



TOWN OF WASAGA BEACH
ENGINEERING STANDARDS

December 2025

TOWN OF WASAGA BEACH

ENGINEERING STANDARDS

INDEX

	Page No.
INTRODUCTION.....	1
1. DESIGN SUBMISSION REQUIREMENTS	2
1.1 General	2
1.2 First Submission / Draft Plan Application Submission (Stage 1 of Development Engineering Review)	3
1.3 Second and Subsequent Submissions / Detailed Design (Stage 2 of Development Engineering Review)	3
1.4 Reports and Drawings / Plans.....	5
1.5 Engineering Design Drawings.....	10
1.6 Acceptance of Originals	12
1.7 Other Development Approvals	13
1.8 Record Drawings.....	13
1.9 Closed-circuit Television (CCTV) Videos (OPSS 409)	16
1.10 Street Lighting Record Drawing Requirements	17
2. ROADWAYS	18
2.1 General	18
2.2 Entrances / Driveways	19
2.3 Driveway Culverts	20
2.4 Parking Lot Design Requirements.....	20
2.5 Requirements for Local Urban Residential Roads	21
2.6 Boulevard Grading	22
2.7 Road Base Construction	22
2.8 Roadway Surface Asphalt (Base and Surface Courses).....	23
2.9 Curbs	24
2.10 Bicycle Lanes / Cycle Tracks	25
2.11 Sidewalks.....	25
2.12 Roadway and Development Certifications	25
2.13 Minimum Road Access Requirements	26
3. TEMPORARY EROSION AND SEDIMENT CONTROL	26
4. GRADING.....	27
4.1 House Lot Grading	27
4.2 Imported Fill Material.....	29
4.3 Swales	29
4.4 Parkland Grading	30
5. UTILITIES.....	30
5.1 Telephone/ Cable TV/ Gas.....	30
5.2 Electrical Distribution and Transformation.....	30
5.3 Utility Plans	31
6. LIGHTING	33
6.1 Street Lighting	33
6.2 Parking Lot Lighting	36

7.	TRANSPORTATION AND TRAFFIC	36
7.1	Signage	36
7.2	Traffic Signals	37
7.3	Pavement Markings	37
7.4	Pedestrian Crossovers (PXO).....	37
8.	PEDESTRIAN FACILITIES.....	38
8.1	Sidewalks.....	38
8.2	Walkways.....	38
8.3	Recreational Trails	39
8.4	Transit Shelters	40
8.5	Pedestrian Crossovers (PXO).....	41
9.	WATERMAIN DISTRIBUTION.....	42
9.1	General	42
9.2	Piping	43
9.3	Testing Requirements	44
9.4	Valves	46
9.5	Backflow Preventers	46
9.6	Hydrants.....	47
9.7	Residential Services.....	48
9.8	Commercial/Industrial/Institutional Services.....	49
9.9	Miscellaneous	50
10.	SANITARY SEWERS.....	51
10.1	General	51
10.2	Material	52
10.3	Upsizing for External Lands	52
10.4	Installation	52
10.5	Sanitary Sewer Services	54
10.6	Miscellaneous	55
11.	SANITARY SEWAGE PUMPING STATIONS.....	56
11.1	General	56
11.2	Station Capacity	56
11.3	Feasibility and Site Considerations	57
11.4	Design Report	57
11.5	Structures.....	59
11.6	Submersible Pumps	59
11.7	Wet Wells.....	60
11.8	Valve Chambers or Dry Wells	62
11.9	Piping and Valves	63
11.10	Ventilation	63
11.11	Electrical	64
11.12	Mechanical	65
11.13	Controls and Alarms.....	66
11.14	Standby Power.....	67
11.15	Emergency High Level Overflow	67
11.16	Commissioning.....	68
11.17	Assumption	68
12.	STORMWATER MANAGEMENT	70
12.1	General	70
12.2	Service Areas.....	71
12.3	Materials	71

12.4	Drainage Easements/ Blocks	71
12.5	Stormwater Management Report	72
12.6	Design Flows.....	72
12.7	Methods of Computation	73
12.8	Minor Storm System.....	76
12.9	Major Storm System.....	77
12.10	Outfalls	78
12.11	Stormwater Quantity Control	78
12.12	Roof Leaders.....	80
12.13	Foundation Drains.....	80
12.14	Stormwater Quality Control	81
12.15	Wet Pond Design Criteria.....	81
12.16	Municipal Drains.....	82
13.	STORM SEWERS	83
13.1	General	83
13.2	Material	84
13.3	Upsizing for External Lands	84
13.4	Storm Sewer Pipe	84
13.5	Storm Sewer Maintenance Holes and Catchbasins	84
13.6	Storm Sewer Services.....	85
13.7	Rear Lot Catchbasins.....	85
13.8	Miscellaneous	86
14.	LANDSCAPING	87
14.1	Tree Protection.....	87
14.2	Managing Woodland Edge Impacts and Restoration Guidelines	93
14.3	Soft Landscaping Standards	95
14.4	Topsoil, Sod, and Seed.....	103
14.5	Landscape Design in Stormwater Management Ponds	107
14.6	Fencing	110
14.7	Neighbourhood Identification Signs.....	111
15.	STANDARD DRAWINGS.....	112
16.	Appendices – Table of Contents	115

APPENDICES

Appendix A: Example Lot Grading Checklist and Certificate

Appendix B: Municipal Infrastructure Milestones and Requirements

Appendix C: Road Not Assumed Sign Detail

Appendix D: Stormwater Management Facility Specification Summary

Appendix E: Operations and Maintenance Manual Requirements for Private Development

Appendix F: Site Plan Requirements for Private Development

Appendix G: Town of Wasaga Beach Approved Materials List

Appendix H: Park Standards

INTRODUCTION

The Town of Wasaga Beach Engineering Standards are intended for use as a guideline for subdivision, capital works and site plan design, to establish a uniform criteria of minimum standards and to improve the processing of engineering design submissions for development and capital related works in the Town. Changes to these standards, which improve or maintain the quality of the design will be considered for acceptance subject to the approval of the Town's Engineer, which may be based on discussions with the Director of Public Works and/or the Director of Planning.

It is understood that these standards may be referred to as a schedule in a subdivision agreement and that the current revision of the standards are then considered to be part of the agreement.

All proposed construction products and materials shall be CSA certified and in accordance with the Town approved materials list as amended from time to time.

Throughout this document, the term "Town Engineer" shall mean the Manager of Engineering Services and/or his/her designate.

TOWN OF WASAGA BEACH ENGINEERING STANDARDS

1. DESIGN SUBMISSION REQUIREMENTS

1.1 General

Ontario Provincial Standard Specifications and Drawings shall apply together with the following information.

Subdivision and capital servicing designs prepared by the Developer's and/or the Town's Consulting Engineer are reviewed by the Town's Engineers and by staff of the Public Works Department as applicable. The review procedure is set out below. Incomplete submissions that do not address all aspects of the draft conditions or Engineering Standards will be returned with a request to complete the documentation.

Digital submission of all materials to the Planning Department will be acceptable. Hard copy submissions are not required.

Submissions must be complete and a full set of design drawings and reports required for the design in order to be accepted. Incomplete submissions will be returned to the applicant without comment.

The Planning Department will circulate a complete digital set of each full development application submission to the Public Works Department for review. The Town Engineer will review the design drawings with the Fire Department and Public Works (Operations and Parks) as applicable.

The Planning Department shall also be responsible for circulating all design submissions directly to the Nottawasaga Valley Conservation Authority (NVCA) as well as any / all other agencies from which the application requires approval.

The Developer agrees to adhere to and follow the Municipality's "Complaint Protocol". Wherein, when the Municipality receives a complaint, the Municipality shall contact the Developer's Engineer upon any notice or requirement for response to any site related engineering or other matter. The Developer or Developer's Engineer will have 2 business days (48 hours) after such notice to respond in writing to the Municipality identifying a resolution to the matter or the time frame to address any concerns that have been identified. Failing such response or if the Municipality is of the opinion that further review of the issue is necessary, the Municipality will contact the Owner or his agents to discuss the matter and if necessary, investigate the matter and perform a site inspection, if required, to determine the status of the complaint and any proposed work that may be required.

1.2 First Submission / Draft Plan Application Submission (Stage 1 of Development Engineering Review)

For Planning Applications including Official Plan Amendment, Zoning By-Law Amendment and related applications, up to and including Draft Plan Approval, a copy of the General Site Servicing Plan shall be submitted for approval in principal before submission of detailed drawings. The plan shall indicate the proposed locations of street lighting, roads, sidewalks, and walkways, as well as watermains and storm and sanitary sewers and associated appurtenances. All locations must be established and resolved by the Developer's Engineer in conjunction with the utility companies and in accordance with the locations on the typical cross-sections.

Bell cables and terminals, hydro wires and transformers and coaxial television / communication cables and natural gas services shall be dealt with by those respective utilities under separate agreements.

The following documents shall be submitted to the Town Planning Department for circulation:

- The "Draft" Plan of Subdivision, General Site Servicing Plan, Preliminary Grading Plan, Park Facility Fit Plan, Tree Inventory, Tree Protection Plan and Arborist Report, Functional Servicing Report, Preliminary Stormwater Management Report and calculations requiring acceptance.
- A covering letter with comment response matrix to itemize and address any previous discussion or submission comments from all commenting Departments and Agencies, with responses to be itemized / numbered as per the original comments.

In addition to the above, and as outlined in the Town's Engineering Review Fee Policy, applicants must submit a 25% deposit of the total engineering review fee with their first development application submission. To establish the total fee, applicants must provide a benchmark estimated cost of construction before the first submission. Engineering staff will use this estimate to calculate the review fee, and the required 25% deposit must be included with the first submission. This requirement will be explained to the applicant during the Pre-consultation stage. If the deposit is not provided—such as when the cost estimate is not submitted in advance—engineering comments from the first submission will not be issued until the fee has been received.

1.3 Second and Subsequent Submissions / Detailed Design (Stage 2 of Development Engineering Review)

It is recommended that the applicant attend a pre-submission meeting with Engineering staff prior to any subsequent submissions to ensure understanding of previous comments.

All detailed design submissions shall include the following:

- A complete set of digital detailed design drawings and calculations, submitted to the Town Planning Department for circulation.
- One (1) digital set of all documents/attachments as detailed below in Section 1.4.
- A covering letter from the developer's representative shall be submitted itemizing and identifying how each of the municipal comments from the previous submission has been addressed.
- It is anticipated that acceptance of the design drawings should be achieved by the third submission. Additional submissions will require further Engineering Review Fees in accordance with the Engineering Review Fee Policy.
- A digital copy of all drawings in vector-based Portable Document Format (.pdf) and AutoCAD (.dwg) format acceptable to the Town shall be provided with the final design submission.
- A digital copy of all reports in searchable Portable Document Format (.pdf) that allow redline markups shall be provided to the Town with all submissions.
- A submission to the Ministry of the Environment, Conservation and Parks for an Environmental Compliance Application for works that are not pre-authorized for Town approval under the Town's CLI-ECA will not be endorsed by the Town until the Drawings have been reviewed and deemed acceptable by the Town Engineer and the Director of Public Works.

Application and submissions for Site Preparation / Alteration and/or Pre-servicing Agreements will not be considered by Town staff until after Draft Plan Approval has been received and at minimum, one full detailed design submission has been reviewed by the Town Engineer. Proceeding with these Agreements ahead of an executed Subdivision or Site Plan Agreement is at the risk of the Owner. Installation of works under these Agreements may require altering if applicable to suit the final and complete Accepted for Construction drawings for the development.

The following materials are required for Site Preparation / Alteration Agreement submissions:

- All applicable Agency approvals for the works and associated reports.
- Erosion and Siltation Control Plan and details.
- Interim Grading Plan.
- Tree Protection Plan.

The following materials are required for Pre-Servicing Agreement submissions:

- All applicable Agency approvals for the works and associated reports.
- Erosion and Siltation Control Plan and details.
- All civil engineering design drawings.
- Tree Protection Plan.

1.4 Reports and Drawings / Plans

Detailed design submissions are to be accompanied by a digital copy of any supporting documentation required for the completeness of the design. Such documentation is to include (as applicable), but shall not be limited to, copies of the following reports and/or plans unless waived by The Public Works Department:

- Aggregate Potential Assessment and/or Aggregate License Compatibility Assessment
- Aggregate Studies related to/and in compliance with the requirements of the MNR license for new/expansion to existing pits and quarries
- Arborist Report
- Archaeological Reports
- Composite Utility Plan(s) (with second / subsequent detailed submissions)
- Contamination Management Plan
- D4 Assessment
- Energy Analysis
- Environmental Impact Study
- Environmental Site Assessment (Phase 1)
- Fire Break Lotting Plan / Master Fire Plan (as required for each phase of development)
- Functional Servicing Report
- Geotechnical/Soil Stability Report
- Golf Course Errant Ball Spray Analysis
- Hydrogeological Study / Hydrology Study or Water Budget
- Infrastructure Design Report
- Landscape Plans (with second / subsequent detailed submissions)
- Lighting Illumination Study/Plan (with second / subsequent detailed submissions)

- Lot Grading Plan
- Master Servicing Study / Servicing Options Report
- Master Trails Plan
- Natural Hazards Study / Coastal Engineering Study
- Plans/Profiles of Internal Roadways (if necessary)
- Park Facility Fit Plans
- Noise/Vibration Impact Analysis
- Odour/Dust/Nuisance Impact Analysis
- Operations and Maintenance Manual
- Parking Report/Analysis
- Shadow Analysis
- Servicing Plan
- Source Water Protection Land Use Questionnaire
- Stormwater Management Report
- Town Drinking Water Permit Approvals
- Transportation and Traffic Impact Study
- Pavement Markings and Traffic Signage Plan
- Tree Inventory and Protection Plans
- Water Conservation Report
- Watershed/Sub-watershed Study
- Well Interference Study
- Wellhead Protection Area – Risk Assessment Report or Risk Management Plan
- Wind Study
- Wind Turbine Impact Study
- Vibration Monitoring Report and Plan

The relevant studies that are applicable to each application shall be confirmed through the Pre-consultation process, which is managed through the Town Planning Department.

All studies and reports are to be stamped and signed by a licensed professional engineer.

The following provides brief details of the requirements for typical application reports:

- **Acoustic/Noise Report** identifying existing and development noise sources and demonstrating how mitigating measures will be implemented to conform to MECP Guidelines and to the satisfaction of the Town Engineer. Warning Clauses as necessary shall be included in the report.
- **Functional Servicing Report (FSR)** must at minimum address the proposed servicing of the development. Specifically, detail with regard to water, sanitary sewer and stormwater management (SWM) will need to be addressed with regard to the overall site and how existing municipal servicing and utilities will be utilized. Confirmation will be required that the existing municipal services are sufficiently sized to accommodate the proposed development. Calculations to support the design of the supply and distribution works including main sizes, fire flows and anticipated flows from domestic and other users. This will be compared and verified in the Town's water distribution system model. Any proposed phasing of the development should be addressed in this report, outlining timing of works and any triggers for works. Depending on the complexity of the proposed development, a Functional Servicing Brief (FSB) may be acceptable as the minimum amount of technical reporting required for any development application, at the discretion of the Town Engineer. The FSB shall generally describe the same details as an FSR, but would not require full modelling analysis. Additionally, the FSB may combine / include the general details outlined for the following reports.
- **Geotechnical / Soils Report** by a qualified Geotechnical Consultant identifying site soil conditions, seasonal high groundwater table and stipulating that cathodic protection is required for watermains and appurtenances. Recommendations must be provided for pipe bedding and backfill materials, foundations, retaining walls, slope stabilization including stormwater management ponds and road sub-base as well as design criteria of the road base and surface materials if conditions dictate requirements for greater than the minimum specified in Section 2.0 Roadways.
- **Hydrogeological Report** by a qualified Geotechnical/ Hydrogeological Consultant to assess groundwater infiltration, groundwater recharge, groundwater elevations and water quality. The report must also address any concerns or effects on private wells within 500m and to the Town's drinking water sources and any associated concerns pertaining to source water interference (e.g. dewatering). This report may be a standalone report or may form part of the Geotechnical Report.
- **Lighting Intensity Report / Plan** demonstrating no site plan impact at property line for private development and verifying adequate levels of illumination for all roads with dark sky compliant lighting. The Lighting Report / Plan will be a requirement in the detailed design stage of development and will not be a requirement for Draft Plan approval.

- **Sanitary and Storm Sewer Calculations** on standard design sheets bound with engineering drawing set to be included. (To be included in the FSR, but must also form part of the design drawing set and a copy to be provided in Excel format.)
- **Stormwater Management (SWM) Report** addressing methods of stormwater runoff quality, quantity, siltation and erosion control. The potential use of Low Impact Development (LID) methods are also to be reviewed and recommended as applicable in the SWM Report. Reference shall be made to the MECP Low Impact Development Stormwater Management Guidance Manual (still in DRAFT at the time of this Standard being approved), as well as the Conservation Authority documents referenced in this Manual.
- **Traffic Impact Study** will be required where new development or expansion of existing development will generate more than 50 trips during the peak hour; i.e., 50 dwelling units or an office complex of approximately 1,850 square metres. The report shall assess the impact of the development on the transportation system and identify improvements that may be required as a result of the development for a minimum 10-year horizon, depending on anticipated duration of full build-out. Horizons should reflect full build-out of the development and 5 and 10 years beyond. Interim horizons should also be considered to coincide with phases of development should road system improvements be warranted. For developments generating less than 50 trips per hour, a Traffic Impact Brief should be prepared to confirm the volume of traffic to be generated and review the site access operations, which may form part of the FSR. Traffic counts must be completed in late May to mid June to properly reflect average annual daily traffic (AADT) in the Town of Wasaga Beach.

The "study area" shall include the immediate access points to the site, nearby intersections, and surrounding roads that are likely to experience increased traffic due to the new development, taking into account factors like trip generation, traffic volumes, intersection capacity, existing and proposed surrounding land uses, and pedestrian/cyclist access, all while considering existing traffic conditions and potential mitigation strategies. The exact extent of the study area will vary depending on the size and nature of the proposed project, as well as local regulations and guidelines. Growth rates for future background shall be in accordance with the latest town wide Transportation Study available on the Town's website.

- **Vibration Monitoring Program / Plan** is required to be accepted by the Town Engineer prior to any construction activities requiring soil compaction. Vibration monitoring is not typically required for site servicing, or building construction. Monitoring is required for engineered fill and surface works such as road/ parking lot construction. The Vibration Monitoring Program shall include at minimum, 1 vibration monitor per site or stage of development. Protocols for monitoring and addressing the concerns from vibration complaints must be clearly defined, including relevant contacts. Such reporting may follow the City of Toronto By-Law No.514-2008. The vibration monitoring program is required to be in place

prior to any agreement (e.g. Site Alteration Agreement). The following table provides vibration levels that are not permitted to be produced:

Prohibited Construction Vibrations	
Frequency of Vibration (Hz)	Vibration Peak Particle Velocity (mm/sec)
Less than 4	8
4 to 10	15
More than 10	25

Standard clauses relating to vibration monitoring will be implemented into the Draft Plan Conditions/ Agreements are as follows:

- a. That prior to final approval, the Owner shall retain a Professional Engineer (typically geotechnical consultant) to review the proposed works and existing soil conditions and define a Zone of Influence of vibrations as well as submit a proposed vibration monitoring program. The Zone of Influence shall include the area of land (and buildings and structures existing on such land) within or adjacent to the proposed development that potentially may be impacted by vibrations emanating from a construction activity as defined by the Professional Engineer referred to above in the vibration monitoring program, to the satisfaction of the Town.
- b. Prior to commencement of construction, the Developer shall retain a qualified consultant to complete a pre-condition survey of all existing dwellings/structures within the Zone of Influence as described above. The survey shall include photographic inventory of existing conditions of the interior and exterior of all buildings. In the event that a property owner will not permit access to the interior of the dwelling, the consultant shall provide written documentation to the Developer and the Town. The Developer shall provide a copy of the full pre-condition survey to the Town Engineer.
- c. The Owner shall agree as part of a Development Agreement that vibration levels shall be measured by the Developer's Engineer during construction on /at all existing buildings and structures within the defined Zone of Influence during construction in accordance within the monitoring program submitted with the development approval. A minimum of 1 vibration monitoring gauge is to be installed prior to earthworks construction at or near the existing structure that is closest to the work zone, regardless of the defined zone of influence.

1.5 Engineering Design Drawings

Engineering drawings shall be in one complete set of Portable Document Format (.pdf), with drawing sheet names labelled in the “thumbnails”, and shall consist of the following:

- Cover Sheet (identifying-Development Name; Key Plan identifying site location; Developer & Consultant information; Drawing Index; Submission No.)
- General Notes (per Town Std. Dwg. No. 1A&1B)
- Draft Plan of Subdivision
- General Site Servicing Plan (including external works where applicable)
- Sanitary Drainage Area Plan (including external drainage plan where applicable)
- Storm Drainage Area Plan (including Pre-Development and Post-development Drainage Area Plans showing external drainage where applicable)
- Sanitary and Storm Sewer Pipe sizing calculations sheets
- Lot Grading and Drainage Plan
- Siltation and Erosion Control Plan
- Overall Comprehensive Plan of Easements
- Plan and Profile drawings of all streets, easements and external works
- Detail Sheets including standard and special details together with material and construction specifications
- Pavement Markings and Traffic Signage Plans
- Composite Utility Plan
- Lighting Design Plan
- Removals Plan
- Other Plans as required

All drawings must be in Portable Document Format (.pdf) acceptable to the Town and shall be stamped, signed and dated by a Professional Engineer. The digital submission of design drawings shall be in vector-based pdf file format. Final drawings that are Accepted for Construction shall also be provided in ACAD format.

The following standards shall be adhered to in preparation of these drawings:

1. All profiles must be shown to the geodetic datum that is noted on each drawing; Vertical & horizontal datum systems shall be georeferenced to – CGVD 2013 and NAD83(CSRS) respectively. Designers are advised that a large amount of existing record drawings / information for infrastructure in the Town of Wasaga Beach is based on datum system – CGVD 28 / NAD83. All design drawings shall indicate the specific datum systems applicable to the design along with the site benchmark information.
2. In general, East-West streets shall have zero chainage at their Westerly limits and North-South streets shall have zero chainage at their Southerly limits. Chainage on a plan-profile shall increase from left to right;
3. Drawings shall be metric size A1 (594 mm x 841 mm) or Arch D (610mm x 914mm);
4. Scales for drawings shall be as follows:

General Layout Plan	1:1,000
Plan Profile Drawings/Horizontal (Reconstruction)	1:250 or 1:500
Vertical	1:50

Scales shall be shown on all drawings;

5. The intersection of centrelines of streets shall be used as zero chainage;
6. When the plan must be broken because of curvature, etc., the profile shall be broken as well, so that as far as possible, chainage points in plan and profile will coincide vertically;
7. The drawings shall show clearly:
 - a. Centreline chainage every 20 m maximum;
 - b. Existing and proposed centreline elevations every 20 m max.;
 - c. All vertical and horizontal curve data;
 - d. Gutter grades at all intersections, bends and cul-de-sacs (min grade 0.5%);
 - e. All street names in larger font and bold;
 - f. All lot lines and numbers per registered plan of subdivision;
 - g. North arrows pointing towards the top or right of page;
 - h. Geodetic Bench Mark locations (brass tablets)
 - i. Town's name in lower right corner;
 - j. Up-to-date revisions block;
 - k. Ditch/swale and berm details, profiles and cross-sections;
 - l. Overall storm and sanitary drainage area and sub-area boundaries;
 - m. Lot grading, complete with underside of footing, basement floor, top of foundation wall, first floor elevations and lot corner elevations existing and proposed, established seasonal high ground water table

- n. Sewer diameters, lengths, grades, inverts, structures, hydraulic grade lines, material type and classes on plan/profiles;
 - o. Where possible, avoid placing structures in driveways;
 - p. General note information should include the information provided in Town Std. Dwg. No. 1A&1B as a minimum;
 - q. All existing and proposed utilities;
 - r. All limits of construction and phasing;
 - s. All easements and appropriate labels;
 - t. Any special design information not covered by standard drawings;
 - u. Key plan on each drawing.
8. The Developer's Engineer shall add their professional engineer's seal, signed and dated, to all submitted drawings;
 9. All drawings shall include a blank / empty box within the title block in a consistent location on all drawings for the Town to batch stamp "Accepted for Construction", near the stamp of the signing engineer / architect. .
 10. The Town Engineer shall be consulted as to the manner of showing information not set out in the above requirements.

The following minimum information shall be provided for Overall Lot Grading design drawings:

1. Design elevations of the lot grades for all lot corners and grade change locations for the entire plan of subdivision.
2. Soak away pits / LID features (if applicable).
3. Invert and Top of Grate elevations of all catchbasins/structures and rear lot catch basins.
4. Grading arrows.
5. Invert elevations of all ditches at 20 metres intervals.

1.6 Acceptance of Originals

It is the Developer's responsibility to ensure that all drawing changes occurring throughout the approvals process are incorporated into the digital submission. The final drawings shall be submitted in vector-based Portable Document Format (.pdf) format only for the Town to stamp, sign and date the drawings "Accepted for Construction" digitally. The digital drawings may be "batch stamped" for all drawings in the same location within the title block as described in Section 1.5 above. In this case, the digitally stamped drawings would be provided to the Developer's consultant upon execution of the development agreement (as applicable), which requires provision of securities, all fees paid by the Developer, insurance, etc. all in accordance with the agreement.

The "Accepted for Construction" digital files shall be provided to the Town in AutoCAD (.dwg) format.

1.7 Other Development Approvals

A copy of all other approvals that may be required for the development shall be submitted to the Town Planning Department. This may include, but not be limited to, the approvals received from the following authorities: Ministry of the Environment, Conservation and Parks, Ministry of Transportation, Ministry of Natural Resources and Forestry, the Nottawasaga Valley Conservation Authority, and the County of Simcoe.

1.8 Record Drawings

Individual Service Record Sheets

Prior to issuance of the Certificate of Substantial Completion (Full Services) – a requirement for issuance of Occupancy Permits, individual sewer and water service record sheets (SRS) for each lot must be forwarded to the Town Engineer digitally for review and comment. Each sheet must clearly identify the registered plan number, lot number, roll number and municipal street address together with the services pipe material type, size, invert elevations and location swing tied to acceptable permanent structures and appurtenances such as property bars, centre of maintenance holes and/or catch basin lids, gate valves, transformers, street light poles and/or foundation wall corners. Swing tie measurements must not cross the street and shall not exceed 30m in length. All dimensions shall be field measurements. Scaling from ACAD design drawings shall not be acceptable. In addition to swing ties to the water service curbstop (CS) and distance from CS to sanitary sewer cleanout (CO), the SRS shall also provide the distance from the upstream and downstream sanitary MHs to the sanitary service tee. Please see Appendix I for a Water and Sewer Service Record Sheet template.

Upon final review and acceptance of all SRS by the Town Engineer, the Developer's consultant shall submit a digital copy of all SRS for that phase in separate PDF's. The digital SRS shall be provided in vector-based Portable Document Format (.pdf) format as individual files for each lot / property. The digital filename provided by the consultant shall be based on the fifteen (15) digit "lot roll number.pdf"; for example: 436400000000000.pdf.

The final sheets that are accepted by the Town Engineer will be forwarded to the Town's Building Department as well as interdepartmental circulation for uploading to the Town's GIS mapping.

Construction Record Drawings

Prior to the issuance of the Certificate of Substantial Completion (Full Services) – a requirement for Occupancy Permits, Plan and Profile "Record" drawings must be provided to and accepted by the Town Engineer. Prior to Final Assumption, a complete set of "Record" drawings including the full original set of civil drawings must be provided and accepted by the Town Engineer.

Revisions must be made to the drawings to reflect any changes to the line and/or grade of the roadways and services, and incorporate all the grading modifications resulting from final lot grading. All valves, terminations, bends, reducers, tees and crosses shall be properly tied into fixed reference points.

If any revisions are required, one set of redlined drawings will be returned to the Developer's Engineer.

When all revisions and/or corrections have been made, a complete set of "Record" drawings shall be submitted to the Town Engineer for review and approval. After a final review by the Public Works Department and the Town Engineer, one (1) complete digital copy of all drawings in vector-based Portable Document Format (.pdf) and current AutoCAD (.dwg) format complete with the pen style (.ctb) file shall be submitted to the Town Engineer..

Final "Record" drawings shall be geo-spatially referenced with the Town's GIS coordinates in accordance with Section 1.5(a) above.

Final "Record" drawings submitted in ACAD Format shall have consistent layer naming and irrelevant drafting layers removed. "Record" drawings shall not require any cross referenced external drawings.

The "Record" drawings shall be consistent with drafting requirements and include at a minimum the following information:

Road System

1. Final elevations of centre line of roadway every 20 metres.
2. Revised horizontal curve information.
3. Any additional information that has been required for construction after acceptance of the engineering drawings.
4. Revised construction benchmarks located in permanent locations throughout the development such as on fire hydrants and/or other permanent structures at sufficient intervals.
5. A minimum of one (1) Geodetic Bench Mark must be provided within each development, at the Town's discretion, and consist of a brass plaque (to be provided by the Town) embedded in concrete as per Town Standard DWG No. 23. Bench Marks shall be in an area that is sufficient to support a tripod with a GPS receiver, has a clear view of the sky (e.g. minimal trees, buildings, topography, or other obstructions that might cause disruption to multipath of the GPS signal), has no above ground utility lines immediately overhead that might interfere with GPS signals, is on municipal property and is relatively secure and safe. Horizontal and vertical location / control of the Geodetic Bench Marks shall be determined / established by the Developer's Ontario Land Surveyor, cross-referenced

to the site benchmark used for design. This Bench Mark information shall be included on the Record drawings.

Storm System

1. Length, diameter, type of material, gradient and invert elevations shall be provided for all storm sewers.
2. Invert and top of frame and grate elevations as well as specific location geo-spatially surveyed for all storm Maintenance holes and catchbasins.
3. Revised gradients of all storm sewers along with as-constructed distances between Maintenance holes.
4. Any additional information that has been required for construction after acceptance of the engineering drawings.

Sanitary System

1. Length, diameter, type of material, gradient and invert elevations shall be provided for all sanitary sewers.
2. Invert and top of frame and cover elevations as well as specific location geo-spatially surveyed for all sanitary Maintenance holes.
3. Revised gradients of all sanitary sewers along with as-constructed distances between Maintenance holes.
4. Any additional information that has been required for construction after acceptance of the engineering drawing.

Water System

1. Elevations of top of watermain every 20 metres and at deflection points.
2. Diameter and type of material for all watermains.
3. Location by measurement of valves, bends, restrainers and terminations by swing ties to permanent structures.
4. Locations of cathodic protection / anodes.
5. Any additional information that has been required for construction after approval of the engineering drawing.
6. Top of nut elevation for all Fire Hydrants.

Overall Comprehensive Plan of Easements

1. All easements and as may be required for the installation and supply of services to the development and maintenance of any existing services which are known easements shall be filed with the Town on an Overall Comprehensive Plan and in a form approved by the Town's Solicitor.

Stormwater Management Pond / Facility

1. Topographic and/or bathymetric surveyed elevations are to be provided for the entire bottom / shape and size of the pond / facility, along with certification from the Developer's Engineering Consultant that the pond / facility is in accordance with the accepted design.
2. All plan and cross-section drawings included in the detailed design drawings that were "Accepted for Construction" are to be updated to reflect as-constructed conditions.

1.9 Closed-circuit Television (CCTV) Videos (OPSS 409)

CCTV inspections are required prior to Basic Services (after utility installation) and prior to surface course asphalt (prior to Municipal Assumption/ Final Acceptance).

The complete system (Sanitary and Storm) shall be flushed and inspected by an approved NASSCO certified individual / company. Proof of Certification to be provided to the Town.

Videos are required for all sewers and service laterals and are to be provided on a USB thumb drive in MP4 format. The Town Engineer shall be provided with a copy of the CCTV videos and video report together with conclusions and recommendations from the Developer's Engineering Consultant of record.

CCTV inspection shall be undertaken per OPSS 409 and shall comply with the Town's latest CLI-ECA. CCTV inspections are to be conducted:

- On all mainlines, leads and service lateral connections;
- All individual service laterals to 1.5m beyond the cleanout / inspection port;
- Prior to the issuance of the Certificate of Substantial Completion (Basic Services), and;
- Prior to the placement of surface course asphalt.

Any noted deficiencies shall be brought forth to the Town Engineering Department along with a detailed repair proposal by the Developer's Engineer, along with an estimated time of repair completion prior to the placement of surface asphalt. Subsequent videos are required after repair completion.

Lighting shall be sufficient so that the video is clear (no shadows, fog or water).

Should debris pile onto the camera lens during CCTV, the video shall terminate and restart from the beginning after the debris has been removed.

If fog is encountered on the camera lens or within the sewer pipe and affects the video quality, the video shall terminate and restart once the fog has been removed (i.e. fan may be used to attempt to clear the fog).

All CCTV videos are to be reviewed and approved by the Developer's Engineer and provided to the Town thirty (30) days prior to surface course asphalt.

1.10 Street Lighting Record Drawing Requirements

Record drawings are to include the project specific details including but not limited to:

- North Arrow
- Key Plan
- Legend
- Title Block
- Drawing Title & Drawing Number
- Scale
- Location of proposed and existing Street Lights
- Contours or Points of Lighting patterns

Details and specifications of streetlights installed must be included in the record drawings. The record street light record drawing shall have a table for the Pole & Mounting Details and Specifications, Luminaire Specifications, and Accessory Specifications each.

Pole and Mounting Details and Specifications: Street lighting record drawings should include a table specifying the material (Concrete, aluminum, other), height, pole type (Octagonal, Round, etc), finish (powder-coated, galvanized, etc.), colour, etc. Further to the above, the arm length, height from the ground to the luminaire, quantities of installed arms, poles, hand covers, and specification if the fixture was mounted with a bracket or arm.

Luminaire Details: Street lighting record drawings should include a table specifying the fixture type (Cobrahead or Post Top/Coach), model / catalogue number, wattage, lumen output, colour temperature, dim setting, lighting pattern, quantities of each fixtures etc.

Accessory Specifications: Street lighting record drawings should include a table specifying the type of accessories required. The table should include the type of accessory (banner, flower basket / planter accessories, seasonal elements, etc.) and quantities of each accessory.

The Accessory Specifications table is to be included in the street lighting record drawings for all Capital projects or development projects along collector roads and to be included for other projects as applicable.

Any deviations from the approved lighting plan must be re-submitted for review and acceptance for the Town's records. Further to the above, any deviations from the original plan shall be recorded with accurate field measurements. If multiple streetlight fixtures are proposed and installed, the manufacturer specifications of the street lighting that was installed should be submitted under a separate cover / detail sheet within the same submission.

2. ROADWAYS

2.1 General

The latest version of the Ministry of Transportation Geometric Design Standards and the Transportation Association of Canada (TAC) Urban Supplement to the Geometric Design Guide for Canadian Roads shall apply together with following Municipal standards.

All roadways shall be serviced as shown on the typical urban cross-sections, which are described in Section 14 of these standards (Standard Drawings). The Town will only consider urban cross-sections.

Temporary access roads not owned by the Town, leading to the area of the development, shall be maintained to a standard 150 mm granular 'A' builders road (at minimum), satisfactory to the Town.

Granular embedment for pipe trenches shall be placed in layers not exceeding 300 mm thick and shall be thoroughly compacted to minimum 95% standard proctor maximum dry density.

A "Road Occupation Permit" will be required from the Public Works Department for each driveway installation proposed and / or any works within the existing Municipal right-of-way in accordance with the Road Occupation Permit Policy. A fee is required for these permits, with a portion refundable upon satisfactory inspection by Public Works staff.

The Developer shall be responsible to install at minimum one geodetic benchmark per development as per Standard Drawing No. 23 at a location to the satisfaction of the Town in accordance with Section 1.8 above.

2.2 Entrances / Driveways

Residential driveways shall be subject to the lesser of either: a) a relative maximum width of up to 55% of the width of the lot frontage, or b) an absolute maximum width as follows:

- 6.0 m for dwellings without a garage or a single car garage,
- 7.6 m for double car garages, and
- 9.0 m for triple car garages.

The minimum width of driveways, including drop curb for same, shall be the width of the garage from the outside walls. The minimum for a double car garage is 6.0m and the minimum for a single car garage is 3.0m.

For a residential dwelling containing an accessory dwelling unit, the driveway width shall not be more than 55% of the width of the lot frontage, and a minimum of 45% of the front yard of the residential dwelling unit shall be landscaped open space.

All residential entrances are to have a minimum longitudinal gradient of 2.0% and a maximum longitudinal gradient of 6.0%. The edge of residential driveways must be minimum 1.0 metre offset from side-yard lot line.

Driveway locations at cul-de-sacs and at bends shall be shown on the Draft Plan of Subdivision and engineering drawings. Driveways should generally be perpendicular to the curb, and shall be straight from the garage face to the curb where possible. Exceptions in unusual circumstances will be subject to approval from the Town Engineer.

The minimum clear distance between the edge of a driveway and any above ground utility structure shall be in accordance with Section 5.3.

Typical commercial entrances are to have a minimum width of 9.0 m and a maximum width of 12.0 m, with a minimum longitudinal gradient of 2.0% and a maximum longitudinal gradient of 6.0%. An absolute minimum width of 6.0m may be considered pending specific circumstances.

All driveways must be fully paved from the back of curb to the garage, which shall be graded with a minimum of 150mm granular 'A' and paved with a minimum of 50 mm HL3 hot mix asphalt.

Where landscaping improvements are proposed adjacent to the driveway (i.e. driveway edging), driveway edging must be flush with the driveway surface (and back of curb, if applicable) to a minimum of 1.5 m beyond the edge of pavement/curb line. Where sidewalks exist along the frontage of the proposed dwelling, driveway edging must be flush with the driveway surface for a minimum of 500 mm beyond the back of sidewalk.

2.3 Driveway Culverts

Where development will utilize existing roadside ditch elements, the following culvert and driveway specifications will apply:

- a. Minimum culvert length, 6.0 metres.
- b. Minimum culvert diameter, 400 mm (16 inches) and designed for a 5 year return storm frequency at minimum.
- c. Culvert material to be galvanized corrugated steel pipe, 2.0 mm thickness and/or 320 kpa HDPE as per OPSD.
- d. Architectural stone per Risi Stone Sienna Stone (or approved equivalent) or concrete headwalls are required on both ends of culvert to the satisfaction of the Public Works Department when the ditch is greater than or equal to 1 m in depth; shallower ditches may have other culvert end treatments such as stone, paving, or sod to the satisfaction of the Town.
- e. Minimum pipe gradient, 0.5%.
- f. Maximum slope of roadside ditch, 3:1.
- g. For rural entrances, a downward gradient of -2% minimum is to be provided on the driveway behind the roadway edge of pavement for a minimum distance of 1.5m; also refer to OPSD 301.02.
- h. Roadside ditch and boulevards to be reinstated with 150 mm topsoil and sod.
- i. Road shoulders and asphalt surface must be reinstated to original or better condition to the satisfaction of the Public Works Department.

2.4 Parking Lot Design Requirements

- a. Minimum Parking lot gradients, 1.0%.
- b. The minimum width of the primary access aisle shall be 7.3 m. A reduction in the primary access aisle and entrance widths may be considered by the Town pending site geometry, restrictions, and satisfactory design vehicle turning templates, but at no time shall aisle widths be less than 6.0m.
- c. Secondary aisle minimum, 6.0 m.
- d. Concrete barrier curb per OPSD 600.110 to be installed along the perimeter of the paved surface.
- e. Line painting specifications and pavement markings (including directional arrows etc.) shall be provided per Ontario Traffic Manual Book 11.
- f. Fire Route to be identified with minimum centreline turning radius of 12.0 metres per Ontario Building Code.
- g. Parking lot surface water storage requirements shall be in accordance with Section 12.11.2.
- h. The lengths of the parking row should not exceed more than 60.0m (approximately 20 spaces) to improve accessibility and navigation.
- i. Barrier free parking must be provided in accordance with Municipal Zoning Bylaw #2003-60 as amended, the Ontario Building Code and Accessibility for Ontarians with Disabilities Act (AODA).
- j. Pavement structure thickness shall be per Geotechnical recommendation report.
- k. Landscape islands and walkways shall be curbed.

