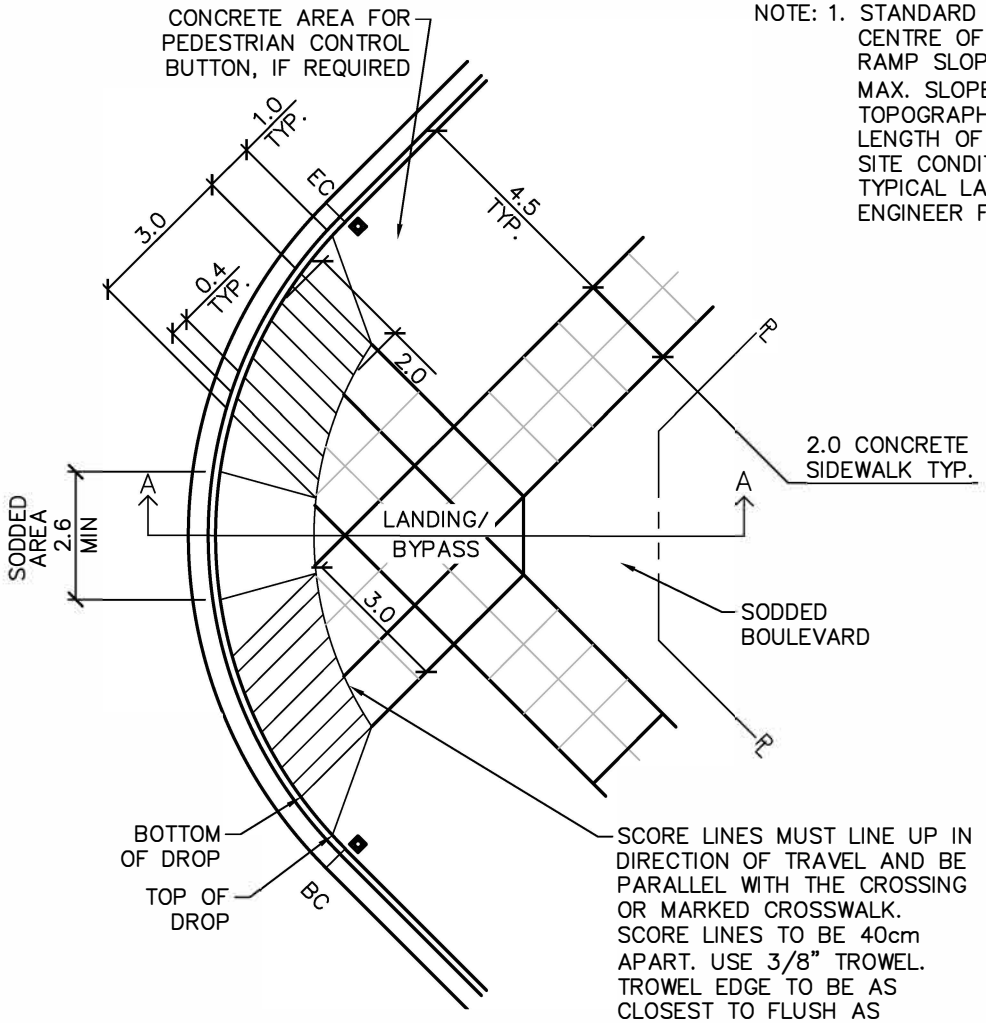
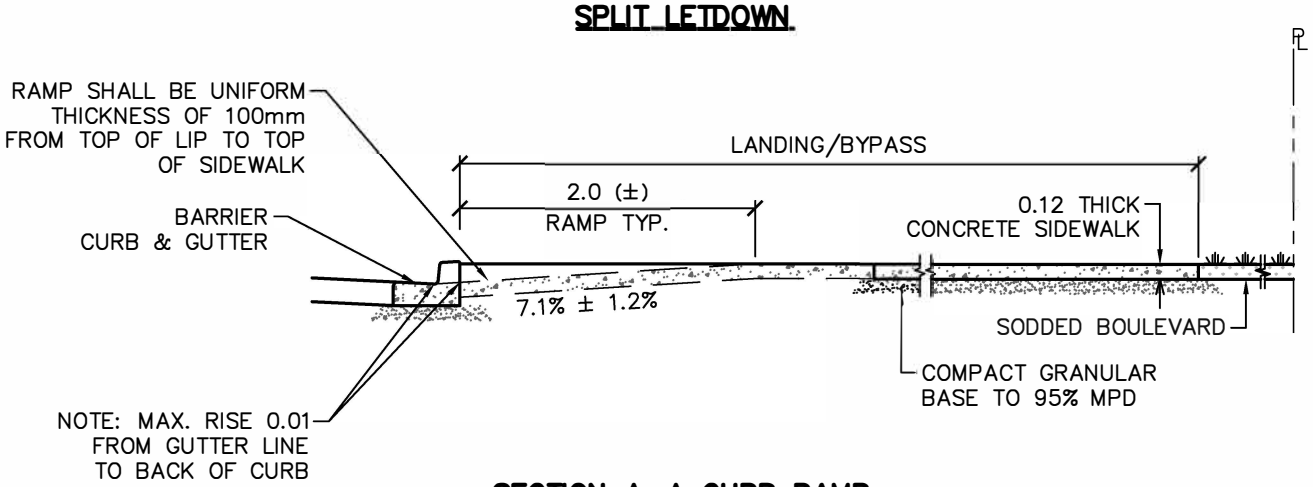
CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–11a
Drawn By	Surrey Engineering	

NOTE: 1. STANDARD RAMP LENGTH: 2.0m AT CENTRE OF RAMP. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS. ADJUST LENGTH OF RAMP AS REQUIRED WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT. CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.



SPLIT LETDOWN



SECTION A–A CURB RAMP

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	J ULY2017	Title: SPLIT LETDOWN AT INTERSECTION BOULEVARD GREATER THAN 4.50m
	Revision Date / Approved	

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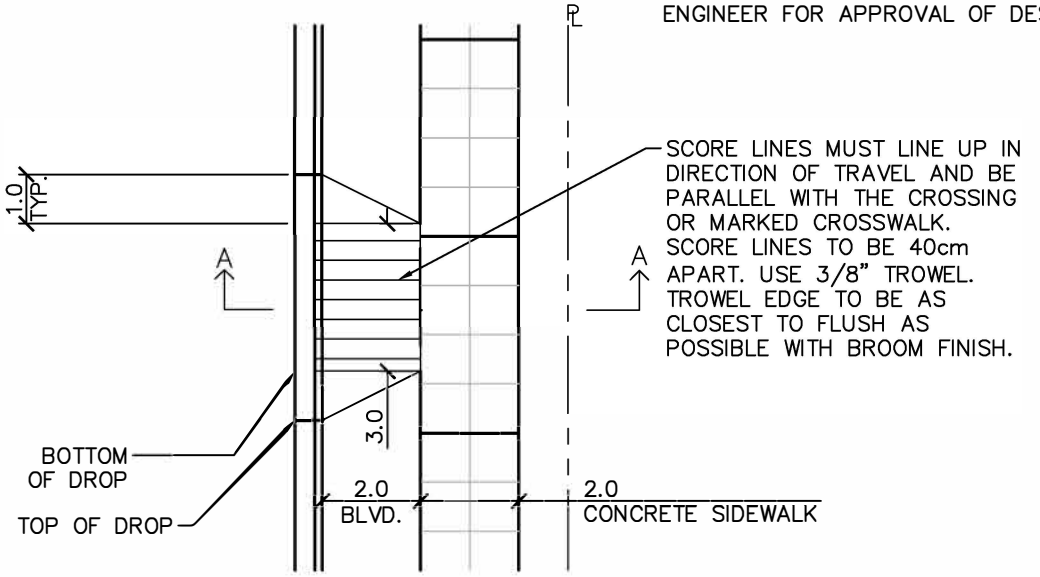
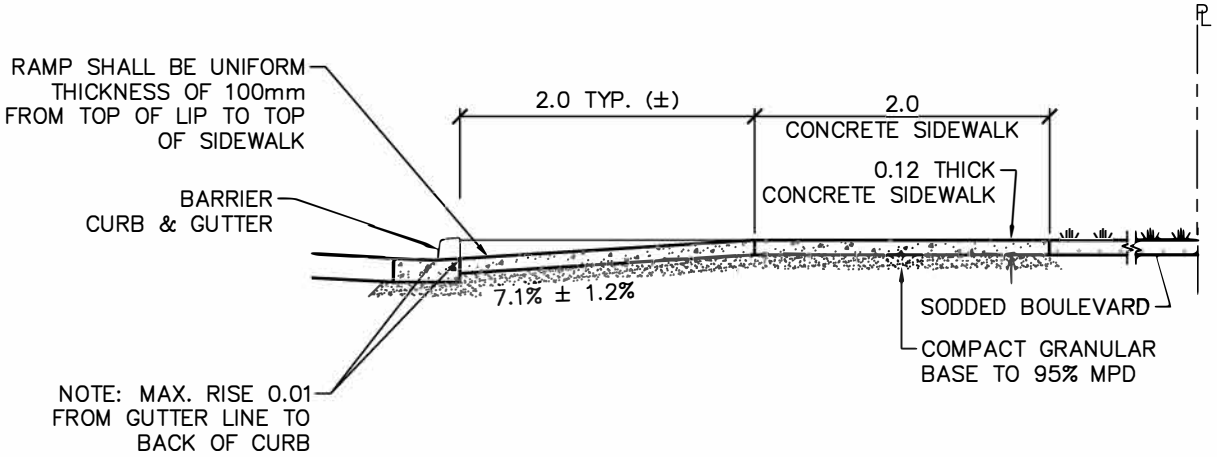
CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	J UY 2017	CCSD–11b
Drawn By	Surrey Engineering	