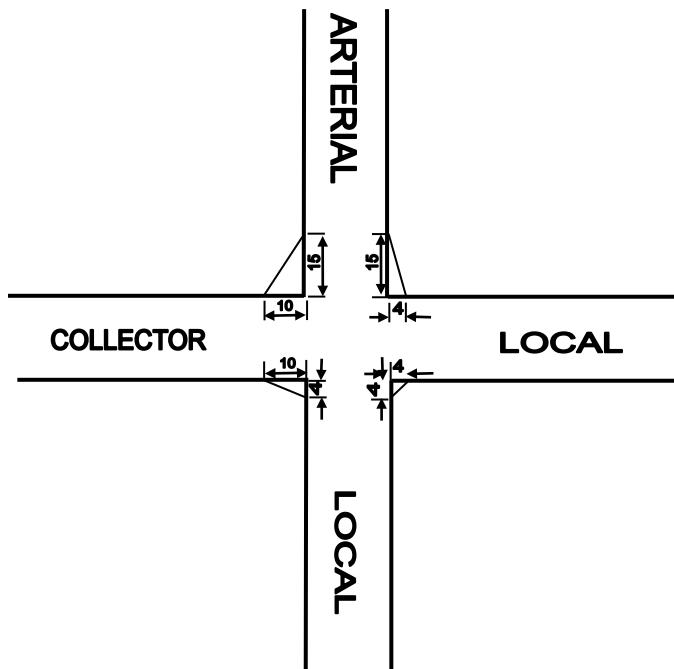
- l. Snow storage locations.
- m. Lighting.
- n. Signage.
- o. On-road parking stall details as applicable.

2.5 Requirements for Local Urban Residential Roads

- a. Design speed, 40 km/hr min.
- b. Minimum Centreline Curve Radius, 65 m.
- c. Horizontal and vertical stopping sight distance, 50 m min.
- d. Street allowance, 20 m min.
- e. Pavement width (not including gutters) - 8.5 m.
- f. The use of cul-de-sacs is discouraged, however, where necessary, cul-de-sac street allowance, 21.0 m R. min.
- g. Edge of pavement in cul-de-sac, 15.0m R min.
- h. Edge of pavement at intersection radii, 9.0 m min.
- i. Road grades, 0.5% min., 8% max. with curb and gutter.
- j. Daylight triangle property requirements at all intersections shall be provided as follows:
 - 4.0 m minimum in length along local road right-of-way
 - 10.0 m, minimum in length along collector road right-of-way
 - 15.0 m minimum in length along arterial road right-of-way

or as may be otherwise determined by the Town Engineer with reference to the TAC Geometric Design Guide for Canadian Roads (Urban Supplement).

Intersection Daylight Triangle Property Requirements:



- k. Changes in alignment where the deflection angle is greater than 45° shall provide a minimum property Daylight triangle of 4 m x 4 m.

2.6 Boulevard Grading

The boulevard area behind the curbs shall be graded at minimum 2% to maximum 6% towards the curbs.

All boulevards to the street line shall be overlaid with 200 mm minimum of screened topsoil, overlaid with nursery sod, lightly compacted and in accordance with Section 14 of the Engineering Standards. Top of sod shall be level with top of sidewalk and top back of curb.

2.7 Road Base Construction

All excavation shall conform to the current Ontario Provincial Specification for Grading OPSS 206.

The sub-grade shall be excavated or filled to the required grade for the required width between the curbs plus 500 mm behind the curbs. Where earth fill is required, including backfill for trench excavations, it shall be placed in lifts not exceeding 300 mm in depth and each lift shall be thoroughly compacted to minimum 95% of standard proctor maximum dry density.

All vegetation, boulders over 150 mm in diameter, topsoil and organic or frost-susceptible materials, shall be removed from the road base to a depth of at least 1.20 m below finished grade and replaced with suitable material. In swamp or other areas where the material at this depth is unsuitable, special treatment may be directed by the Town Engineer to be carried out, further to geotechnical recommendation.

All unsuitable excavated material shall be removed from the entire street allowance and deposited off the site to a disposal area approved by the Town.

The Developer shall retain a qualified soils consultant to carry out compaction tests on the completed subgrade and subsequent lifts of granular base material before placement of the next granular or asphalt lift.

The sub-grade shall be shaped to conform to the required longitudinal grade and cross-section and shall have a cross-fall of 3% from the centreline of the roadway to each side. If considered necessary by the Town Engineer, the sub-grade shall be compacted with suitable mechanical compaction equipment as required to produce a solid base for the road gravel. All soft spots shall be excavated and backfilled with granular base material.

The granular base shall be laid on dry, smooth, properly graded sub-grade, and shall be spread for the required width to meet the edge of sub-grade. The granular road base shall consist of a bottom course of minimum 300 mm

consolidated Granular 'B' material full width across the roadway behind the curbs. Granular top course shall be minimum 150 mm consolidated Granular 'A' material for local roads and minimum 200 mm for collector roads for the full width across the roadway and 500 mm behind the curbs, conforming in all respects to the Ministry of Transportation Ontario Provincial Standard Specifications. Where native fine sand is considered for granular base course, the top course of Granular 'A' must be increased by 50 mm.

The granular material shall be spread in layers of 300 mm maximum compacted depths, and each layer shall be thoroughly compacted to 100% standard proctor maximum dry density.

No granular base shall be placed until the grade on which it is to be laid has been inspected and approved by a Geotechnical Engineer and the Town Engineer. Proof-rolling of the sub-grade shall be witnessed by the Geotechnical Engineer and the Town Engineer prior to placement of the granular bases. During and between construction seasons, the granular base shall be maintained suitably for vehicle and pedestrian traffic including dust control by calcium chloride and renewed if required to the satisfaction of the Town Engineer.

All granular construction shall conform in all respects to Ontario Provincial Standard Specification OPSS 314.

2.8 Roadway Surface Asphalt (Base and Surface Courses)

The surface course asphalt may only be placed after a formal base course asphalt testing summary has been provided by a qualified geotechnical engineer and accepted by the Town Engineer. Approval for paving surface course asphalt for subdivisions shall not be given for at least one year from the date of placement of the base course asphalt and until 80% of the housing units have been constructed and the lot grading certificates have been issued for 80% of the lots. As well, a Certificate is required from the Developer's Engineer certifying that all works have been completed in accordance with the drawings that were "Accepted for Construction".

All asphalt shall be placed at the specified thickness and each layer shall be thoroughly compacted to 92% maximum relative density as specified in OPSS.MUNI 310 Table 10.

No asphalt shall be placed until the base on which it is to be placed has been inspected, repaired as necessary and accepted by the Town Engineer. Tack coat shall be applied to the base asphalt prior to placement of top course.

Asphalt work shall conform in all respects to Ontario Provincial Standard Specification OPSS 310.

Denso Re-instatement Tape (or approved equivalent) shall be applied to the vertical face of the existing asphalt at all lateral and longitudinal joints on surface asphalt where new asphalt matches existing, including all road cuts. Denso Re-

instatement Tape (or approved equivalent) may also be required for joints on base course asphalt pending anticipated timing for paving surface course asphalt and other related considerations at the discretion of the Town Engineer.

2.9 Curbs

Concrete curb and gutter conforming to Ontario Provincial Standards Drawing OPSD 600.040 – Concrete Barrier Curb with Standard Gutter shall be installed along existing roads to be urbanized, road widening projects and all collector and/or arterial roads.

OPSD 600.070 – Concrete Barrier Curb with Standard Gutter – Two Stage Construction shall be installed along all edges of the roadway paved surface in new developments. The second stage of curb construction shall only be permitted following the satisfactory inspection of the base curb and asphalt by the Town Engineer prior to placing surface course asphalt.

Curb terminations shall either be joined to existing concrete curbs or terminated as per OPSD 608.010.

Curb radii at commercial entrances shall terminate at the edge of the existing shoulder of the roadway per OPSD 608.010 and be provided with a minimum 5.0m long hot-mix asphalt taper to match to the existing edge of pavement/ edge of travelled lane.

150 mm diameter pipe sub-drains shall be provided under all curb and gutter. Deletion of this sub-drain may be considered by the Town Engineer if supported by a report from a qualified soils consultant, in areas of native sand material only. Sub-drains shall be perforated, corrugated, plastic pipe with geotextile other than the 2 m section of sub-drain immediately upstream of all structures, which shall be non-perforated, corrugated pipe. Sub-drains shall be bedded in a 300 mm x 300 mm granular 'A' trench below and at each edge of the subgrade and shall conform to OPSS 405.

Concrete shall conform to Ontario Provincial Standard Specification for mix-design, placing concrete and curbing. Curb construction shall conform to Ontario Provincial Standard Specification OPSS 353. Curbs shall be bedded on the granular base construction and upon completion of the curbs, Granular 'A' backfill shall be placed behind the curb and thoroughly compacted to prevent the displacement of the curb by the subsequent Granular 'A' and asphalt operation.

The minimum longitudinal gradient along the gutter line is to be 0.5%; additionally, the gradient shall be minimum 0.5% for the outside radius of 90° crescents and cul-de-sacs.

2.10 Bicycle Lanes / Cycle Tracks

Where applicable, bicycle lanes / cycle tracks are to be provided on collector roads consistent with Ontario Traffic Manual Books 5, 11 and 18, and Town Std. Dwg. No. 3.

2.11 Sidewalks

Refer to Section 8.1.

2.12 Roadway and Development Certifications

Prior to issuance of Building Permits by the Town, a "Certificate of Substantial Completion (Basic Services)" must be issued by the Developer's Engineer and accepted by the Town Engineer. This Certificate will be issued upon completion of the internal and external servicing works associated with that phase, including but not limited to the sanitary sewage pumping station (as applicable) and sanitary sewer piping, water booster pumping station (as applicable) and watermain piping, stormwater management facilities (permanent or temporary) and storm sewer piping, and hydro service, complete with first stage concrete curb and base course asphalt. The Town may issue the "Certificate of Substantial Completion (Basic Services)" ahead of hydro service installation in the event that written confirmation is received from Wasaga Distribution Inc. and/or the Developer's electrical contractor confirming that hydro services will be installed within a maximum of six months from the date of the letter. Inspection requirements are outlined in Appendix B.

Prior to issuance of Occupancy by the Town, a "Certificate of Substantial Completion (Full Services)" must be issued by the Developer's Engineer and accepted by the Town Engineer. This Certificate will be issued upon completion of all development work including grading, topsoil and seed / sod (as applicable) of any parklands within that phase, with the exception of surface course asphalt, concrete sidewalk, second stage curb, and boulevard sod. The Maintenance Period shall be two (2) years following issuance of the "Certificate of Substantial Completion (Full Services)" or one (1) year following paving of surface course asphalt, whichever period is longer. Inspection and Occupancy requirements are outlined in Appendix B.

The Developer's Landscape Architect shall provide written certification that all landscaping including trees and shrubs are in good health. The warranty period for landscaping shall be two (2) years from the date of certification.

2.13 Minimum Road Access Requirements

The minimum number of access points required based on the number of proposed units in a development are as follows:

Number of Households	Minimum Access Routes Required
0 – 85	1
86 – 600	2
601+	3

Note: Minimum access route = permanent roadways that meet engineering standards for roads.

3. TEMPORARY EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures during construction must be addressed on all projects, including the supply, installation, maintenance and removal of catch basin sediment traps such as Layfield or approved equivalent.

The requirements of the Town of Wasaga Beach, Ministry of the Environment, Conservation and Parks, and the Nottawasaga Valley Conservation Authority and all other applicable agencies will apply.

The Developer shall consider the sensitivity of the downstream environment and the availability of on-site retention facilities when determining erosion and sediment control measures.

A mud mat must be provided in accordance to Standard Drawing No. 17 at all approved construction accesses to the site.

The developer will be responsible for clearing all mud tracked onto municipal streets and/or adjacent properties to the satisfaction of the Town.

The Erosion & Sediment Control Plan (Sec. 1.5) shall include the minimum control measures required to address temporary erosion and sediment control.

All sites shall be delineated with a 1.2 m high steel wire silt fence in accordance with Town Std. Dwg No. 16 and/or as directed by the Town Engineer and applicable Approval Agencies.

The Developer shall monitor and properly maintain the control measures during construction and until such time as the control measures are no longer required. Maintenance shall include the removal of sediment accumulated by the control measures as determined by the Town Engineer to the satisfaction of the Town.

Should the proposed control measures prove to be ineffective, then other methods and controls shall be added subject to the approval of the Town Engineer.

Stockpiled material shall be limited to a maximum height of 6.0 m with maximum 2:1 slopes. Stockpiles shall be vegetated within 30 days of stockpiling with hydraulic seed and mulch and provided with silt fence around the top and base of the stockpile, to the satisfaction of the Town Engineer.

4. GRADING

All site grading must be maintained within the development lands and shall not extend into neighbouring properties without written consent from the neighbouring property owner. The lot grading and resulting drainage shall not adversely affect the adjacent lands.

4.1 House Lot Grading

Generally, all new lots shall be excavated or filled as follows:

- a. Wherever reasonably possible, the whole of the lot area shall drain from rear of the lot to the street line.
- b. The building apron shall be 300 mm minimum above the elevation of the centreline of the road.
- c. The slope from the curb to the rear of the building shall be a minimum of 2% and a maximum of 5%.
- d. All lots must provide an unobstructed "flat" area with gradient between 2% to a maximum 5% for a minimum width of 0.9m to allow for rear access on at least one side of the house. The minimum 150mm deep 3:1 side slope swale with invert at property line requires a 0.45m swale width adjacent to the flat area, yielding a minimum 1.35m minimum side yard setback.

In situations where the slope of the land justifies different requirements, the Town Engineer may permit variations of the above. The Town Engineer retains the right to amend any of the grades proposed if a particular situation so warrants.

Lot/development site grading shall be designed such that check valves are not required in storm sewers to prevent spills for system surcharge situations. Any surcharging of the system in major storm events shall be conveyed to the SWM pond/facility/ultimate outlet via overland flow.

Engineered fill shall be placed in layers not exceeding 300 mm thick and shall be thoroughly compacted to 100% standard proctor maximum dry density, and as approved by the Geotechnical Engineer. The Overall Grading Plan shall identify all lots requiring engineered fill. Engineered fill shall be placed under the full-time supervision of a qualified Geotechnical Engineer.

The "Lot Grading Plan" must show the proposed and existing lot grades at lot corners and finished grade level at building, underside of footing, basement floor, top of foundation wall and first floor elevations and shall be submitted to the Town Engineer for approval. The Town Engineer retains the right to amend any of the grades proposed if a particular situation so warrants.

The underside of footing elevation must be a minimum of 300mm above the established seasonal high groundwater table elevation. Top of basement slab must be a minimum 500 mm above established seasonal high ground water table. Recommendations shall be included in the Geotechnical Report with respect to seasonal groundwater fluctuations to assist with the determination of the underside of footing elevation, to the satisfaction of the Town Engineer.

The "Lot Grading Plan" shall also identify rear yard drainage swales to be constructed by the Developer, complete with topsoil and sod.

All lots shall be completely rough graded and cleared of construction debris as part of the requirements for occupancy to ensure there is no ponding on the lot and the lot does not have any abrupt changes in grade or trip hazards.

The Developer shall place topsoil and sod within twelve (12) months from the date of occupancy, subject to seasonal limitations. Should the 12-month date from occupancy be between November 1 and May 1, the sodding shall be placed by June 15 of that year. Sod shall be rolled with a smooth drum roller.

Topsoil is to be minimum 200 mm thick and screened clear of all stones, debris and woody material to the satisfaction of the Town in accordance with Section 14 of these Standards.

A topsoil quality report must be submitted prior to the start of work to confirm quality consistent with the requirements of Section 14 of the Engineering Standards.

A certificate of lot grading and associated checklist in municipal format shall be completed for each lot and block. The certificate must be certified by a professional engineer.

An example Lot Grading Certificate and associated checklist can be found in Appendix A.

Final inspection and approval of lot grading including issuance of the Lot Grading Certificate can occur only between May 1st and October 31st, weather permitting. Any requests for final lot grading inspection and approval submitted outside of this designated period will not be considered.

For infill lot design criteria, refer to the Town Building Department's "Infill Lot-Grading and Drainage Policy".

Maintain the existing or natural grade at property lines. Avoid artificially raising or lowering grades that would require the use of retaining walls, which would adversely affect water run-off and/or connectivity to adjacent properties.

Avoid the use of retaining walls along street frontages, parks and other open spaces areas, and abutting adjacent properties. Where a retaining wall cannot be avoided and the grade change is greater than one metre, the wall should be set

back from the property line and terraced to provide an appropriate transition.

Downspouts shall not be located on driveways, walking paths, or any hard surfaces. When such locations are unavoidable, the downspout shall be directed to an underground soakaway pit in accordance with Town Std. Dwg. No. 11, unless an alternative positive outlet is available for the underground drainage pipe.

4.2 Imported Fill Material

Any fill imported to a development site requires geotechnical confirmation/certification regarding the source of the material and the suitability of its intended use. This is in addition to the geotechnical Certification of engineered fill for each lot. If the material source is from any site other than a licensed source pit/quarry, then the geotechnical certification must also indicate that the material has been tested for contamination and has been confirmed to be "clean fill".

All soils to meet O.Reg 406/19. Additional supporting and informative references in terms of imported fill can be reviewed at the following website: <https://www.ontario.ca/page/rules-soil-management-and-excess-soil-quality-standards>.

4.3 Swales

- a. The preferred minimum lot grading swales is 2.0%.
- b. The minimum gradient for all rear and side yard swales in native sandy soil material shall be 1.0%.
- c. Minimum depth shall be 150mm.
- d. Side slopes to be 3:1.
- e. The minimum gradient for all rear and side yard swales in any soil material other than native sand material shall be 2.0%.
- f. Side and rear lot swales shall be well defined.
- g. Although not preferred, when unavoidable to design with swales with gradients less than 1.0%, a 150 mm diameter pipe sub drains shall be provided. Sub-drains shall be perforated, corrugated plastic pipe with geotextile placed at 0.5 m offset property line. Sub-drains shall be bedded in a 300 mm x 300 mm clear stone trench below the swale and shall conform to OPSS 405. In such cases, the subdrain is to connect to a positive outlet (e.g. RLCB, etc.).
- h. The maximum length of a rear lot swale to a positive outlet or rear lot catchbasin shall be the least of 75 m or six (6) lots width (eight (8) lots width for townhouses).

4.4 Parkland Grading

The area of land deeded to the Town for public purposes other than highways shall be carefully graded to provide positive surface drainage to a suitable outlet on public lands, care being taken to preserve existing trees. Drainage to private lands will not be permitted.

The whole area shall have or receive at least 200 mm of topsoil and shall be sodded in accordance with Section 14 of the Engineering Standards as a requirement for the "Certificate of Substantial Completion (Full Services)" (i.e. prior to occupancy).

See Appendix H for Park Standards.

5. UTILITIES

5.1 Telephone/ Cable TV/ Gas

Telephone and cable television services shall be underground and shall be installed by the applicable utility company.

Telephone and cable television service pedestals shall be installed within the Municipal right-of-way at 300 mm from the right-of-way property line and located at lot lines.

Gas service must be provided for all subdivisions and site plans.

The Developer's Engineer must coordinate the installation of all utilities. The telephone and cable television services are installed at the same time in the assigned location within the right-of-way.

The Developer must bear the cost of any surcharges for underground installations and must grant any easements for their services.

5.2 Electrical Distribution and Transformation

The electrical distribution and transformation services shall be dealt with under the direction and approval of Wasaga Distribution Inc. and details of same are available at their offices located at #950 River Road West.

Designers must allow for a minimum of 3 m x 3 m construction footprint for transformers to accommodate the grounding grid installation.

Transformers must not be located on the same lot line as a fire hydrant and should generally be separated by two lot lines wherever possible (i.e. generally 30 metres separation for 15 metre wide lots). Additionally, in all circumstances, transformers must be located a minimum 5 metre separation from fire hydrants.

5.3 Utility Plans

A Composite Utility Plan is required for review and acceptance which shall include a signature block for all utilities to sign and date and to ensure there are no conflicts with drainage or other design components. The Plan shall indicate the location of all underground and all above ground services and utilities. Joint utility trenching is preferred in accordance with Town Standard Drawings.

Municipal Consent (MC) drawings are required for all utility installations in existing road allowances.

A minimum horizontal clear separation of 1.5 m between hydro transformers and driveway edges and 1.0 m for other street furniture shall be maintained.

The following chart represents the minimum clear separation between public utilities and municipal sewers and structures unless otherwise approved by the Town Engineer.

All Utility vaults within 1m of the sidewalk shall incorporate at minimum H20 or Tier 15 load rating boxes and lids.

MC Clearance Guidelines (Preferred)

All Dimensions in Millimetres (mm)	Preferred Vertical Clearance	Preferred Horizontal Clearance
ELECTRICITY Wasaga Distribution Inc.		
Conduits	500	1500
Transformers	1500	1500
Streetlights	1500	1500
GAS Enbridge		
Gas main < 400 mm (16") diameter	500	1500
Gas main >= 400 mm (16") diameter	1500	3000
Above ground regulator stations	1500	1500
BELL Telecommunications		
All buried infrastructure	500	1500
Above ground infrastructure	1000	3000
ROGERS Telecommunications		
All buried infrastructure	500	1500
Above ground infrastructure	1000	3000
ROAD		
Clearance from road, curb, sidewalks	1000	1000
Clearance from catchbasins	1000	1500
Above ground plant clearance from Traffic Signal Poles	1000	1500
Above ground plant clearance from Controller Boxes	1000	1500
Above ground plant clearance from Fire Hydrant	1000	3000
Buried plant clearance from Fire Hydrant (incl. lead & valve)	1000	3000
Water Supply		
Services	1000	1000
Mainline 100 mm - < = 400 mm diameter	1500	1500
Mainline >= 400 mm diameter	2000	2000
Valve Chamber	2000	2000
Storm Sewer (incl. CB & Subdrain)		
< 100 mm diameter	1000	1000
100 mm >= 750 mm diameter	1500	1500
>= 750 mm diameter	2000	2000
Maintenance Hole	2000	2000
Sanitary Sewer		
Services	1000	1000
Mainline 200 mm to < = 375 mm diameter	1500	1500
Mainline >=375 mm diameter	2000	2000
Maintenance Hole	2000	2000

6. **LIGHTING**

6.1 **Street Lighting**

Streetlight layout and design is to be prepared by a qualified Electrical Engineering Consultant. All lights must be "dark sky" compliant and shall be 3000K in colour.

Streetlight fixtures shall be Genlyte: Hadco TVLN style luminaires (black) mounted on octagonal, tapered, polished, eclipse black concrete poles, all to the satisfaction of the Town. The ordering code below can be used to confirm the most adequate fixture, with additional verification of the manufacturer and the electrical consultant.

Example: TVLN-L4-S-(16/32/48)-G1-7-2S-730-A-S-PHX-N-SP1-N-N-N-BK

Existing cobra head fixtures that need replacements or retro-fitted shall be replaced with Cree Guideway (GWY) cobra head style luminaires (black) mounted on elliptical black powder finished arms where the standard lighting requirements are met and the specifications of the fixture are compatible with the overall urban design, zoning requirements, and overall aesthetic of the streetscape.

Poles shall be direct buried, octagonal, tapered, polished, eclipse black, concrete poles, all to the satisfaction of the Town. The concrete poles shall be StressCrete, Class A, pole length as required to provide for the photometric design and soil conditions and shall include pole grounding and complete with 8-FINCAP. Depending on the location, some poles may require banner arms and receptacles, such as on collector roads.

Streetlights on local residential roads shall be provided on the sidewalk side of the roadway in accordance with Town Std. Dwg. No. 2A. The minimum requirement for street lighting on local residential roads shall be LED TVLN coach-style luminaires as noted above, generally at a maximum spacing of 35 m on lot lines and/ or as required to provide roadway illumination in accordance with the ANSI / IESNA RP-8 Roadway Lighting Manual as follows:

Road and Pedestrian Conflict Area		Pavement Classification (Minimum Maintained Average Values)			Uniformity Ratio	Veiling Luminance Ratio
Road	Pedestrian Conflict Area	R1 lux/fc	R2 & R3 lux/fc	R4 lux/fc		
Major	High	12.0/1.2	17.0/1.7	15.0/1.5	3.0	0.3
	Medium	9.0/0.9	13.0/1.3	11.0/1.1	3.0	0.3
	Low	6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
*Collector	High	8.0/0.8	12.0/1.2	10.0/1.0	4.0	0.4
	Medium	6.0/0.6	9.0/0.9	8.0/0.8	4.0	0.4
	Low	4.0/0.4	6.0/0.6	5.0/0.5	4.0	0.4
Local	High	6.0/0.6	9.0/0.9	8.0/0.8	6.0	0.4
	Medium	5.0/0.5	7.0/0.7	6.0/0.6	6.0	0.4
	Low	3.0/0.4	4.0/0.4	4.0/0.4	6.0	0.4

Table 2: Illuminance Method - Recommended Values

Lighting Design Criteria for Streets		Average Luminance L_{avg} (cd/m ²)	Average Uniformity Ratio L_{avg}/L_{min}	Maximum Uniformity Ratio L_{max}/L_{min}	Maximum Veiling Luminance Ratio L_{vmax}/L_{avg}
Street Classification	Pedestrian Activity Classification				
Major	High	1.2	3.0	5.0	0.3
	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
*Collector	High	0.8	3.0	5.0	0.4
	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
Local	High	0.6	6.0	10.0	0.4
	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Table 3: Lighting Design Criteria for Streets

L_{avg} = Maintained average pavement luminance

L_{min} = Minimum pavement luminance

L_{vmax} = Maximum veiling luminance

*NOTE: Consideration is to be given for providing local road street lighting levels for collector roads with houses fronting the road.

Streetlights on collector and arterial roads shall be staggered on both sides of the roadway in accordance with Town Std. Dwg. No. 2B. Streetlight installation on arterial and collector roads shall include banner arms and duplex receptacle complete with ground fault interruption (GFI). The minimum requirement for collector and arterial road lighting shall generally be at a maximum spacing of 70m on both sides of the road and/or as required to provide roadway illumination in accordance with the ANSI / IESNA RP-8 Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting as per above Tables 2 and 3.

Each fixture shall be controlled by a dusk-to-dawn photo-electric cell and be fused. Power feed shall be completely underground. The light shall generally be placed on the outside of horizontal curved roadways.

Particular care shall be taken to adequately illuminate the intersections and pedestrian crossing areas.

A photometric point plan shall be submitted to demonstrate illumination levels shown in Lux values for the proposed development road allowance areas. The plan shall show from street property line to street property line, demonstrating that there is no light trespass on private properties. This can be shown by point files / contours and are to be well defined and labeled within the drawing and within the legend.

The photometric plan shall be submitted by the designer to the lighting fixture manufacturer for their review and acceptance of the design. The photometric plan shall include a signoff block for the manufacturer's acceptance of the design.

All lighting shall be "dark sky" compliant and shall be 3000K in colour. Additionally, all fixtures shall have adjustable brightness settings / dimmable (Q Settings). House shielding should not form part of the photometric design, however, they may be required in unique circumstances.

Where overhead hydro has been permitted, the hydro poles located in the road allowance, may be used to carry the street lighting.

The fixture, manufacturer, model, style, power, height, Kelvin, fixture arm length, and pole spacing requirements shall be as set out above, and as reviewed by Wasaga Distribution Inc. and final approval by the Town.

Prior to energization of the streetlight and electrical distribution system, the Developer shall coordinate the Electrical Safety Authority for the inspection and approval of the systems. A copy of the ESA "Connection Authorization" is to be provided for Town records.

The developer shall provide a letter from the manufacturer guaranteeing that any hardware or driver issues are guaranteed with a warranty for repair or replacement within 10 years of the date of delivery. Invoice with date of delivery to be provided to the Town of Wasaga Beach.

6.2 Parking Lot Lighting

A photometric point plan is required for site plans submissions, demonstrating that the site does not adversely affect neighbouring properties or municipal rights-of-way.

Parking lot lighting, together with building security lighting facilities shall be identified on the plan.

Parking lot luminaires are to be “dark sky” compliant and shall be 3000K.

The fixture, manufacturer, model, style, power, height, Kelvin, fixture arm length, and pole spacing requirements shall be as reviewed by the Wasaga Distribution Inc. and final approval by the Town.

7. TRANSPORTATION AND TRAFFIC

The proposed location of all traffic signs and pavement markings are to be clearly identified on the Pavement Marking and Signage Plan. This Plan shall be part of the complete engineering drawing set, to be accepted for construction by the Town. The Plan shall account for all modes of transportation.

Traffic Calming Measures may be required as part of the engineering design of roadways where identified in the Traffic Impact Study, to the satisfaction of the Town. The design and application of traffic calming measures shall follow the “Canadian Guide to Neighbourhood Traffic Calming” by the Transportation Association of Canada.

“Road Not Assumed By Municipality – Use at Own Risk” signs shall be installed at all entrances to new subdivisions per Appendix C of this document.

7.1 Signage

All proposed street names for new development shall be subject to the approval of the Town.

Temporary street name signs and posts, or permanent signs mounted on temporary posts must be installed at all intersections upon completion of base course asphalt. These signs must be maintained by the Developer at all times. Permanent signs and posts must be in good condition at issuance of the Certificate of Substantial Completion (Full Services) and until Assumption by the Town.

Double sided street name signs are to be provided and mounted by the Developer on 100mm dia. round galvanized metal posts, 3.75 m long, embedded 1.2 m in the ground prior to Certificate of Substantial Completion (Basic Services).

Street name signs material to be 160mm high extruded aluminum blades with a bulb "T" top and bottom. Green high-intensity grade reflective background with pre-cut 90mm white high-intensity upper case block highway lettering. All vacuum applied. The suffix of each road name "Ave., Blvd., Rd., St.," etc. is to be abbreviated. Street name signs shall not be mounted on same post as stop signs. Street name signs must be mounted on its own post, in a quadrant other than the stop signs.

Traffic control and advisory signs shall be provided by the Developer and mounted on a "U" flange galvanized metal posts, 3.75 m long, embedded 1.2 m in the ground. The shape, colour, height and location of traffic signs shall be in accordance with the Ontario Traffic Manual as published by the Ministry of Transportation. All regulatory signs shall be manufactured using "High Intensity" sheeting conforming to ASTM D4956-90 Type III or Type IV material.

Square metal posts with breakaway sleeves are to be used at all locations where signs are installed in hard surfaces (i.e. asphalt, concrete pavers, etc.).

7.2 Traffic Signals

Traffic signals are to be implemented in accordance with the recommendations of the accepted Traffic Impact Study.

Please see the Approved Materials List in Appendix G for the Town of Wasaga Beach specifications for traffic signal controller box and related materials.

7.3 Pavement Markings

Pavement markings shall be clearly identified on the Pavement Marking and Signage Plan and shall be in accordance with the current OPSS, Transportation Association of Canada Design Guidelines and the Ministry of Transportation "Ontario Traffic Manual".

Temporary pavement markings are to be placed upon completion of base course asphalt and maintained by the Developer until placement of top course asphalt. Following placement of top course asphalt, permanent pavement markings are to be installed in accordance with the design. Pavement markings will be reviewed and may require re-application prior to municipal assumption

7.4 Pedestrian Crossovers (PXO)

In the event that PXOs are deemed to be warranted, the minimum acceptable type in Wasaga Beach is Level 2 Type C complete with amber flashers, per Ontario Traffic Manual Book 15.

8. PEDESTRIAN FACILITIES

8.1 Sidewalks

All sidewalk construction must conform to OPSD 310.010, OPSD 310.020, OPSD 310.030 and OPSS 351. Sidewalks shall be a minimum 1.50 m wide and provide a minimum 100 mm thickness Granular 'A' bedding compacted to minimum 95% standard proctor maximum dry density.

Location of sidewalk in roadway shall be per the Town Engineering Standard drawings in Section 14.

Expansion joints shall be provided at minimum 6.0 m spacing (i.e. every four bays) and/or where the sidewalk abuts a rigid object or changes direction. Dummy joints are to be provided every 1.5 m spacing.

Sidewalks are to be continuous through commercial, industrial and institutional driveways.

All sidewalk designs must satisfy the requirements of the applicable Provincial legislation for accessibility. This shall include but not be limited to, where a curb ramp is provided at a pedestrian crossing, it must have tactile walking surface indicators to the satisfaction of the Town. Tactile plates shall be as per OPSD 310 Series, installed at 150mm behind and parallel to the back of drop curb, and shall be cast iron with a natural finish. Anchored cast iron plate such as TufTile or approved equivalent may be accepted at the discretion of the Town Engineer.

The minimum clear width for sidewalks shall be 1.5 meters.

Where the sidewalk connects with a curb ramp, a 1.2-meter-wide level area shall be provided at the top of the ramp to maintain the path of travel and serve as a turning space for mobility devices.

If the sidewalk is adjacent to parking stalls oriented perpendicular to the exterior path of travel, the clear width should be increased to a minimum of 1.8 meters to accommodate vehicle overhang.

In areas with high pedestrian traffic, the sidewalk shall be increased to a minimum clear width of 2.4 meters.

8.2 Walkways

Walkways shall be constructed of 150 mm thick concrete surface conforming to OPSS 351 on a 150 mm thick Granular 'A' compacted to minimum 95% standard proctor maximum dry density, and minimum width of 3.0 m. Concrete walkways shall be constructed in conformance with Town Std. Dwg. No. 7.

Walkways located between two adjacent residential lots shall be fenced with a - 1.8m tight board privacy. The height of the fence shall be reduced to 1.2m for the

frontage of the lot in accordance with the Town's Zoning By-law.

All walkway designs must satisfy the requirements of the applicable Provincial legislation for accessibility.

Walkways that also function as an overland flow route shall have a minimum width of 6.0 m and shall have a cross-section designed to contain and convey the major storm events within the block.

Streetlights shall be provided at the access and egress of walkways.

Removable bollards shall be installed with the base flush with finished grade at all walkway access / egress points to deter motorized vehicles per Town Std. Dwg. No. 7.

8.3 Recreational Trails

Recreational trails shall be constructed as per the current specifications as identified in the Town Standard Drawings.

Trail routes shall meander to avoid disturbance to existing vegetation but must not be located within 6.0 metres of adjacent private property. Exact location and clearing limits to be determined on site in consultation with Town staff prior to construction.

Trail design must have regard for existing/ proposed drainage patterns and may require culvert installations at designated locations.

'P' gates shall be installed at all access and egress points with a minimum separation width of 1.5m. Where necessary, landscape boulders may be required along the outer limits of the trail access / egress as per Town Std. Dwg. No. 29 to further deter motorized vehicles.

Trailhead signage shall be provided at all access points to a recreational trail and must include the following information:

- **Trail Name:** Official name of the trail
- **Trail Length:** Total length of the trail.
- **Surface Type:** The material used for trail construction.
- **Trail Width:** Both the average and minimum width of the trail.
- **Trail Slopes:** Average and maximum running slope, as well as the cross slope.
- **Amenities:** Locations of any available amenities.

All trailhead signage must comply with O. Reg. 413/12, s. 6 as amended and be designed for clarity, durability, and visibility.

Educational boards shall be installed at designated locations along trails, parks, and public spaces to enhance residents' awareness and engagement. All educational boards must meet the following requirements:

- Clearly convey relevant educational information, such as environmental conservation, local wildlife, cultural heritage, or historical significance.
- Use concise, informative text complemented by visuals, diagrams, or maps where applicable.
- Boards shall be designed for high readability, incorporating appropriate font sizes, contrast, and language clarity.
- Content should be accessible to a diverse audience, including children and individuals with disabilities.
- Constructed from weather-resistant and vandal-resistant materials suitable for outdoor installation.
- Ensure longevity with UV-resistant coatings and anti-graffiti finishes.
- Positioned at key points of interest without obstructing pathways or natural sightlines.
- Mounted at an accessible height to accommodate all users, including those in wheelchairs.

All pedestrian bridges shall have an OSIM inspection completed by the Developer's consultant in advance of a final assumption. A bridge identification number will be provided by the Town's Engineer upon request and/or prior to final submission of the OSIM inspection report.

8.4 Transit Shelters

Bus shelters and landing pads shall be provided as required by the Town.

8.4.1 Concrete Pad

This standard is to be read in conjunction with Town sidewalk standards in Section 8.1 of these Engineering Standards.

The transit shelter concrete pad size should extend at minimum 300mm on all sides beyond the shelter footprint, or a total of 600mm larger than both the length and width dimensions of the shelter. The standard shelter is 5'x10' and therefore the minimum standard concrete pad shall be minimum 7'x12' (i.e. 2.13m x 3.66m). Depending on available space and potential need, the Town may require added width for a bench, waste receptacle and/or bike rack, for which the shelter concrete pad shall be a minimum of 3.0mx9.0m.

Base material shall be constructed with a minimum 150mm thickness Granular 'A' bedding, compacted to a minimum 95% standard proctor maximum dry density prior to pouring concrete.

Concrete pads shall be:

- 200mm thick concrete.
- Concrete to be reinforced with Fiberglass mesh screen or steel re-bar as approved by the Town.
- A minimum 28-Day Compressive Strength of 30 MPa.
- Broom finished.
- On urbanized roads, the pad for the shelter as described above shall be located behind the sidewalk, and a concrete pad with minimum width of 2.4m shall extend from the sidewalk to the back of curb, for connectivity from the shelter to the bus stop location.

All bus shelter pads are to be sloped 2% towards the road unless otherwise noted.

Where an edge(s) of a concrete shelter pad are adjacent to curb and/or sidewalk an expansion joint shall be used.

All Transit Shelter designs must satisfy the requirements of the applicable Provincial legislation for accessibility.

8.4.2 Bus Shelter

Public transit bus shelters shall be approximately 5'x10' Avanti Shelter supplied by Daytech Limited (specified dimensions = 58 15/16" x 131 1/4"), or approved equivalent complete with:

- All glass walls.
- Clear polycarbonate multi-wall (cellular) roof material.
- Double sided display.
- 44" (L) easy access bench complete with arm rests.
- Powder coated silver finish.

All Transit Shelter designs must satisfy the requirements of the applicable Provincial legislation for accessibility.

8.5 Pedestrian Crossovers (PXO)

Where mid-block pedestrian crossings are necessary for the design, the minimum pedestrian crossover allowable is a Level 2 Type C complete with amber flashers, per Ontario Traffic Manual Book 15.

9. WATERMAIN DISTRIBUTION

9.1 General

Under the Ministry of Environment, Conservation and Parks (MECP) Municipal Drinking Water License process, the Town of Wasaga Beach was issued a Drinking Water Works Permit (DWWP) on July 18, 2011. With the DWWP, most alterations of the Town of Wasaga Beach Drinking Water System by addition, modification, replacement or extension must satisfy the requirements of the Town's Drinking Water Works Permit (#131-101). Therefore, submissions are made directly to the Town of Wasaga Beach Public Works Engineering Department for approval.

Watermain designs shall comply with the Ministry of the Environment, Conservation and Parks Design Guidelines for Drinking Water Systems and must be reviewed and approved by the Town in accordance with the Town's Drinking Water Works Permit.

All watermain fittings, pipes and appurtenances shall be CSA Certified and in accordance with the Town approved materials list as amended.

Watermains, hydrants and house service connections shall be provided to serve the whole of the development and shall be compatible with adjacent developments.

The subdivision shall have a minimum of two feeds from the existing Town distribution system. Refer to Section 9.2 below. For private roads / private water systems, an Omni C2 bulk water meter is required on all feeds.

As part of the design review process, a water distribution system analysis of flows, pressures, fire flows, etc. shall be undertaken using the Town's water system model in Water CAD at the discretion of the Town Engineer. The analysis shall demonstrate that the development's distribution system maintains a minimum system pressure of 350 kPa (50.8 psi) under normal operating conditions.

Watermain pipe joints shall be mechanically restrained on both sides of all valves and at fire hydrants, termination points and changes in direction or pipe size and all areas of engineered fill. Restrained lengths are to be calculated by the developer's engineer and approved by the Town engineer. A factor of safety of 1.5:1 shall be used for the minimum distance calculations. Restrainer limit lengths shall be identified on the design drawings.

Test connections shall be completed in accordance with Town Standards Drawing No. 13 – Water Distribution System 50 mm Test Point By-Pass, or approved equivalent.