NOTE: 1. STANDARD RAMP LENGTH: 2.0m AT CENTRE OF RAMP. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS. ADJUST LENGTH OF RAMP AS REQUIRED WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT. CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.



PLAN



SECTION A–A CURB RAMP

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: SINGLE RAMP LETDOWN WITH PARALLEL SCORING
	Revision Date	Approved	

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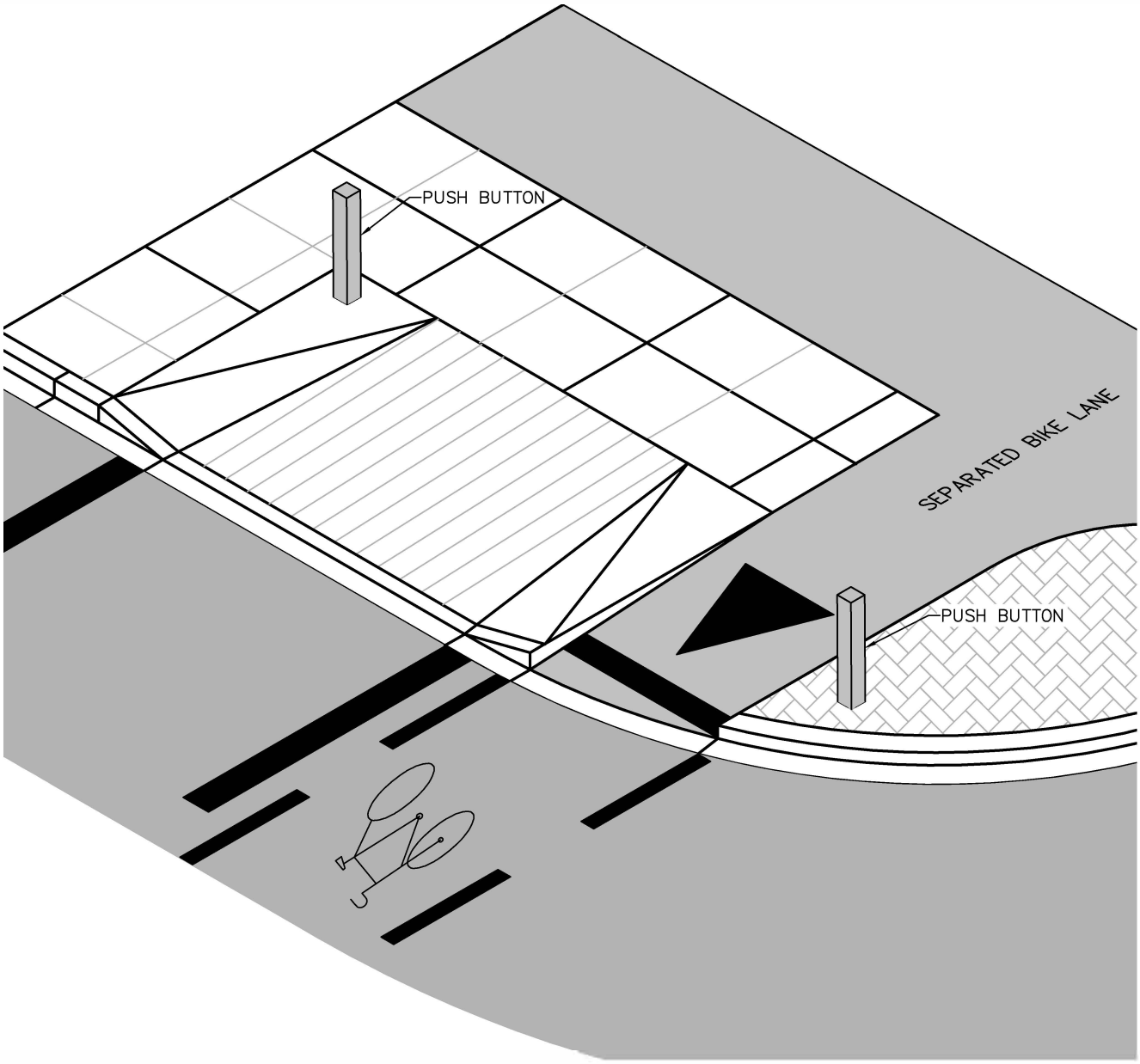
Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–11c
Drawn By	Surrey Engineering	



3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title **TYPICAL TREATMENT TWO LETDOWNS FOR PROTECTED INTERSECTION**
	Revision Date / Approved	