All private developments require an Operations and Maintenance Manual for the regular inspection and maintenance of all private watermain, valves and fire hydrants. Guidelines for the preparation of the Operations and Maintenance Manual can be found in Appendix E.

All connections to municipal mains must be undertaken by a Town approved contractor in the presence of Municipal water / sewer staff and/or Town Engineer. All active main valves must be operated by certified municipal staff. A minimum 48 hours' notice is required to be given to the Town Engineer when scheduling these works.

9.2 Piping

Watermains shall be adequately sized to provide fire protection. The minimum size shall be 150 mm diameter and as may be required by the Town.

Watermain pipe shall be gasketed PVC (DR 18) conforming to AWWA C900, for pipes up to 300 mm diameter with PVC fittings and/or ductile iron, cement lined mechanical joint fittings with mechanical restraints and cathodic protection. A different pipe strength or type may be required by the Town for larger pipe sizes and for special conditions.

Pipes shall be bedded in accordance with OPSD 802.010.

The nominal cover on the watermains, hydrant branches and services shall be 1.7 m at all points. Watermains and services shall be backfilled with approved granular material and thoroughly compacted in layers.

The PVC pipe installation shall include a white 12 AWG TWH solid plastic covered tracer wire, TW4 75°C 600 V or approved equal. Tracer wire shall be fastened to the top of watermain pipe with J Clips by Tracer Wire Inc. (or approved equivalent). The installation of the tracer wire shall provide for a connection at the flange of all fire hydrant barrels and mainline valves as noted on Town Std. Dwg. No. 6 Hydrant and Valve Detail. Tracer wire shall also be provided along all water services to the property line, and brought to the surface on the outside of water valve. Splice connections of tracer wire shall be completed using DryConn waterproof connectors (or approved equivalent). Tracer wire continuity of current must be tested and certified by Public Works staff prior to acceptance and placement of base course asphalt.

Cathodic pipe protection is required at metal pipes and fittings with Zinc or Magnesium anodes at mechanical fittings, as recommended in the geotechnical report. In order to avoid potential corrosion, PVC pipe fittings (with mechanical restrainers as applicable) are recommended to be used in lieu of metal parts wherever possible (bends, tees, reducers, etc.).

For the purpose of water quality, all new pipe systems must be looped and connected to the existing municipal water distribution system at a minimum of two locations. If this cannot be provided, a local 50 mm dia. pipe loop connected

to a minimum of four (4) individual services to a maximum of five (5) individual services is required to maintain constant flow and satisfactory water quality within the system. Alternatively, an auto-flusher may be provided at the Developer's cost. A Mueller Hydro-Guard 200 Series (FC200) Cold Climate auto-flusher complete with Bluetooth controller shall be supplied and installed by the Developer in accordance with the specifications, to the satisfaction of the Town Engineer. An OMNI R2 meter within a meter pit is required on the service line leading to the auto-flusher.

The Mueller Hydro-Guard 200 Series (FC200) Cold Climate auto-flusher shall also be used as part of a flushing program to maintain acceptable chlorine residual levels in the watermains for phasing of development to the satisfaction of the Town.

9.3 Testing Requirements

The Developer's consultants and/or contractor shall produce and provide a comprehensive proposed swabbing, chlorination, and pressure testing procedures and plan. Testing is to be undertaken by a qualified third party company approved by the Town. The consultant is to provide a written proposal regarding how the testing is to be conducted in keeping with current standards seven (7) days prior to testing. A Watermain Commissioning Proposal Checklist consistent with Appendix B () is to be submitted with the Proposal.

All watermains shall be tested, swabbed, flushed and disinfected in accordance with current OPSS.MUNI 441 specifications. A minimum of three (3) numbered swabs are to be used per line. Insertion of the swabs is to be witnessed by Town staff at the time of swabbing. Pressure testing shall be completed for maximum 300m length test sections. All proposed testing procedures and processes are to be provided in writing with specific details to the Engineering and Public Works Department for review and approval prior to commencement of any testing works.

Hypochlorite for disinfecting shall be NSF certified for all watermain works.

The procedures for disinfecting watermains shall be in accordance with the latest revision of AWWA C651. The Developer shall arrange the watermain test and shall inform the Town Engineer when a section has completed a satisfactory pre-test for leakage testing and is ready for the final leakage testing inspection. A minimum of 48 hours notice is required prior to testing for the Town Engineer to coordinate with Public Works staff for operation of valves. Any sections failing the test shall be repaired and retested at the Developer's expense.

Two series of bacteriological tests are to be conducted in accordance with AWWA C651 after residual chlorine level testing and system flushing to re-establish municipal system chlorine levels. The AWWA C651-14 revision indicates that the purchaser has two options for bacteriological testing for total coliform analysis as follows:

“Option A: Before approving a main to go into service, take an initial set of samples and then resample again after a minimum of 16 hr using the sampling site procedures outlined (in the AWWA Standard). Both sets of samples must pass for the main to be approved to go into service.”

“Option B: Before approving a main to go into service, let it sit for a minimum of 16 hr without any water use. Then collect sample, using the sampling site procedures outlined (in the AWWA Standard) and without flushing the main, two sets of samples a minimum of 15 min apart while the sampling taps are left running. Both sets of samples must pass for the main to be approved to go into service.”

The Developer / contractor is responsible to arrange for a certified technician to obtain water samples for bacteriological testing. Bacteriological testing shall be undertaken by an accredited laboratory and the results shall be in accordance with the Ministry of the Environment Guidelines.

All water samples shall be tested for E-Coli, Total Coliform, Background and HPC.

The Developer’s contractor shall flush each / every individual water service 24 hours following chlorination, as part of the de-chlorination process.

Prior to connecting new watermain to the municipal distribution system, the Developer must provide satisfactory bacteriological test results to the Town Engineer. An approved, qualified third party shall take the test samples with Town staff present to witness sampling. Samples are to be sent to an approved laboratory, which is to be confirmed in writing to the satisfaction of the Town. The Town requires a copy of the chain of custody report for file.

In the event that final connection is NOT made within (10) days, a flushing program will be implemented immediately by the Developer, to maintain a minimum 0.5mg/L free chlorine residual and shall continue to be flushed on a fourteen (14) day (or less) rotation schedule to maintain that residual. This schedule will be required until the Town assumes the new development or it is determined that there is sufficient usage to maintain above the minimum requirement. If connection has been within (10) days, a flushing program will be implemented on a (14) day schedule (or less) to maintain a minimum 0.5mg/L free chlorine residual until the development is assumed by the Town or it is determined that there is sufficient usage to maintain above the minimum requirement.

After all testing is complete, as part of the connection process, all remaining watermain stubs shall be lowered to below ground with sufficient frost cover (1.7m minimum) and a 50mm dia. blow-off is to be brought to surface in accordance with OPSD 1104.030.

9.4 Valves

Resilient seat gate valves shall be installed at each location of the intersection of street lines (i.e. three valves at tee intersections and four valves at cross intersections) to allow the isolation of each section of watermain between intersections. When streets extend for greater than normal distances without intersections the Town or the Town Engineer may require additional valves at intermediate points. Maximum 300 m distance between valves. Valve locations to be approved by Public Works staff.

All valves at points of termination of a stage of construction shall be restrained with two additional lengths (i.e. 12.0m) of watermain pipe beyond the gate valve. Watermain pipe termination shall be plugged and restrained complete with a minimum 50 mm blow off as per OPSD 1104.030.

Where watermain valves are located within the travelled road surfaces, top of the valve box shall be set flush with the paved road surface and a 0.5 m tapered asphalt apron provided if located in gravel shoulders.

Gate valves shall be resilient seat "open left" complete with valve boxes with 125 mm diameter lids marked WATER, all in accordance with the Town approved materials list. Valves shall be joined to the pipeline with anchor tees, tie-back rods or by using mechanical joint restrainer gland rings with cathodic protection.

"Live tapping" into existing watermains must be undertaken by a contractor that is approved by the Town.

Air release valve chambers shall be provided at system high Points and drain valves shall be located at low points per MOECC Guidelines.

9.5 Backflow Preventers

Backflow protection must be provided in accordance with the Ontario Building Code and applicable Provincial Regulations.

When backflow prevention is required under the Ontario Building Code, a Reduced Pressure Zone Backflow Preventer per the Town approved materials list must be enclosed in a chamber in accordance with Town Std. Dwg. No. 15B or the building mechanical room at commercial, industrial or institutional services as deemed necessary by the Town Engineer.

The owner is responsible for annual inspection and certification to verify conformance with the Building Code. The annual inspection / certification reports are to be forwarded to the Town's Building Department.

For watermain testing purposes, a flow meter may be provided by Public Works (pending availability) or else supplied by the contractor as applicable. Backflow preventer installation and backflow testing shall be done by a plumber certified in backflow prevention, and witnessed by the Developer's Consultant. A copy of the certification is to be provided by the Developer's Consultant to Town staff. See Appendix B for the Town's standard form.

9.6 Hydrants

Hydrants shall be CSA Certified and in accordance with the Town approved materials list as amended.

Anti-tampering devices are to be installed following completion of testing of system by the Developer to the Town's satisfaction and following completion of all testing to be completed by Public Works (i.e. continuity, gate valves, curbstops and fire hydrant testing). The anti-tampering devices are to remain on all fire hydrants throughout the duration of site building construction, and then are to be removed by the Developer at the end of the warranty period, prior to municipal assumption of the roads for the final phase of the development.

Hydrant leads shall be 150 mm dia. and shall have a shut-off valve per the Town approved materials list, placed 1.50 m from the hydrant. Hydrants shall be located at lot lines and spaced at a maximum distance of 150 m in residential areas and 90 m in commercial and industrial areas. A hydrant shall be placed at the end of every cul-de-sac and dead-end street within a maximum distance of 15 m from a sanitary Maintenance hole for maintenance and flushing purposes.

Hydrants must be non-self-draining (internally plugged) and shall be equipped with two hose connections plus a pumper connection, complete with factory installed Storz fitting. All hydrant leads shall be installed at 1.7m depth of cover with provision for extension at the surface for adjustment to street lines grades. Hydrant flanges shall be set 75 mm to 100 mm above finished grade.

Hydrants shall be painted to conform to the Town's standard colours: yellow barrel with silver top and black Storz connections and caps. Yellow paint shall be Colour No. 236 as manufactured by BEHL Chemicals Inc. of Milton, Ontario or approved equivalent.

Hydrant markers, consisting of two 100 mm yellow reflectorized galvanized steel diamonds shall be mounted facing each direction of traffic at 1.8 m height from finished grade on a 3.0 m length square steel post embedded minimum 1.2 m into the ground, erected at the rear of each hydrant and adjacent to the property line.

Hydrants and markers shall be installed as per the Town of Wasaga Beach - Hydrant and Valve Detail Town Std. Dwg. No. 6.

Each fire hydrant is to have a "Pump After Each Use" sticker affixed to front of the hydrant, above the Storz connection cap. The stickers are to be supplied by the Public Works Department and applied to hydrants by the Developer's contractor.

9.7 **Residential Services**

Each freehold housing unit shall have a separate 25 mm minimum dia. water service per the Town approved materials list, complete with tracer wire from the main to the property line. A curb stop and extension service box and main stop must be installed on each service using compression joint fittings. Curb stops are to be non-self-draining. Curb stop installation must include a 100 mm cedar block under the curb stop with a 2.5 m long, 25 mm dia. tail piece extending to the surface at 1.5 m into the private property / back from the right-of-way property line. Water services on private property shall be installed on the property to be serviced and in no case shall cross a property line into or pass through other private property.

Water service fittings shall be as per the Town approved materials list.

Curb stops shall be located on the street line and are typically located in the centre of the lot, unless an appropriate location is established with the owner prior to construction to accommodate driveways, landscaping, etc., and at 1.5 m separation from the sanitary sewer services. The designer shall try to avoid locating curb stops within the driveway wherever possible. The service shall always be a minimum of 1.5 m offset from the side property line. Service connections to watermains shall be made by direct tapping for ductile iron or with broad band stainless steel saddles on PVC.

Water services shall be a minimum of 300mm below the underside of footings at the dwelling.

A 12 lb. zinc anode shall be installed on each copper water service using a hydro type galvanized clamp.

The Public Works Department will supply residential water meters, touch pad and transmitters at the expense of the Owner, and the Owner shall be responsible for the installation. The touch pad and transmitter shall be located on the exterior of the building beside the hydro meter (minimum 150mm separation) and shall be accessible to the Town's agent.

Residential water meter specifications and installations shall be in accordance with Town Std. Dwg. No. 14A. The builder shall install the full assembly from the water meter inside the dwelling, out of the building with wire up to and including installation of the touch pad. The Flexnet Transmitter will be installed by Town Public Works following inspection and acceptance of works.

The cost of the water meter, transmitter, and subsequent installation shall be at the owner's expense. The meter shall be installed at a location approved by the Town.

Unless otherwise directed by the Town Engineer, decommissioning of existing water services shall include exposing the service connection at the watermain, closing the main stop and capping the main stop, then removing a short length of

the existing water service (minimum 300mm). Decommissioning shall also include removal of the existing curbstop, which may be returned to the Town's Public Works Department at the discretion of the Town Engineer. Full removal of the existing decommissioned water service is encouraged, should the opportunity exist. For any water service 50 mm Ø or greater, removal of the abandoned water service between the main stop and curb stop is required.

9.8 Commercial/Industrial/Institutional Services

The standard size for potable commercial/industrial/institutional water services is 38 mm dia. unless otherwise demonstrated by the developer's engineer in accordance with the calculations of the Ontario Building Code.

Where applicable, the Town requires the following provisions for commercial/industrial/ institutional water services and dedicated fire lines:

- Provide a single individual service to property line sized applicably for both domestic and fire protection.
- Where on-site fire hydrants are required, minimum pipe size shall be 150 mm dia. with calculations to be provided to the Town to demonstrate pipe sizing needs on site.
- Minimum watermain size along frontage of school block is typically 300mm dia., to be checked through the Town's water distribution model to confirm sufficient domestic flow and fire protection.
- Main line valve to be placed 300 mm offset property line within the right-of-way and marked.
- On-site line split for domestic and dedicated fire supply to occur within the property.
- At the point of separation, both lines must have independent valves.
- Protection from contamination must conform to latest addition of the Ontario Building Code with Backflow Preventers.
- Face of the building must be within 90 metres of street hydrant.
- Face of portable units must be within 90 metres of site hydrant.
- Siamese connections must be within 45 metres of site hydrant.
- Domestic line shall make provision for a water meter per Town Std. Dwg. No. 14A or 14B as applicable. The owner must purchase commercial, industrial or institutional meters from the supplier.
- PVC and PE pipe must be installed complete with tracer wire. A continuity test must be undertaken and certified by Public Works Staff prior to acceptance.

- All site watermains must be swabbed, flushed, chlorinated and pressure tested in accordance with the Ontario Provincial Standard Specifications and Section 9.3 of these Standards. All internal building mains must be installed and tested in accordance with the Building Code. All tests must be certified by the Town.
- All connections to existing municipal supply lines must be inspected by a representative of the Wasaga Beach Public Works Department prior to backfilling operations.

9.9 Miscellaneous

All water services, hydrants and other works required on any section of watermain shall be completed prior to construction of the road base.

Extra fittings shall be installed at any point on watermains as required by the Town Engineer.

The Town will not be responsible for any costs arising out of the construction of watermains for the development.

Upon completion of the work, and prior to the issuance of the Certificate of Substantial Completion (Full Services), Water and Sewer Service Record Sheets (one for each lot) shall be prepared by the Developer's Engineer in accordance with Section 1.8 and turned over to the Town Engineer for review and acceptance. The sheets shall show clearly:

- a. Registered plan number and Roll number;
- b. Lot, lot number and street lines;
- c. Swing ties as per Section 1.8 of these Engineering Standards;
- d. North arrow;
- e. Type, diameter and depth below grade at the end of each service;
- f. Any other pertinent information.

All valves, curb stops and hydrants must be inspected for accessibility and operation prior to Substantial Completion (Basic Services) and prior to Municipal assumption.

10. SANITARY SEWERS

10.1 General

Sanitary sewers and house service connections to the street line shall be provided to serve the whole of the development and shall be compatible with adjacent developments and sized to accommodate external flows within the drainage catchment area.

Sewers and house service connections to the street line shall be installed prior to road base construction. Each housing unit shall have a separate service to property line in accordance with Town Std. Dwg. No. 12 A.

Sanitary sewer design shall comply with the Ministry of the Environment, Conservation and Parks (MECP) Design Criteria for Sewage Works. The design shall include a structures table in a format to the satisfaction of the Town for ease of inserting the table in the Town Engineering Department's inspection sheets.

The Town has received a Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) from the MECP for both sanitary and storm sewer systems for works that will be owned and maintained by the Town (i.e. will not apply to private infrastructure). As such, the Town is now the approval authority for sewers, and an ECA application to MECP should not be required, as per the pre-approved parameters of the CLIs. The design must also conform to the latest MECP Design Criteria for Sewers under ECA (May 31, 2023, or as amended). Should there be a discrepancy in the Town's Engineering Standards versus the MECP Design Criteria, then the MECP Design Criteria shall govern.

Sanitary sewers shall be connected to the Town's sanitary sewer system at locations approved by the Town.

The following design parameters shall be used for sizing sanitary sewer pipes and sewage pumping stations in the Town of Wasaga Beach:

- a. The designer must demonstrate that the actual system velocity at peak flow will be greater than 0.6 m/s, and no greater than 3.0 m/s.
- b. The top end section of the sanitary pipe system shall have a minimum 1.0% gradient.
- c. The number of persons per unit (ppu) shall be 2.6 for all residential type units.
- d. Average daily per capita flow = 350 L/cap/day.
- e. Peak extraneous flow (I/I) = 0.28 L/ha/s for design of sanitary sewers.
- f. Peak extraneous flow = 227 L/cap/day for design of sanitary sewage pumping stations.

Where sanitary sewers must be located within an easement, the easement shall be minimum width of 6.0m, unless depth or size of sewer dictates a larger width necessary for maintenance. Additional depth of footings for houses adjacent to the sanitary sewer easement shall be considered in the design.

All private developments require an Operations and Maintenance Manual describing regular inspection and maintenance requirements, including flushing of sanitary sewers, as per Appendix E.

10.2 Material

All materials shall be CSA Certified and in accordance with the Town approved materials list as amended.

Main sewers shall be PVC, SDR 35 with rubber gasket connections and of minimum size 200 mm dia.

House service connections shall be PVC SDR 28 with rubber gasket connections and shall be 125 mm minimum dia. For single dwellings. Connections for multiple dwellings and commercial or industrial premises shall be of a type and size approved by the Town Engineer.

Forcemains shall be engineer designed and approved, and at minimum, PVC DR18 or HDPE DR11, or approved equivalent. Inside diameter of HDPE pipe must be identified on the design drawings. The PVC and HDPE pipe installation shall include a blue 12 AWG TWH solid plastic covered tracer wire, TW4 75°C 600 V or approved equal. Hydrostatic testing of forcemain for leakage shall be carried out for two-hours in accordance with OPSS.MUNI 412. Test pressure shall be 1,035 kPa (150psi), consistent with pressure testing for watermains.

10.3 Upsizing for External Lands

The Town may require a larger sanitary sewer size on parts of the development than required for the development alone, to connect to other areas or for other reasons.

10.4 Installation

Sewer construction and testing shall conform to the requirements of the Ontario Provincial Standard Drawings and Specifications for sewer construction (OPSS.MUNI 410).

New sanitary sewers shall be plugged at the point of connection to the existing sanitary sewer system throughout construction, until all sewer has been installed and successfully passed all testing requirements. The location of the plug shall be reviewed with the Town prior to installation. The plug shall remain in place and shall not be removed until that phase of development has received the Certificate of Substantial Completion (Basic Services) from the Town Engineer.

Pipes shall be bedded in accordance with OPSD 802.010. Main sewers and house service connections across roadways shall be backfilled entirely with approved granular materials, thoroughly compacted in layers.

Shop manufactured "Tee" connections shall be used for house service connections on 200 mm and 250 mm sewers. Saddles are not permitted on 200 mm and 250 mm sewers.

Individual service connections are not permitted to connect directly into Maintenance holes.

Mainline / sewer trunk connections to Maintenance holes shall enter the Maintenance hole no higher than 600 mm above the lowest invert except as otherwise approved by the Town Engineer. Greater than 600mm requires a drop structure. Only external drop structures will be permitted.

Maximum mainline sewer pipe depth shall be 6.5m.

Maintenance holes shall be equipped with rubber gasket boots for pipe connections and shall not be parged internally.

All structures to be installed complete with Denso Petroleum tape (or approved equivalent such as Mel Roll) applied at each section's joints.

Maintenance holes located in areas expected to be within areas to be flooded during the major storm event or otherwise susceptible to inflow of surface water shall be equipped with water-tight lids.

Maintenance holes shall be provided at all changes in direction of the sewer and at all street intersections, but no further apart than 120 m. Maintenance holes shall be pre-cast concrete, conforming to OPSD 701.010 and shall generally be 1200 mm dia. Larger sizes may be required depending on the size of the sewer or the number of connections in accordance with OPSD. The selection of manufacturer of pre-cast concrete Maintenance holes will be subject to the approval of the Town Engineer. Benching shall be provided in all Maintenance holes. Maintenance hole covers shall conform to OPSD 401.010 Type "A" closed cover. Covers shall be set on a minimum of 50 mm and a maximum of 150 mm of "Moduloc" or approved equivalent adjustment rings. Precast concrete adjustment units shall be installed per OPSD 704.010.

Maintenance hole steps shall be per OPSD 405.010 hollow rungs installed at 300 mm spacing with a maximum 600 mm from the top of grate to the first step.

All Maintenance holes shall be equipped with frost straps in accordance with OPSD 701.100 installed with "quick anchors" external to the Maintenance hole in lieu of drilling through the structure.

Parging of joints within the structure is not acceptable. Section joints, as well as HDPE adjustment rings or approved equivalent shall be wrapped on the outside of each structure with Denso petroleum tape.

Maintenance holes must be initially installed such that the frame and grate is flush with base course asphalt. The frame and grate shall subsequently be raised to be flush with finished elevation and grade prior to the placement of top course asphalt. Adjustment of top of grate to match top course asphalt may be provided by cutting base asphalt around the frame and grate and raising with HDPE adjustment rings or approved equivalent adjustment ring, or by using cast iron Sigma riser rings (or approved equivalent). Alternatively, the Developer may use Bibby-Ste-Croix AutoStable adjustable frames at the time of initial maintenance hole installation, which can be adjusted at the time of paving surface course asphalt.

Sanitary sewers shall be cleaned, flushed and tested for leakage and deflection in accordance with the current OPSS.MUNI 410 specifications.

The complete system shall be flushed and inspected by an approved video camera testing company and the Town Engineer shall be provided with a copy of the appropriate data.

CCTV inspection shall be undertaken per OPSD 409 as directed by the Town following the installation of all utilities. CCTV inspections are to be conducted:

- On all mainlines and service lateral connections;
- All individual laterals to 1.5m beyond the cleanout / inspection port;
- Prior to the issuance of the Certificate of Substantial Completion (Basic Services), and;
- Prior to the placement of surface course asphalt.

Any noted deficiencies shall be brought forth to the Town Engineering Department along with a detailed repair proposal by the Developer's Engineer, along with an estimated time of repair completion prior to the placement of surface asphalt. Subsequent videos are required after repair completion.

Please refer to section 1.9 above for further CCTV inspection requirements.

10.5 Sanitary Sewer Services

Sanitary sewer service laterals shall be gasketed pipe, typically located minimum 1.5 m offset from the water service at minimum depth of 500 mm below the water service to the lot and at a maximum depth of 2.5 m below finished grade at property line as well as a minimum depth of 1.7 m for frost protection. The service shall always be a minimum of 1.5 m offset from the side property line.

Sanitary sewer service laterals shall be minimum of 300mm below the underside of footing of the dwelling.

When the sanitary sewer main is 4.0m or greater in depth, the laterals shall be provided with controlled settlement joints / riser sections.

Commercial/ industrial/ institutional services shall be sized based on intended use, minimum 150 mm dia. at 2% minimum grade and inspection maintenance holes at property line.

Sanitary sewer service laterals shall be provided with a 200 mm dia. vertical PVC DR35 cleanout / inspection port brought to the surface at the property line with a PVC 125 x 125 x 200 tee. A 1.5 m length of 125 mm dia. pipe shall be extended from the tee into the private property, capped with a watertight end fitting. The service termination is to be marked with a green painted / marked 2 x 4 that extends to grade all as per the Town of Wasaga Beach Sanitary Sewer Service Connection Detail, Town Std. Dwg. No. 12A.

The designer shall try to avoid locating sanitary sewer service cleanouts within the driveway wherever possible. Where necessary to locate services in or within 0.5m of a driveway / hard surface, cleanouts shall be equipped with a cast iron lid complete with flexible coupler as per Standard Drawings No. 12A.

Following service installation inspection by the Building Department and prior to the final lot grading inspection, the top of the cleanout port will be adjusted by the builder to be flush with finished boulevard grade adjacent to property line and shall be capped with a detectable metal cap.

A final visual inspection of the interior of all sanitary service cleanout / inspection ports is to be conducted by Public Works prior to municipal assumption. The developer's representatives are to first inspect all ports to confirm they are in acceptable condition prior to contacting Public Works with minimum 48 hours notice to request the final inspection. Should Public Works forces observe any deficiencies within the cleanout / inspection ports, the Developer will be responsible for all repairs. Following repairs of deficiencies, Public Works shall attend for a subsequent inspection to confirm repairs are acceptable. The developer will be charged back the costs associated with any / all subsequent inspections following deficiency repairs. Developers are advised to commence this process at minimum two to four months in advance of anticipated assumption.

10.6 Miscellaneous

The Town shall not be held responsible for any costs arising out of the construction of sanitary sewers for the development.

Upon completion of the work, and prior to the issuance of Building Permits, Sanitary Sewer Record Sheets shall be provided in a form similar to the water service requirements in Section 9.8.

All sewers and Maintenance holes must be inspected and flushed prior to Municipal assumption and in accordance with Appendix B of these Standards.

11. SANITARY SEWAGE PUMPING STATIONS

11.1 General

1. Revised horizontal curve information.
2. There are four major types of sewage pumping stations that the designer may consider for site specific conditions: submersible, wet well/dry well, suction lift and screw pump.
3. The following are the standard specifications for submersible sanitary sewage pumping stations (submersible pumps located in the same below-grade chamber into which the wastewater flows) to be installed and connected to the Town of Wasaga Beach sanitary sewer collection system.
4. For the elements in common these standards also apply to all types of sewage pumping station; however additional standards referencing Special Considerations for the other types of sewage pumping station in the current MOE guidelines also apply to those types of pumping stations.
5. In addition to the standards included here, all sewage pumping stations must be designed in accordance with current MECP criteria.
6. Submersible sanitary sewage pumping stations shall consist of a wet well, sewage pumps, control systems, electrical systems (normal and emergency), superstructures, site security, grading and access.
7. The developer shall be responsible for extending all necessary utilities to the pump station site (water, electrical, gas, phone, etc.).
8. The design of a pumping station requires a review of the components of the system to ensure that the system is safe to operate, with access ladders, hoists for lifting pumps, lighting, ventilation to remove dangerous gases and security for the electrical system being among the major safety items to be considered.

11.2 Station Capacity

Sewage pumping stations shall be able to pump the design peak instantaneous sewage flows and be capable of upgrading to handle future peak flows from the ultimate tributary area with minor modifications (e.g. pumps, motors or impeller changes).

11.3 Feasibility and Site Considerations

Sanitary sewage pumping stations shall only be considered when gravity collection and disposal of sewage is ruled out as impractical. The following shall also be reviewed when considering the site location of a sewage pumping station:

- The structures, electrical and mechanical equipment shall be protected from physical damage by the 100-year design flood event. Sewage pumping stations shall remain fully operational and accessible during the 100-year flood event. Regulations/requirements of municipalities, provincial and federal agencies regarding flood plain obstructions must be considered.
- The pumping station shall be readily accessible by maintenance vehicles during all weather conditions, be located off the traffic way of streets, have access hatches with locks and have security fencing.
- Geotechnical review and attendant impacts on feasibility (e.g. rock or high water table).
- Natural and other aesthetic features at the site and consequent station structural, architectural and landscaping design so as not to detract from the surrounding area.
- Odour impacts, mitigation and control.
- Noise impacts, mitigation and control.

11.4 Design Report

All sewage pumping station plan submissions shall include a Design Report with the following information:

- Title Page which includes subdivision name, Legal Description and/or Municipal Address, date, developer/owner's name and engineering firm preparing the plans.
- Sewer System Information as follows:
 - Introduction
 - Type, location and size of development
 - Number of and range in size of lots to be developed
- Existing Sewer System
 - Location and type of gravity system the force main will discharge into.
 - State whether the entire development will be serviced by the proposed phase or if several phases will be involved.

- State the number of lots this phase will encompass initially and finally if future phases are to be constructed.
- Listing of results from the design calculations to be provided in the following order:
 - Number of lots or buildings
 - Population equivalent
 - Average daily flow (ADF) in L/s
 - Peak flow (PF) in L/s
 - Volume of the wet well
 - Static head
 - Total dynamic head
 - Submersible pump selections (manufacturer, model number, size, kW, RPM, phase and capacity)
 - Total cycle time for ADF (fill time plus pumping time)
 - Total cycle time for PF (fill time plus pumping time)
 - Size and length of force main
 - Velocity maintained in force main
 - Force main retention time (at initial and design flows)
 - Maximum force main operating pressure
- Cost Analysis
 - Consultant shall complete a cost analysis of the construction, operation, maintenance and life cycle costs over a 50-year period. These costs shall be compared with a gravity sewer alternative. Operations and maintenance costs include labour, electrical, equipment replacement, building, operation and routine maintenance.
 - The gravity sewer cost comparison is not necessary if the gravity sewer alternative would include sewer installed at depths greater than 6.5 metres.
- Pump information including pump performance curves, make and model.
- Leakage testing specifications including testing methods and leakage limits.

11.5 Structures

1. Where more than one sewer enters the site, a junction maintenance hole shall be provided to allow for one inlet into the wet well.
2. A by-pass connection is to be provided in the design / construction to allow the pump station to be taken off line for applicable maintenance works.
3. Where a bar rack is required, preceding the pumps, a mechanical hoist must be provided and mechanical cleaning of the bar rack is required (bar rack generally not required for submersible pumping stations).
4. Dry wells, including their superstructure, shall be completely separated from the wet well and common walls must be gas tight.
5. Safe access for persons wearing self-contained breathing apparatus shall be provided.
6. Screens and other equipment located more than 1.2 metres deep in wet wells shall be provided with stairway access.
7. Wet wells greater than 5.0 metres deep shall be provided with safety platforms.
8. All stairways and walkways shall be properly designed with guardrails.
9. Confined spaces shall be minimized.

11.6 Submersible Pumps

1. Pumps and motors shall be designed specifically for raw sewage use. Pumps shall be manufactured by Flygt or as approved by the Town.
2. Pump selection shall take into account the availability of local repair service, as well as the manufacturer's experience and history in the design and selection of pumps for raw sewage use.
3. Pump removal shall include an engineered hoist and pumps shall be readily removable and replaceable without personnel entering or dewatering the wet well, or disconnecting any piping in the wet well and without interfering with the continued operation of the remaining pumps.
4. Multiple pumps shall be provided. Where only two pumps are provided, they shall be the same size. The pumps shall be capable of providing a firm capacity with the largest pump out-of-service equal to the design peak hourly flow.

5. The designer must ensure that all pumps are subjected to hydrostatic and operating tests performed by the manufacturer.
6. Pump impellers shall be of non-clog design and capable of passing spherical solids of up to 80 mm in diameter.
7. Pump suction and discharge openings shall be a minimum 100 mm in diameter.
8. Each pump shall be equipped with flush valves for aeration and suspension of grit and solids in the wet well; alternatively recirculation pipes or mixers shall be provided.
9. Each pump shall be equipped with a time totalizer and provision for automatic or manual alteration of the lead pump.
10. Pumping station designs shall be based on system-head calculations and curves for three conditions using Hazen-Williams factor "C" as follows:
 - a. Low sewage level in the wet well, C = 120
 - b. Median sewage level over the normal operating range in the wet well, C = 130
 - c. Overflow sewage level in the wet well, C = 140
11. System-head curve (b) (normal operating range) shall be used to select the pump and motor; the pumps shall be able to operate satisfactorily over the full range (intersections of system-head curves (a) and (c) with the selected pump curve).
12. Pumping stations discharging directly to a sewage treatment plant or another pumping station shall be equipped with variable speed drives.

11.7 Wet Wells

1. Divided wet wells, properly interconnected to facilitate repairs and cleaning, shall be provided for all pumping stations with firm capacities in excess of 100 L/s and in smaller stations where continuity of operation is critical.
2. Wet wells are to be of adequate size to suit equipment space, operator access requirements and active volume considerations.
3. To minimize dead storage volume, the depth from the "pump off" level to the floor of the wet well shall be kept to the minimum recommended by the pump manufacturer.

4. Wet wells must be small enough to minimize the total retention time (time sewage is held in the wet well and any rising force main) while also large enough to control the frequency of pump starts, as follows:
 - Maximum retention time in the wet well should not exceed 30 minutes for the design average daily flow rate (unless the station is designed to provide flow equalization).
 - Total retention time in the wet well and force main shall be kept to a minimum (generally less than 4 hours) to avoid anaerobic fermentation and the resultant production of odorous, hazardous and corrosive gases (alternatively, provisions must be made to control anaerobic conditions).
 - For pumping stations with 50 kW or smaller pumps, the wet well shall be large enough to limit the cycle time to no less than 10 minutes for each pump; for larger pumps, the pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycle times.
5. Other factors that shall be considered in wet well sizing include dimensional requirements to avoid turbulence problems, vertical separation between pump and control points, sewer inlet elevation, capacity required between alarm levels and basement flooding and/or overflow elevations, and the number of and horizontal spacing between pumps.
6. The minimum surface plan area of a wet well shall be 4.9 square meters.
7. Equipment such as access hatches, ladders, service platforms, guards, grates and handrails shall be constructed of a suitable material when exposed to wet and/or corrosive conditions.
8. Wet wells shall be arranged and benched (minimum 1:1 sloped wet well floor to hopper type bottom) to limit dead spaces where solids can accumulate and to provide smooth, unobstructed flow to the pump suction influence zones, with the horizontal area of the bottom being no larger than necessary for the proper installation of the pump.
9. The cross-sectional area of the wet well above the benching shall be constant for the full depth of the wet well.
10. Access to the wet well shall always be from the outside, with an access ladder provided from the top of the slab to the service platform and a separated ladder from the platform to the bottom of the well.
11. The opening to the wet well (minimum 750 mm x 900 mm, or 900 mm diameter) shall be provided with a cover with a lock and pry lip and safety rail around the access, shall be flush with the vertical wall of the wet well and shall be on the wall giving access to float controls, bubbler lines and similar equipment, without the necessity of entering the wet well.

12. All bolts, nuts, other fasteners and piping used in the wet well areas, including platform, chain and pump lifting chain, shall be stainless steel.
13. All supports, brackets, gratings, ladders and other structures shall be of corrosion resistant materials.
14. All-aluminum doors or hatches are required for access to the wet wells.
15. All wet wells to be equipped with DBI SALA fall arrest pockets for confined space entry.

11.8 Valve Chambers or Dry Wells

1. Required valves shall be located in a separate valve chamber or a dry well, with provisions for draining accumulated water from the chamber or dry well.
2. Check valves that are integral to the pump and can be removed from the wet well need not be located in a separate structure.
3. Valve chambers may be dewatered to the wet well through a drain line with a gas and water tight valve.
4. Dry well floors shall be sloped toward a sump, equipped with a sump pump.
5. A sump pump equipped with dual check valves shall be provided in the dry well to remove leakage or drainage with discharge above the high water level of the wet well.
6. Pump seal leakage shall be piped or channeled directly to the sump and the sump pump shall be sized to remove the maximum pump seal water discharge that would occur in the event of a pump seal failure.
7. The air bubbler line (if used) and sump pump discharge shall cross between the dry well and wet well below the frost line. All openings between the dry well and wet well shall be sealed to prevent gases from entering the dry well.
8. The capacity of any water service must not exceed the sump pump capacity and any water service provided to the dry well shall be equipped with a suitable backflow preventer.
9. Suitable access and lifting/moving equipment shall be provided for the maintenance/ repair/removal of sump pumps, valves, fittings, etc. located in the dry well.
10. All dry wells to be equipped with DBI SALA fall arrest pockets for confined space entry.

11.9 Piping and Valves

1. Shutoff and check valves shall be placed on the discharge line of each pump, with the check valve preferably placed horizontally between the shutoff valve and the pump.
2. Shutoff and check valves shall be capable of withstanding normal pressure and high-pressure transients and shall be operable from the floor level and accessible for maintenance (outside levers shall be provided on swing check valves).
3. Pump discharge piping shall be a minimum of 100 mm diameter and designed with the following features:
 - Velocities at design peak flows in the 0.8 to 4.0 m/s ranges (preferably in the low end of the range);
 - Flanged, concentric increaser;
 - Spacer 150 to 300 mm long with one flanged end and one grooved end for Victaulic coupling;
 - Elbows (as necessary);
 - Flanged check valve;
 - Flanged gate valve;
 - Riser pipe;
 - Magnetic or other type of suitable flow meter and recorder (or pump times for small, constant speed stations where accuracy or flow measurement is not critical – 3 timers minimum, one for each pump and one for pumps operating in parallel);
 - 150mm bypass pipe and valves located downstream of meters and control valves.
4. Flow meters shall be provided by Endress & Hauser, or other approved by the Town.
5. All flow meters, valves, etc. within the building structure shall be above grade.

11.10 Ventilation

1. All wet wells and dry wells shall be properly ventilated, with no interconnection between the wet well and dry well ventilation system and no venting of wet well air into a building.
2. Ventilation, heating and dehumidification equipment shall be provided to protect electrical control equipment from excessive moisture.

3. Wet well ventilation may be either continuous or intermittent, with continuous ventilation providing at least 12 air changes per hour and intermittent ventilation providing at least 30 air changes per hour, based on 100 per cent fresh air.
4. Natural ventilation of small pumping station wet wells is acceptable, utilizing two 100 mm diameter vent pipes with gooseneck tops and insect screens, extending 900 mm above the slab of the wet well (with one vent extending within 0.3 m of the crown of the inlet sewer and the other terminating on the underside of the roof slab).
5. Where a wet well ventilating fan is provided the air change requirements shall be oriented to blow fresh air into the wet well at a point 900 mm above the alarm level.
6. Dry well ventilation may be either continuous or intermittent, with continuous ventilation providing at least 6 air changes per hour and intermittent ventilation providing at least 30 air changes per hour, based on 100 per cent fresh air.
7. Mechanical ventilation of dry wells in accordance with Ministry of Labour requirements must be provided.
8. In dry wells over 4.6 m deep, multiple inlets and outlets shall be provided, fine screens or other obstructions shall be avoided and dampers shall not be used on exhaust or fresh air ducts.

11.11 Electrical

1. Submersible pumps shall operate at 3 phase power.
2. Pump motors shall be equipped with soft starter and across-the-line starter option with pilot lights (run, fault), hour meters, amp meter and HOA switch.
3. Pumps shall have plug and receptacle on flexible cable with serviceability under conditions of extra hard usage and shall meet the requirements of the Ontario Electrical Safety Code standards for flexible cords in sewage pumping stations.
4. All flexible cable shall be provided with corrosion-resistant terminal fittings, watertight seal and separate strain relief, and shall be designed to facilitate field connecting.
5. Electrical supply, control and alarm circuits shall be designed to provide strain relief and to allow disconnection from outside the wet well, with terminals and connectors protected from corrosion by location outside the wet well or through use of watertight seals.

6. The motor control centre shall be located outside the wet well, be readily accessible and be protected by a conduit seal or other appropriate measures meeting the requirements of the Ontario Electrical Safety Code, to prevent the atmosphere of the wet well from gaining access to the control centre, with the seal located such that the motor can be removed and electrically disconnected without disturbing the seal.
7. When exposed to weather the motor control centre shall meet the requirements of weatherproof equipment of the National Electrical Manufacturers' Association (NEMA) 3R or 4.
8. Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, control circuits) in raw sewage wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapours may be present, shall comply with the Electrical Safety Code (O. Reg. 164/99) under the Electricity Act, 1998 for Zone 1, Group D locations.
9. Installation of electrical equipment and wiring located within the wet well shall be avoided unless it is essential that it be located in the wet well. All junction boxes shall be installed outside the wet well and all wire access holes shall be sealed to prevent migration of gases through the wet well walls.
10. Equipment located in the wet well shall be suitable for use under corrosive conditions.
11. A fused disconnect switch located above ground shall be provided for the main power feed for the pumping station which, if exposed to weather, shall meet the requirements of weatherproof equipment NEMA 3R or 4.
12. Lightning and surge protection shall be included.
13. A 110-volt power receptacle shall be provided inside the control panel for stations that have control panels located outdoors.
14. Ground Fault Circuit Interruption (GFCI) protection shall be provided for all outdoor outlets and for indoor outlets located near eye washes or other area susceptible to dampness.
15. Interior and exterior lighting to be LED

11.12 Mechanical

1. Frost free hose-bib located at exterior near wet well hatches.
2. Sink, hot water tank and eyewash station.

11.13 Controls and Alarms

1. Instrumentation and control systems must be designed to the satisfaction of the Town. The method of communication is to be determined in consultation with the Town.
2. A flood alarm shall be supplied in any dry well.
3. Supervisory Control and Data Acquisition (SCADA) shall consist of an integrated hardware and software system to provide full control and monitoring of the pumping station, with the pumping station designed for manual configuration and then automated with SCADA.
4. Level control shall be provided by Siemens Sitrans P pressure measurement system or as approved by the Town. Float backup shall be provided for high level alarm.
5. Level control sensing devices shall be so located as not to be affected by turbulent flows entering the well or by the turbulent suction of the pumps.
6. Float controls shall be at least 300 mm vertically and 450 mm horizontally apart and positioned against a wall away from turbulent areas.
7. High sewage level should normally be at least 300 mm below the invert of the inlet sewer, however where there is no danger of basement flooding and/or solids deposition, normal high sewage level may be designed to be above the invert of the inlet sewers to minimize pumping costs and wet well depth.
8. Low sewage level should be at least 300 mm or twice the pump suction diameter (D) above the centre line of the pump volute.
9. The bottom of the wet well shall be no more than D/2 and no less than D/3 below the mouth of the flared intake elbow.
10. Provision shall be made to automatically alternate the pumps in use.
11. Flow monitoring and data logging shall be accomplished with a magnetic flow meter.
12. Alarm systems with standby power source are required for all pumping stations.
13. The alarm shall be activated in cases of power failure, dry well sump and wet well high/low water levels, pump failure, unauthorized entry, high/low temperature, air quality (H₂S, CO, O₂ and Flammable), generator fault/failure to run, transfer switch, utility power fail, level transducer fault or any other cause of pump station malfunction.

14. Pumping station alarms shall include identification of the alarm condition and shall be transmitted to the Wasaga Beach Water Pollution Control Plant.

11.14 Standby Power

1. All sewage pumping stations must be provided with an automatic generator for standby power in case of power failure (for small pumping stations, a quick connection for a portable generator may be considered by the Town). Both diesel and natural gas fired generators shall be considered. The capital/operating costs and reliability of both options shall be reviewed with the Town before making a final selection.
2. Standby generators shall be sized to provide adequate power to start and continuously operate all connected loads, including pumps, lighting, ventilation and other auxiliary equipment necessary for the safe and proper operation of the sewage pumping station.
3. The generating equipment shall be capable of operating all pumps during emergency situations, however operation of fewer pumps during auxiliary power supply will be considered if an evaluation based on design peak hourly flows, anticipated length of power outage and storage capacity indicates such operation is justified.
4. Unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating, special sequencing controls shall be provided to start pump motors.
5. Where permanent standby generating equipment is provided, the standby generating equipment shall include automatic (i.e. automatic transfer switch) and manual start-up and load transfer.
6. Where a connection for portable generating equipment or manual transfer is provided, sufficient storage capacity with alarm system shall be provided to allow time (minimum 2 hours) for detection of the pumping station failure and time to transfer, setup and connect portable equipment.

11.15 Emergency High Level Overflow

1. A controlled, high-level wet well overflow to supplement alarm systems and emergency power generation shall be provided, where possible.
2. Where such overflows are proposed, MOE shall be contacted to assess the potential impact on public water supplies or other critical water uses and determine the necessary treatment and storage requirements.
3. Storage/detention tanks or basins, if provided, shall be made to drain to the pumping station wet well.

11.16 Commissioning

1. Commissioning testing of sewage pumping stations, including but not necessarily limited to the following, shall be completed and shall be certified by a Professional Engineer:
 - Testing of station performance over the full range of flows, including transitions between pumps.
 - Pump performance test demonstrating the pumping efficiency, capacity and function in accordance with the pumping station design report.
 - Continuous high frequency (minimum 1 Hz) pressure monitoring during testing procedure and for 24 hour period under normal conditions using portable equipment.
2. A five (5) Day Test is to be completed as part of the initial commissioning and after any subsequent upgrades (i.e. installation of new or larger pumps).
 - The Sewage Pumping Station shall be operated for a 5-day continuous period (commencing on a Monday) under the direction of the Developer's Engineer and the operating staff. Appropriate personnel, including mechanical and electrical superintendents shall be available to assist in such operation.
 - The start-up period shall be extended as required to ensure that a continuous 5-day operating period (excluding weekend) has been attained.
 - A proposal on how the 5 day test will be conducted shall be provided by the Developer's Engineer in advance of the testing for review and approval by the Town.
 - The proposal shall also take into consideration, odor logging and downstream capacity/ constraints.
3. Reporting on commissioning results complete with plots of pressure and flow during the testing procedure and all relevant interpretation and explanations, including discussion of impact of operations and life cycle costs.
4. Operation and Maintenance Manuals provided to the Town and/or Operating Authority.

11.17 Assumption

1. The Owner shall maintain the facility and provide maintenance reports on an annual basis (based on monthly inspections) until assumption of the facility by the Town.

2. The Town will not assume the facility until a minimum of 80% of the dwelling units in the final applicable phase / stage are occupied and until such time as the Town is prepared to assume all other municipal aspects of the subdivision. It should be clearly detailed that the developer shall be fully responsible for the full 100% cost to operate the sewage pump station (including OCWA and Town costs) until the facility is assumed by the Town.
3. Prior to the pumping station assumption by the Town the following shall be required:
 - Wet well cleanout, unless the annual was completed within the last six (6) months.
 - Pull out all pumps for inspection and repairs (if any).
 - Engineering certification in relation to the overall pumping station construction and performance in writing, signed and stamped by a Professional Engineer.
 - As-constructed drawings, 3 copies of operation and maintenance manuals (to have been provided prior to commissioning), the original design report and approved shop drawings for all equipment, prior to final inspection.
 - Copy of close-out permit from ESA.
 - Installation test reports of feeders, pumps, etc.
 - I/O point-to-point checklists.
 - All schematic drawings and manuals.
 - Documentation for load bank testing of generator set, including oil sample testing report.
 - Confirmation that “Normal” and “Emergency” power is in phase and demonstration of the generator set operation from Normal to Emergency and back to Normal mode, proving louvre operation.
 - Engineering certification that pump rotations are correct.
 - All electrical enclosures shall be clean and operational.
 - Confirmation of capacitor sizing versus pump motor sizing and power factor testing with and without load (if applicable).
 - Demonstration that alarms function locally and remotely.
 - Demonstration of a complete pump cycle, including alternation of pumps as well as initiating a pump failure to prove lag pump backup operation.
 - Pump servicing reports.
 - Spare parts and warranties information package.

- 11" x 17" plastic laminate fact sheet on the pumping station including lowest basement elevation, location of force main outlet to gravity system and bypass invert elevation, mounted adjacent to the control panel.
- 11" x 17" plastic laminate with process flow diagram indicating valves and key interlocks.
- Generator fuel system 3rd party TSSA inspection report.

12. STORMWATER MANAGEMENT

12.1 General

Stormwater quantity and quality must be satisfactorily addressed on all projects.

The design requirements of the Town of Wasaga Beach including the requirements under the Town's CLI-ECA approval, Ministry of Environment, Conservation and Parks and Nottawasaga Valley Conservation Authority and any other applicable agencies will apply.

Design and system selection must comply with the Ministry of the Environment Storm Water Management, Planning and Design Manual (latest edition).

Generally, stormwater run-off shall be accommodated by a system of catch basins, Maintenance holes and storm sewers. The storm drainage system is to be designed to limit flood damage and hazards for non-frequent storm conditions, to provide a reasonable level of convenience and safety for pedestrian and traffic use by removal of lot and street surface run-off during frequent storm conditions and to prevent the impairment of water quality and disturbance to natural streams.

In all cases the designer must have regard for impacts on receiving watercourses, riverfront and public beach areas.

The developer's design engineers are encouraged to consider use of low impact development (LID) techniques for stormwater management in lieu of and/or in combination with end-of-pipe designs where reasonable / feasible. LID measures will be considered by the Town in consultation with the Nottawasaga Valley Conservation Authority on a case-by-case basis, particularly with regard to the downstream receiving Town owned property capacity to convey stormwater flows in the event of LID measures failing. Measures to be considered shall include but not be limited to underground pipe storage, infiltration galleries, low gradient grassed infiltration swales, bio-retention swales, rain gardens, permeable pavers / surfaces and/or other industry standard / acceptable means of lot level control for stormwater quantity and quality. The designer should review the NVCA Stormwater Technical Guide for LID design considerations.

An Operations & Maintenance Manual for all Stormwater Management facilities shall be provided under separate cover, as outlined in Appendix E, complete with a Stormwater Management Facility Specifications Summary, as outlined in Appendix D.

12.2 Service Areas

The system shall be designed to service all areas within the subdivision to their maximum future development in accordance with the Official Plan. Allowance shall be made for inflows from the appropriate adjacent drainage areas and outlets to the appropriate adjacent sewer or watercourse. This may require assumptions to be made for post development conditions of adjacent future development lands that outlet to the stormwater management facilities. The exact location and service requirements for connecting sewers or channels to adjacent sewers or areas shall be approved by the Town Engineer.

12.3 Materials

All materials shall be CSA certified and supplied in accordance with specifications and the Town approved materials list.

12.4 Drainage Easements/ Blocks

If the required drainage works from municipal lands or lands to be dedicated to the municipality result in drainage through other lands, all such work shall be carried out by means of a storm drain and appurtenances of sufficient size for the drainage requirements of the area. The design shall be based on the run-off to be expected from the area when completely developed with buildings, pavements, sidewalks and parking areas, and such design shall be approved by the Town Engineer.

The Developer will obtain at no expense to the Town by deed or grant of easement in a form approved by the Town Solicitor, any necessary rights in land for drainage through lands other than its own. The Town shall be protected or indemnified by the Developer from all claims or actions of any nature or kind whatsoever arising from the use of such lands until such time as the services installed therein become vested in the Town in the manner herein before provided.

Lands designed as overland flow routes, drainage corridors, or spillways shall be deeded to the Town as municipal blocks. These drainage blocks must be designed to convey the 100-year return frequency storm event and may be required to accommodate the Regional (Timmins) Storm event. The minimum width of these blocks is 6.0 metres. The design of drainage blocks must be verified using HEC-RAS software or approved equivalent.

To ensure the integrity of rear yard drainage and overland flow systems, 3.0 m wide drainage easements may be required over the rear of all lots, and where possible, split equally on either side of the adjoining lots.

An Overall Comprehensive Plan of Easements is required with design submissions.

12.5 Stormwater Management Report

The Stormwater Management Report setting out the existing and proposed drainage system shall be submitted for approval to the Town Engineer. The report may also have to be approved by the Ministry of Environment, Conservation and Parks, the Ministry of Natural Resources and Forestry, and the Nottawasaga Valley Conservation Authority. This report shall provide for all criteria within this section of the Engineering Standards and among other things shall pay particular attention to the following:

- a. Possible areas within the subdivision not having suitable drainage outlets as well as proposed mitigation measures to ensure that a suitable outlet is provided for each area.
- b. The possible obstruction of natural drainage patterns caused by development and buildings, and proposed mitigation measures as necessary.
- c. Details of a suitable drainage outlet(s) from the subdivision.
- d. Natural watercourses entering the subdivision and adjacent lands draining to the subdivision and protective measures incorporated into the design to preserve these features.
- e. Accumulated flows at all proposed drainage structures.

The report shall include a plan showing the major overland system design. When the Rational Method is used, the relevant figures are to be entered on Storm Sewer Design Sheets, which are to be included as part of the drawing set in the detailed drawings submissions. When computer modelling is used, the report shall indicate model parameters and assumptions used to give outflow hydrographs and hydraulic grade line levels (for 100-year storm event) on plan / profile drawings where applicable.

This report shall provide recommendations for dealing with all drainage that affects the design of drainage works for the development and such recommendations, when approved by the Town Engineer shall be incorporated into the detailed Engineering Design Drawings.

12.6 Design Flows

Potential increases in run-off rates resulting from new development shall be controlled as required by the Town. Where downstream constraints exist such as those established by the Town or the Nottawasaga Valley Conservation Authority, the drainage report shall demonstrate how run-off rates will be controlled to satisfy those constraints. In the absence of such constraints, the post-development flows from a 5-year return frequency storm shall not exceed the flows for pre-development conditions for the same storm at the outlet for the minor system unless it is demonstrated to the satisfaction of the Town Engineer and Nottawasaga Valley Conservation Authority (as applicable) that uncontrolled

flows will have no adverse effects. Similarly, for the major system, post-development run-off from a 100-year return frequency storm shall not exceed the pre-development run-off for the same storm.

The designer must also demonstrate that the Regional (Timmins) Storm event can be safely conveyed to a positive outlet via overland flow routes including drainage blocks and/or municipal rights-of-way.

12.7 Methods of Computation

Pre-development peak flows shall be computed by a method such as the Rational Method or by an approved equivalent or more conservative computer model. Watershed definition and pre-development flows must be approved by the Town Engineer.

Preliminary estimates of post-development flow rates may be computed using a method such as the Rational Method.

For all systems and for the design of surcharged sewers and detention facilities, the latest version of the computer model SWMHYMO or OTTHYMO is recommended. Other hydrograph methods may be considered if it is demonstrated that the results are comparable to those from OTTHYMO. Post-development design flows may be determined using the Rational Method only where the design area is less than 40 hectares and run-off control facilities are not considered.

The Rational Method and the Town's intensity-duration-frequency (IDF) regression equation for rainfall intensities are to be used for storm sewer pipe sizing calculations, which must be approved by the Town Engineer. All storm sewers shall be designed according to the Rational Formula:

$$Q = \frac{CiA}{360}$$

where,

- | | | |
|---|---|---|
| Q | = | design flow in (m ³ /s) |
| C | = | site specific runoff coefficient (unitless) |
| A | = | drainage area (ha) |
| i | = | rainfall intensity (mm/hr) |

The rainfall intensity shall be calculated in accordance with the following:

Town of Wasaga Beach IDF Curve Parameters – Adjusted for Climate Change

Parameter	Return Period					
	1:2 Year	1:5 Year	1:10 Year	1:25 Year	1:50 Year	1:100 Year
A	586	765	901	1084	1171	1263
B	2.58	2.44	2.54	2.74	2.49	2.33
C	0.742	0.739	0.741	0.746	0.741	0.737

1. Rainfall Intensity, i (mm/hr) = $a/(t_c+b)^c$, where t_c is time of concentration in minutes.
2. Parameters based on MTO IDF Curve Look-up Tool 2010 base data (Latitude – 44.520833, Longitude -80.012500).
3. Climate change adjustment based on a review of literature, the IDF intensity values were increased by 20% to account for climate change.

$$i = \frac{a}{(t_c+b)^c}$$

where,

i = rainfall intensity (mm/hr)

t_c = time of concentration (minutes)

a, b, c = a function of the local intensity duration data (adjusted for climate change)

Where the first leg of a residential storm sewer system is sized using the Rational Method, the initial inlet time shall be 15 minutes for the 5-year storm. This shall apply where the upstream drainage area does not include large open space areas, in which case the inlet time of concentration is to be calculated in accordance with the Ministry of Transportation Drainage Manual. Where peak flows from external areas enter a subdivision sewer system, the more critical case based on either the time of concentration including the external area, or the time of concentration excluding the external area shall be used. Actual velocities of computed peak flows shall be used to estimate time of concentration.

A design evaluation of inlet times must be submitted to justify inlet times different from those specified above, especially in the cases where the sewer is designed for certain surcharge conditions for larger storms and where the sizing is optimized for both situations. Such an evaluation should be approved by the Town Engineer prior to submission of design drawings.

Run-off coefficients for the Rational Method are given by component of surface treatment and by Land Use. The Land Use values provided are intended as a guide only. The designer is encouraged to develop an appropriate coefficient using a composite calculation, which is subject to the approval of the Town Engineer.

<u>Description</u>	<u>Runoff Coefficient 'C'</u>
Sodded area under 7% slope	0.25
Sodded area over 7% slope	0.35
Paved Area with Storm Sewer	0.90
Paved Area with Sodded Swales (Dependent on Relative Area of Swale To Paved Area and On Type of Swale)	0.30 - 0.85
Gravel Area	0.75
Roof Area	0.90
Flat Roof Area With Detention Hoppers	0.10 - 0.50
Residential Lots:	
Single Family	0.30 – 0.45
Semi-detached	0.45 – 0.60
Row / townhouses	0.50 – 0.70
Commercial / Non-residential Lots With Roof Leaders Or Pavement to Sodded Areas	0.40 - 0.85
Unimproved Open Space Under 7% Slope	0.25
Unimproved Open Space Over 7% Slope	0.30

In addition to the above parameters, when developing a “weighted ‘C’ value”, the designer shall consider the allowable percent imperviousness as outlined in the Town’s Zoning By-law. The following is a summary of the maximum allowable imperviousness at full build-out of all lots under each type of zoning:

Zone	Lot Coverage (max.)	Landscaped Open Space (min.)	Maximum impervious build-out
R1	35%	30%	70%
R2	40%	30%	70%
R3	35-45% (per unit type)	30%	70%
R4	35%	35%	65%
CD	(none)	5%	95%
CS	(none)	10%	90%
CL	40%	(none)	100%
CR	(none)	20%	80%
CT	(none)	(none)	100%
CA	(none)	10-35%	65-90%

For estimating flows from storms larger than the 5-year return storm the run-off coefficients should be increased to account for the increase in run-off due to saturation of the soil, with the estimate becoming less accurate for larger storms. Coefficient for the larger storms can be derived as follows:

$$C_{10} = C_5$$

$$C_{25} = C_5 \times 1.1$$

$$C_{50} = C_5 \times 1.2$$

$$C_{100} = C_5 \times 1.25$$

Manning's Formula shall be used to determine the capacity of the sewers. For concrete and PVC sewers, a roughness co-efficient of 0.013 shall be used. For corrugated pipe used as culverts, not storm sewers, roughness coefficient of 0.024 shall be used.

In general, a storm sewer system shall be designed to convey not less than the 5-year return frequency storm without surcharge. Where underground storage is proposed, a hydraulic grade line analysis of the storm sewer system under 1 in 100-year storm condition is required. The hydraulic grade line shall be shown on a profile drawing in the Storm Water Management Report and on Final plan / profile drawings. Surcharged design may be considered for higher design levels where suitable methods are used, subject to the approval of the Town Engineer.

12.8 Minor Storm System

Storm sewers and culverts are to be designed for at least a 5-year return frequency storm without surcharge where adequate overland drainage capacity exists to satisfy the major system requirements.

An exception to this may be considered when the major system is inadequate either because there is no outlet for overland flows or there is insufficient surface detention potential. Under these circumstances and subject to approval by the Town Engineer, the sewer system may be designed to carry as much flow as necessary to achieve the minimum 100-year level of protection for the major system as specified below.

12.9 Major Storm System

Run-off rates in excess of the design capacity of the minor system shall be conveyed via streets and swales to a safe outlet. The combination of overland flow system and minor system shall be designed for a minimum 100-year return frequency storm, to prevent flooding of private property with maximum level of road flooding and surface detention as follows:

LOCATION	STORM RETURN FREQUENCY (YEARS)		
	Under 25	25	100
Walkways and Open Spaces	Minor Surface Flow UP to 25mm Deep On Walkways	As Required for Overland Flow Outlets	As Required for Overland Flow Outlets
Collector and Industrial Roads	Within the Roadside Ditch or 1.0 m Wide in Gutter or 0.10 m Deep at Low Point Catch Basins	Up to Crown	0.10 m Above Crown
Arterial Roads	Within the Roadside Ditch or 1.0 m Wide in Gutter or 0.10 m Deep at Low Point Catch Basins	One Lane Clear	Up to Crown
Public Property	Minor Ponding in Swales or Ditches	No Structural Damage, Ponding in Flat Areas, No Erosion	No Structural Damage, Ponding in Flat Areas, Some Erosion
Private Property	Minor Ponding In Swales	No Structural Damage, Ponding In Yard Areas	No Structural Damage, Ponding in Yard Areas Below Building Openings - No Basement Flooding
Parking Lots	No Surface Ponding for 5-year return frequency or less	No structural damage, Max. Ponding depth 200 mm	No Structural Damage, Max. Ponding depth 200 mm.

Street grading must provide a continuous gradient to direct street flows within the right-of-way to a safe outlet at low points. Outlets can be walkways or open sections of roadways leading to parks, open spaces or river valleys.

12.10 Outfalls

Outfall structures to existing channels or watercourses shall be designed to minimize potential erosion or damage in the vicinity of the outfall from maximum design flows.

12.11 Stormwater Quantity Control

12.11.1 General

Where deemed necessary by the Town to reduce run-off increases and to meet identified downstream flow constraints, detention and/or retention facilities shall be provided for both the major and minor systems.

Land area set aside expressly for stormwater management facilities where it is not part of a privately owned facility (i.e. roof top storage or otherwise incorporated into industrial/commercial lands) shall be designated as a "stormwater detention/retention site".

All detention/retention facilities dedicated by the Developer to the Town shall not be considered as part of the park system.

All stormwater management facilities shall be provided with an outlet (overflow spillway) designed to accommodate a 100-year return frequency storm and/or the Regional (Timmins) storm event flow without failure. Suitable erosion protection shall be provided downstream of the outlet for all flow conditions. Operation during spring snowmelt or freezing conditions shall be investigated and any required changes shall be incorporated.

For private commercial developments, surface water infiltration systems are encouraged, utilizing existing granular soils conditions and having regard for seasonal high groundwater table.

12.11.2 Parking Lot Storage and Rooftop Storage (Commercial Development)

The Town does not recommend the use of rooftop storage for stormwater management. Continual functioning of flow control devices cannot be guaranteed and therefore, these methods of quantity control create a potential for flood damage. Where other options for stormwater management practices exist, it is the preference of the Town that alternatives to rooftop storage be used.

Rooftop storage will not be considered for any residential building including mixed residential / commercial use.

In the event that the Developer proposes rooftop and/or parking lot storage due to site conditions / restrictions, the following conditions shall apply:

1. The Developer must provide written acknowledgement that he is aware of the potential liabilities associated with parking lot and rooftop controls, and that the Municipality will not be held liable for any damages related to the installation, operation, modification or removal of proposed parking lot or rooftop controls.
2. Parking lot and rooftop storage systems must be registered on title to be binding on subsequent site owners as part of the Site Plan Agreement to ensure they cannot be removed or altered during future site alterations without the provision of adequate alternative storage, as approved by the Municipality.

Design Requirements for Parking Lot Storage

- Parking lot storage must be controlled by pipe size reductions within the storm sewer network, and preferably not through the use of orifice plate restrictors.
- Surface ponding is only allowable during storm events greater than the 1:5 year design storm. No ponding may occur for lesser storm events.
- The maximum allowable ponding depth within the parking lot is to be limited to 200 mm.
- The 100-year ponding elevation and storage volume provided at each ponding location must be shown on the Site Grading and Drainage Plan.
- No ponding is permitted within designated fire routes.

Design Requirements for Rooftop Storage

Where rooftop controls are considered, design submissions must indicate:

- The type of control to be installed (i.e., product name and manufacturer), complete with tamper-proof screening.
- The number and placement of proposed drains and weirs;
- Product specifications showing design release rates for each structure;
- The maximum ponding depth of 150mm, draw down time and detained volume at each structure; and the total release rate and detained volume for the roof.
- An emergency weir overflow be provided at the maximum design water elevation
- As part of the design submission, the engineer may also be requested to demonstrate that there is sufficient distance from the outlet structure to the closest watercourse such that the discharged flows will not adversely affect the temperature of the watercourse.

12.11.3 Underground Storage

The use of underground storage for stormwater management will be considered by the Town subject to the results and recommendations of a geotechnical investigation. For underground storage systems incorporating infiltration measures into the design, in-situ infiltration testing confirming the infiltration rate of the native soil is adequate is to be completed. Safety factors are to be applied to the infiltration rate as per the Low Impact Development Stormwater Management Planning and Design Guide prepared by CVC and TRCA, 2010 - versions 1.0. Also, a minimum 1.0 m separation from the invert of the underground storage system to the established seasonally high groundwater table is required for systems incorporating infiltration measures into the design. For any underground storage system, approval of the design from a geotechnical perspective (infiltration rates, hydrostatic uplift, cover requirements, etc.) is required from a Geotechnical Engineer.

12.12 Roof Leaders

Leaders are to be discharged to ground surface splash blocks and flows to be directed away from the building in such a way as to prevent ponding or seepage into weeping tile. In residential development, roof leader soakaway pits (see Town Std. Dwg. No. 11) may be required as part of the stormwater management design. No connections are to be installed directly to storm sewers.

12.13 Foundation Drains

The underside of footing elevation must be a minimum of 0.3 metres above the established seasonal high ground water table as determined by a Geotechnical Engineer.

Foundation drains shall be in accordance with the Ontario Building Code and connected to a sump pump, which is to be discharged to an at-grade splash pad overland.

In the event that the footings must be lower than the groundwater table elevation, the underside of the foundation drain / weeping tile shall be a minimum 300mm above the established seasonal high groundwater table elevation.

Foundation drains shall not be connected to sanitary sewers. In some cases, depending on site parameters, storm service laterals may be permitted, at the discretion of the Town Engineer, at which time the sump pump discharge shall be controlled as outlined in Town Std. Dwg. No. 21.

12.14 Stormwater Quality Control

The selection of Best Management Practices (BMP) for water quality control shall be applied. When selecting and designing BMP's, reference should be made to the Ministry of the Environment Stormwater Management Planning (SWMP) and Design Manual, latest revision.

The BMP selection process shall review all environment constraints and provide rationale for the selection of alternatives for a specific site as outlined in detail in the above noted MOE document.

In all cases, infiltration of stormwater from rooftops and grassed areas by using dry wells, infiltration trenches, buffer zones, grass swales, etc. shall be the primary consideration for stormwater quality control. Infiltration areas would be subject to the recommendations of a hydro-geological and soils investigation report. Run-off from roadways and parking lots must be treated prior to infiltration or discharge to a watercourse. For developments where infiltration is not possible or is limited, wet ponds shall be considered.

Oil grit separators (OGS) may be considered in isolated, in-fill situations as a means of stormwater quality control when used in conjunction with other SWMP methods in a "treatment train", in accordance with MOE SWMP manual guidelines. Acceptable OGS products include Stormceptor, and Echelon Environmental chambers.

12.15 Wet Pond Design Criteria

The wet pond shall be designed in accordance with the MOE Stormwater Management Planning and Design Manual; however, must incorporate the following municipal requirements:

- a. The side slopes shall be a maximum 5:1.
- b. Retaining walls will not be permitted along the perimeter of retention/detention facilities – all sides are to be sloped.
- c. The facility shall be constructed with a maintenance platform that shall be minimum 6.0m x 6.0m in size, paved or Turfstone surface and shall be constructed to an elevation higher than the springline of the inlet pipe to the pond. It is to be located such that standard maintenance equipment can access the forebay.
- d. The pond block shall be delineated from adjacent residential land uses with 1.5m high black vinyl chain link fence per Town Std. Dwg. No. 41 placed wholly within the pond block.
- e. All vertical drops around the pond, including the concrete headwalls, shall be fenced with a galvanized pedestrian handrail as per OPSD 980.101.
- f. Gates shall be provided for accesses to the maintenance platform and inlet and outlet structures as required.
- g. Permanent pool shall be equipped with a fountain aerator, in accordance with Town Std. Dwg. No. 18.
- h. A SWM Pond Landscaping Plan shall be provided. SWM facility

landscaping shall be designed by a Landscape Architect in accordance with Section 14: Landscaping of these Engineering Standards. SWM facility landscaping is to be designed to discourage growth of invasive and noxious weeds such as cattails to the satisfaction of the Town.

- i. Headwalls and vertical structures shall be concrete or stackable armour stone.
- j. Inlet and outlet pipe structures shall be concrete, PVC, or HDPE.
- k. SWM ponds shall be provided with a 3.0m wide maintenance access constructed of 50mm HL-4 hot mix asphalt over 200mm of compacted granular 'A' around the entire perimeter at the top of slope for safety purposes, for maintenance access around the pond and to form part of the pedestrian trail system. The access shall be provided from municipal road allowances and looped to avoid dead ends. The access shall be set back a minimum of 3.0 m from the nearest residential lot line.
- l. Complete the Stormwater Management Facility Specification Summary per Appendix D and include in the final Stormwater Management Report Operations and Maintenance Manual as required.
- m. The bottom of the sediment Forebay shall be hard surface (30MPa concrete or cable mat) to the satisfaction of the Town Engineer.
- n. Stormwater Management ponds shall be provided with warning signage per Standard Drawing No. 19. Warning signage is to be installed near pedestrian traffic routes or walkways, located within or adjacent to the SWM facility. The number and location of signs will be subject to approval from the Town Engineer on a site specific basis. All Signs to be installed prior to occupancy.
- o. For pond lining (as applicable), geosynthetic clay liners shall be used in lieu of native / natural clay soil material.
- p. The Operation and Maintenance Manual shall identify the minimum expected cleanout frequency for the sediment forebay, as well as identify the sediment depth that warrants the cleanout.

Prior to municipal assumption, the Developer shall be responsible to cleanout the SWM pond. Further, the Developer shall direct his engineer to update the Stormwater Management Facility Specification Summary after cleanout.

12.16 Municipal Drains

Where development proposals include any sort of alterations to a Municipal Drain, the developer is required to petition the Town in accordance with the Ontario Drainage Act. Regulations and specifications of the Ontario Drainage Act shall be strictly adhered to and the design specified by the Engineer's Report for the Municipal Drain shall be met.

13. STORM SEWERS

13.1 General

Storm sewers shall be provided to serve the whole of the development and shall give consideration to upstream future developments, as applicable.

Generally, storm sewer systems shall be designed in accordance with the Ministry of Environment and Ministry of Transportation Guidelines.

The storm sewers shall be connected to the Town's storm sewer system or discharged to a natural watercourse as approved by the Town.

The storm sewer system shall be designed by a recognized engineering method such as Rational Method using the 5-year Town rainfall intensity curve and a maximum time of concentration of 15 minutes at the inlet of the storm sewer system. This shall apply where the upstream drainage area does not include large open space areas, in which case the inlet time of concentration is to be calculated in accordance with the Ministry of Transportation Drainage Manual.

The minor drainage system (i.e. storm sewers) are to be designed to convey at a minimum the 1:5-year return frequency design storm peak flow with adjustments for climate change. The major drainage system (overland flow routes) are to be designed to convey the greater of the 1:100-year return frequency design storm (adjusted for climate change) or Regional Storm peak flow. If the combination of the minor and major drainage systems have insufficient capacity to convey the greater of the 1:100-year return frequency design storm (adjusted for climate change) or Regional Storm peak flow, the capacity of the minor drainage system should be increased such that the peak flow produced by the governing major storm event is safely conveyed to the downstream outlet.

The minimum flow velocity in the storm sewer shall be 0.75 m/s and shall not exceed 6.0 m/s.

Where the seasonal high ground water table is at or above the spring line elevation of the storm sewer, the curb line subdrain shall be installed at or below the pipe spring line on the outside of curb.

Alternatively, a perforated pipe/open joint storm sewer system complete with filter fabric sock will be considered.

Except for special cases, the downstream pipe diameter shall always be greater than or equal to the upstream pipe diameter.

All private developments require an Operations and Maintenance Manual for the regular inspection and maintenance for cleaning out catchbasin sumps and flushing of storm sewer pipes, as per Appendix E.

13.2 Material

All materials shall be CSA Certified and in accordance with the Town approved materials list as amended.

Minimum size of storm sewer pipe shall be 300 mm diameter. Catchbasin leads shall be minimum 300 mm diameter.

Where the main sewer is 450 mm dia. or less the spring lines of the lateral and the main sewer shall match. Where the main sewer is greater than 450 mm dia. the invert of the lateral and spring line of the main sewer shall match.

13.3 Upsizing for External Lands

The Town may require a larger storm sewer size on parts of the development than required for the development alone.

13.4 Storm Sewer Pipe

Storm sewer construction and testing shall conform to the requirements of the Ontario Provincial Standard Drawings and Specifications for sewer construction. Flexible pipes shall be embedded in accordance with OPSD 802.010 and rigid pipe shall be embedded in accordance with OPSD 802.031.

Main sewer connections across roadways shall be backfilled with approved granular materials, thoroughly compacted in layers.

13.5 Storm Sewer Maintenance Holes and Catchbasins

Concrete Maintenance holes shall be provided at all changes in direction of the sewer and at all street intersections, but no further apart than 110 m for storm sewers up to 975 mm and 130 m for storm sewers from 1075 mm to 1350 mm. Catchbasins and Catchbasin Maintenance holes shall not be located in driveways. Maintenance holes shall be minimum 1200 mm inside diameter. Benching shall be provided per OPSD 701.021 in all storm Maintenance holes and catchbasin Maintenance holes greater than 1800 mm diameter in size. Catchbasin Maintenance holes equal to or less than 1800 mm diameter in size shall have sumps. All storm Maintenance holes covers shall conform to OPSD 401.010, closed cover.

Catchbasins shall be provided on both sides of the street at all low areas but no further apart than 60 m. Double catchbasins shall be provided at all sags in the street. Catchbasins shall have sumps; however, rear lot catchbasins shall be without sumps. All catchbasin frames and grates shall conform to OPSD 400.020.

Maintenance hole and catchbasin covers shall be set on a minimum of 50 mm and a maximum of 150 mm of HDPE adjustment rings or approved equivalent. Precast concrete adjustment units shall be installed as per OPSD 704.010 600mm max height or 3 riser rings.

Maintenance holes as per OPSD 704.010 within the travelled portion of the roadway must be initially installed such that the cover is flush with base course asphalt and raised to be flush with finished grade prior to the placement of top course asphalt. Adjustment of top of grate to match top course asphalt may be provided by cutting base asphalt around the frame and grate and raising with HDPE adjustment rings or approved equivalent adjustment ring, or by using cast iron Sigma riser rings (or approved equivalent). Alternatively, the Developer may use Bibby-Ste-Croix AutoStable adjustable frames at the time of initial maintenance hole installation, which can be adjusted at the time of paving surface course asphalt.

Structures within the curb line must also be initially installed with the cover set to base course asphalt and raised to finished grade in accordance with OPSD 610.010.

Maintenance hole steps shall be per OPSD 405.010 hollow rungs installed at 300 mm spacing with a maximum 600 mm from the top of grate to the first step.

Catchbasin leads shall be connected to the main sewer through a Maintenance hole except where the main sewer size exceeds 450 mm dia. in which case the lead can be connected directly to the main sewer with manufactured tees. Catchbasin leads to be at a minimum 1.0% grade.

A minimum of two catchbasins shall be required on the outside radius of all cul-de-sacs and crescents.

Catchbasins are to be located to avoid conflict with driveways.

13.6 Storm Sewer Services

Where applicable, storm service connection pipes are to be 100 mm diameter, PVC SDR 28 and white in colour (to distinguish from sanitary laterals) complete with rubber gasketed bell and spigot joints at a minimum of 1% slope and 1.2m cover at property line.. The storm service lateral shall be extended 1.5m into the private lot, consistent with sanitary sewer and water services.

Services for commercial/ industrial/ institutional shall be equipped with a maintenance hole at property line.

13.7 Rear Lot Catchbasins

It is preferred that use of rear lot catchbasins be avoided whenever possible by way of appropriate lot grading design. Low points in the rear of lots may be avoided by providing rear-to-front lot grading drainage.

Rear lot catchbasins are required to provide a drainage outlet for rear yard surface drainage systems where a positive outlet is not available, or the number of lots serviced by a positive draining swale exceeds the length of six (6) freehold lots, or 75 m.

Each rear lot catchbasin shall service a maximum of twelve (12) lots, or a maximum length of 75 m.

The storm sewer pipe for rear lot catchbasins shall be offset 0.75 m from the property line within the 3.0 m wide side or rear lot easement. Both the catchbasin lead and structure are to be located on the same lot.

Rear lot catchbasins shall be per OPSD 705.030 without sumps and shall be connected to the trunk storm sewer by a Maintenance hole structure.

Rear lot catchbasin storm sewer pipe leads shall be concrete.

13.8 Miscellaneous

The Town shall not be liable for any costs arising out of the construction of storm sewers for the development.

All sewers, Maintenance holes and catchbasins must be inspected, cleaned out and flushed prior to assumption into the municipal system.

Storm sewer pipe deflection testing (mandrel) will be required in accordance with the Town's CLI-ECA.

The complete system shall be flushed and inspected by an approved video camera testing company and the Town Engineer shall be provided with a copy of the appropriate data.

CCTV inspection shall be undertaken per OPSS 409 as directed by the Town following the installation of all utilities. CCTV inspections are to be conducted:

- On all mainlines and lateral services;
- Prior to the issuance of the Certificate of Substantial Completion (Basic Services), and;
- Prior to the placement of surface course asphalt.

14. LANDSCAPING

All landscape plans shall be prepared by an accredited professional Landscape Architect in good standing with the Ontario Association of Landscape Architects (OALA). The Landscape Architect shall collaborate with all consulting professionals to ensure an accurate representation of the site and proposed development.

14.1 Tree Protection

To ensure effectiveness, the tree inventory, protection and compensation review process shall take place in tandem with the preparation and review of preliminary design development. Identifying and addressing potential limitations posed by existing trees prior to the plan review stage is essential. Additionally, efforts to promote the protection and conservation of trees on-site are strongly encouraged.

Preserving trees before, during, and after construction-related activities is essential for maintaining their health, ensuring long-term survival, and protecting the surrounding environment. A Certified Arborist or Registered Professional Forester must conduct a detailed tree inventory to achieve this. The inventory must provide comprehensive data on all trees within the designated area of consideration, encompassing the immediate site disturbance area and an additional 6.0m beyond its boundaries, increasing to 12.0m where the disturbance is adjacent to Town-owned lands.

14.1.1 Tree Inventory and Protection Plan

The Tree Inventory & Protection Plan must document the location, size, and condition of all trees over 10cm in diameter at breast height (DBH) within the area of consideration. It must assess any potential tree injuries and recommend specific protection measures for each tree. A minimum tree protection zone (TPZ) should be established to guide these efforts.

The tree inventory must include the following information:

- Species, size (measured at diameter at breast height), and condition of each tree.
- Surveyed locations of each tree in relation to the construction site, clearly mapped.
- An assessment of the tree's health, structural integrity, and viability for preservation.
- Identification of protected and significant trees, including heritage species, if applicable.
- Recommendations for tree preservation, removal, or mitigation measures.

All development applications must include a Tree Protection Plan outlining specific measures for tree preservation. This plan shall be prepared in

conjunction with an arborist report. The Tree Protection Plans must include the following information:

- Depict the extent of the crown (drip line) or the minimum TPZ (whichever is greater) of each existing tree.
- Depict any proposed changes to the site, including structures, utility services, hardscape and grading modifications.
- Identify vehicular access routes and construction staging area.
- Indicate which trees require root pruning due to excavation.
- Identify trees that may be removed or are anticipated to sustain injuries.
- Depict the placement of tree protection barriers and the extent of TPZs.
- Where applicable, provide details about the extent of proposed tree injuries.
- Provide contact details for the arborist overseeing the tree protection measures.