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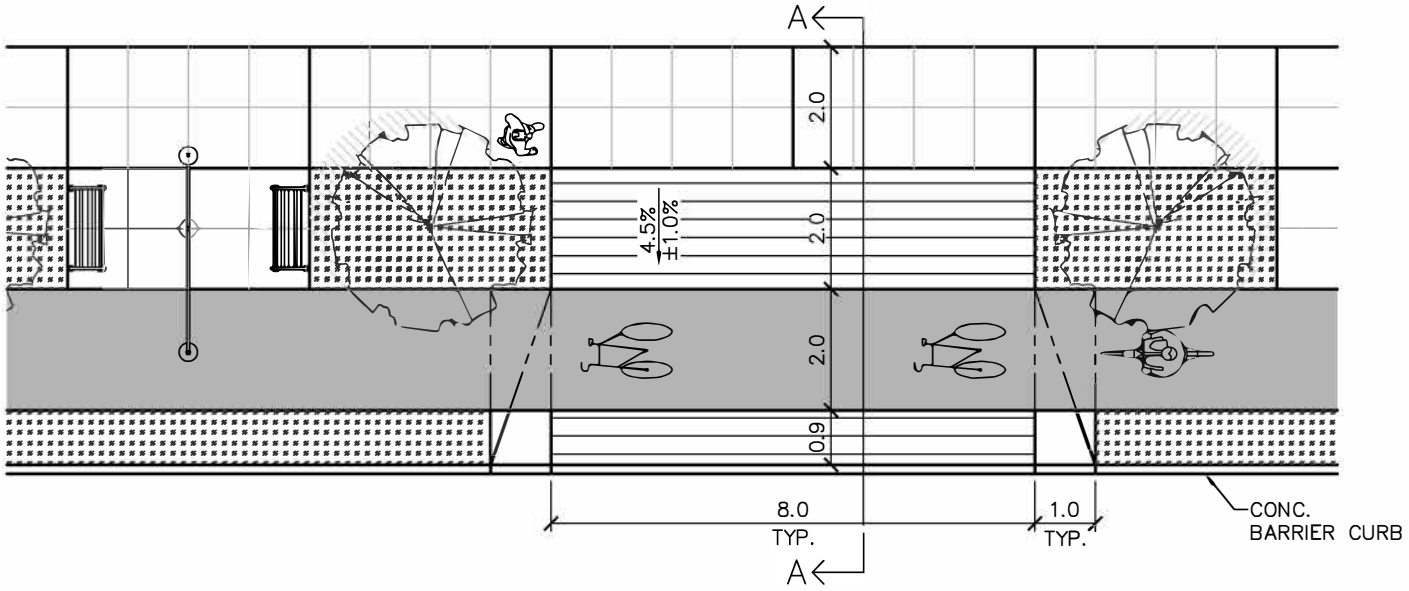
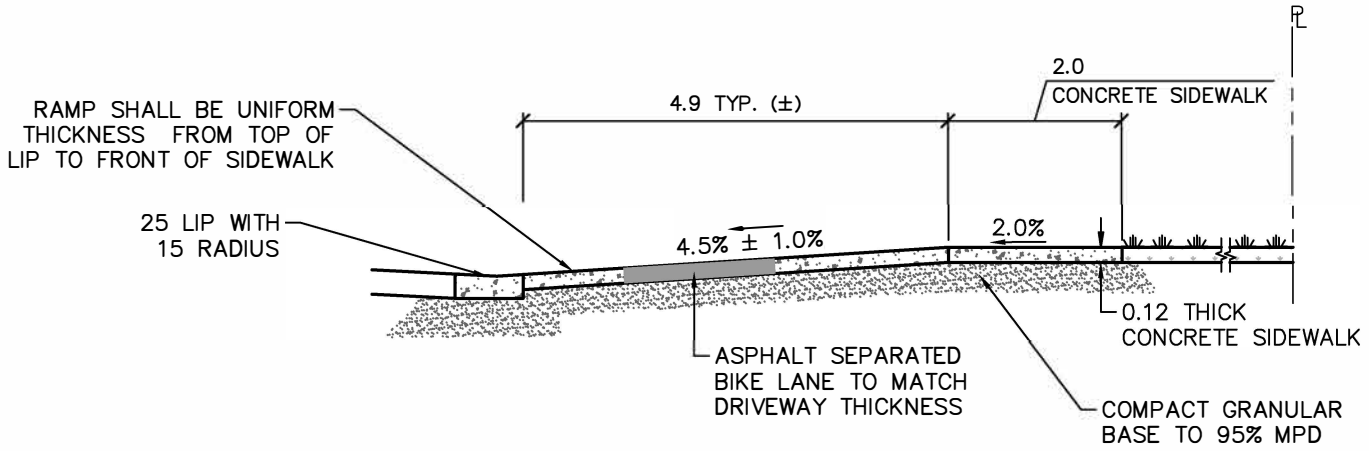
Approved		DRAWING NUMBER
Date	JULY 2017	CCSD–11d
Drawn By	Surrey Engineering	

TYPE I





3		
2		
1	JULY 2017	
	Revision Date	Approved

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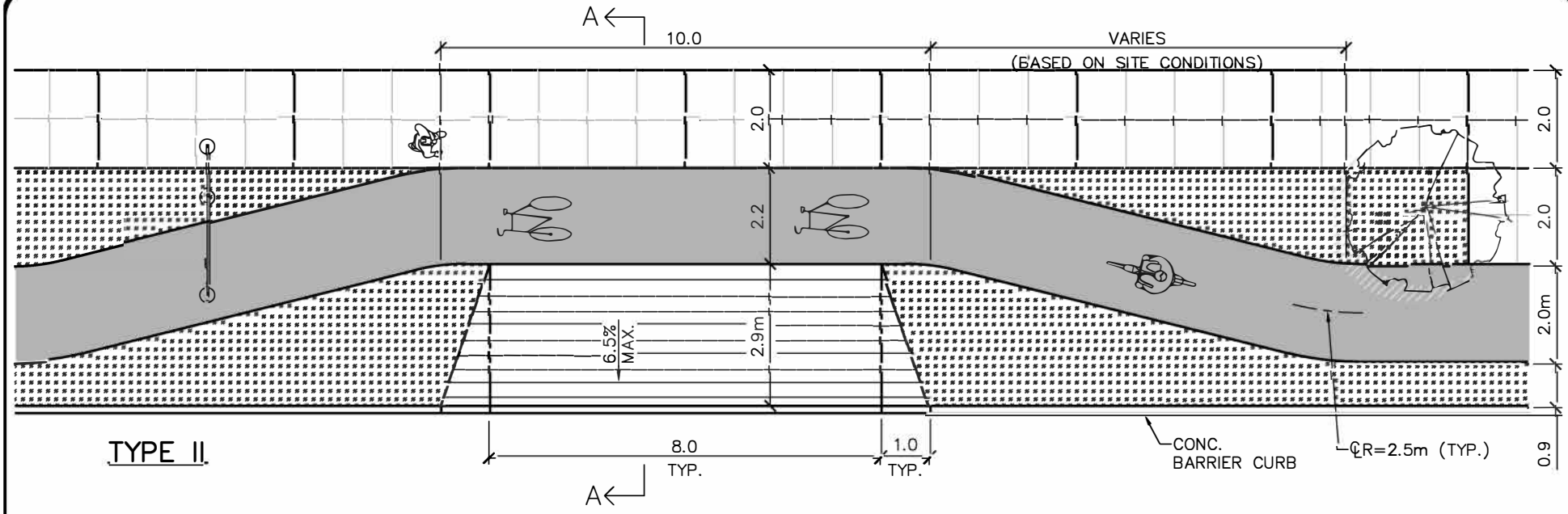
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

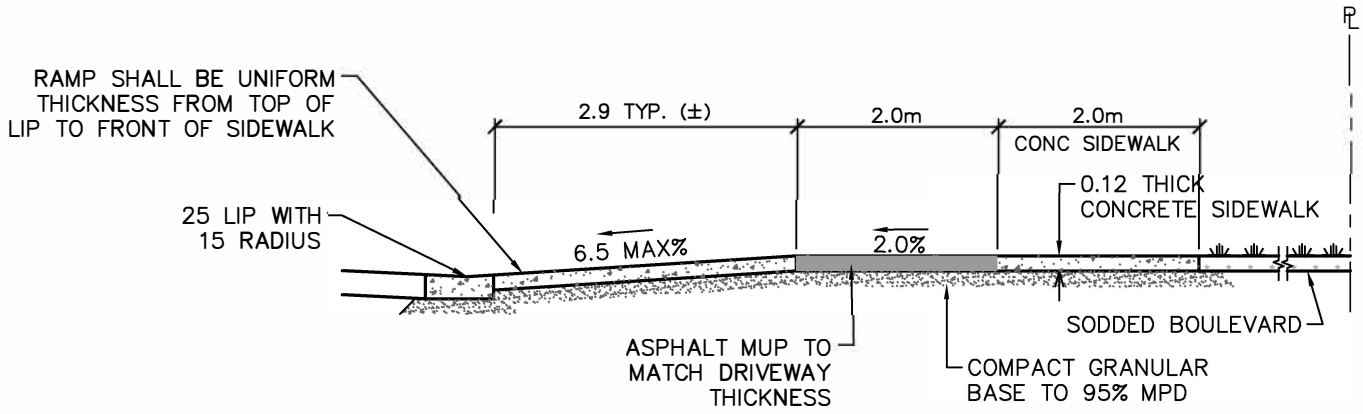
Title: **DRIVEWAY TYPE 1 PLAN & SECTION VIEW (30m) ROW**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-12a



TYPE II



SECTION A

3		
2		
1	JULY 2017	
	Revision Date	Approved

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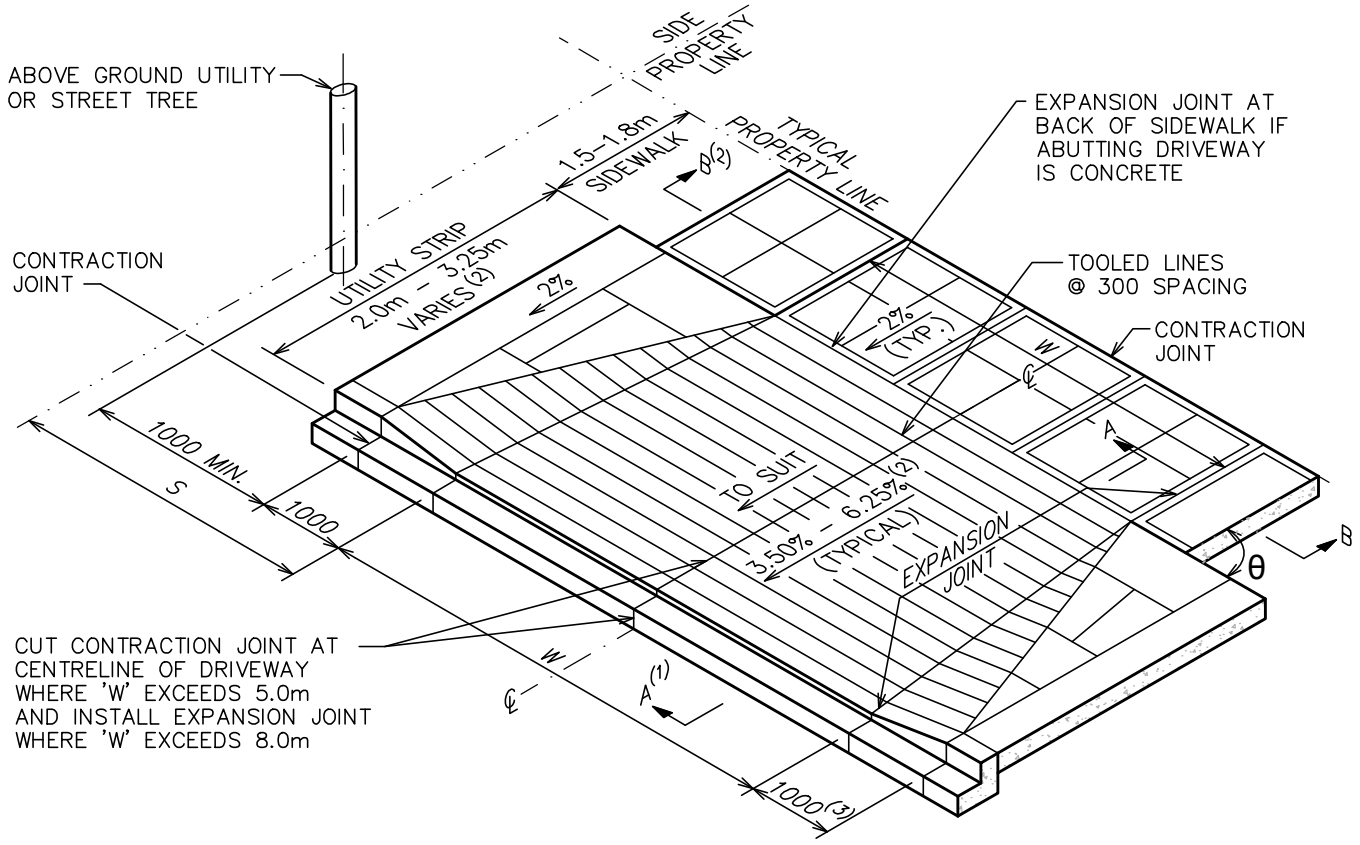
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title: **DRIVEWAY TYPE II PLAN & SECTION VIEW (30m) ROW**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–12b



ZONE	OPERATION	W		S	θ – MIN. ANGLE BTWN. THE FRONTAGE PROP. LINE AND THE EDGE OF DRIVEWAY (DEG.)
		MIN. (m)	STD. (m)	MIN. DISTANCE FROM SIDE PROPERTY LINE (m)	
SINGLE FAMILY RESIDENTIAL	N/A	4.5	6.0	1.2	90
MULTI FAMILY RESIDENTIAL	TWO WAY	N/A	7.3	2.0	90
	ONE WAY	N/A	4.5	2.0	45
LANE	RESIDENTIAL	N/A	7.3	2.0	90
	COMMERCIAL	N/A	9.3	2.0	45
COMMERCIAL	TWO WAY	7.3	9.0	2.0	90
	ONE WAY	N/A	4.5	2.0	45
INDUSTRIAL	TWO WAY	9.0	11.0	2.0	90
	ONE WAY	N/A	5.0	2.0	30

NOTES: (1) FOR SECTION A–A REFER TO SSD–R.42.1.
(2) FOR UTILITY STRIP LESS THAN 2.0m, LETDOWN SLOPE SHALL BE 2% AND REFER TO SECTION B–B ON SSD–R.42.1.
(3) FLARE IS NOT PERMITTED FOR SINGLE FAMILY RESIDENTIAL UNLESS DIRECTED BY ENGINEER.
(4) EXPANSION JOINTS SHALL USE FULL DEPTH ASPHALT IMPREGNATED FIBREBOARD @ MAXIMUM 9m LONGITUDINAL SPACING. EXPANSION JOINTS SHALL BE PROVIDED AGAINST ALL VERTICAL EDGES AND CHANGE IN MATERIALS.

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: LOCAL ROAD DRIVEWAYS
	Revision Date / Approved	

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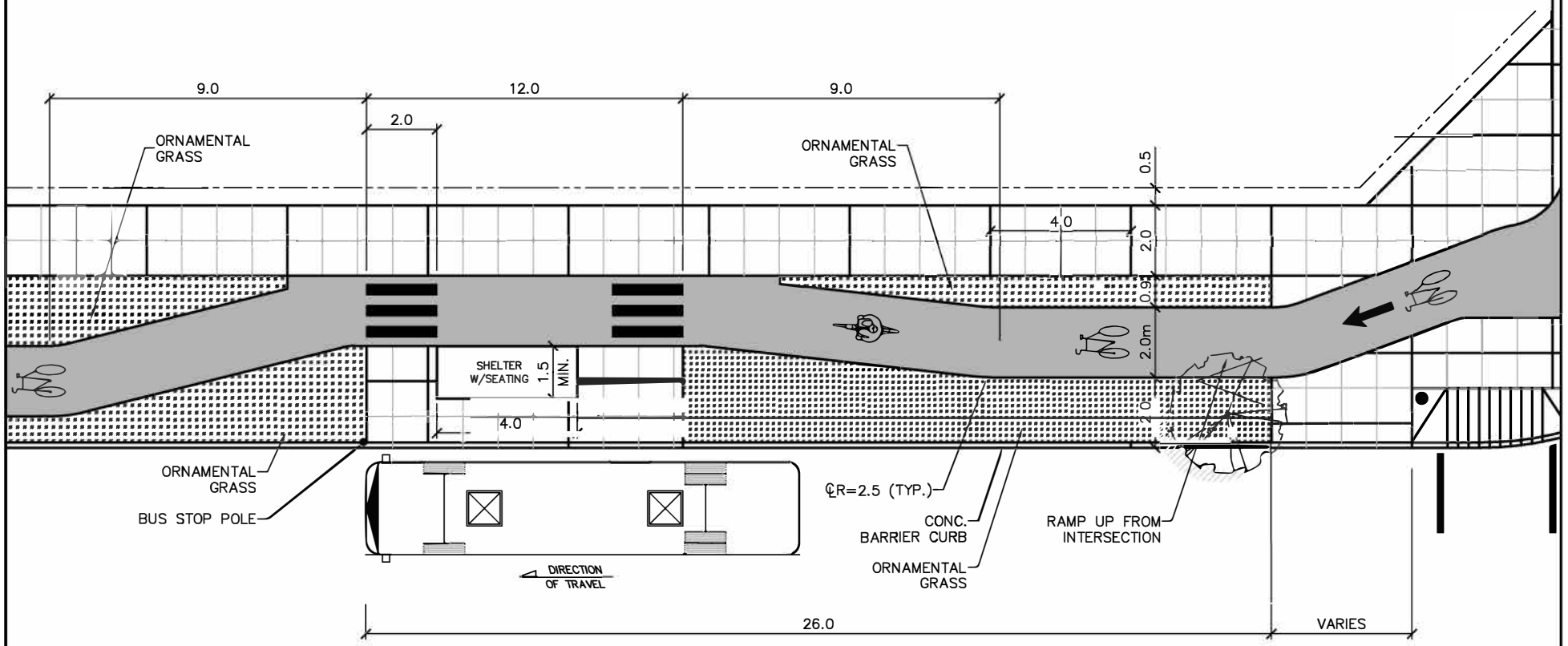
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD–12c