14.1.2 Arborist Report

The Arborist Report, prepared by a qualified professional (Certified Arborist or Registered Professional Forester), is required to assess tree health, safety, and potential impacts of site activities. It must include the following key components:

- **Title page, introduction, and scope definition:** Outlining the property address, owner/applicant information, consultant details (name, title, company, and contact information), application file number (if known), dates of site visits and report preparation, and the scope of the report summarizing proposed works and tree impacts.
- **Methodology and parameters:** Include relevant background such as site history, legislation, and regulated areas, reviewed documents (e.g., servicing and grading plans), as well as the purpose and intended use of the report.
- **Observations:** Detail existing site and tree conditions, climatic factors, and regulated areas (e.g., provincial or federal legislation). Supporting photographs will provide aerial views, inventoried trees, significant conditions, and adjacent properties.
- **Analysis and recommendations:** Interpret findings and address tree retention and protection, including the feasibility of transplanting, tree protection fencing (TPZ), maintenance practices (e.g., pruning, soil treatments), post-construction care (e.g., aeration, mulching), and monitoring/inspection requirements.
- **Conclusion:** Summarize findings and recommendations, signed by the arborist, including their qualifications.
- **Optional disclaimers or limitations:** Add as necessary.

Additionally, include supporting materials, such as tree inventories, maps, and photos to substantiate observations, analysis, and recommendations.

14.1.3 Protecting Trees

The chart below outlines the required distances for establishing a minimum Tree Protection Zone (TPZ) for trees located on town streets, parks, and private property. In some cases, higher protection standards may be required for municipal or private trees at the discretion of the Town Arborist or Public Works, depending on factors such as the tree's size, species, location, health and any construction-related risks to the tree. The Optimum TPZ is the limit of the canopy and should be protected whenever feasible.

Minimum Tree Protection Zone (TPZ) Determination	
Trunk Diameter (DBH)	Minimum Tree Protection Zone
<10cm	1.2 m
10 - 29 cm	1.8 m
30 - 40 cm	2.4 m
41 - 50 cm	3.0 m
51 - 60 cm	3.6 m
61 - 70 cm	4.2 m
71 - 80 cm	4.8 m
81 - 90 cm	5.4 m
91 - 100 cm	6.0 m
>100 cm	6 cm per 1 cm DBH

In some cases, disturbances in the TPZ may be unavoidable. When this occurs, adjustments can be made in consultation with both the applicant's arborist and Public Works.

The following tree species are highly sensitive to construction-related disturbance. Proper planning and implementation of the TPZ are crucial to safeguarding the health and integrity of these trees. For these species, the Arborist Report and Tree Protection Plan must carefully consider a more extensive tree protection strategy to prevent damage to roots and crowns caused by construction activities, such as soil compaction, excavation, or above-grade construction that impacts the branches of the following trees:

- *Acer rubrum* (Red Maple)

- *Acer saccharum* (Sugar Maple)
- *Betula papyrifera* (Paper Birch)
- *Carya glabra* (Pignut Hickory)
- *Fagus grandifolia* (American Beech)
- *Liriodendron virginiana* (Tulip Tree)
- *Ostrya virginiana* (Ironwood)
- *Pinus resinosa* (Red Pine)
- *Pinus strobus* (White Pine)
- *Prunus serotina* (Black Cherry)
- *Quercus alba* (White Oak)
- *Quercus velutina* (Black Oak)
- *Tsuga canadensis* (Eastern Hemlock)
- *Tilia americana* (Basswood)

14.1.4 Prohibited Activities Within a TPZ

No unauthorized activities may take place within the established TPZ. Construction-related activities will not disturb or access areas identified TPZ. The following activities are prohibited within the TPZ:

- No alteration or disturbance to existing grade of any kind, including changes to the grade by adding fill, excavating or scraping.
- No storage of construction materials or equipment.
- No storage of soil, construction waste or debris.
- No discharge or disposal of any substances or chemicals that may adversely affect the health of the tree e.g. concrete sleuth, gas, oil, paint, pool water.
- No access or movement of vehicles, equipment or pedestrians.
- No nailing or stapling into a tree, including attachment of fences, electrical wires or signs.
- No cutting, breaking, tearing, crushing, exposing or stripping tree's roots, trunk and branches.

14.1.5 Tree Health / Condition Value Indices

Health of Tree	Health Co-efficient
Excellent. Perfect specimen. Excellent form and vigour for species. Full canopy with no significant structural issues. No visible signs of disease, pest problems, mechanical injuries or environmental stress. The root system appears stable, with no signs of girdling or compaction. No corrective work is required. Life expectancy is exceptional.	1.0
Good. Healthy and structurally sound. No apparent signs of insect, disease, or mechanical injury. Canopy density is slightly less than ideal but still substantial. No significant damage to the trunk or root system. Little or no corrective work is required. Life expectancy is average.	0.75
Fair. The tree shows moderate signs of stress or decline. Canopy thinning, deadwood (less than 25%), or minor structural defects are present. It may need some corrective pruning or repair. Disease or pest damage is noticeable but manageable. The root system may show signs of compaction or limited space for growth. Life expectancy is limited without intervention.	0.50
Poor. The tree is in a general state of decline. Canopy thinning exceeds 25% is prevalent. Structural issues such as trunk damage, decay, or limb failure. Significant pest infestation or disease presence. May require major repair or renovation. Life expectancy is one season.	0.25
Dead. No signs of life (e.g. no leaves, buds, or sap). The bark may be peeling, and the wood may be dry and brittle. Complete loss of canopy and failure of vascular system.	0.0

14.1.6 Public Tree Compensation

Where trees are removed from an existing municipal right-of-way and/or established park land, the developer must compensate the Town with replacement trees:

Public Tree Replacement Chart Min. 60mm Diameter Deciduous/1.8m Height Coniferous	
Diameter at Breast Height (DBH) in cm	Number of Replacement Trees
10 - 15 cm	1 x Health Coefficient
16 - 30 cm	2 x Health Coefficient
31 - 45 cm	3 x Health Coefficient
46 - 60 cm	4 x Health Coefficient
61 - 75 cm	5 x Health Coefficient
76 - 90 cm	6 x Health Coefficient
91 - 105 cm	7 x Health Coefficient
106 - 120 cm	8 x Health Coefficient
>120 cm	9 x Health Coefficient

The following tree species are exempt from compensation:

- *Ailanthus altissima* (Tree-or-Heaven)
- *Alnus glutinosa* (Black Alder)
- *Elaeagnus angustifolia* (Russian Olive)
- *Fraxinus americana* (White Ash)
- *Fraxinus pennsylvanica* (Green Ash)
- *Rhamnus sp.* (any tree of the genus buckthorn)
- *Morus alba* (White Mulberry)

14.1.7 Regulated Conditions

The Developer is responsible for confirming the regulated conditions that may affect tree protection and removal activities and the recommendations outlined in the Tree Inventories, Arborist Report, and Tree Protection Plans:

- Ash Trees and the Emerald Ash Borer (EAB).
- Migratory Birds Convention Act.
- Development and Woodlands in Designated Areas.
- Forestry Act and Boundary Trees.
- Endangered Species and Species at Risk.
- Tree Risk Assessment.
- Heritage Trees.

14.2 Managing Woodland Edge Impacts and Restoration Guidelines

The removal of woodland vegetation along woodland edges or the exposure of new woodland edges from partial clearing can result in significant ecological consequences. These impacts affect both the woodland borders and interior ecosystems. The primary challenges associated with newly exposed woodland edges include:

- Increased light, wind, and sun exposure leading to reduced soil moisture.
- Susceptibility to salt spray.
- Decline in the establishment of shade-tolerant plant species and overall plant diversity.
- Encroachment of aggressive, non-native plant species.
- Loss of native seed banks.
- Reduction in interior habitat.
- Windthrow risk for edge trees.
- Changes in wildlife diversity and abundance.
- Soil destabilization and compaction.
- Altered hydrology.
- Increased noise levels.

14.2.1 Mitigation Measures for Woodland Edge Management

To address these issues, woodland management techniques are essential. Key strategies include:

1. **Native Plantings for Protective Buffers:** Native trees, shrubs, and ground flora should be planted promptly after vegetation removal to create a buffer that reduces invasive species infiltration and mitigates altered micro-habitat conditions. Selected species should match the existing habitat and be non-invasive.
2. **Grading and Soil Management:** Grading near new edges must align with existing grades at least 3 meters from tree drip lines to minimize soil compaction and root damage. Decompaction efforts, where needed, should extend to a depth of 250 mm.
3. **Drainage and Hydrology Preservation:** Drainage patterns near new edges should remain intact, particularly around wetlands and moisture-retentive woodland substrates, to avoid altering soil moisture levels.
4. **Invasive Species Control:** An immediate plan to prevent and manage the spread of invasive species is crucial.
5. **Monitoring Plans:** Establish a monitoring program to ensure the survival of new plantings and manage invasive species. Regular inspections over two years, especially during dry spells, should include watering, weed control, and the use of protective mats.
6. **Species Selection:** Planting should include a mix of native species adapted to existing and transitional light conditions. Early successional species can facilitate natural succession, with shade-tolerant species gradually becoming dominant.
7. **Protective Measures During Construction:** Tree protection barriers should delineate clearing limits. Retained vegetation must remain intact, with minimal disturbance to root zones.
8. **Site Stabilization:** Stabilization measures, such as hydroseeding, straw mulch, or jute mats, should be implemented during or immediately after construction. Sod is permitted temporarily but not as a permanent solution.
9. **Structural and Species Diversity:** Restoration should aim for at least 50% woody coverage in designated areas, with diversity in species and structure to support long-term ecosystem health.
10. **Hazard Tree Management:** Hazardous trees near public spaces should be pruned or removed with proper approvals, retaining non-hazardous snags for wildlife habitat.

11. **Mulching and Herbaceous Control:** Where herbaceous competition is high, mulch and protective guards for young trees may be necessary. Larger planting stock may also be used in these areas.
12. **Restoration Phasing:** Plans should specify the timing and phasing of restoration activities to optimize outcomes.
13. **Detailed Restoration Plans:** Drawings should outline planting locations, species, densities, and stock conditions (bareroot, balled and burlapped, or potted). Seasonal timing should align with species needs.

14.3 Soft Landscaping Standards

14.3.1 Tree Planting Targets

New development shall demonstrate adherence with tree planting targets established for the following uses:

Land Use	Planting Target
Subdivision (lot frontage $\leq 9.00\text{m}$)	1 trees per lot
Subdivision (lot frontage >9.00 to $\leq 13.2\text{m}$)	2 trees per lot
Subdivision (lot frontage $>13.2\text{m}$)	3 trees per lot
Apartment / Condominium Dwellings	30% Canopy Coverage
Commercial	30% Canopy Coverage
Institutional	25% Canopy Coverage
Community	30% Canopy Coverage
Industrial	20% Canopy Coverage

*Tree canopy size is calculated at maturity.

A provision for the planting of supplemental trees will be a mandatory requirement for all new developments. The number of supplemental trees will be determined at the discretion of the Town, and their location will be identified on-site in consultation with municipal staff.

If, at the discretion of the Director of Planning and/or the Director of Public Works, the minimum number of tree planting requirements for the subdivision is deemed unfeasible, the shortage of trees across all Lots and Blocks in the subdivision will result in an increased number of supplemental trees being

required on other Lots and Blocks within the development. In the event that the site does not have sufficient room for the calculated number of trees, the Town may consider accepting a “cash-in-lieu” of \$650 per tree.

14.3.2 Species Selection

1. Plant material shall be in accordance with the Canadian Landscape Standards (latest edition), published by the Canadian Nursery Landscape Association (CNLA) and the Canadian Society of Landscape Architects (CSLA).
2. Form Vigour of Trees
 - i. All trees shall be true to type, structurally sound with no evidence of dead branches, sun scald, frost cracks, abraded or broken bark, and be free of insect or disease infestation.
 - ii. All trees shall have a full well-developed symmetrical crown with one distinctive vertical leader, branches appropriately spaced, and a root system typical of the species.
3. All trees must be nursery stock with burlap or wire baskets and planted in accordance with good nursery practices.
4. Planting street trees as a single-species monoculture is prohibited.
5. Clusters of the same species shall not exceed five to eight trees within the same area.
6. Random sequencing of tree species is encouraged within a planting scheme.
7. Species diversity should depend on the quantity of trees to be planted:
 - i. For plantings exceeding 10 trees, a variety of tree species is required.
 - ii. For 20 to 40, no more than 25% should belong to the same genus.
 - iii. For plantings exceeding 40 trees, the proportion of any one genus shall be limited to 10%.
8. A minimum of 30% of the trees planted on a site should be native tree species.
9. The use of invasive species is prohibited.
10. Tree species shall be selected based on site-specific conditions, such as soil composition, sunlight exposure, drainage, slope, moisture levels, drought tolerance and salt tolerance. Selection should also consider planting space, soil depth, setbacks requirements, utility conflicts, and visibility clearance.

11. Large canopy shade trees shall be prioritized to maximize urban forest coverage, mitigate heat island effect and enhance pedestrian comfort.
12. In subdivisions with limited space (e.g. near streetlights or where distinct visual effects), small ornamental or columnar trees may be utilized. Examples include locations at intersections or neighborhood entryways to create identifiable gateway features.
13. All plantings are to conform to the “Planting Under or Around Powerlines and Electrical Equipment”, Electrical Safety Authority Guidelines.

14.3.3 Plant Material Considerations

1. Minimum Plant Material Sizes:
 - i. Deciduous trees: 60mm caliper, Wire Basket
 - ii. Coniferous trees: 1.8m in height, Wire Basket
 - iii. Shrubs: 3 gallon pot, 50cm in height
 - iv. Perennials & Groundcovers: 1 gallon pot
2. All tree and shrub plantings shall be in accordance with the Town Standard Planting Details. All stakes and ties are to be removed one year after planting.
3. All pruning is to be performed by an International Society of Arboriculture Certified Arborist and is to conform to ANSI Pruning Standards.
4. Trees Spacing:
 - i. The spacing of tree shall align with the natural growth habit of the particular species;
 - ii. Large shade trees shall be spaced at intervals of 7 to 10 meters;
 - iii. Small flowing and columnar trees can be utilized in locations with limited space, such as near light standards, and spaces at intervals of 5 to 7 meters.
5. Subdivision Frontage: A minimum of one street tree shall be planted for each lot frontage, unless site-specific conditions dictates otherwise.
6. Subdivision Flankage: A minimum of two street trees shall be planted along each flankage, unless site-specific conditions dictates otherwise.
7. Subdivision Backyards: *Thuja occidentalis* and *Juniperus virginiana* shall only be considered for rear yard planting when a hedgerow is being proposed for screening purposes.

8. Planting Bed Design: To prevent overcrowded or sparse areas, the spacing of shrubs, perennials, and ornamental grasses should reflect the mature size of the plant.
9. Minimum Tree Setback Distances: When planting near infrastructure, the location and species of plant material must be coordinated with the engineering plans to ensure adherence to the following setback distances:

Minimum Tree Setback Distances	
From Edge of Sidewalk	1.0m
From Edge of Driveway	1.5m
Below Grade Utilities	1.0m
Hydro Transformer Grounding Grid	1.5m
Fire Hydrant	3.0m
Back Edge of Curb	1.0m
Streetlight	3.0m
Fencing	1.0m
Community Mailboxes	2.0m

*Ensure trees do not create sight line obstructions for vehicles.

14.3.4 Warranty, Assumption, and Site Inspection Process

1. All landscape site works must be carried out in accordance with the approved Site Plan and Landscape Plan drawings.
2. Any changes to the approved landscape works must receive prior approval from the Public Works Department. This may require the submission of a revised Site Plan submission or an as-build landscape drawing if the completed works deviate substantially from the original approved plans.
3. Landscape site work security deposits may be reduced only between April 30th and November 1st. Requests for security reductions outside of this timeframe will not be considered. The reduction will be determined based on staffs' evaluation of the outstanding landscape works.
4. Final approval of the landscape site and the subsequent release of the security deposit can occur only between May 1st and October 31st, weather permitting. Any requests for final approval submitted outside of this designated period will not be considered.

5. Upon receiving written notice of the landscape site work completion from the consulting Landscape Architect, staff will conduct a site review to verify that the works conform to the approved drawings. If any deficiencies are identified, a Site Review Report will be provided to both the applicant and the consulting Landscape Architect. Once the landscape works are accepted, an approval notice will be issued to the Town's Finance Division.
6. Plants installed between May 15 to October 15 will be warranted for a period of twenty-four (24) months following the Town's acceptance of the completed work.
7. Plants installed after October 15th will be warranted for twenty-four (24) months starting from May 15th the following year, upon acceptance of the work by the Town. Additionally, replacement trees will be warranted for twenty-four (24) months from the date the work is accepted by the Town.

14.3.5 Recommended Tree Species List

The following list identifies species recommendations. Requests for adjustments to recommended cultivars, locations or consideration of alternative species require consultation with Town staff.

Planting Locations	
St	Street Tree (Municipal Right-of-Way)
Cir	Commercial, Industrial & Residential
P	Municipal Parks
Os	Open Space
H	Height Restricted Areas / locations where a small canopy is required
SWM	Stormwater Management Pond
Em/Ra	Edge Management / Restoration Area
*	Limited Use (Approval from Public Works required)

Deciduous Trees		
Scientific Name	Common Name	Planting Location
Acer campestre	Field Maple	St, Cir, P, Os, H
Acer x freemanii cultivars	Freeman's Maple	St, Cir, P

Deciduous Trees		
Scientific Name	Common Name	Planting Location
<i>Acer nigrum</i> + cultivars	Black Maple	St, Cir, P, Os, SWM, Em/Ra
<i>Acer rubrum</i> + cultivars	Red Maple	P, Os, SWM, Em/Ra
<i>Acer saccharinum</i> + cultivars	Silver Maple	St*, Cir, P, Os, SWM, EM/RA
<i>Acer saccharum</i> + cultivars	Sugar Maple	St*, Cir, P, Os, SWM, EM/RA
<i>Aesculus glabra</i>	Ohio Buckeye	St*, Re, P, Os
<i>Aesculus hippocastanum</i>	Horse Chestnut	St*, Cir, P, Os
<i>Amelanchier arborea</i>	Downy Serviceberry	P, Os, Em/Ra
<i>Amelanchier canadensis</i>	Canadian Serviceberry	P, Os, H, Em/Ra, SWM
<i>Amelanchier laevis</i>	Allegheny Serviceberry	P, Os, H, SWM
<i>Betula alleghaniensis</i>	Yellow Birch	SWM, Em/Ra
<i>Betula nigra</i>	River Birch	P*, Os*, SWM, Em/Ra
<i>Betula papyrifera</i>	Paper Birch	Cir, P, Os, SWM, Em/Ra
<i>Carpinus betulus</i> + cultivars	European Hornbeam	Cir, P, Os
<i>Carpinus caroliniana</i>	American Hornbeam	Os, SMW, Em/Ra
<i>Catalpa speciosa</i>	Northern Catalpa	St*, Cir*, P, Os
<i>Celtis occidentalis</i>	Common Hackberry	St, Cir, P, Os, Em/Ra
<i>Cercidiphyllum japonicum</i>	Katsuratree	St*, Cir, P, Os
<i>Cersis Canadensis</i>	Eastern Redbud	P*, Os*, Em/Ra*
<i>Cladrastis kentukea</i>	Yellowwood	St*, Cir*, P*, Os*
<i>Corylus colurna</i>	Turkish Hazelnut	Cir, P, Os

Deciduous Trees		
Scientific Name	Common Name	Planting Location
<i>Fagus grandifolia</i>	American Beech	P*, Os*, Em/Ra
<i>Fagus sylvatice</i> + cultivars	European Beech	Cir*, P*, Os*
<i>Ginko biloba</i> + cultivars	Maidenhair Tree	St, Cir, P, Os
<i>Gleditsia triacanthos</i> cultivars	Thornless Honeylocust	St, Cir, P, Os
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree	St, Cir, P, Os
<i>Ostrya virginiana</i>	Ironwood	Cir, P*, Os*, SWM, Em/Ra
<i>Platanus x acerifolia</i> + cultivars	London Plane Tree	St*, Cir, P, Os
<i>Populus balsamifera</i>	Balsam Poplar	SWM, Em/Ra
<i>Populus tremuloides</i>	Trembling Aspen	P*, Os*, SWM, Em/Ra
<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan Japanese Cherry	SWM, Em/Ra
<i>Prunus serotina</i>	Wild Black Cherry	SWM, Em/Ra
<i>Prunus virginiana</i> + cultivars	Chokecherry	SWM, Em/Ra
<i>Quercus alba</i>	White Oak	P*, Os*, SWM, Em/Ra
<i>Quercus macrocarpa</i>	Bur Oak	St, Cir, Os, SWM, Em/RA
<i>Quercus palustris</i>	Pin Oak	St*, Cir, P, Os, SWM, Em/Ra
<i>Quercus robur</i> + cultivars	English Oak	St, Cir, P, Os
<i>Quercus rubra</i>	Red Oak	St, Cir, Os, SWM, Em/Ra
<i>Salix nigra</i>	Black Willow	SWM
<i>Syringa reticulata</i> + cultivars	Japanese Tree Lilac	St*, Cir, P, Os, H

Deciduous Trees		
Scientific Name	Common Name	Planting Location
<i>Tilia americana</i> + cultivars	Basswood	St, Cir, P, Os, SWM, Em/Ra
<i>Tilia cordata</i> + cultivars	Little Leaf Linden	St, Cir, P, Os
<i>Ulmus americana</i> 'Princeton'	American Elm	St*, Cir*, P, Os, SWM
<i>Ulmus americana</i> 'Valley Forge'	Valley Forge Elm	St*, Cir*, P, Os, SWM
<i>Zelkova serrata</i> + cultivars	Japanese zelkova	St, Cir, P, Os

Coniferous Trees		
Scientific Name	Common Name	Planting Location
<i>Abies balsamea</i>	Balsam Fir	Cir, SWM
<i>Abies concolor</i>	White Fir	Cir, P, O
<i>Juniperus virginiana</i>	Eastern Red Cedar	Cir*, SWM, Em/Ra
<i>Larix decidua</i>	European Larch	Cir, P, Os
<i>Larix laricina</i>	Tamarack	P, Os, SWM
<i>Picea abies</i>	Norway Spruce	Cir, P, Os
<i>Picea glauca</i>	White Spruce	Cir, P, Os, SWM, Em/Ra
<i>Picea pungens</i> + cultivars	Blue Spruce	Cir, P, Os
<i>Pinus nigra</i>	Austrian Pine	Cir, P, Os
<i>Pinus strobus</i>	Eastern White Pine	Cir, Os, SWM, Em/Ra
<i>Pinus sylvestris</i>	Scots Pine	P*, Os*
<i>Thuja occidentalis</i>	Eastern White Cedar	Cir*, Os, SWM, Em/Ra
<i>Tsuga canadensis</i>	Eastern Hemlock	SWM, Em/Ra

14.4 Topsoil, Sod, and Seed

The requirements in OPSS 802 & OPSS 803 shall apply except as amended herein.

14.4.1 Topsoil Materials

Topsoil shall be natural, fertile, loamy agricultural soil capable of sustaining plant growth with sufficient water retention capacity to help promote water conservation by reducing the need for lawn watering.

1. All topsoil whether acquired from the jobsite or imported from offsite, shall not contain material greater than 25 mm in size, such as stones, sticks or other debris.
2. All topsoil must be laboratory tested and include a letter from the Geotechnical Consultant confirming that the topsoil is suitable for turf growth. The testing shall confirm the topsoil does not contain pesticides or industrial contaminants.
3. The consultant shall take samples from at least three random locations from the stockpiles, and tests shall be conducted on a combined mixture of the three samples. Testing shall include gradation, organic matter, pH value, and levels of phosphorous (P), and potassium (K).
4. If native site topsoil material does not meet the above requirements, the geotechnical consultant may make recommendations for amendments and/ or blending of topsoil with imported material to provide a final product that is acceptable to the Town.
5. As a guide, the composition of topsoil shall be as follows:
 - Sand: 20 – 70%
 - Clay: 15 – 30%
 - Silt: Total soil composition will sum 100%
 - Organic material: >1%
6. Nutrient ratios shall be measured with recommendation in the soil suitability report for placement of Phosphorous (P), Potassium (K) and Nitrogen (N) to promote and maintain turf growth.
7. Phosphorous (P) and potassium (K) shall be increased based on the recommendations of the geotechnical consultant.
8. Topsoil is to have an acidity range (pH) between 5.5 and 7.8.

14.4.2 Preparation for Topsoil

1. Areas where topsoil is to be placed shall be fine graded to a uniform surface.
2. The surface shall be loosened to a minimum depth of 25 mm.
3. It shall be free of all vegetation, debris, and stones which would not be covered by the depth of the topsoil.

14.4.3 Placement of Topsoil

1. Topsoil shall be spread on unfrozen sub-grade, free of standing water, uniformly to a depth of 200 mm.
2. Topsoil shall be rolled with a mechanical roller of a minimum weight of 220 kg and a minimum width of 760 mm.

14.4.4 Stockpiling Topsoil

1. Topsoil stockpiles containing more than 100 m³ of material shall be located a minimum of 10 m away from any roadway, drainage channel or occupied residential lot.
2. Topsoil shall not be stockpiled on slopes steeper than 2H:1V and the stockpile height shall not exceed 6 m.
3. Topsoil stockpiles should be stabilized by covering with geotextile material to prevent soil erosion and contamination by weeds.
4. Perform weed control, when necessary, in accordance with relevant government chemical pesticide application legislation. Temporary seeding of topsoil with cover crops may be required by the Town to prevent weed growth.

14.4.5 Planting Soil

1. Planting Soil Mixture shall be 50% screened topsoil, 20% coarse sand, and 30% compost.
2. Mulch to be shredded cedar bark, free of dyes and chemicals, or approved equal.
3. For new tree plantings, 30 m³ of good quality topsoil, with a minimum depth of 750 mm to a maximum depth of 900 mm, should be provided. Trees in common planting areas may share soil volume to a maximum of 15 m³ each.

14.4.6 Sod Materials

1. Sod rolls specifically sown and cultivated in a nursery field all in compliance with the specifications published by Nursery Sod Growers Association of Ontario, Number One Grade Turfgrass Nursery Sod.
2. Sod should be Kentucky Blue Grass / Fine Fescue as per NSGA technical specifications.
3. Sod shall be permeated with a strong fibrous root system and free from decay, bare spots, weeds and stones.
4. Supply sod which has been grown for a minimum of twelve (12) months, with a root development that will support its own weight without tearing.

14.4.7 Delivery, Storage and Acceptability of Sod

1. All sod shall be reviewed by the Contractor at the job site prior to installation.
2. During delivery, sod materials shall be protected from drying or contamination by detrimental materials.
3. Deliver sod within twenty-four (24) hours of being lifted and lay sod within thirty-six (36) hours of being lifted.
4. During dry weather, protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil when handling.
5. Deliver fertilizers and similar material to the site packed in standard containers, clearly marked with content, weight, analysis and name of manufacturer.

14.4.8 Placement of Sod

1. Sod should be placed in residential lots, boulevards, parks, adjacent to sidewalks abutting commercial or residential buildings, driveways, walkways, the bottom of swales and ditches, or as directed by the Town.
2. Sod shall be placed evenly and closely packed together, with joints staggered, leaving no open joints and no overlap on adjacent pieces of sod.
3. When abutting an existing turfed area, cut the existing turf to form a straight joint with the new sodded area.
4. On embankments, sod shall be placed lengthwise across the face of the slope. On slopes of 3H:1V or steeper, every second row on the slope and at the foot of the slope, each piece of sod shall be pegged with two (2) minimum 250 mm long wooden pegs driven into the soil layer of the sod.

5. Sodding operations shall be completed within two (2) working days after placing the sod. This shall be deemed to include; watering, rolling and repairing any visible joints and low spots.
6. Sod shall not be placed in a frozen state, or when any other conditions unfavorable to be successful transplanting of sod exist.

14.4.9 Seeding

1. All seed supplied, either as single species, or as a seed mix shall comply with the provisions of the Canada Seeds Acts and Regulations and the grade standards for that particular seed kind.
2. The primary seed mix shall be composed of the following:
 - 30% Certified Tall Fescue
 - 30% Certified Self-repairing Tall Fescue
 - 20% Chewings Fescue
 - 20% Self-repairing Perennial Ryegrass
3. Seeding during drought-prone season (June through August) shall require approval from the Town.
4. Approximate seeding rate shall be 25kg/1000m².
5. All areas that are to be provided with hydraulic seed and mulch in accordance with the "Accepted for Construction" drawings shall be provided with a minimum thickness of 200 mm of topsoil.
6. All residential lots are to be completely sodded unless otherwise indicated on the "Accepted for Construction" drawings.

14.4.10 Warranty

All sodded and/ or seeded areas are to be guaranteed by the Developer for minimum one year after placement. Sod within the Town owned rights-of-way (boulevard sod) shall be acceptable to the Town for the Assumption inspection.

14.5 Landscape Design in Stormwater Management Ponds

The following section outlines the specific design criteria and planting requirements to be implemented within stormwater management (SWM) facilities in the Town of Wasaga Beach. These standards are in addition to the minimum standards outlined within the Ministry of the Environment's (MOE) Stormwater Management, Planning and Design Manual.

In cases where there are residential lot(s) adjacent to a SWM facility, a minimum 6.0m wide landscaping buffer with a maximum slope of 4:1 will be required between the maintenance access route and the residential lot(s) to provide separation between the SWM facility and private property.

14.5.1 Planting Zones

The MOE manual outlines five planting zones based on the frequency and duration of water inundation. These guidelines, combined with professional expertise, should inform the development of a planting plan.

- **Zone 1 - Deep Water Areas**

Aquatic species suitable for deep water areas (> 0.5 m) including submergents, floating-leaved plants like pondweed, and free-floating plants such as duckweed.

- **Zone 2 - Shallow Water Areas**

In shallow water areas (<0.5 m), both submergent and emergent vegetation can be utilized. Most emergent plants should be placed in water depths of less than 0.3 m. To maximize planting area, it is preferable to maintain minimum side slopes.

- **Zone 3 - Extended Detention or Shoreline Fringe Areas**

Shoreline fringe areas experience frequent wetting due to storm events. This zone is defined as the land between the permanent pool and the high water mark for erosion/water quality control. These areas typically have higher soil moisture due to water level fluctuation and the presence of the permanent pool during dry conditions.

- **Zone 4 - Flood Fringe Areas**

A wet pond designed to manage infrequent storm events (2-year to 100-year storms) creates a zone of occasional inundation, where the impact of a permanent pool and frequent storms is minimal. This zone can support a variety of grasses, forbs, shrubs and trees, with a gradual transition to upland vegetation for aesthetic appeal.

- **Zone 5 - Upland Areas**

Upland areas enhance the pond's aesthetics while also serving practical purposes, such as restricting access to steep slopes and inlets. Carefully planned planting provides wind screening, thermal, and safety benefits,

with clusters of trees and shrubs supported by regeneration zones to promote long-term growth. Adopting a naturalized landscape approach creates a sustainable and low-maintenance vegetation community.

14.5.2 Planting Guidelines

Aquatics (Submergent and Aquatic Fringe):

1. Include at least 5 different aquatic plant species, with a minimum of one floating, one submered, and one emergent species (robust, broadleaved, or narrow-leaved).
2. Avoid planting aquatic species within the forebay, as this area is unlikely to sustain re-colonization following dredging operations.
3. All aquatic plant species must be native.
4. Install aquatic fringe plants one full growing season after the shoreline and flood fringe plantings or once a complete vegetative buffer has formed around the pond perimeter to deter geese.

Terrestrial (Shoreline Fringe, Flood Fringe and Upland)

1. Ensure all plant species are native and sourced from a reputable grower or supplied.
2. Plant material harvested form natural wetlands or roadsides are prohibited, as they may introduce invasive or non-native species.
3. Include at least 12 tree species (a mix of coniferous and deciduous) and a minimum of 8 shrub species, each adapted to their intended planting locations.
4. Shrubs groupings shall be 15 to 30 units to support biodiversity, colonization and spreading.
5. Limit tree groupings to no more than five of the same species.
6. Arrange trees and shrubs in a naturalistic configurations.
7. In the Flood Fringe area, plant trees and shrubs that will provide canopy coverage to mitigate the thermal effect on water temperature.
8. Minimum Plant Material Sizes:
 - i. Deciduous trees: 40mm caliper, Wire Basket
 - ii. Coniferous trees: 1.5m in height, Wire Basket
 - iii. Shrubs: 3 gallon pot, 50cm in height

9. Install rodent protection around all deciduous trees. The developer is responsible for removing the rodent protection at the end of the two year warranty period prior to final acceptance. Biodegradable options will also be considered.
10. The implementation of bioengineering techniques, such as live staking, on steep slopes injunction with other stabilization methods is encouraged. Live staking will not contribute to plant density requirements.
11. Maintain a minimum 1.5m buffer between plantings and structures, such as maintenance roads, drying areas, and fences adjacent to residential properties.
12. Trees species planted along residential property fences must have strong branching to prevent potential hazards such as falling limbs.

14.5.3 Planting Density

1. Plant aquatics in a 1.5m wide band around the perimeter or up to 0.75m depth, whichever is greater, ensuring a maximum spacing of 1.0m on centre across at 40% of the planting area.
2. Tree density shall be 3 to 5 trees per every 100m² of the planting area.
3. Plant shrubs with a spacing of 1.0m to 1.5m on center across 30% of the planting area.

14.5.4 Seeding

1. Select the appropriate seed cover based on site conditions (upland, mesic, or wetland) and provide a seed mix containing at least six different species, with a minimum composition of 70% native, non-invasive species.
2. For areas adjacent to ANSIs, PSWs, County Greenland or other environmentally designated zones, use a seed mix comprising 100% native, non-invasive species.
3. Apply seed mixes using hydroseeding or terraseeding methods.
4. Seed mixes are to be placed in combination with an annual rye nurse crop or an equivalent suitable nurse crop, applied at a rate of 12 kg per hectare.

14.6 Fencing

Fencing shall be provided to separate privately owned lands from municipally owned (public) lands / blocks as required in the Development Agreement. Such fencing shall be constructed wholly within the Municipal property.

Fencing shall be in accordance with the most recent requirements and specifications of the Town as shown on the Town's Standard Engineering Drawings or as approved by the Municipality.

The following fencing is required prior to issuance of the Certificate of Substantial Completion (Full Services)/Occupancy for various land uses unless otherwise stipulated in the Development Agreement:

- Developed parks - 1.5 m high black vinyl chain link fence.
- Walkways - 1.8m tight board privacy fence to the front yard set back and then 1.2m height.
- Open Space / Environmentally Protected / natural wooded areas and agricultural lands - 1.5m black vinyl chain link fence.
- For stormwater management pond fencing requirements, see Section 12.15 of these Engineering Standards.
- Fencing to separate commercial land use from residential – 1.8 m high tight board privacy fence.
- 1.8 m high tight board privacy fence is required along lot flankages of residential lots, to the front wall of the subject dwelling, abutting collector or arterial roads where a noise fence is not required, as well as on residential flankages abutting community post boxes.
- New residential development abutting existing residential lots – 1.8 m high tight board privacy fence.
- Residential lots abutting a school block shall be provided with fencing in accordance with requirements according to the applicable school board, as set out in the Draft Plan Conditions for the Subdivision and shall be installed entirely on school lands.
- Noise attenuation fencing shall be constructed in accordance with the development Noise Study. The design (materials) of which shall be reviewed and accepted by the Municipality. Noise attenuation fencing shall be located wholly within the development site unless specified otherwise in the Development Agreement.
- Private access gates are not permitted through municipally owned fences (fences that are constructed wholly on public lands), other than as stipulated in the Town's Corporate Gate Policy.

14.7 Neighbourhood Identification Signs

- Entrance features consisting of decorative walls and landscaping may be constructed at the intersection of arterial or collector roads, subject to the Director of Public Works approval.
- Creative and imaginative neighbourhood identification signs should align with the development's architectural style and scale. The landscape features complementing the signage should also be incorporated to enhance its appearance.
- All structures or plantings shall be located within a special landscape reserve block adjacent to the standard road allowance.
- Neighbourhood identification blocks / area shall not be factored into the parkland dedication calculation.