3		
2		
1	JULY 2017	
	Revision Date	Approved

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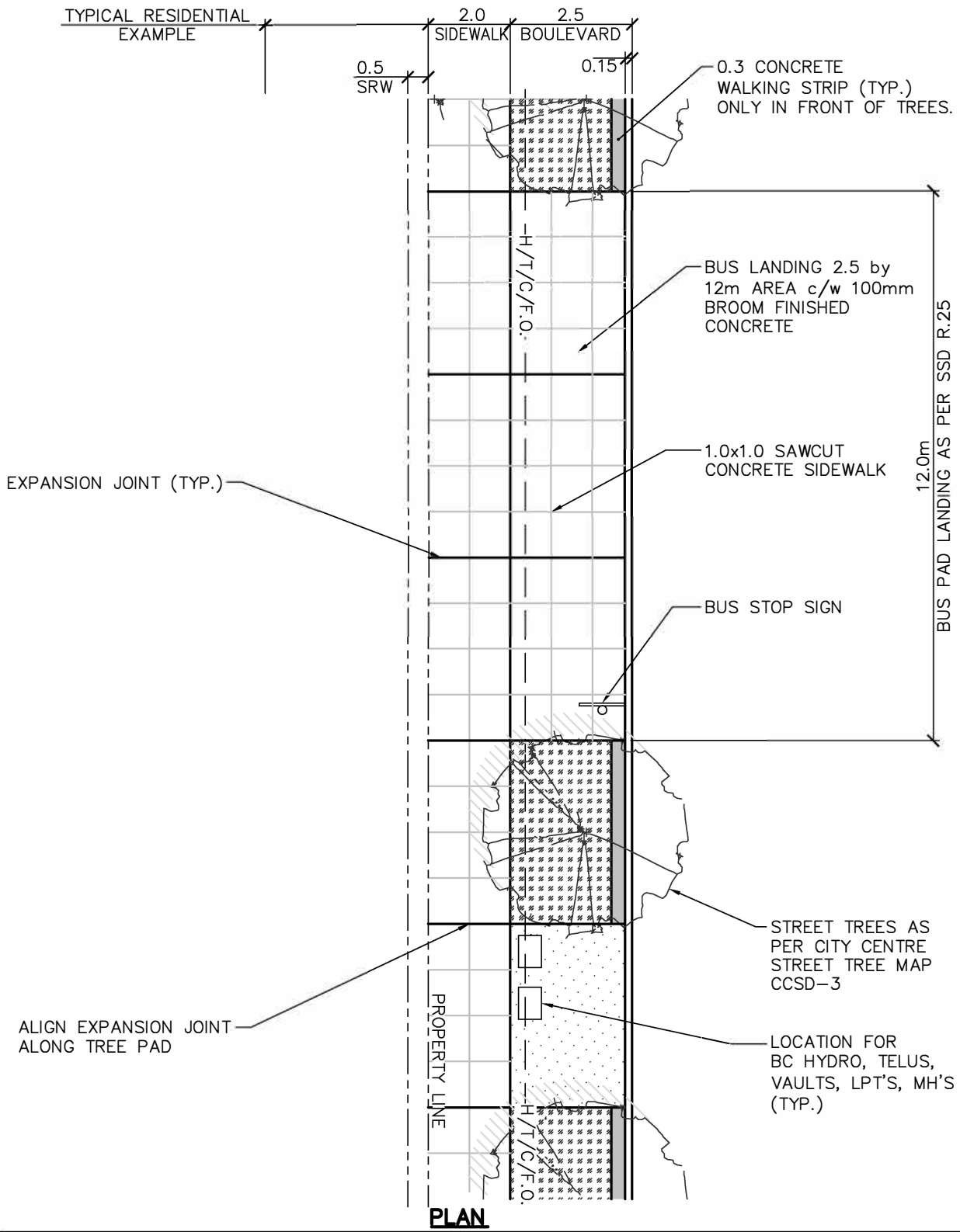
CITY CENTRE STANDARD DRAWINGS

All Dimensions Shown In Metres, Unless Otherwise Noted

Title **TYPICAL BUS STOP PLAN VIEW (30m) ROW**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD–13a



PLAN

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: LOCAL BOULEVARD FOR 20m ROW BUS STOP FOR (4.5m) FRONTAGE
	Revision Date / Approved	

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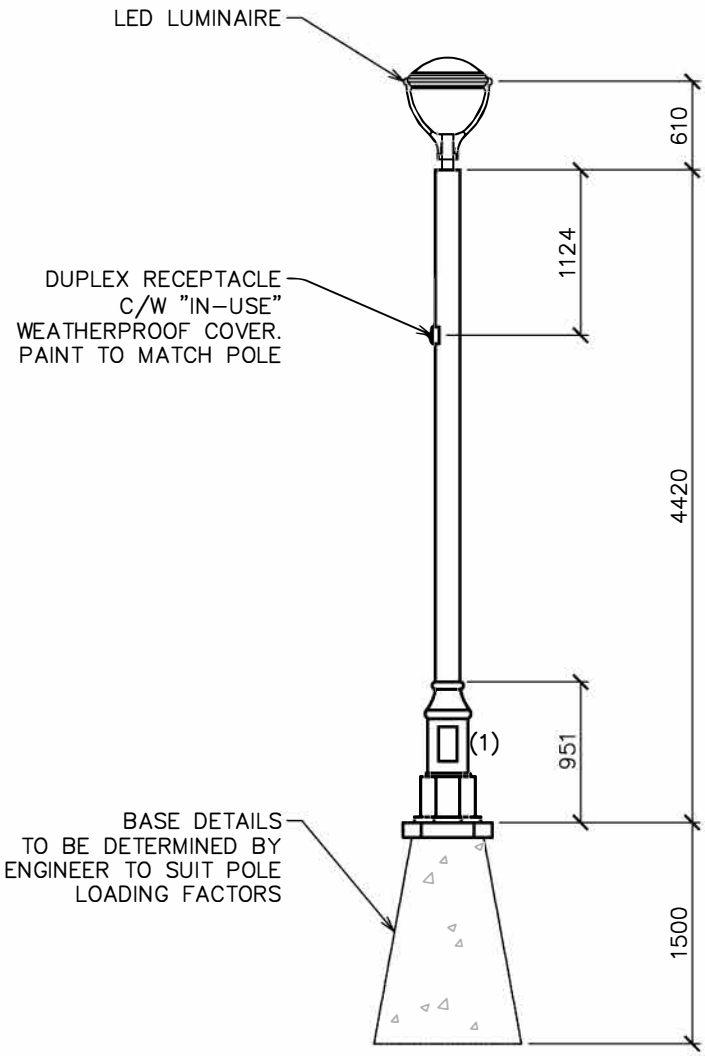
CITY CENTRE STANDARD DRAWINGS

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER: CCSD-13b



TYPICAL PROPOSED TYPE 'A' DECORATIVE LUMINAIRE POST

NOTES: (1) BOX FOR FUSE AND PHOTOCELL TO BE INSTALLED WHERE IDENTIFIED BY STREETLIGHT ENGINEER.
(2) POLE TO BE POWDER COATED BLACK.

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: STREET LIGHTS – TYPE 'A'
	Revision Date	Approved	

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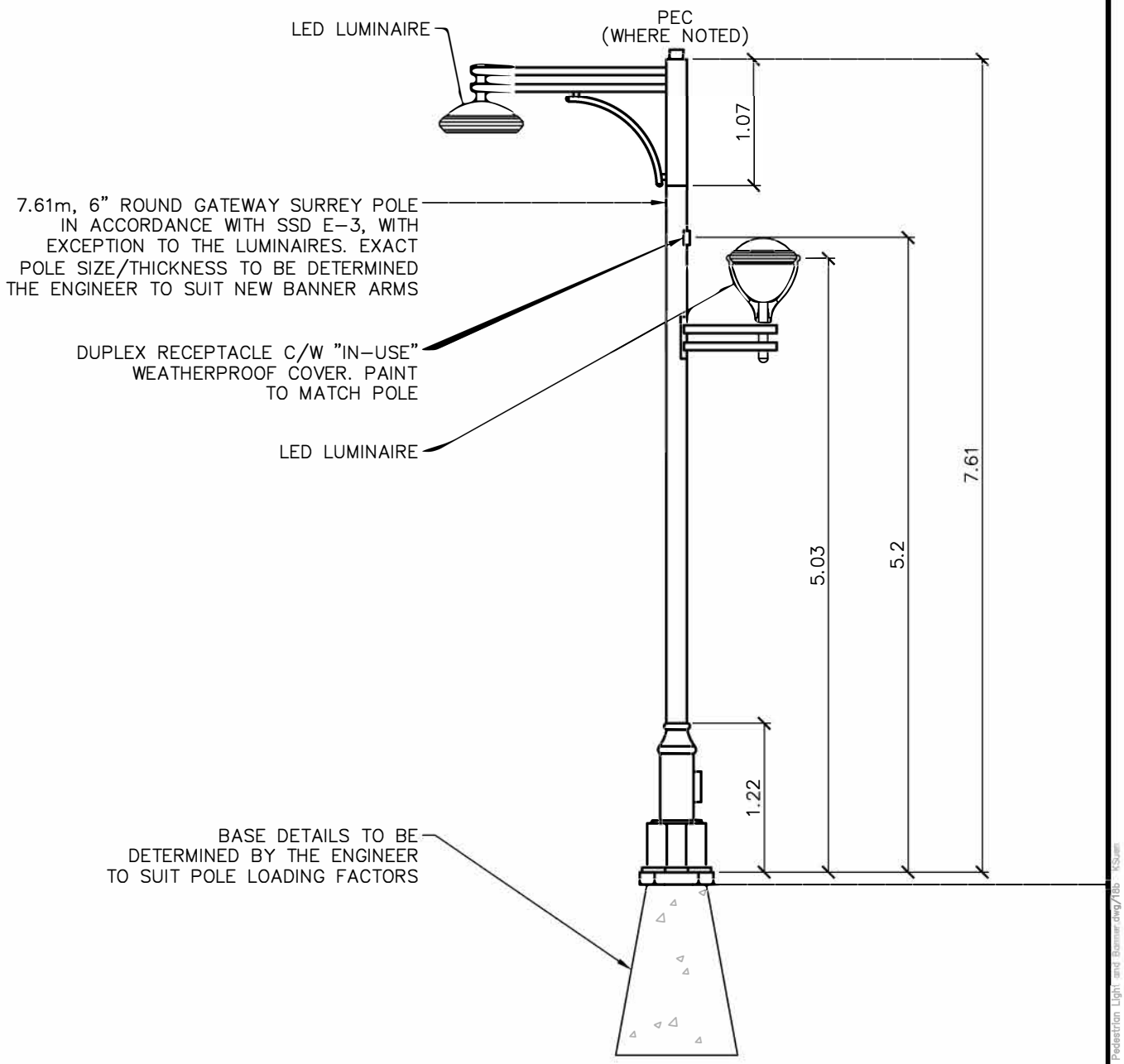
CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD-14a
Drawn By	Surrey Engineering	



TYPICAL PROPOSED TYPE 'B' DECORATIVE LUMINAIRE POLE

NOTES:
(1) TYPICAL 32m SPACING ON OPPOSITE SIDES, NOT STAGGERED SUBJECT TO ENGINEER APPROVAL
(2) SUBJECT TO EXCEEDING ILLUMINATION REQUIREMENTS.
(3) POLE TO BE POWDER COATED RAL 7016 (GREY).

3			All Dimensions Shown In Metres, Unless Otherwise Noted
2			
1	JULY 2017		Title: STREET LIGHTS – TYPE 'B' WITH PEDESTRIAN LIGHT
	Revision Date	Approved	

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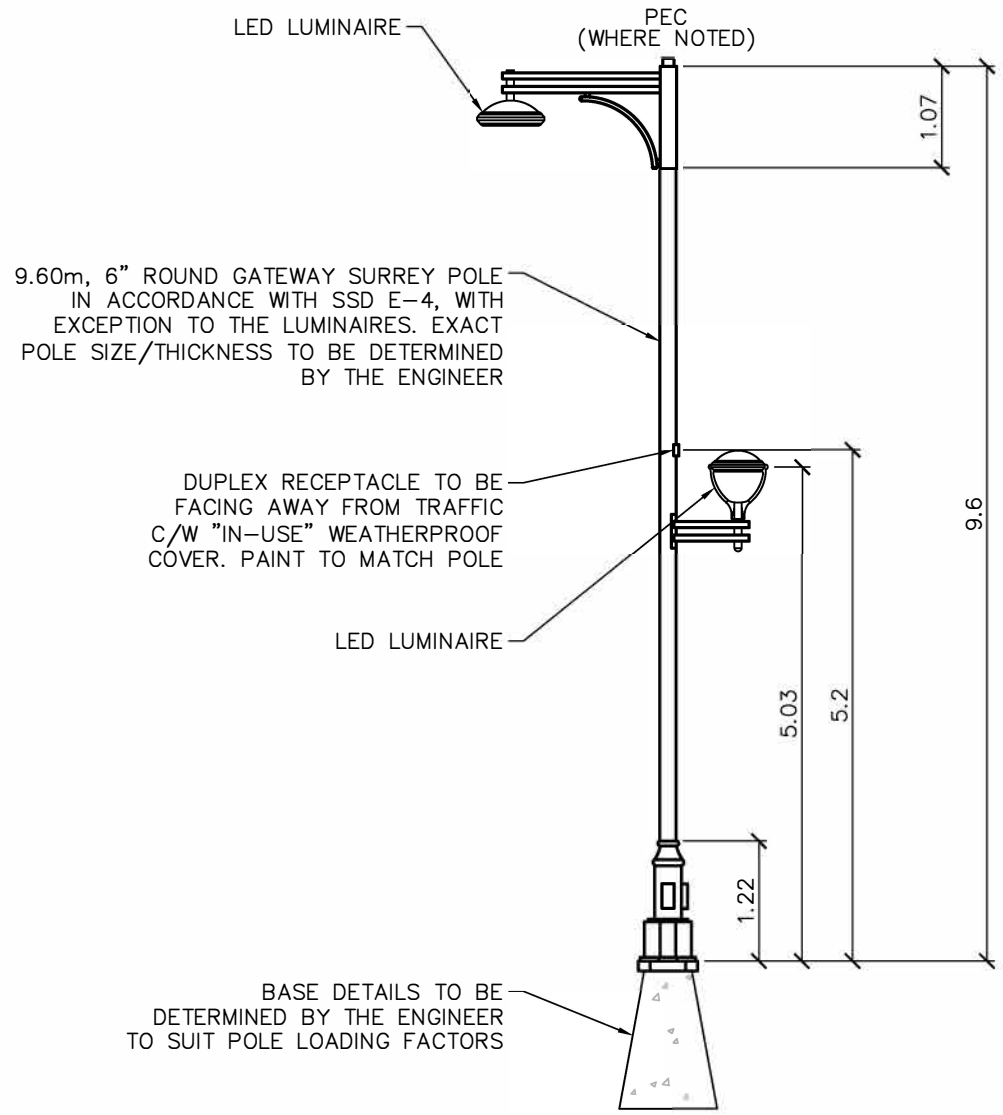
Approved		DRAWING NUMBER
Date	JULY 2017	CCSD-14b
Drawn By	Surrey Engineering	