15. STANDARD DRAWINGS

Ontario Provincial Standard Drawings shall apply together with the attached Municipal Standard Drawings:

- Std.Dwg.No.1A&1B - Town of Wasaga Beach – General Notes
- Std. Dwg. No. 2A-1 - Standard Cross-Section: Local Residential Subdivision 8.5m Road on 20m R.O.W.
- Std. Dwg. No. 2A-2 - Standard Cross-Section: Local Residential Subdivision 8.0m Road on 20m R.O.W.
- Std. Dwg. No. 2B-1 - Standard Cross-Section: Collector – 9.5m Road on 20m R.O.W.
- Std. Dwg. No. 2B-2 - Standard Cross-Section: Collector – 8.25m Road on 20m R.O.W.
- Std. Dwg. No. 2C - Standard Cross-Section: Collector Road with Cycle Track (Off Road) on 23m R.O.W.
- Std. Dwg. No. 2D - Standard Cross-Section: Low-Density Private Residential Development 6.0m Road on 8.5m Corridor
- Std. Dwg. No. 2E - Standard Cross-Section: Medium-Density Private Residential Development 7.5m Road on 10.0m Corridor
- Std. Dwg. No. 3 - Cycle Track Details
- Std. Dwg. No. 4 - Typical 90⁰ Crescent c/w Curb and Gutter
- Std. Dwg. No. 5 - Typical Cul-de-Sac c/w Curb and Gutter and Water Servicing
- Std. Dwg. No. 6 - Hydrant and Valve Detail
- Std. Dwg. No. 7 - Walkway Typical Cross-Section
- Std. Dwg. No. 8A - P-Gate Details
- Std. Dwg. No. 8B - Removable Entrance Post
- Std. Dwg. No. 9A - Residential Lot Tree Planting
- Std. Dwg. No. 9B - Topsoil and Sod Requirements

Std. Dwg. No. 10	-	Off-Road Catchbasin Detail
Std. Dwg. No. 11	-	Roof Leader Soakaway Pit Detail
Std. Dwg. No. 12A	-	Sanitary Sewer Service Connection Detail
Std. Dwg. No. 12B	-	Residential Water Service Connection Detail
Std. Dwg. No. 13	-	Water Distribution System 50 mm Test Point By-Pass Schematic
Std. Dwg. No. 14A	-	Typical Water Meter Installation: 25mm to 50mm dia. Water Service
Std. Dwg. No. 14B	-	Typical Water Meter Installation: 100mm dia. and Greater Water Service
Std. Dwg. No. 15A	-	Water Meter Chamber
Std. Dwg. No. 15B	-	Typical Water Meter Chamber with Backflow Preventer
Std. Dwg. No. 16	-	Typical Detail of Silt / Sediment Control Fence
Std. Dwg. No. 17	-	Stone Mud Mat Detail
Std. Dwg. No. 18	-	Stormwater Management Pond Fountain Aerator Details
Std. Dwg. No. 19	-	Stormwater Management Pond Warning Sign
Std. Dwg. No. 20	-	Footings, Weeping Tile and Seasonal High Groundwater Table Detail
Std. Dwg. No. 21	-	Sump Pump Discharge Detail
Std. Dwg. No. 22	-	Street Name and Regulatory Signs
Std. Dwg. No. 23	-	Benchmark Monument Layout / Detail
Std. Dwg. No. 24	-	Streetlight Detail
Std. Dwg. No. 25	-	Service Entry under Foundations Detail (300mm vertical separation) (Removed / included in No. 20)
Std. Dwg. No. 26	-	Asphalt Trail
Std. Dwg. No. 27	-	Granular Surface Trail

Std. Dwg. No. 28	-	Natural Surface Trail
Std. Dwg. No. 29	-	Trailhead Layout – Typical Condition
Std. Dwg. No. 30	-	Tree Protection Fencing – Light Duty
Std. Dwg. No. 31	-	Tree Protection Fencing – Heavy Duty
Std. Dwg. No. 32	-	Tree Protection Notes
Std. Dwg. No. 33	-	Deciduous Tree Planting
Std. Dwg. No. 34	-	Coniferous Tree Planting
Std. Dwg. No. 35	-	Shrub Planting
Std. Dwg. No. 36	-	Shrub Planting - Stormwater Management Pond
Std. Dwg. No. 37	-	Planting Notes
Std. Dwg. No. 38	-	Landscape Boulder
Std. Dwg. No. 39	-	Residential Screen Fence
Std. Dwg. No. 40	-	Overlapping Board Privacy Fence
Std. Dwg. No. 41	-	Chain-link Fence
Std. Dwg. No. 42	-	Playground Curb
Std. Dwg. No. 43	-	Playground Safety Surfacing & Sub-Drainage System

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH TOWN OF WASAGA BEACH STANDARDS AND OPSS. WHERE INCONSISTENCY OCCURS, TOWN STANDARDS GOVERN.
3. CLEAR STONE WRAPPED IN FILTER FABRIC MAY BE SUBSTITUTED FOR PIPE BEDDING MATERIAL IF APPROVED BY THE ENGINEER.
4. DEWATERING TO BE CARRIED OUT IN ACCORDANCE WITH OPSS-517 AND 518. THE OWNER IS RESPONSIBLE FOR OBTAINING DEWATERING PERMITS AS REQUIRED TO MAINTAIN DRY TRENCH CONDITIONS.
5. UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
6. HYDRO POLES TO BE SUPPORTED AND PROTECTED BY THE CONTRACTOR DURING CONSTRUCTION AS DIRECTED BY WASAGA DISTRIBUTION INC.
7. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH UTILITIES WHICH MAY ALSO BE UNDER CONSTRUCTION.
8. EXISTING GAS MAIN TO BE PROTECTED IN ACCORDANCE WITH ENBRIDGE GAS SPECIFICATIONS.
9. ALL EXISTING PAVED PRIVATE ENTRANCES TO BE REINSTATED WITH 50mm HL3 SURFACE COURSE AND 150mm GRANULAR 'A' BASE TO LIMITS OF CONSTRUCTION.
10. ALL EXISTING GRAVEL OR GRASSED PRIVATE ENTRANCES TO BE REINSTATED WITH 150mm GRANULAR 'A' BASE TO LIMITS OF CONSTRUCTION AND 50mm HL3 TO 2.75m BEHIND CURB.
11. ALL COMMERCIAL ENTRANCES TO BE REINSTATED WITH 50mm HL3 SURFACE COURSE, MATCH EXISTING ASPHALT BASE COURSE(S), 150mm GRANULAR 'A' BASE AND 150mm GRANULAR 'B' SUBBASE TO LIMITS OF CONSTRUCTION.
12. JOINTS WITH EXISTING ASPHALT TO BE SAW CUT PRIOR TO PLACING NEW ASPHALT; DENSO REINSTATEMENT TAPE SHALL BE USED AT THE JOINT OF SURFACE ASPHALT. SURFACE ASPHALT JOINTS TO HAVE MIN. 0.5m WIDE LAP JOINT.
13. ALL BOULEVARDS AND DISTURBED AREAS TO HAVE 200mm SCREENED TOPSOIL AND NURSERY SOD UNLESS OTHERWISE NOTED.
14. PAVED BOULEVARD AREAS TO BE REINSTATED WITH 50mm HL3 SURFACE COURSE ASPHALT AND 150mm GRANULAR 'A' WHERE NOTED.
15. ACCESS TO BUSINESS AND RESIDENTIAL PROPERTIES MUST BE MAINTAINED AT ALL TIMES.
16. THE CONTRACTOR MUST GIVE MIN. 48 HOURS NOTICE TO THE TOWN OF WASAGA BEACH PUBLIC WORKS DEPARTMENT THROUGH THE TOWN ENGINEER FOR OFFICIALS TO BE PRESENT FOR THE OPERATION OF VALVES, TESTING, DISINFECTION AND CONNECTION OF WATERMAIN AND TESTING OF SEWERS.
17. EARTH FILL MATERIAL UP TO AND INCLUDING SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). GRANULAR BASE AND SUB-BASE TO BE COMPACTED TO 98% SPMDD. HOT-MIX ASPHALT TO BE COMPACTED TO 92% MAXIMUM RELATIVE DENSITY.

GENERAL NOTES:

18. MINIMUM VERTICAL SEPARATION OF 150mm BETWEEN SEWERS AT CROSSINGS.
19. THE CONTRACTOR MUST OBTAIN A ROAD OCCUPATION PERMIT FROM PUBLIC WORKS PRIOR TO INSTALLATION OF PROPOSED DRIVEWAY AND/OR ANY CONSTRUCTION WORKS WITHIN THE EXISTING MUNICIPAL RIGHT-OF-WAY.
20. ALL DISTURBED AREAS SHALL BE REINSTATED TO EXISTING CONDITION OR BETTER.

SEDIMENT & EROSION CONTROL NOTES:

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED, AFTER WHICH, THEY SHALL BE FULLY REMOVED BY THE CONTRACTOR. SEDIMENT AND EROSION CONTROL MEASURES THAT ARE DESIGNED TO CONTROL RUNOFF FROM SPECIFIC AREAS MUST BE INSTALLED PRIOR TO ANY DISTURBANCE OF THAT PART OF THE SITE.
2. THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES MUST BE PRESENTED IN WRITING FOR APPROVAL OF THE TOWN ENGINEER AND THE NOTTAWASAGA VALLEY CONSERVATION AUTHORITY.
3. THE CONTRACTOR SHALL HAVE MATERIALS AVAILABLE ON-SITE TO REPAIR SEDIMENT AND EROSION CONTROL MEASURES IN THE EVENT OF UNFORESEEN CONDITIONS: HIGH WATER, EXTREME RAINFALL EVENTS ETC.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED BY THE ENGINEER BI-WEEKLY AND AFTER EACH MAJOR STORM EVENT. INSPECTION REPORTS TO BE FORWARDED TO THE TOWN ENGINEER BI-WEEKLY. AREAS THAT ARE UNDEVELOPED FOR AN EXTENDED PERIOD OF TIME SHALL BE REVEGETATED WITH TOPSOIL AND HYDRAULIC SEED AND MULCH AS DIRECTED BY THE TOWN.

WATERMAIN:

1. ALL MATERIALS SHALL BE CSA CERTIFIED AND IN ACCORDANCE WITH THE TOWN APPROVED MATERIALS LIST.
2. ALL WATERMAIN TO HAVE MINIMUM 1.7m COVER OR APPROVED EQUIVALENT FROST PROTECTION WITH INSULATION.
3. BEDDING AND BACKFILL IN ACCORDANCE WITH OPSS-401.
4. PVC PIPE INSTALLATION TO INCLUDE 12awg TWH SOLID PLASTIC COVERED TRACER WIRE, TWU 75°C 600V OR APPROVED EQUAL. TRACER WIRE CONTINUITY MUST BE TESTED & CERTIFIED BY PUBLIC WORKS STAFF.
5. CATHODIC PROTECTION (S-12 ZINC ANODE @ 30.0m SPACING ON DUCTILE IRON PIPE AND AT ALL METAL RESTRAINTS, FITTINGS, APPURTENANCES, ETC.) TO BE PROVIDED IN ACCORDANCE WITH OPSS-442. CATHODIC PROTECTION IS TO BE CAD WELDED ON WITH MASTIC TAPE. FOR CURB STOPS, 6lb ZINC ANODES CAN BE TWISTED ON BUTTON TWIST NUT. SACRIFICIAL CAPS TO BE INSTALLED ON ALL FITTING BOLTS.
6. CLASS 'B' BEDDING AS PER OPSD-802.030 (RIGID PIPE) OR BEDDING AS PER OPSD-802.010 (FLEXIBLE PIPE) USING GRANULAR 'A'.
7. THRUST PROTECTION SHALL BE PROVIDED USING MECHANICAL JOINT FITTINGS AND RESTRAINERS.
8. GATE VALVES TO BE LEFT HAND OPENING COMPLETE WITH SLIDE TYPE VALVE BOXES 125mmØ WITH LIDS MARKED WATER AS PER TOWN APPROVED MATERIAL AND PRODUCT LIST.
9. WATER SERVICES COMPLETE WITH MAIN STOP TO BE AS PER TOWN APPROVED MATERIAL AND PRODUCT LIST.
10. WHERE RESIDENTIAL WATER SERVICES ARE TO BE ABANDONED, EXPOSE MAIN STOP, CLOSE AND DISCONNECT SERVICE PIPE, AND SALVAGE THE CURB STOP AND RETURN TO PUBLIC WORKS YARD.
11. ALL WATERMAINS AND SERVICES SHALL BE BACKFILLED WITH APPROVED SITE MATERIAL. ALL BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY AS PER OPSS 514. ALL GRANULAR ROAD BASE SHALL BE COMPACTED TO 98% MAXIMUM DRY DENSITY.
12. EXISTING SERVICE LOCATIONS TO BE VERIFIED IN THE FIELD.
13. HYDRANT TO BE AS PER TOWN APPROVED MATERIAL AND PRODUCT LIST WITH MECHANICAL JOINT ENDS, WITH 2-50mm PORTS AND FACTORY INSTALLED STORZ FITTING PER OPSD-1105.010.
14. TESTING CONNECTION TO THE MUNICIPAL WATER SYSTEM SHALL BE PER TOWN STD. DWG. No. 13.
15. MINIMUM VERTICAL SEPARATION 500mm BETWEEN WATERMAINS AND SEWERS. MINIMUM HORIZONTAL SEPARATION OF 2.5m BETWEEN WATERMAINS AND SEWERS.
16. WATERMAINS SHALL BE SWABBED, FLUSHED, DISINFECTED AND TESTED IN ACCORDANCE WITH OPSS 441 AND APPLICABLE LEGISLATION WITH TOWN OFFICIALS PRESENT.
17. DISINFECTION OF WATERMAINS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C651 SPECIFICATIONS.

WATERMAIN:

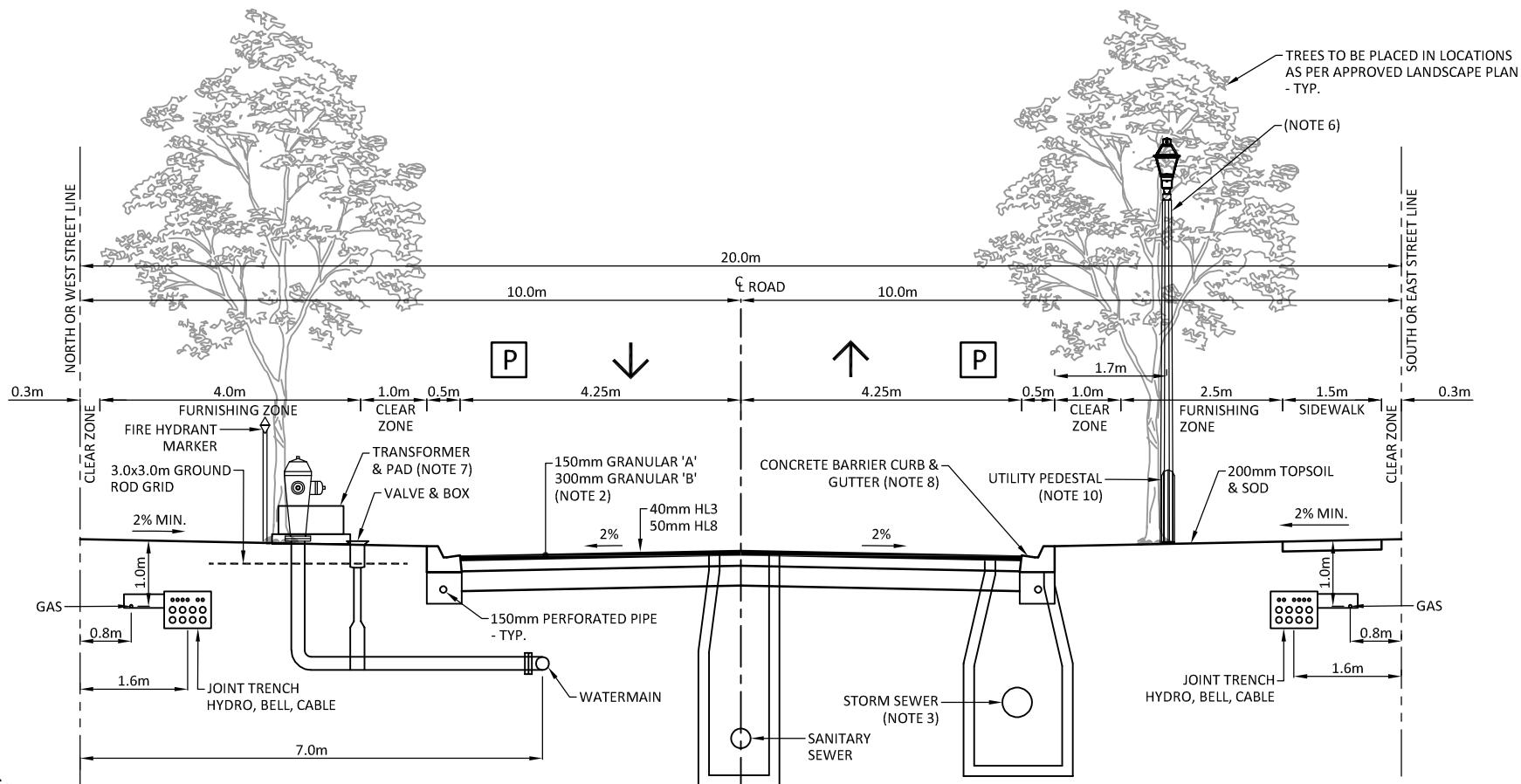
18. ANTI-TAMPERING DEVICES ARE TO BE INSTALLED ON ALL FIRE HYDRANTS FOLLOWING COMPLETION OF ALL WATER SYSTEM TESTING BY THE TOWN. ANTI-TAMPERING DEVICES ARE TO BE REMOVED FROM ALL FIRE HYDRANTS AT END OF WARRANTY PERIOD, PRIOR TO MUNICIPAL ASSUMPTION.
19. MINIMUM 1.0m SEPARATION REQUIRED BETWEEN SERVICE TAPS AND FROM THE END OF WATERMAIN PIPE.

SANITARY SEWER:

1. ALL MATERIALS SHALL BE CSA CERTIFIED AND IN ACCORDANCE WITH THE TOWN APPROVED MATERIALS LIST.
2. BEDDING AS PER OPSD-802.010 USING GRANULAR 'A' COMPACTED TO 98% MAXIMUM DRY DENSITY. USE SELECTED SITE MATERIAL FOR BACKFILL COMPACTED TO 95% MAXIMUM DRY DENSITY.
3. SANITARY SERVICE LATERALS COMPLETE WITH CLEANOUT/INSPECTION PORT TO BE INSTALLED PER TOWN STD. DWG No. 12A.
4. LOT SERVICE LOCATIONS TO BE VERIFIED BY CONTRACTOR.
5. MH'S PER OPSD-701.010 WITH FROST STRAPS PER OPSD 701.100 WITH "QUICK ANCHORED" BOLTS.
6. FRAMES AND COVERS PER OPSD-401.010 TYPE 'A'.
7. MH BENCHING PER OPSD-701.021 AND STEPS PER OPSD-405.010 CIRCULAR ALUMINUM.
8. SANITARY SEWER TESTING SHALL INCLUDE INFILTRATION, EXFILTRATION, DEFLECTION (MANDREL) AND CCTV.
9. SANITARY MAINTENANCE HOLES SHALL BE PROVIDED WITH DENSO PETROLIUM TAPE (OR APPROVED EQUIVALENT) AROUND THE OUTSIDE OF ALL SECTION JOINTS.

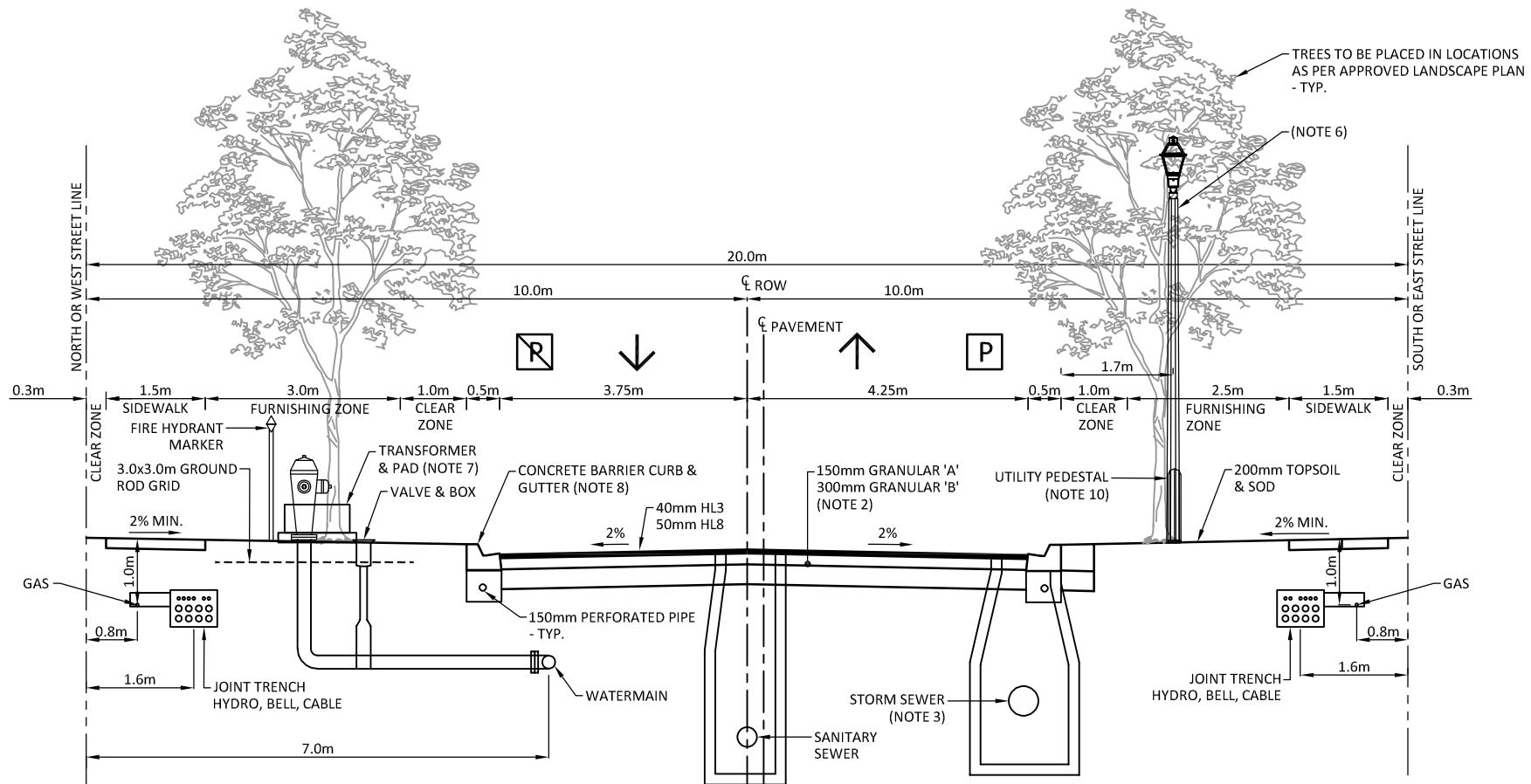
STORM SEWER:

1. ALL MATERIALS SHALL BE CSA CERTIFIED AND IN ACCORDANCE WITH THE TOWN APPROVED MATERIALS LIST.
2. CLASS 'B' BEDDING AND COVER AS PER OPSD-802.030 (RIGID PIPE) OR EMBEDMENT AS PER OPSD-802.010 (FLEXIBLE PIPE) USING GRANULAR 'A'. USE SELECT NATIVE MATERIAL COMPACTED TO 98% MAXIMUM DRY DENSITY FOR COVER MATERIAL IF APPROVED BY THE TOWN ENGINEER.
3. CATCH BASINS & MAINTENANCE HOLES (MH) TO BE BACKFILLED WITH SELECT NATIVE MATERIAL AND COMPACTED TO 95% MAXIMUM DRY DENSITY.
4. STEPS AS PER OPSD-405.010 HOLLOW CIRCULAR ALUMINUM.
5. CATCH BASIN LEADS; - 300mm dia. FOR SINGLE AND DOUBLE CATCH BASINS.
6. CATCH BASIN FRAMES AND COVERS PER OPSD 400.020.
7. STORM SEWER SHALL BE CCTV INSPECTED.
8. REAR LOT CATCH BASIN LEADS SHALL BE CONCRETE SEWER PIPE.
9. ALL MH'S GREATER THAN 1800mm DIAMETER TO BE BENCHING.
10. SUBDRAIN UNDER CURB SHALL BE 150mm dia. AS PER OPSS MUNI 405.



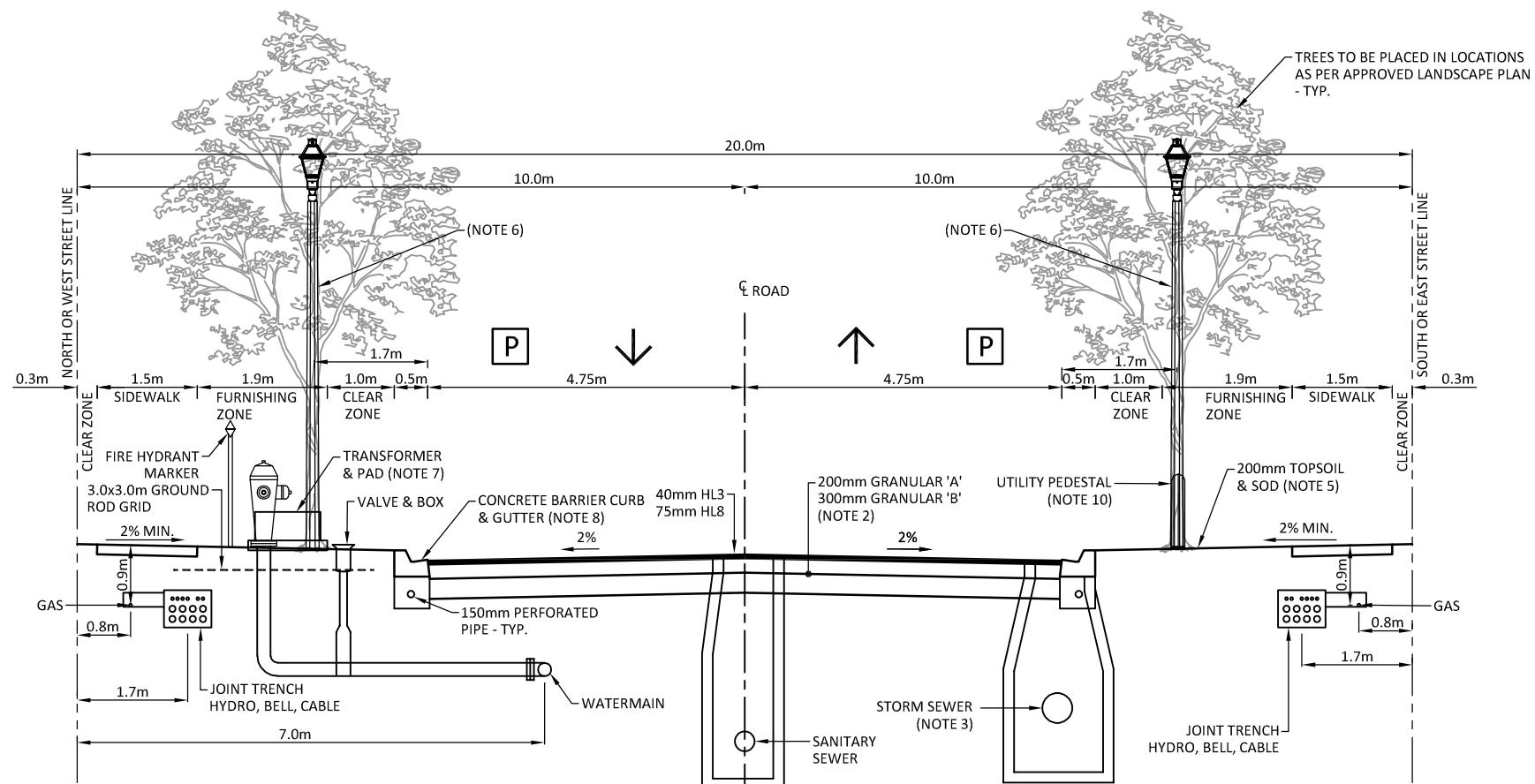
NOTES:

- ALL NEW DRIVEWAYS TO BE PAVED FROM BACK OF CURB TO GARAGE DOOR (TYP) AND ALL DRIVEWAY EDGING/CURBING SHALL BE FLUSH WITH DRIVEWAY PER THE TOWN ENGINEERING STANDARDS.
- WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 200mm.
- IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
- TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
- BOULEVARD TO BE FULLY SODDED WITH 200mm TOPSOIL.
- STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
- TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
- O.P.S.D. 600.040 - EXISTING ROAD IMPROVEMENTS, O.P.S.D. 600.070 (TWO STAGE) - NEW ROAD CONSTRUCTION.
- ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION INC.
- UTILITY PEDESTALS TO BE WITHIN FURNISHING ZONE OR BESIDE HYDRO TRANSFORMERS WHERE APPLICABLE.



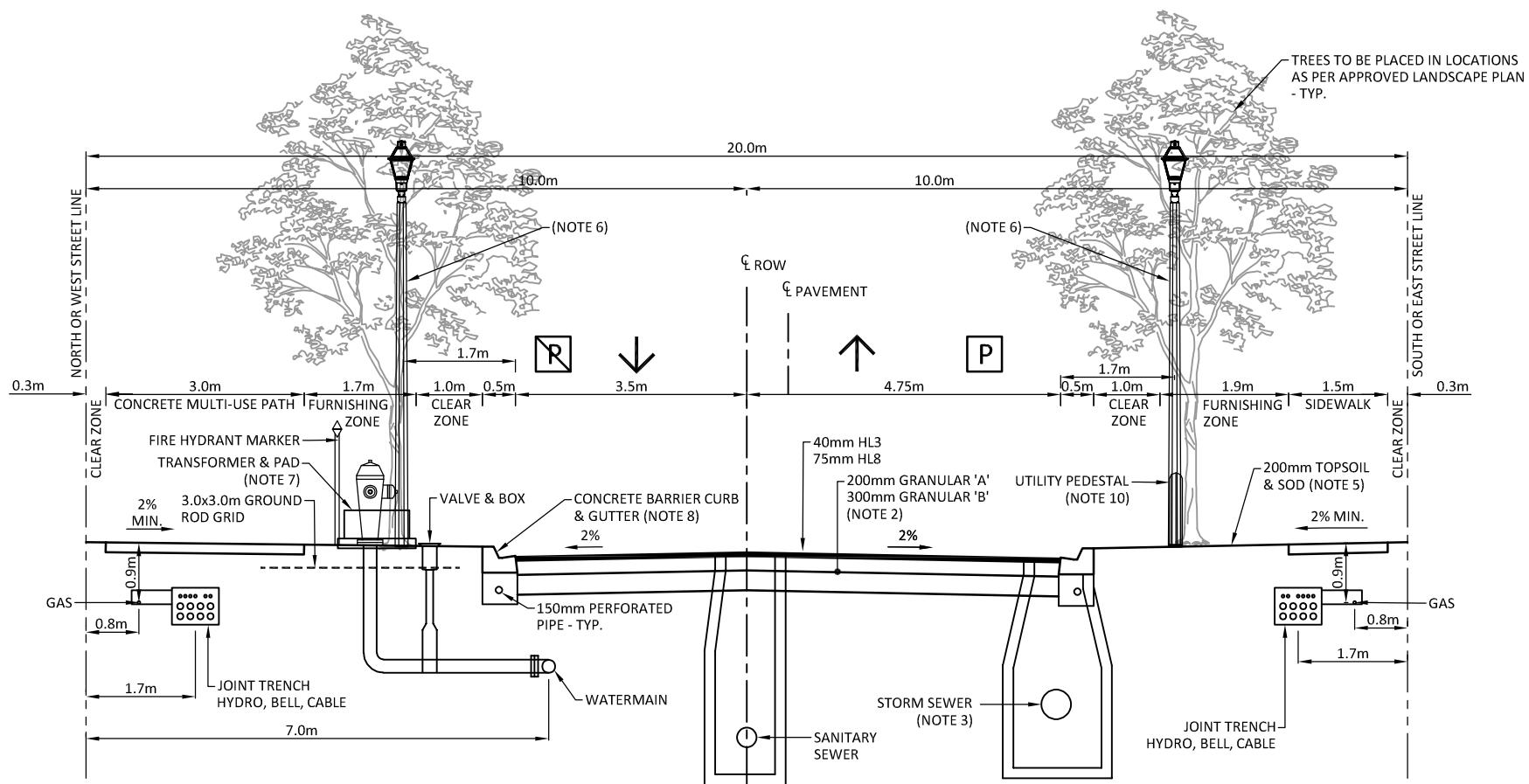
NOTES:

1. ALL NEW DRIVEWAYS TO BE PAVED FROM BACK OF CURB TO GARAGE DOOR (TYP) AND ALL DRIVEWAY EDGING/CURBING SHALL BE FLUSH WITH DRIVEWAY PER THE TOWN ENGINEERING STANDARDS.
2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 200mm.
3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
5. BOULEVARD TO BE FULLY SODDED WITH 200mm TOPSOIL.
6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
8. O.P.S.D. 600.040 - EXISTING ROAD IMPROVEMENTS, O.P.S.D. 600.070 (TWO STAGE) - NEW ROAD CONSTRUCTION.
9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION INC.
10. UTILITY PEDESTALS TO BE 0.3m FROM PROPERTY LINE OR BESIDE HYDRO TRANSFORMERS WHERE APPLICABLE.



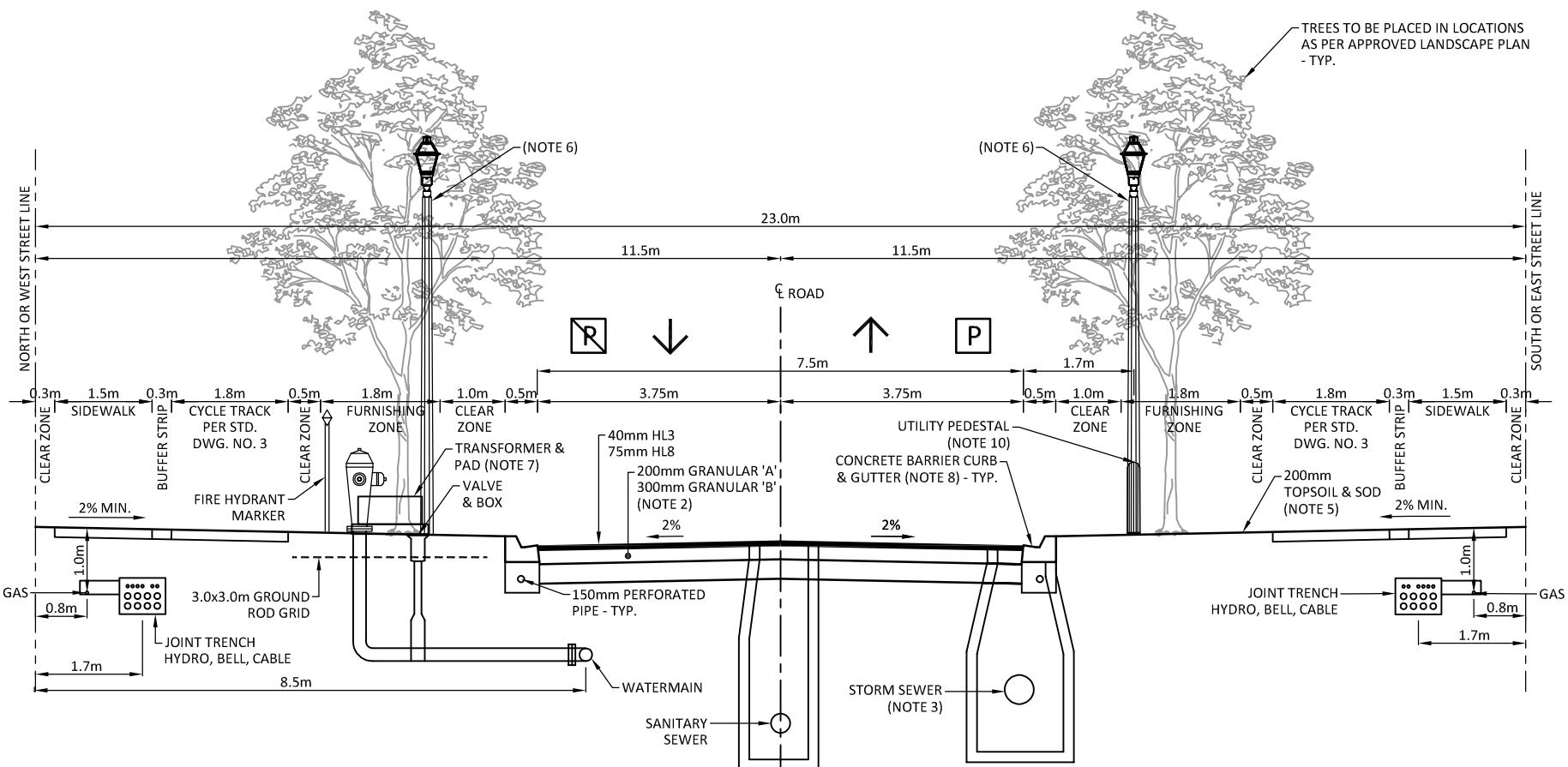
NOTES:

1. ALL NEW DRIVEWAYS TO BE PAVED FROM BACK OF CURB TO GARAGE DOOR (TYP.) AND ALL DRIVEWAY EDGING/CURBING SHALL BE FLUSH WITH DRIVEWAY PER THE TOWN ENGINEERING STANDARDS.
2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 250MM.
3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
5. BOULEVARD TO BE FULLY SODDED WITH 200MM TOPSOIL.
6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
8. O.P.S.D. 600.040 - EXISTING ROAD IMPROVEMENTS, O.P.S.D. 600.070 (TWO STAGE) - NEW ROAD CONSTRUCTION.
9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION INC.
10. UTILITY PEDESTALS TO BE 0.3m FROM PROPERTY LINE OR BESIDE HYDRO TRANSFORMERS WHERE APPLICABLE.



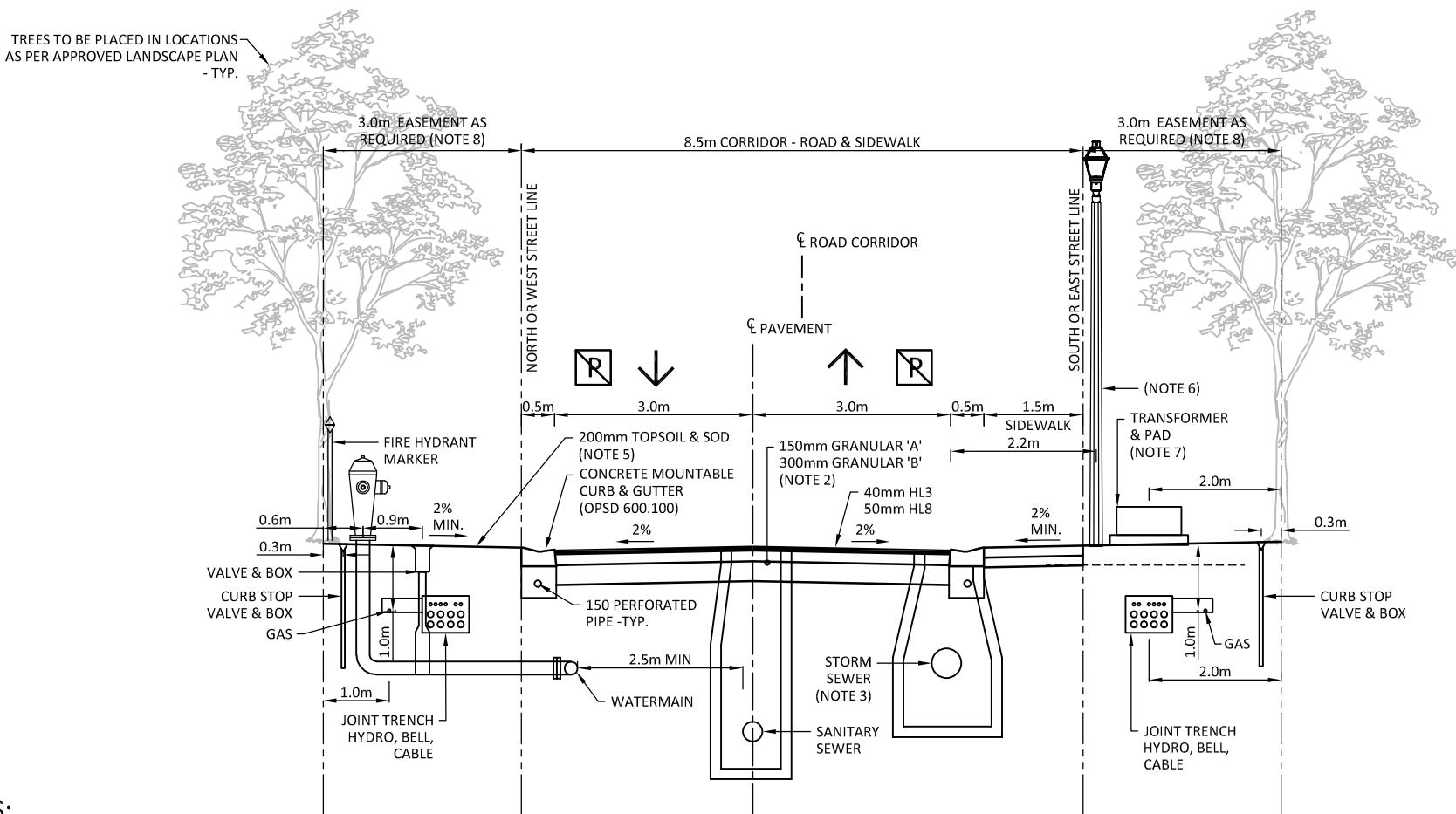
NOTES:

1. ALL NEW DRIVEWAYS TO BE PAVED FROM BACK OF CURB TO GARAGE DOOR (TYP.) AND ALL DRIVEWAY EDGING/CURBING SHALL BE FLUSH WITH DRIVEWAY PER THE TOWN ENGINEERING STANDARDS.
2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 250MM.
3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
5. BOULEVARD TO BE FULLY SODDED WITH 200MM TOPSOIL.
6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
8. O.P.S.D. 600.040 - EXISTING ROAD IMPROVEMENTS, O.P.S.D. 600.070 (TWO STAGE) - NEW ROAD CONSTRUCTION.
9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION INC.
10. UTILITY PEDESTALS TO BE 0.3m FROM PROPERTY LINE OR BESIDE HYDRO TRANSFORMERS WHERE APPLICABLE.



NOTES:

1. ALL DRIVEWAYS TO BE PAVED FROM BACK OF CURB TO GARAGE DOOR (TYP.) AND ALL DRIVEWAY EDGING/CURBING SHALL BE FLUSH WITH DRIVEWAY PER THE TOWN ENGINEERING STANDARDS.
2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 250mm.
3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
5. BOULEVARD TO BE FULLY SODDED WITH 200mm TOPSOIL.
6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
8. O.P.S.D. 600.040 - EXISTING ROAD IMPROVEMENTS, O.P.S.D. 600.070 (TWO STAGE) - NEW ROAD CONSTRUCTION.
9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION.
10. UTILITY PEDESTALS TO BE WITHIN FURNISHING ZONE OR BESIDE HYDRO TRANSFORMERS WHERE APPLICABLE.