TYPICAL PROPOSED TYPE 'C' DECORATIVE LUMINAIRE POLE

NOTES:
(1) TYPICAL 40m SPACING ON OPPOSITE SIDES, NOT STAGGERED SUBJECT TO ENGINEER APPROVAL
(2) SUBJECT TO EXCEEDING ILLUMINATION REQUIREMENTS
(3) 11m POLE MAY BE REQUIRED.
(4) POLE TO BE POWDER COATED BLACK.
(5) TO ACCOMMODATE BANNER ARMS, CONFIRM WIND LOADING WITH STRUCTURAL ENGINEERING

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: STREET LIGHTS – TYPE C PEDESTRIAN LIGHT
	Revision Date / Approved	

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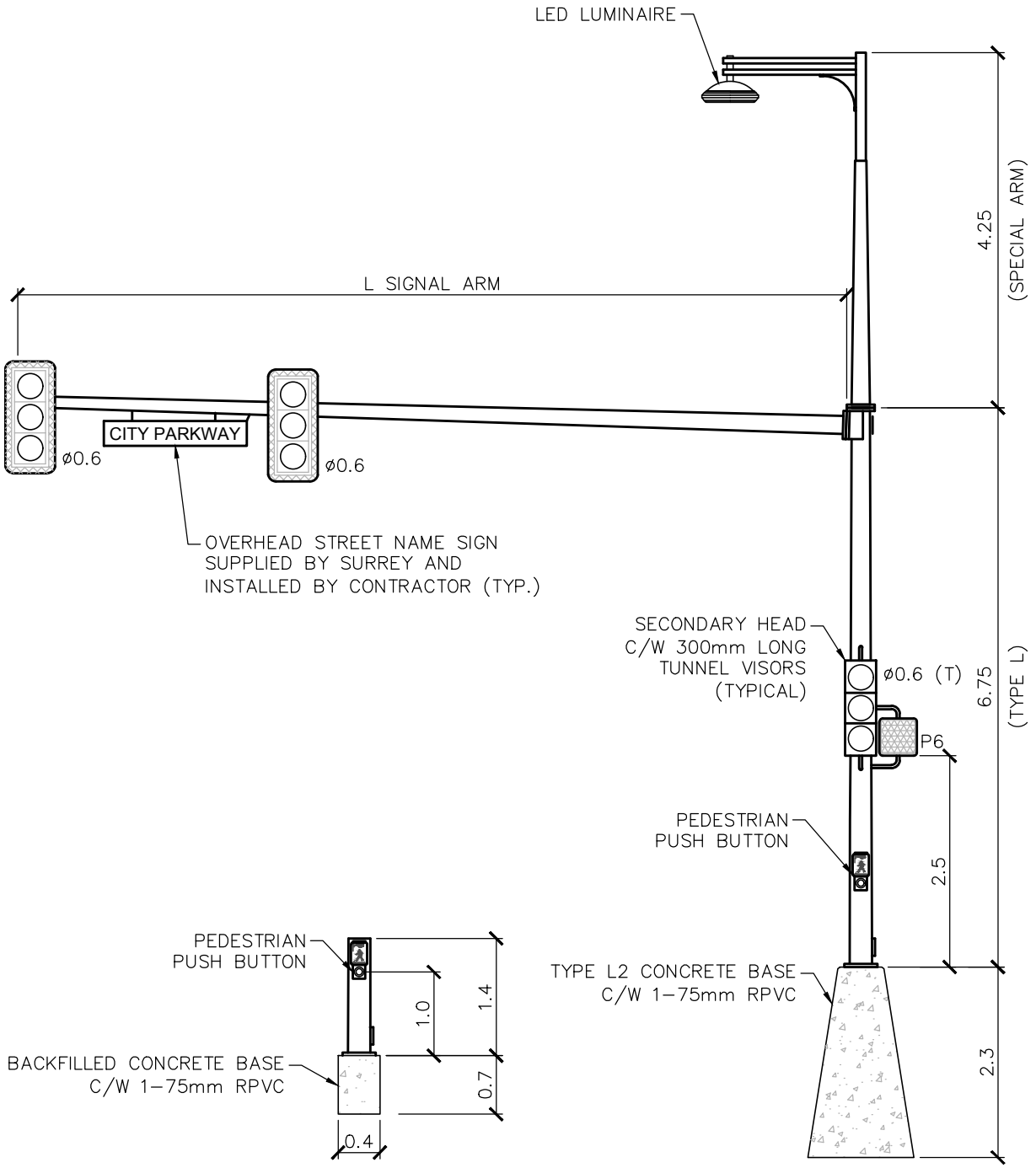
CITY CENTRE STANDARD DRAWINGS

Approved		DRAWING NUMBER
Date	JULY 2017	CCSD-14c
Drawn By	Surrey Engineering	



TYPICAL PROPOSED PEDESTRIAN PUSH BUTTON

TYPICAL PROPOSED TYPE 'L' TRAFFIC SIGNAL POLE

NOTES: (1) POLES TO BE POWDER COATED BLACK.

3		
2		
1	JULY 2017	
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Unless Otherwise Noted

Title: **TRAFFIC SIGNAL POLE**

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CITY CENTRE
STANDARD
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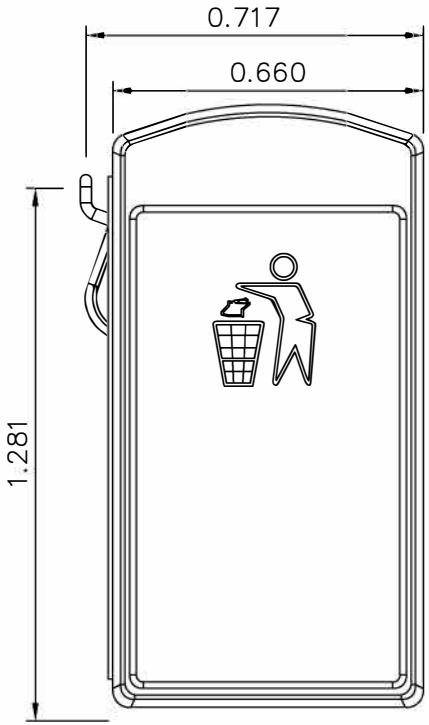
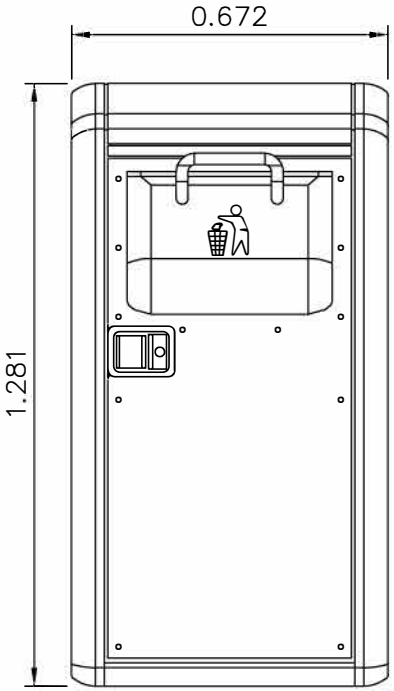
Date	JULY 2017
Drawn By	Surrey Engineering

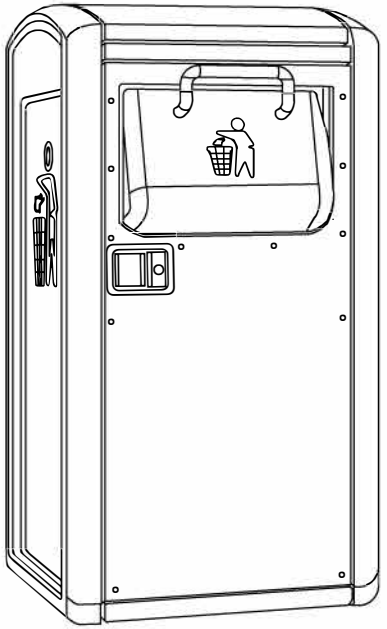
DRAWING NUMBER
CCSD-14d



LEFT SIDE VIEW
NTS



FRONT SIDE VIEW
NTS



ISOMETRIC VIEW
NTS

3		
2		
1	JULY 2017	
	Revision Date	Approved

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CITY CENTRE
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DRAWINGS

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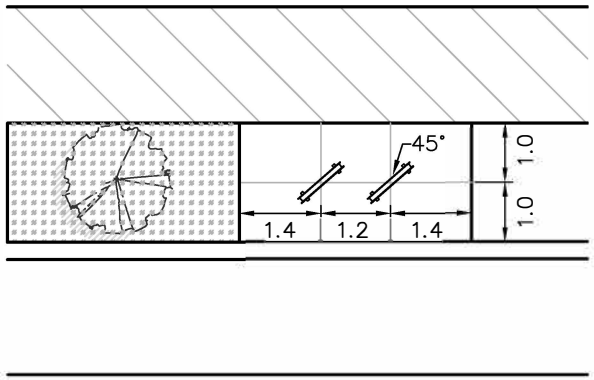
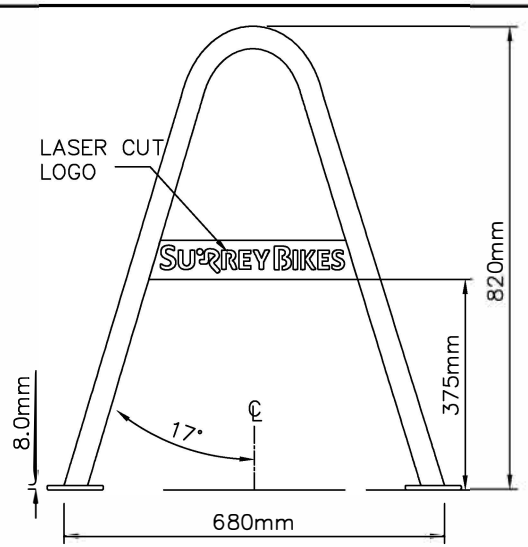
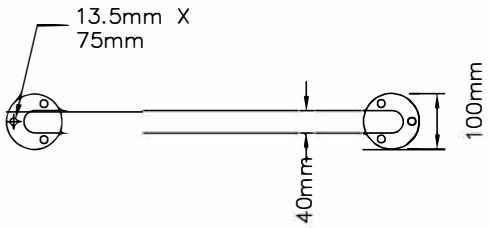
Title **TYPICAL TRASH CAN (BIG BELLY)**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
CCSD-14e







SPECIFICATIONS

BICYCLE CAPACITY	2
RECOMMENDED SPACING	1.2m OC
MINIMUM SPACING	0.9m OC
LONGITUDINAL SPACING	3.0m OC
ASSEMBLY MATERIAL	MILD STEEL (STAINLESS 304)
TUBE SIZE	40.0mm
WALL THICKNESS	3.0mm
LOGO BAR	4.0.mm PLATE
WEIGHT	8.4KG
FINISH	POWDER COATED OVER ZINC PRIMER #4 POLISH (STAINLESS STEEL ONLY)
ANCHOR TYPE	CONCRETE WEDGE ANCHOR 13mm X 75mm GALVANIZED (STAINLESS) OPTIONAL BREAKAWAY NUTS

3		
2		
1	JULY 2017	
	Revision Date	Approved

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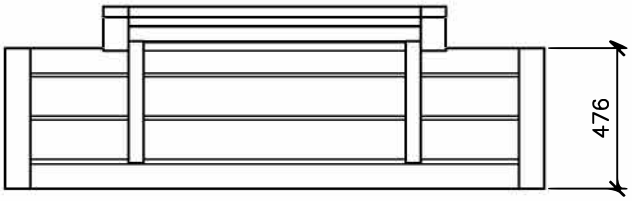
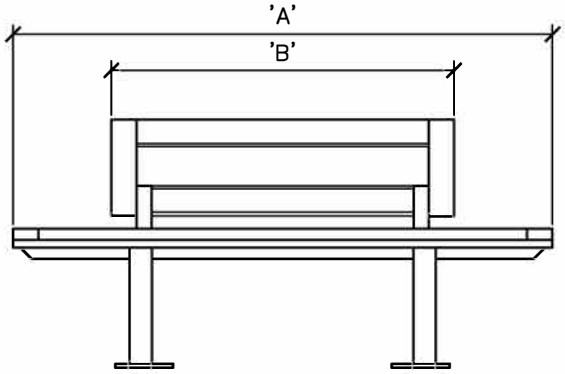
Title **TYPICAL BIKE RACK (BR1)**

Approved	
Date	JULY 2017
Drawn By	Surrey Engineering

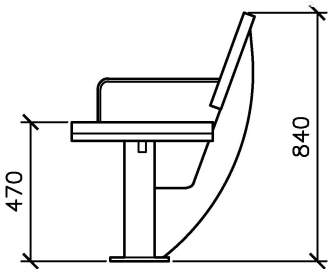
DRAWING NUMBER
CCSD-14f



TOP

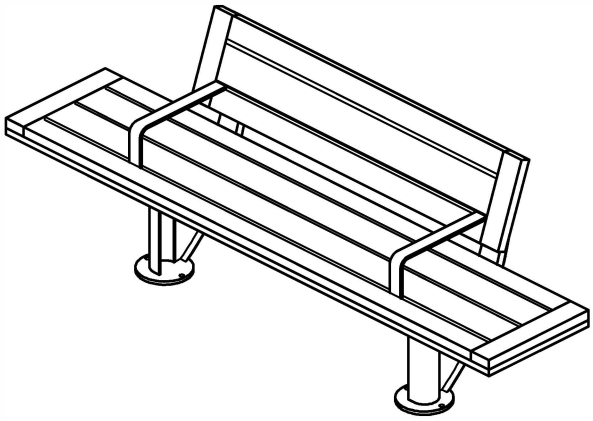


FRONT



ELEVATION

BENCH SIZE	1.8m	2.4m	2.7m
'A'	1.829m	2.388m	2.743m
'B'	1.162m	1.734m	1.905m



CITY STAFF TO SPECIFY
MATERIALS, COLOURS &
APPROVED MANUFACTURES

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: BENCH DETAIL
	Revision Date / Approved	

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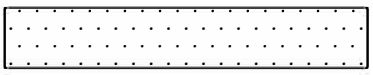
Date	JULY 2017	CCSD-14g
Drawn By	Surrey Engineering	

SURREY TYPICAL ORNAMENTAL GRASSES

BOTANICAL NAME	COMMON NAME
GRASSES, FESCUES AND SEDGES	
CALAMAGROSTIS ACUTIFOLIA	FEATHER REED GRASS
CAREX VARIETIES	SEDGE
FESTUCA GLUACA	BLUE FESCUE
HELICOTOTRICHON	BLUE OAT GRASS
IMPERNATA CYLINDRA	JAPANESE BLOOD GRASS
MISCANTHA VARIETIES	SILVER GRASS
PANICUM VERIGATUM	SWITCH GRASS
PENNISETUM VARIETIES	FOUNTAIN GRASS
STIPA TENUISSIAN	FEATHER GRASS



BOULEVARD GRASS PLAN VIEW

ORNAMENTAL GRASS PLAN VIEW

BOULEVARD GRASS SECTION VIEW

ORNAMENTAL GRASS SECTION VIEW

3		All Dimensions Shown In Metres, Unless Otherwise Noted
2		
1	JULY 2017	Title: ORNAMENTAL GRASSES
	Revision Date / Approved	

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Date	JULY 2017
Drawn By	Surrey Engineering

DRAWING NUMBER
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