NOTES:

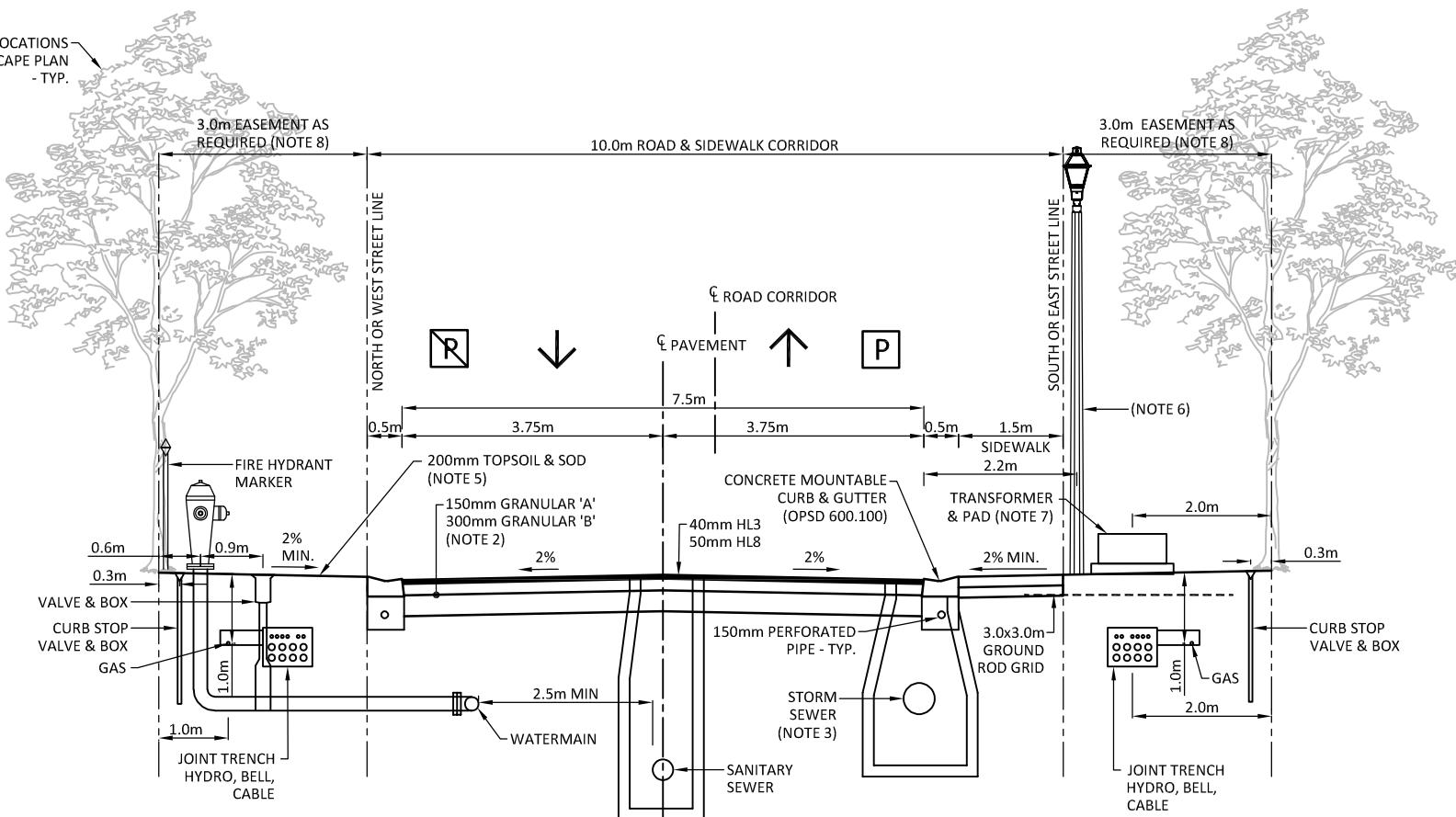
1. "NO PARKING - FIRE ROUTE" SIGNAGE SHALL BE INSTALLED ALONG BOTH SIDES OF ROADWAY.
 2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 200mm.
 3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
 4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
 5. BOULEVARD TO BE FULLY SODDED WITH 200mm TOPSOIL.
 6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
 7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
 8. EASEMENTS FOR UTILITIES, FIRE PROTECTION AND SNOW STORAGE.
 9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA DISTRIBUTION INC.

WASAGA BEACH™

STANDARD CROSS-SECTION
LOW DENSITY PRIVATE RESIDENTIAL DEVELOPMENT
6.0m ROAD ON 8.5m CORRIDOR

REV No.	SCALE: N.T.S.
2	DATE: DEC 2025
STD. DWG. No. 2D	

TREES TO BE PLACED IN LOCATIONS
AS PER APPROVED LANDSCAPE PLAN
- TYP.



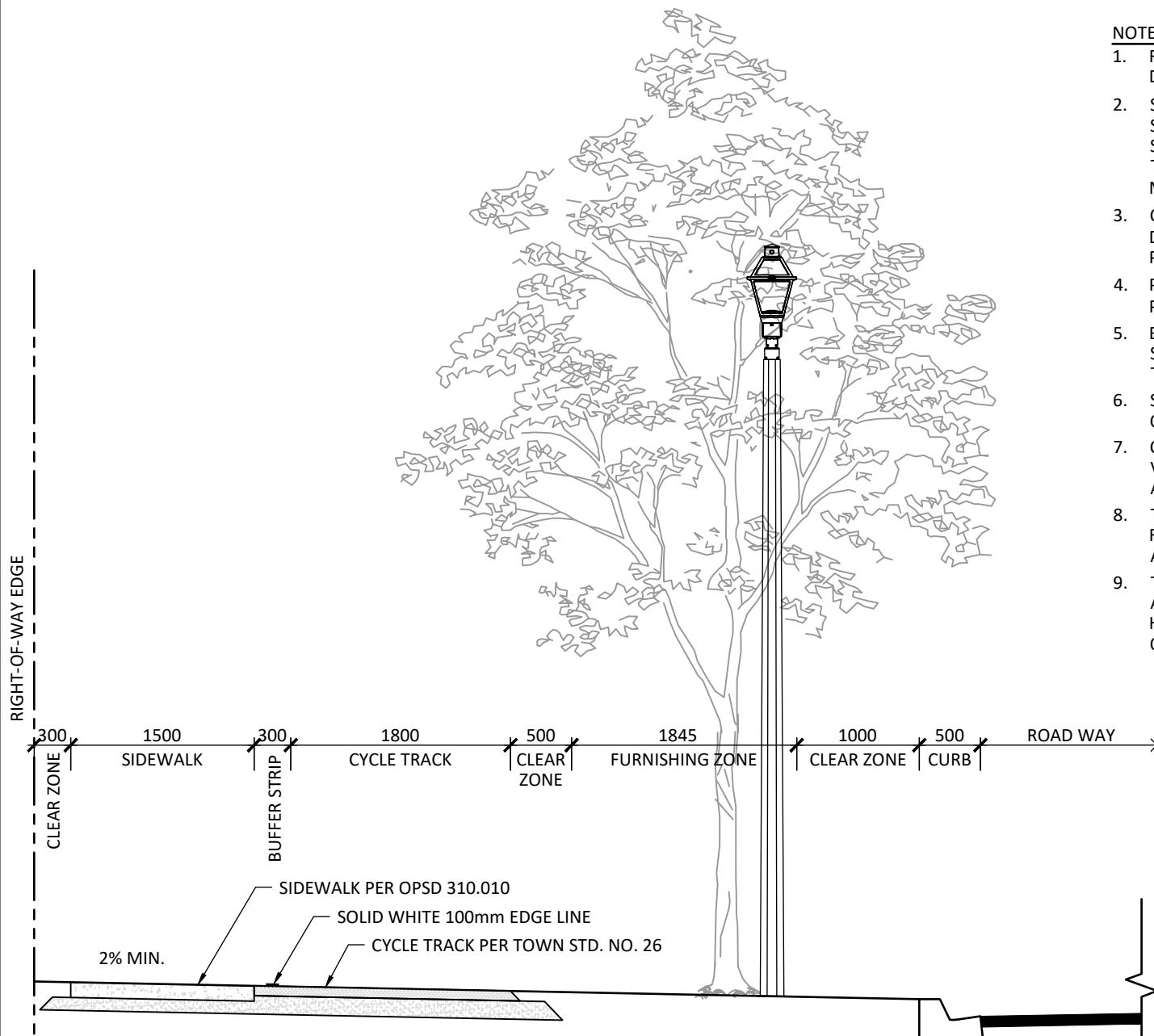
NOTES:

1. "NO PARKING - FIRE ROUTE" SIGNAGE SHALL BE INSTALLED ALONG THE NORTH OR WEST SIDE OF ROADWAY (SIDE WITH FIRE HYDRANTS).
2. WHERE SELECTED NATIVE SAND IS TO BE USED IN LIEU OF GRANULAR 'B' ROAD BASE, INCREASE GRANULAR 'A' THICKNESS TO 200mm.
3. IN AREAS OF HIGH GROUND WATER TABLE, AN INFILTRATING STORM SEWER SYSTEM MUST BE CONSIDERED PER ENGINEERING STANDARDS.
4. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD ALLOWANCE BY CONTRACTOR.
5. BOULEVARD TO BE FULLY SODDED WITH 200mm TOPSOIL.
6. STREET LIGHTS PER TOWN STANDARD DRAWING NO. 24.
7. TRANSFORMERS INCLUDE 3m x 3m GROUND ROD GRID REQUIRING 0.3m MIN CLEARANCE FROM BACK OF CURB.
8. EASEMENTS FOR UTILITIES, FIRE PROTECTION AND SNOW STORAGE.
9. ROAD CROSSING DEPTHS FOR ALL UTILITIES 1.2m PER WASAGA BEACH DISTRIBUTION INC.

WASAGA BEACH™

STANDARD CROSS-SECTION
MEDIUM DENSITY PRIVATE RESIDENTIAL DEVELOPMENT
7.5m ROAD ON 10.0m CORRIDOR

REV No.	SCALE: N.T.S.
2	DATE: DEC 2025
STD. DWG. No. 2E	



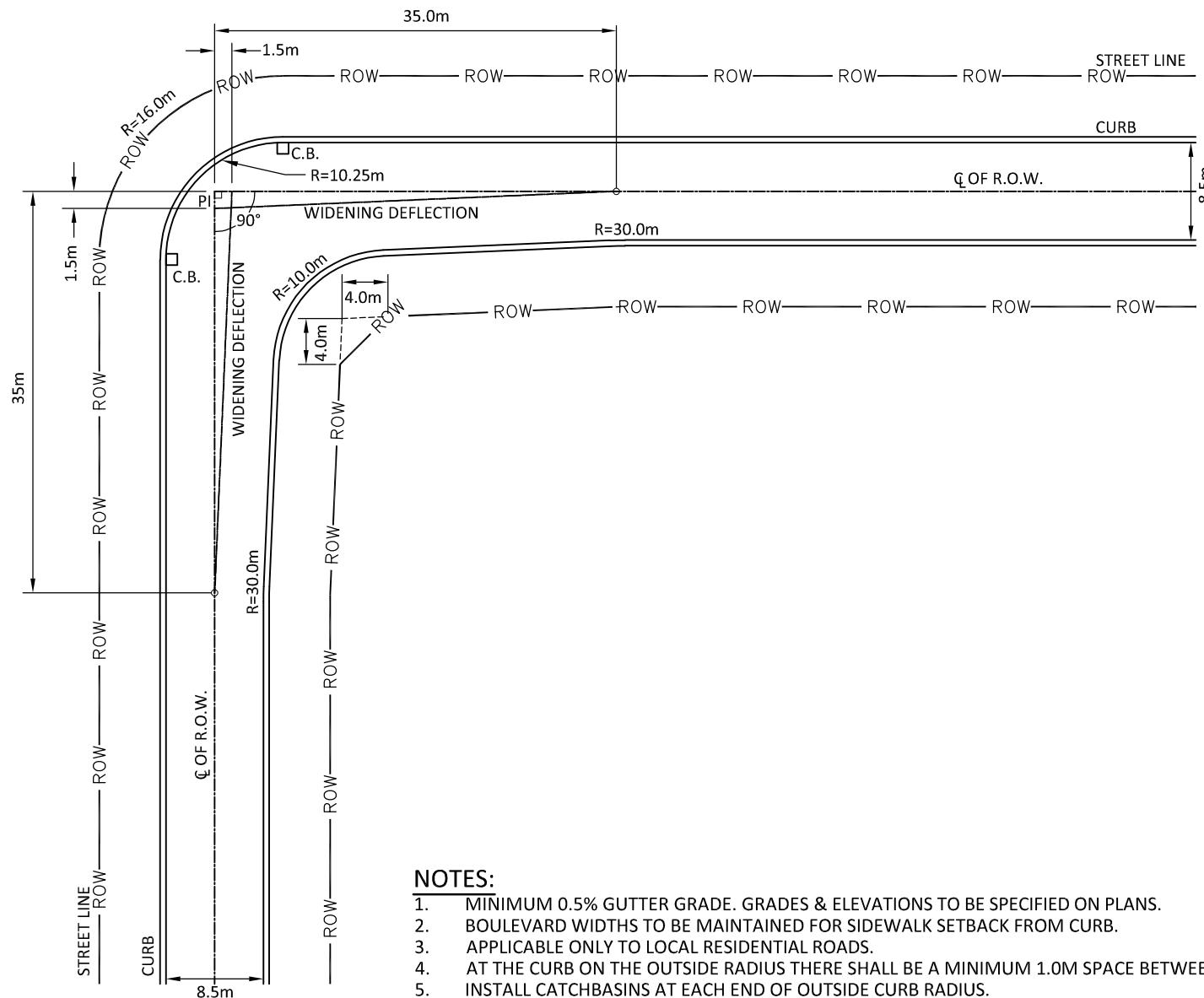
NOTES:

1. REFER TO TOWN STANDARD DETAIL NO. 2C FOR FULL DETAILS ON RIGHT-OF-WAY DESIGN REQUIREMENTS.
2. SURFACE FEATURES PLAN/PAVEMENT MARKING AND SIGNAGE PLANS SHALL INDICATE ALL REQUIRED SIGNAGE AND PAVEMENT MARKINGS FOR THE CYCLE TRACK, IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 18 - CYCLING FACILITIES.
3. CYCLE TRACK PAVEMENT MARKINGS (BICYCLE AND DIRECTIONAL ARROW PER OTM BOOK 18) SHALL BE PROVIDED EVERY 300m.
4. PATHWAY ORGANIZATION SIGNS (RB-72-A, RB-72-B PER OTM BOOK 18) SHALL BE PROVIDED EVERY 300m.
5. BUFFER STRIP BETWEEN THE CYCLE TRACK AND SIDEWALK SHALL BE 300mm STAMPED ASPHALT WITH TRANSVERSE SCORE LINE AT 200mm INTERVALS.
6. SOLID WHITE 100mm EDGE LINE SHALL CONFORM TO OPSS.PROV 1712.
7. CYCLE TRACK PAVEMENT STRUCTURE SHALL BE VERIFIED AND APPROVED BY GEOTECHNICAL ANALYSIS IN FIELD.
8. THE CLEAR ZONES REPRESENT AN AREA THAT IS FREE FROM ANY ABOVE GROUND FURNISHINGS, UTILITIES AND OBSTRUCTIONS.
9. THE FURNISHING ZONE SHALL BE DESIGNED TO ACCOMMODATE SIGNAGE, STREETLIGHTS, FIRE HYDRANTS, TREES, BENCHES, PARKING METERS AND OTHER UTILITIES, ETC. AS REQUIRED.

WASAGA BEACH™

CYCLE TRACK

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 3	



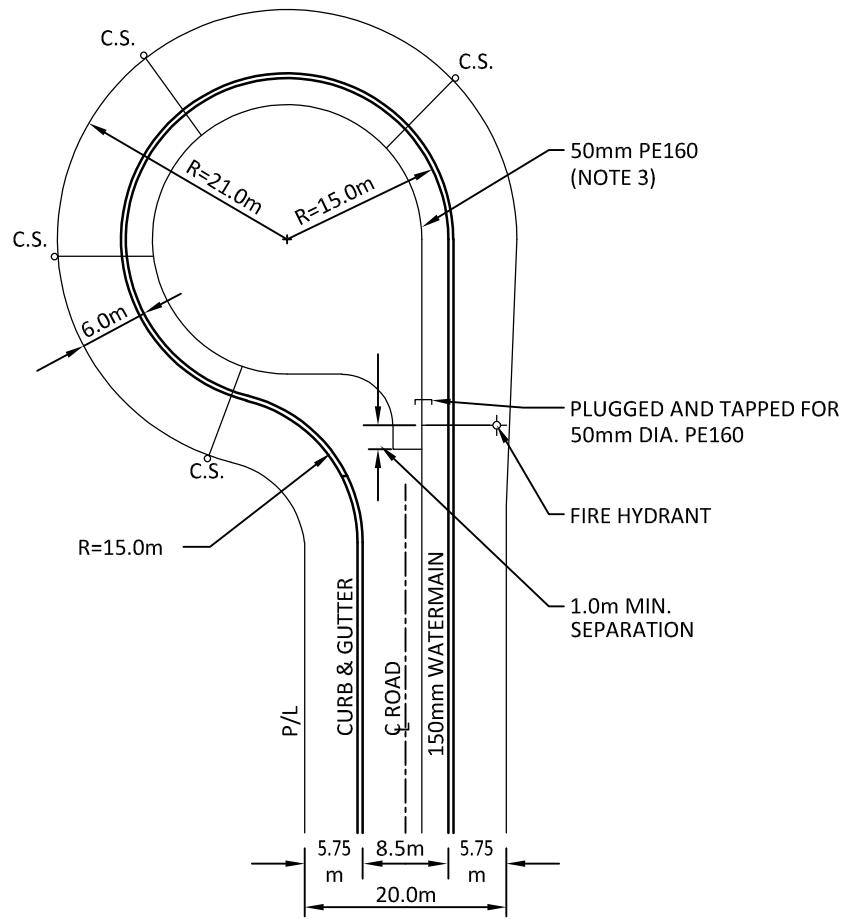
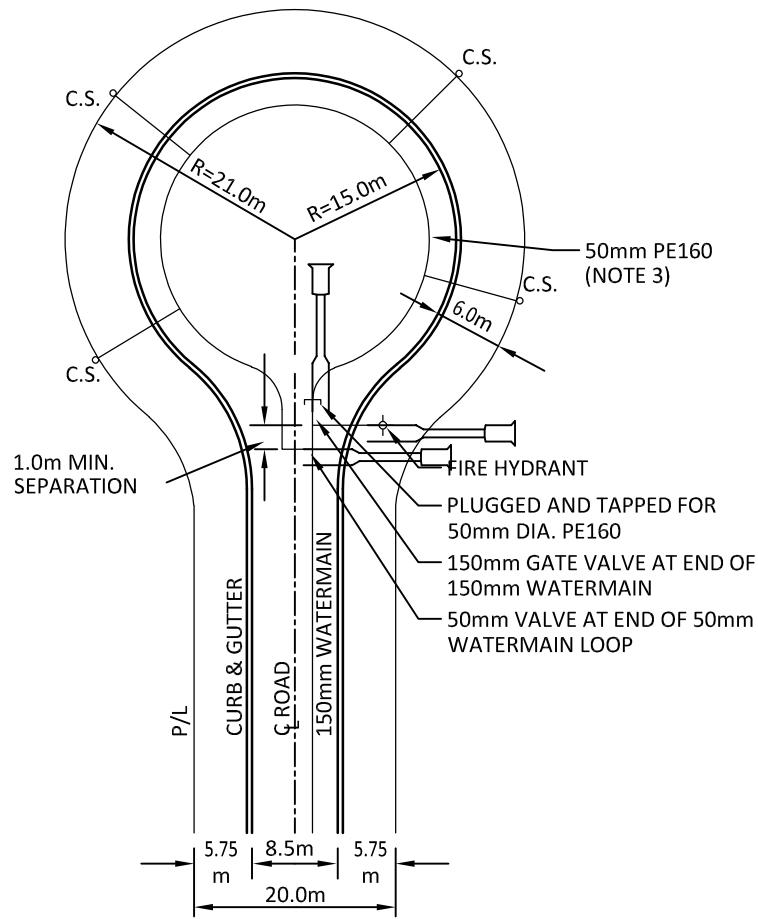
NOTES:

1. MINIMUM 0.5% GUTTER GRADE. GRADES & ELEVATIONS TO BE SPECIFIED ON PLANS.
 2. BOULEVARD WIDTHS TO BE MAINTAINED FOR SIDEWALK SETBACK FROM CURB.
 3. APPLICABLE ONLY TO LOCAL RESIDENTIAL ROADS.
 4. AT THE CURB ON THE OUTSIDE RADIUS THERE SHALL BE A MINIMUM 1.0M SPACE BETWEEN DRIVEWAYS AT PROPERTY LINE.
 5. INSTALL CATCHBASINS AT EACH END OF OUTSIDE CURB RADIUS.

WASAGA BEACH™

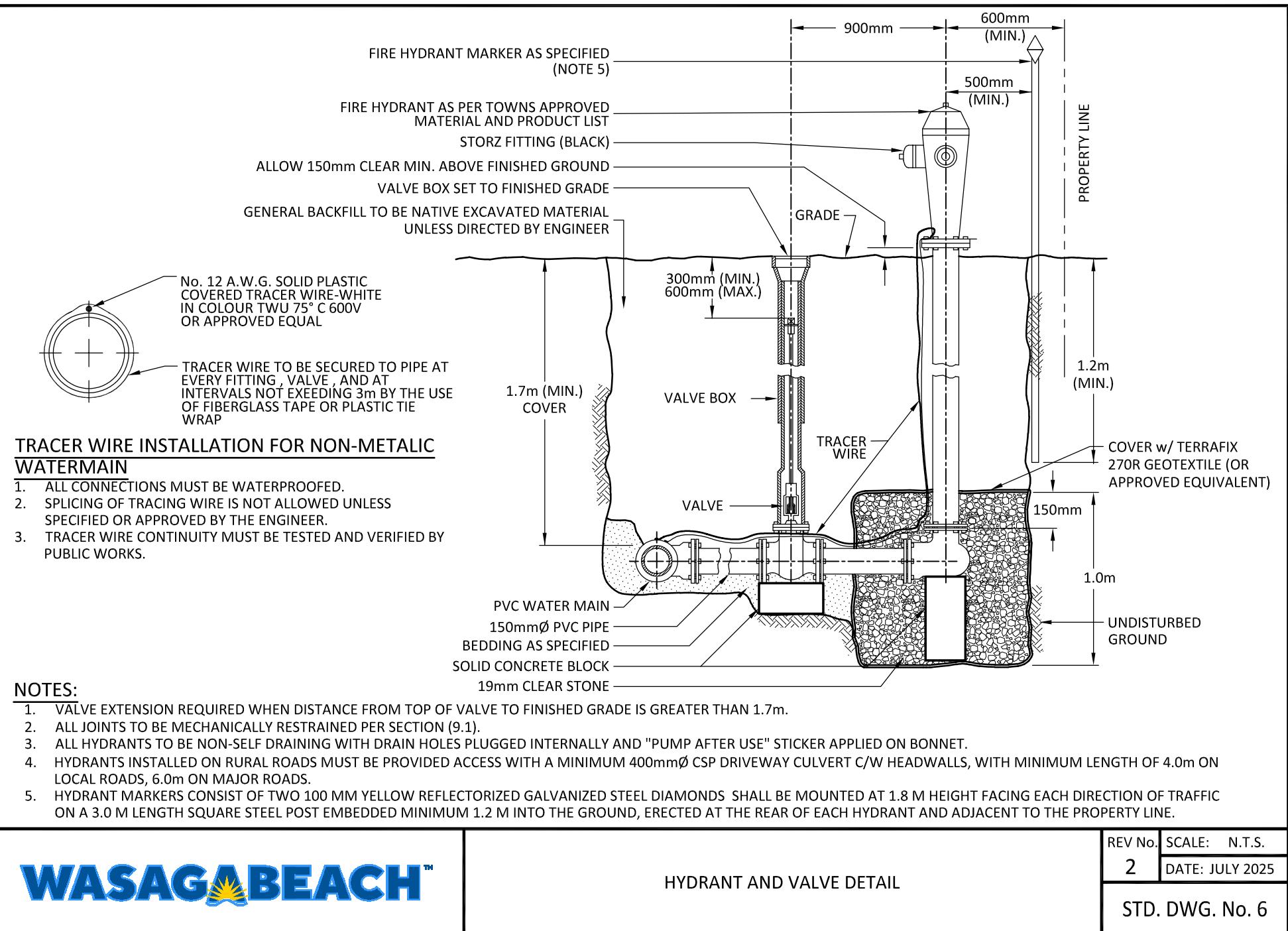
TYPICAL 90° CRESCENT WITH CURB AND GUTTER

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 4	



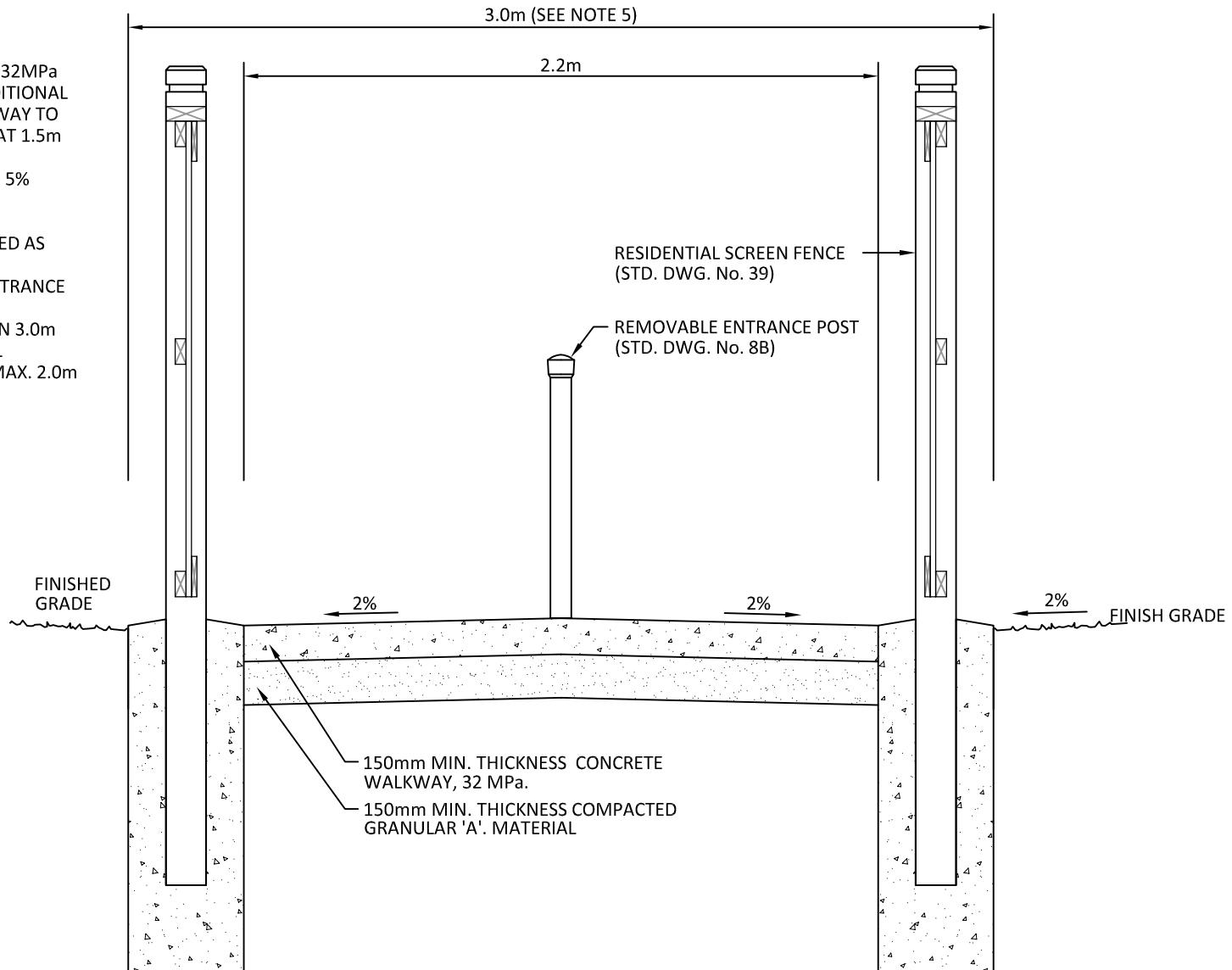
NOTES:

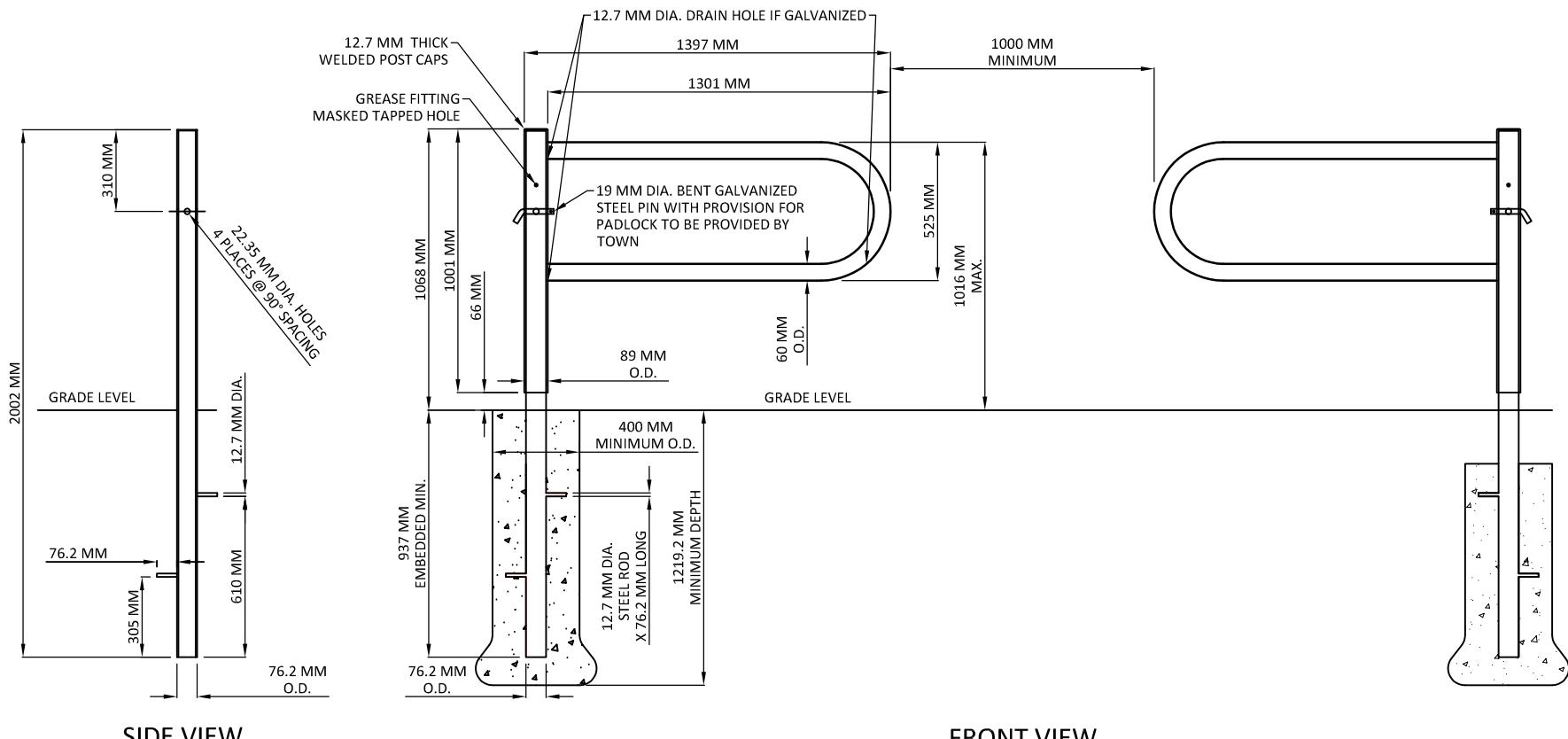
1. GUTTER GRADES TO BE SPECIFIED ON PLANS. MINIMUM GRADE ALONG GUTTER TO BE 0.50%
 2. MINIMUM 2 CATCHBASINS TO BE PROVIDED IN CUL-DE-SAC
 3. MINIMUM OF 4 RESIDENTIAL WATER SERVICES ARE REQUIRED ON THE 50MM DIA. LOOPED WATERMAIN



NOTES:

1. CONCRETE WALKWAY TO BE OPSS 351, 32MPa CONCRETE. SEE OPSD 310.010 FOR ADDITIONAL DETAILS. EXPANSION JOINTS ON WALKWAY TO BE AT 6.0m SPACING. DUMMY JOINTS AT 1.5m INTERVALS.
2. A MINIMUM OF 1% AND MAXIMUM OF 5% GRADE MUST BE MAINTAINED ALONG WALKWAYS.
3. DRAINAGE OUTLETS ARE TO BE PROVIDED AS REQUIRED BY PUBLIC WORKS.
4. REMOVABLE POST TO BE PLACED AT ENTRANCE APPROACH OR EQUIVALENT.
5. WHERE THE DISTANCE IS GREATER THAN 3.0m WIDE FOR DRAINAGE ETC., ADDITIONAL BOLLARDS WOULD BE REQUIRED FOR MAX. 2.0m CLEAR SPAN WIDTH.





SIDE VIEW

FRONT VIEW

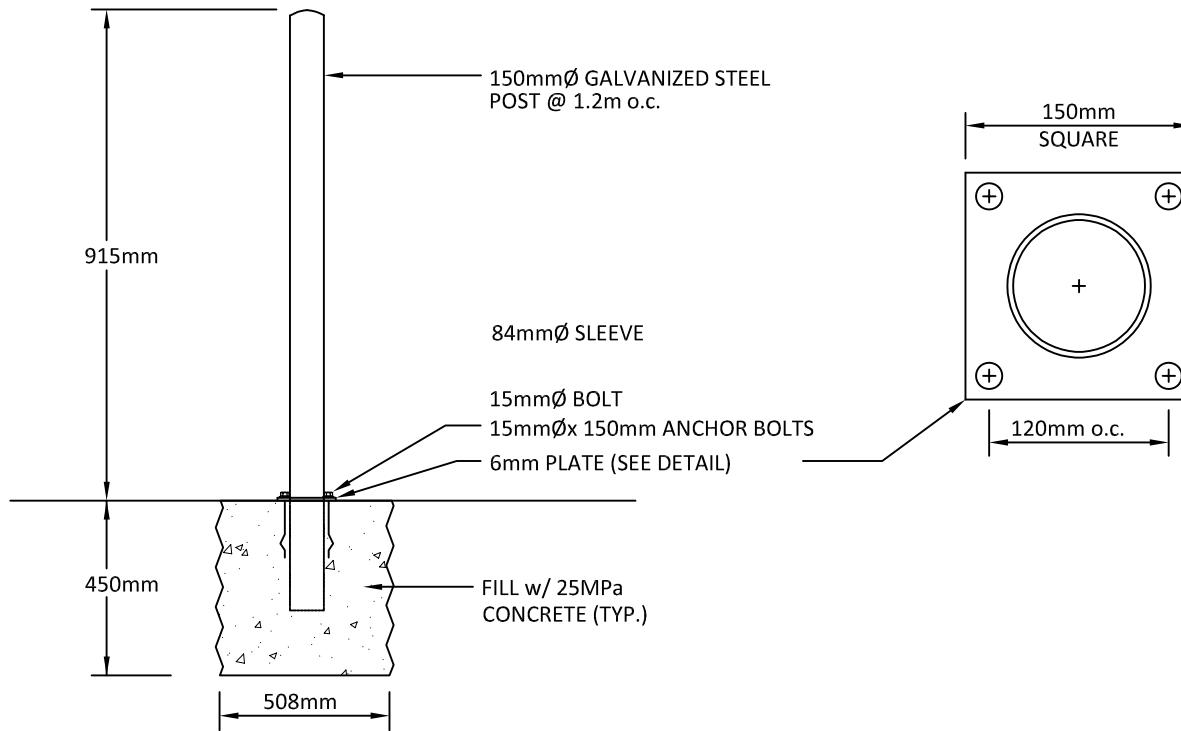
NOTES:

1. P-GATE AS SUPPLIED BY PARIS SITE FURNISHINGS AND OUTDOOR FITNESS
2. PRODUCT # - B35-GATE-42X55, BHD5-GATE-R-42X60 OR APPROVED EQUIVALENT
3. COLOUR TO BE GRAY
4. MATERIAL TO BE STEEL 0.125" WALL HSS TUBE WITH HOT DIPPED GALVANIZED FINISH
5. POST TO BE PLACED AT ENTRANCE APPROACH OR EQUIVALENT
6. 25MPa CONCRETE FOOTINGS

WASAGA BEACH™

P-GATE ENTRANCE

REV No.	SCALE: N.T.S.
0	DATE: JULY 2025
STD. DWG. No. 8A	



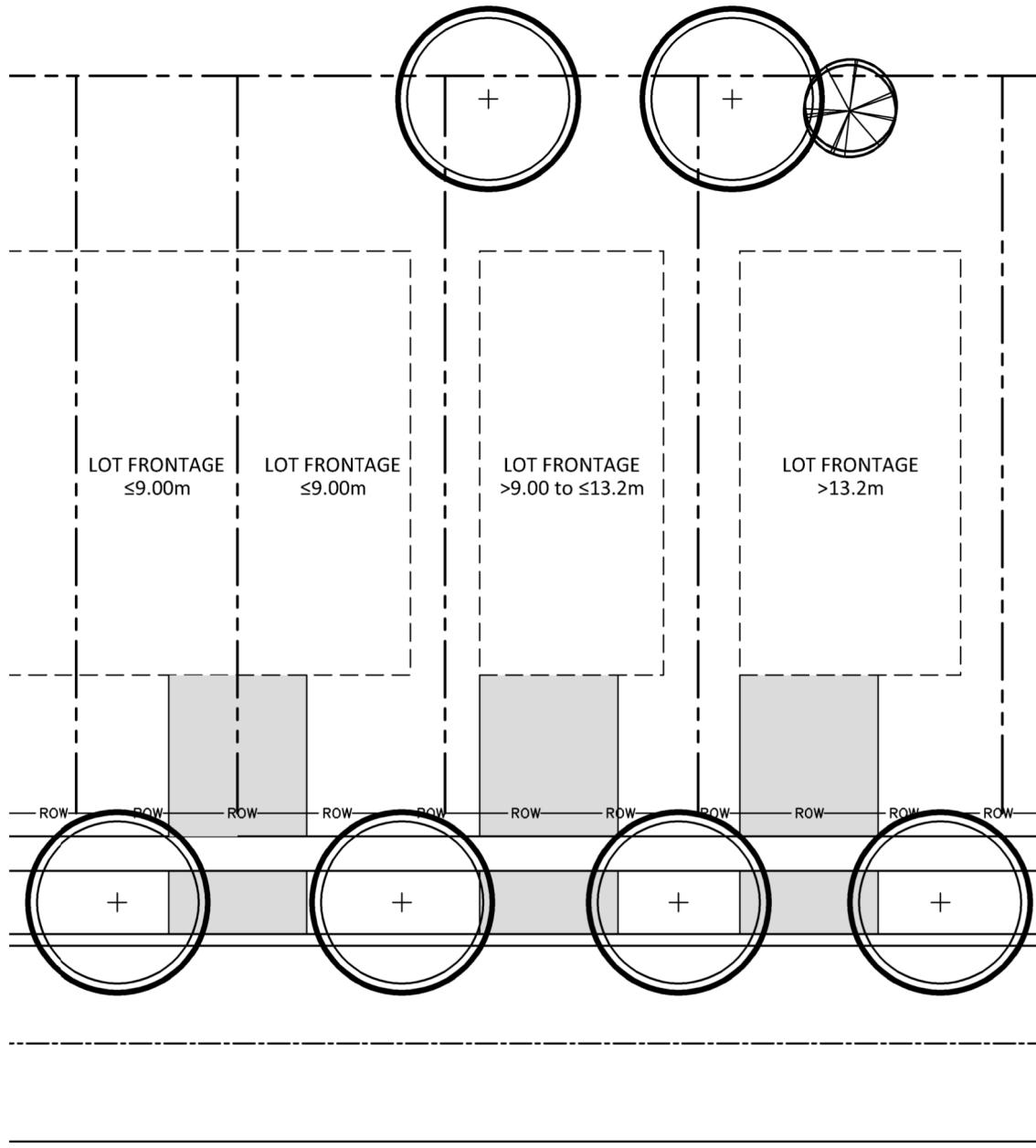
NOTES:

1. 150mm DIAMETER REMOVABLE BOLLARD AS SUPPLIED BY GLOBAL INDUSTRIAL -
PRODUCT # - T97670518 OR APPROVED EQUIVALENT
2. SPACING TO BE EQUAL DISTANCE OF OPENING TO PREVENT VEHICULAR TRAFFIC
3. MIN. SPACING BETWEEN BOLLARDS TO BE 1.5m MAX. SPACING IS 2.0m

WASAGA BEACH™

REMOVABLE ENTRANCE POST

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 8B	

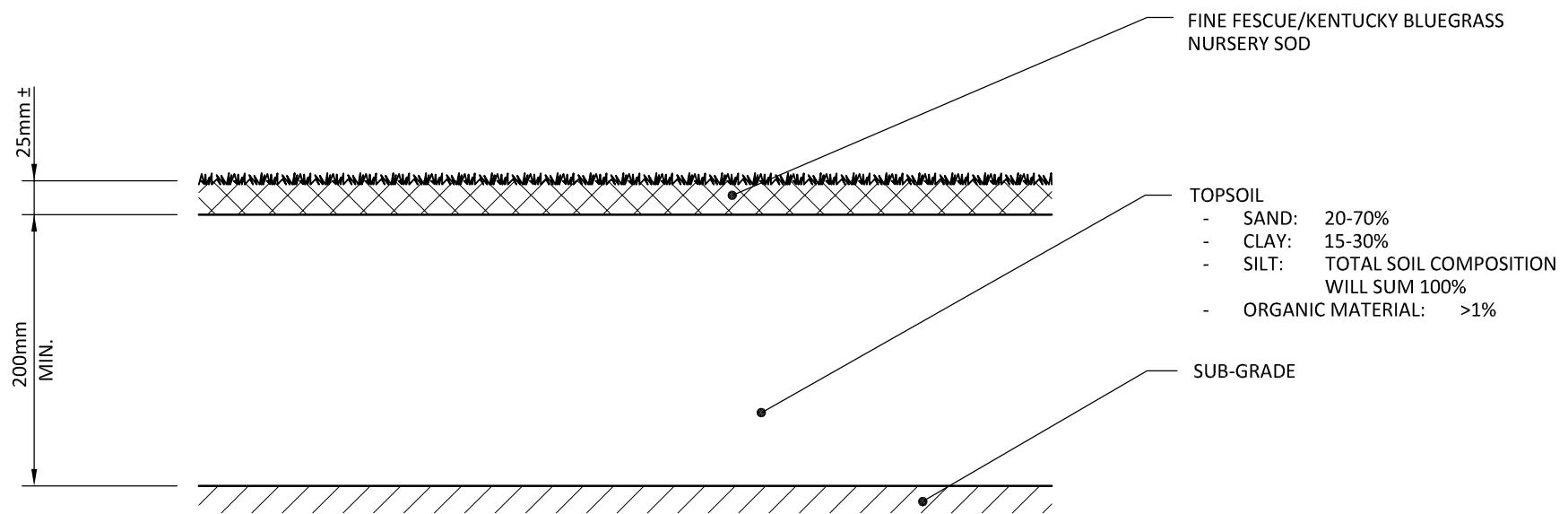


TREE PLANTING TARGETS	
LAND USE	PLANTING TARGET
SUBDIVISION (LOT FRONTAGE $\leq 9.00\text{m}$)	1 TREE PER LOT
SUBDIVISION (LOT FRONTAGE $>9.00 \text{ to } \leq 13.2\text{m}$)	2 TREES PER LOT
SUBDIVISION (LOT FRONTAGE $>13.2\text{m}$)	3 TREES PER LOT

NOTES:

1. LOCATION OF TREE PLANTINGS TO BE DETERMINED AT TIME OF PLANTING IN CONSULTATION WITH MUNICIPAL STAFF AND IN CONFORMANCE WITH THE ACCEPTED FOR CONSTRUCTION LANDSCAPE PLANS.
2. CONTRACTOR TO PRESERVE EXISTING TREES WHERE POSSIBLE.
3. DECIDUOUS TREES SHALL BE: 60mm CALIPER AND CONSISTENT WITH THE TOWN APPROVED SPECIES LIST.
4. CONIFEROUS TREES SHALL BE: A MINIMUM HEIGHT OF 1.8m AND CONSISTENT WITH THE TOWN APPROVED SPECIES LIST.
5. TREE PITS WITHIN 1.0m OF UNDERGROUND UTILITIES ARE TO BE HAND DUG.
6. MINIMUM CLEARANCE FOR TREE ARE AS FOLLOWS:

MINIMUM TREE SETBACK DISTANCES	
FROM EDGE OF SIDEWALK	1.0m
FROM EDGE OF DRIVEWAY	1.5m
BELOW GRADE UTILITIES	1.0m
HYDRO TRANSFORMER GROUNDING GRID	1.5m
FIRE HYDRANT	3.0m
BACK EDGE OF CURB	1.0m
STREETLIGHT	3.0m
FENCING	1.0m
COMMUNITY MAILBOXES	2.0m



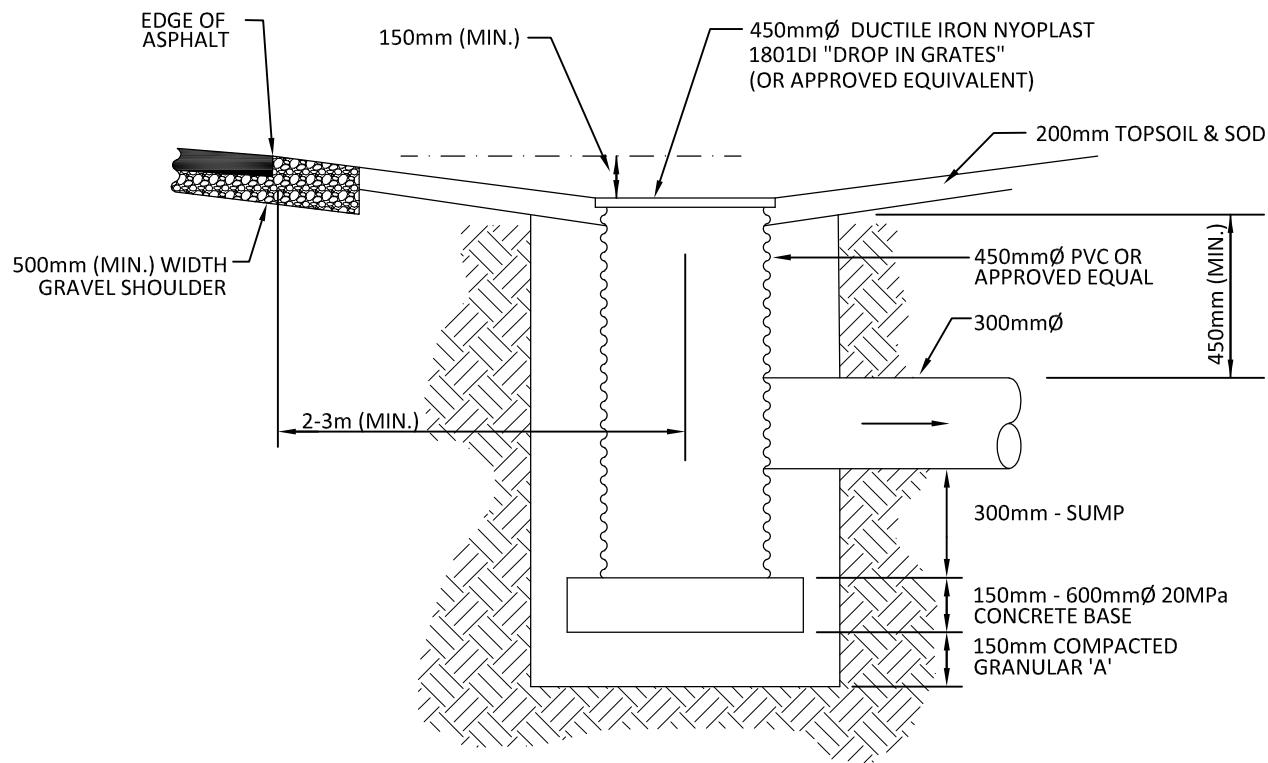
NOTES:

1. SOD MUST FINE FESCUE/KENTUCKY BLUEGRASS AS SPECIFIED BY THE NURSERY SOD GROWERS ASSOCIATION OF ONTARIO.
2. TOPSOIL MUST BE TESTED AND A REPORT MUST BE PROVIDED BY THE GEOTECHNICAL ENGINEER CONFIRMING THE SUITABILITY OF THE TOPSOIL FOR HEALTHY TURF GROWTH.
3. TOPSOIL MUST BE COMPLETELY CLEAR OF ALL STONES IN EXCESS OF 25mm, DEBRIS, AND WOODY MATERIAL.
4. THE SUB-GRADE MUST BE GRADED TO ENSURE CONSISTENT TOPSOIL THICKNESS AND PROVIDE POSITIVE SURFACE DRAINAGE.
5. A PRE-SOD INSPECTION IS RECOMMENDED TO BE COMPLETED BY THE TOWN ENGINEER PRIOR TO THE PLACEMENT OF TOPSOIL.
6. THE REQUIREMENTS IN OPSS 802 & OPSS 803 SHALL APPLY.

WASAGA BEACH™

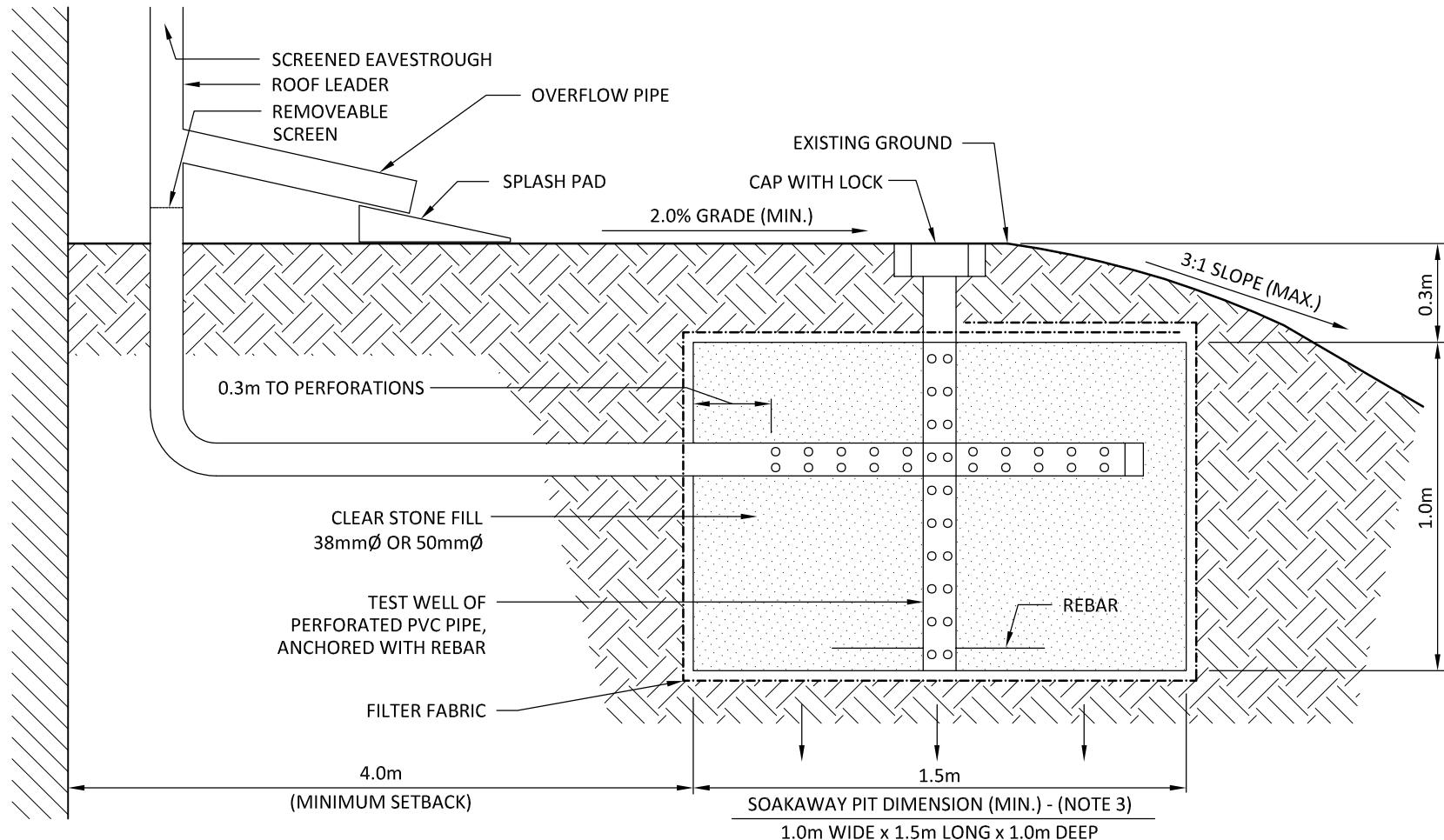
TOPSOIL & SOD REQUIREMENTS

REV No.	SCALE:	N.T.S.
2	DATE:	JULY 2025
STD. DWG. No. 9B		



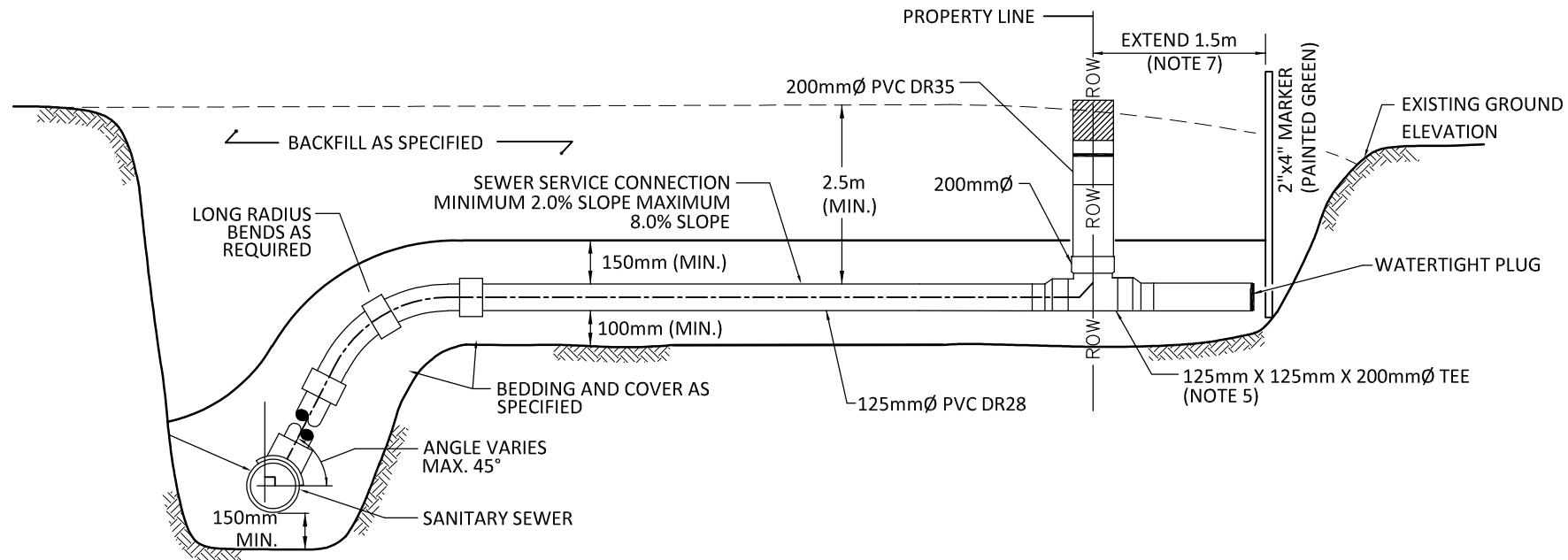
NOTES:

1. IN THE EVENT THAT THERE IS NO STORM SEWER COLLECTION SYSTEM, THE ABOVE MINIMUM GRADING SHALL BE PROVIDED FOR SURFACE WATER CONVEYANCE AND INFILTRATION.
2. A MINIMUM 1.0 X 1.0 X 3.0m SOAKAWAY PIT CONSISTING OF 50mm CLEAR STONE WRAPPED IN TERRAFIX 270R FILTER FABRIC MAY BE REQUIRED AS DEEMED NECESSARY BY THE TOWN ENGINEER.



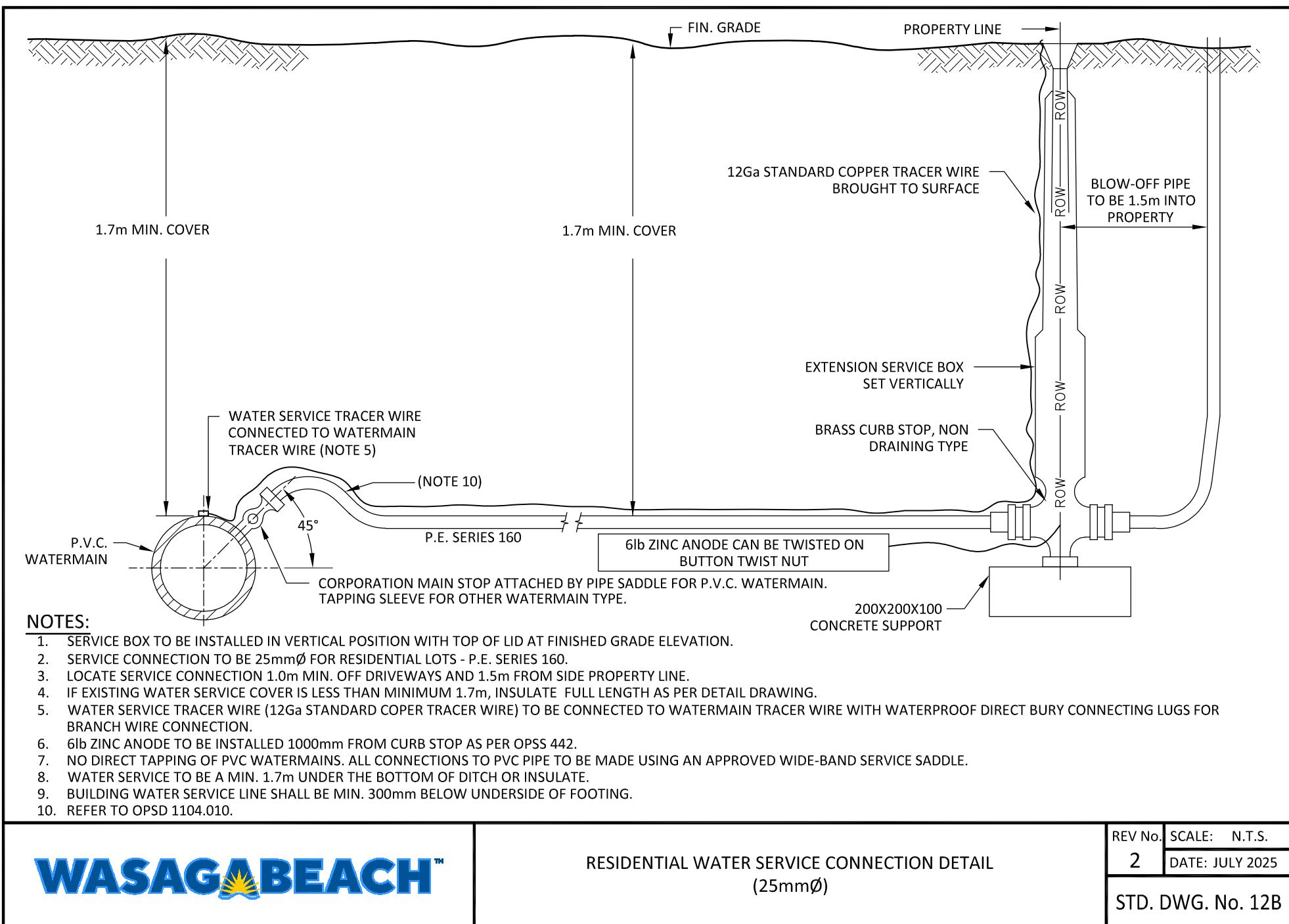
NOTE:

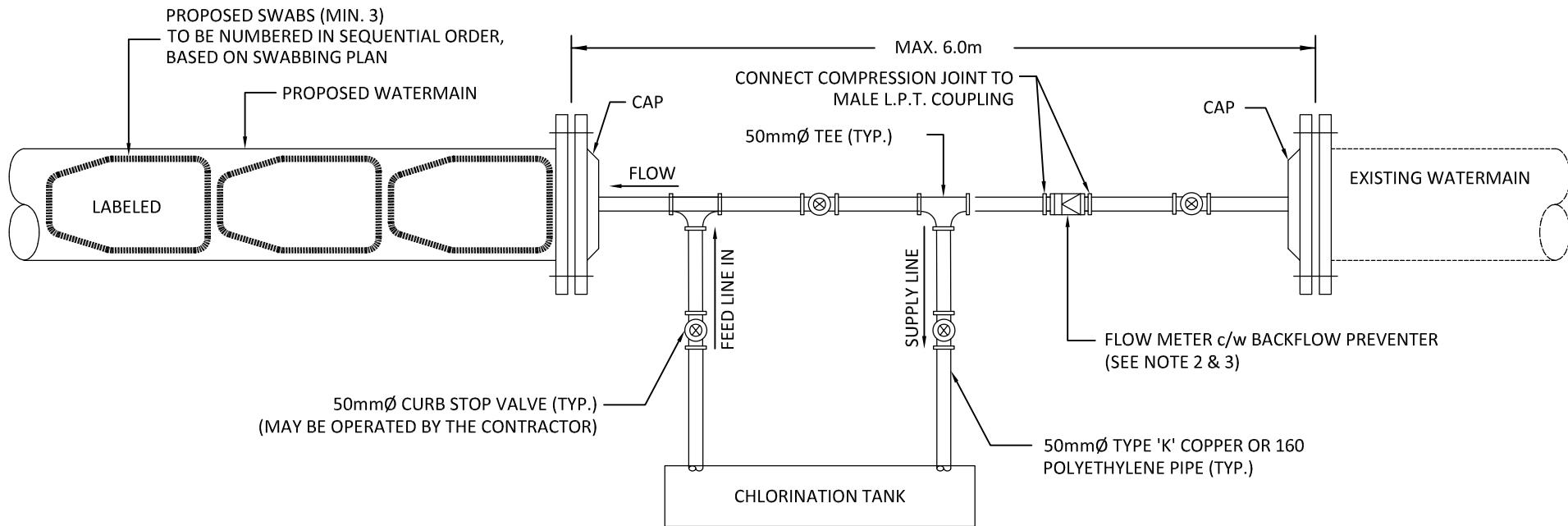
1. FILTER FABRIC TERRAFIX 270R OR EQUAL.
2. PROVIDE MINIMUM 0.5m CLEARANCE TO WATER TABLE FROM BOTTOM OF PIT.
3. SOAKAWAY PIT DIMENSIONS SHALL BE SIZED PER DESIGN ENGINEER RECOMMENDATION.
4. SOAKAWAY PIT TO BE INSPECTED BY DESIGN ENGINEER PRIOR TO BACKFILL.
5. SOAKAWAY PIT TO BE OFFSET A MINIMUM 4.0m AWAY FROM BUILDING.
6. SOAKAWAY PIT TO BE OFFSET A MINIMUM 1.0m AWAY FROM PROPERTY LINE.
7. SURFACE WATER INFILTRATION GALLERIES / SOAK AWAY PITS SHALL HAVE A SURFACE DEPRESSION WITH A MINIMUM DEPTH OF 150mm LOWER THAN ADJACENT GRADE.



NOTES:

1. MAXIMUM DEPTH OF SERVICE AT PROPERTY LINE TO BE 2.5m FROM FINISHED GRADE.
2. 200mmØ CLEANOUT/INSPECTION PORT CHAMBER AT PROPERTY LINE TO BE RAISED BY BUILDER TO FINISHED GRADE TO A MAX 150mm BELOW FINISHED BOULEVARD GRADE ADJACENT TO PROPERTY LINE COMPLETE WITH DETECTABLE METAL CAP PER ROYAL PIPE SYSTEMS "IC LOCKING LID (GREEN)", C/W COLLAR (OR APPROVED EQUIVALENT).
3. A CAST IRON LID PER ROYAL PIPE SYSTEMS PART NO. 71A08DRVVOXG (OR APPROVED EQUIVALENT) COMPLETE WITH FLEXIBLE COUPLER SHALL BE USED FOR SERVICE CLEANOUT CHAMBERS LOCATED IN DRIVEWAYS AND/OR WITHIN 0.5M FROM CENTER OF LID TO EDGE OF DRIVEWAY.
4. ADDITIONAL CLEANOUTS ARE TO BE PROVIDED ON PRIVATE PROPERTY AT EVERY 15m IN ACCORDANCE WITH ONTARIO BUILDING CODE SECTION 7.4.7.2.
5. CLEANOUT/INSPECTION CHAMBER TEES MAY BE PURCHASED "PRE-PLUGGED" BY THE MANUFACTURER TO ASSIST WITH LOW PRESSURE AIR TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE THE TEMPORARY PLUGS AFTER COMPLETING THE SANITARY SEWER LEAKAGE TESTING.
6. EXTEND THE 125mmØ SANITARY SERVICE 1.5m INTO THE PRIVATE LOT.
7. ALL SANITARY PVC FITTINGS ARE TO BE WATER TIGHT.
8. LOCATE SERVICE CONNECTION 1.0m MINIMUM OFF DRIVEWAY (WHERE POSSIBLE) AND 1.5m FROM SIDE PROPERTY LINE.
9. BUILDING SEWER SERVICE LINE SHALL BE MIN. 300mm BELOW UNDERSIDE OF FOOTING.





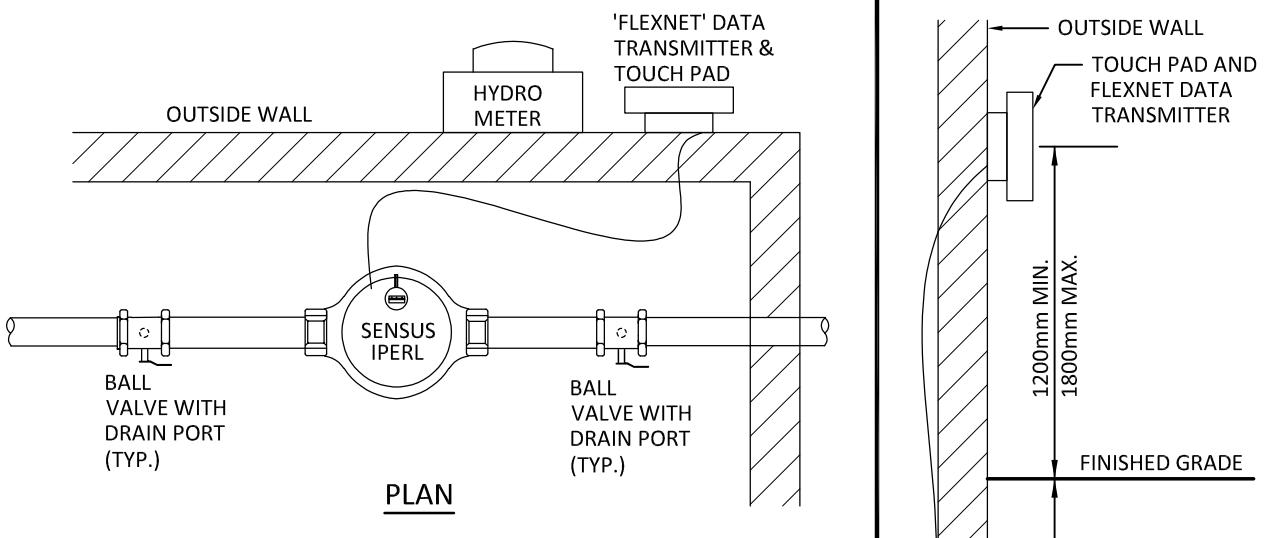
NOTES:

1. INSULATION OF WATERMAIN BY-PASS SYSTEM, TO THE TOWN'S SATISFACTION, IS REQUIRED DURING FREEZING CONDITIONS
2. FLOW METER MAY BE PROVIDED BY PUBLIC WORKS (PENDING AVAILABILITY) OR ELSE SUPPLIED BY THE CONTRACTOR AS APPLICABLE.
3. BACKFLOW PREVENTER TO BE SUPPLIED AND TESTED BY A PLUMBER CERTIFIED IN BACK-FLOW PREVENTION. CERTIFICATION SHALL BE WITNESSED BY THE DEVELOPER'S ENGINEER AND A COPY IS TO BE PROVIDED TO TOWN STAFF. IF THE BY-PASS SYSTEM IS REMOVED AND REINSTALLED, IT MUST BE RE-CERTIFIED.
4. REFER TO SECTION 9.3 OF THE ENGINEERING STANDARDS FOR TESTING REQUIREMENTS.

TABLE 1

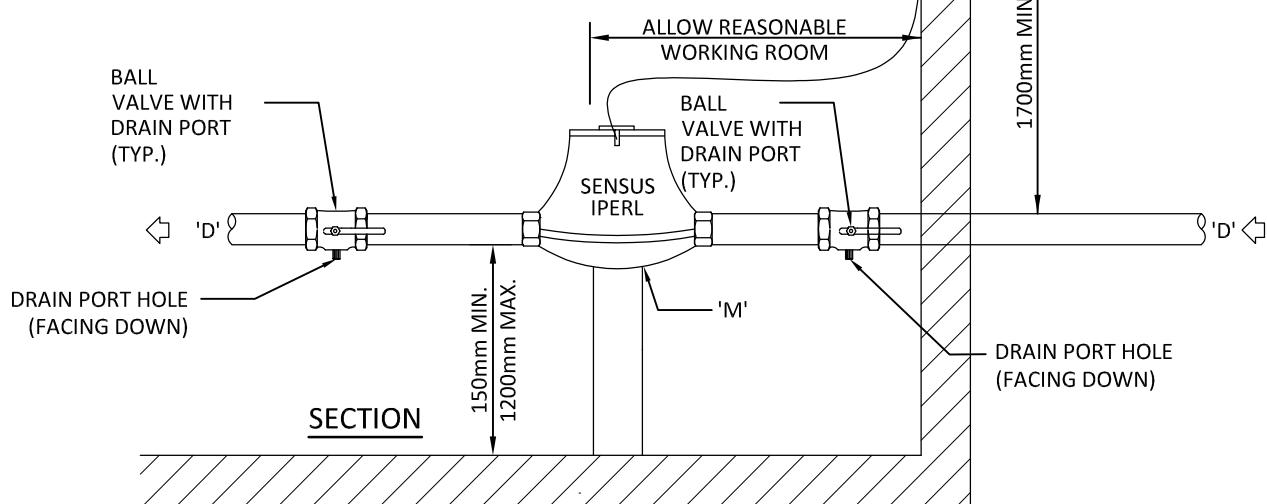
SERVICE 'D' (mm)	SENSUS METER SIZE 'M' (mm)	METER MODEL
19Ø	EXISTING 19Ø	IPERL
25Ø	25Ø	IPERL
38Ø	38Ø	OMNIC2
50Ø	50Ø	OMNIC2

*METER SIZE MAY CHANGE BASED ON
DEMAND REQUIREMENTS



NOTES:

1. DATA TRANSMITTER TO BE LOCATED ADJACENT TO THE HYDRO ELECTRIC METER.
2. METERS SHALL BE INSTALLED IN A HORIZONTAL POSITION.
3. ALL PIPE AND APPURTENANCES TO BE SIZED AS REQUIRED FOR SERVICE DIA. 'D'
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
5. METERS SHALL BE 'SENSUS' AS OUTLINED IN TABLE 1 BELOW c/w FLEXNET REMOTE TOUCH PAD & TRANSMITTER.
6. PROVIDE SUPPORT FOR THE METER AND RELATED COMPONENTS.
7. WORKING SPACE AROUND THE METER SHALL ALLOW MIN. 600mm ACCESS FOR MAINTENANCE PURPOSES.
8. ALL LAWN WATERING SYSTEMS SHALL INCLUDE A BACKFLOW PREVENTION DEVICE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE AND TOWN OF WASAGA BEACH STANDARDS.
9. ALL METERS TO CONFORM TO A SIX (6) WHEEL METER READING.

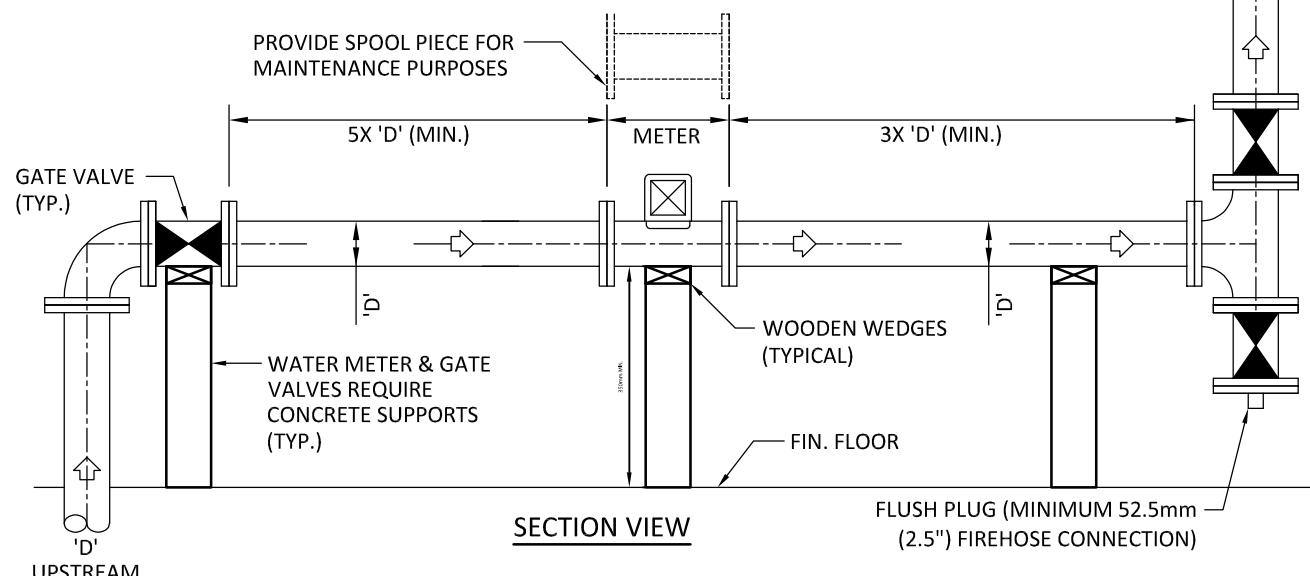
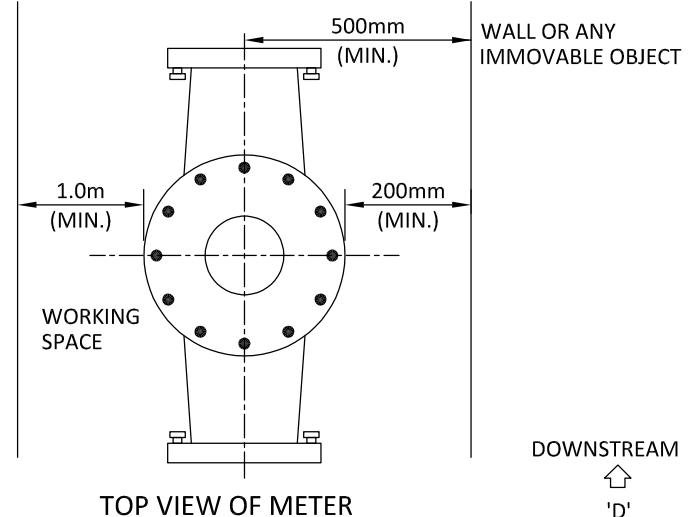


SERVICE Ø 'D' (mm)	METER SIZE 'M' (mm)	SENSUS METER MODEL (SEE NOTE 4)	METER WIDTH
100	100	OMNI C2	508
150	150	OMNI C2	610
>150	SENSUS METER REQUIREMENTS AS SPECIFIED BY THE TOWN ENGINEER		

* A KEY TO THE MECHANICAL ROOM TO BE SUPPLIED TO THE TOWN OF WASAGA BEACH FOR METER MAINTENANCE.

NOTES:

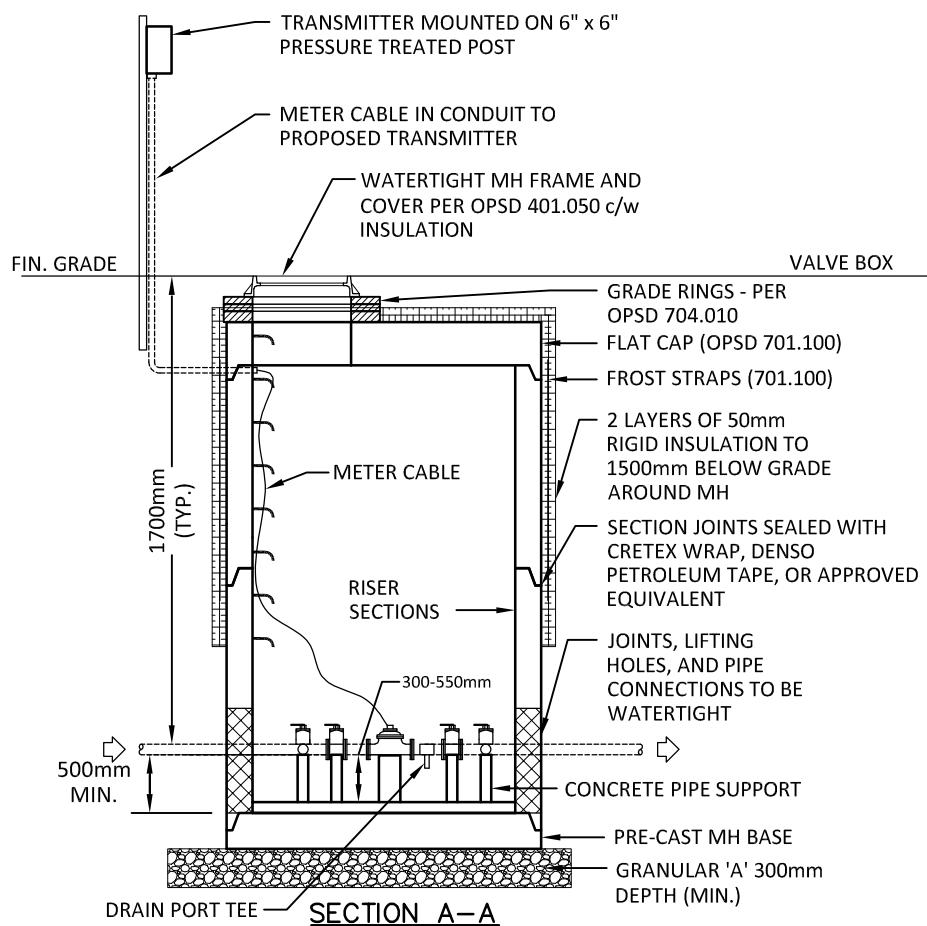
1. VALVES TO BE INSPECTED BY THE TOWN OF WASAGA BEACH.
2. ALL PIPE AND APPURTENANCES TO BE SIZED AS REQUIRED FOR SERVICE DIA. 'D'
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. METERS SHALL BE SENSUS 'OMNI C2' TYPE c/w INTERNAL STRAINER AND/OR AS REQUIRED BY THE TOWN ENGINEER, c/w FLEXNET REMOTE TOUCH PAD & TRANSMITTER. FIRE SUPPLY LINE METERS SHALL BE 'OMNI F2' TYPE
5. WORKING SPACE AT THE METER SHALL BE A MINIMUM OF 2.0m IN HEIGHT.
6. ALL BUILDINGS WITH FIRE SPRINKLER SYSTEMS SHALL INSTALL A BACKFLOW PREVENTION DEVICE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE PART 7.
7. FOR OUTSIDE UNDERGROUND INSTALLATION REFER TO TOWN OF WASAGA BEACH STANDARD DWG No.15A.
8. ALL METERS TO CONFORM TO A SIX (6) WHEEL METER READING.



WASAGA BEACH™

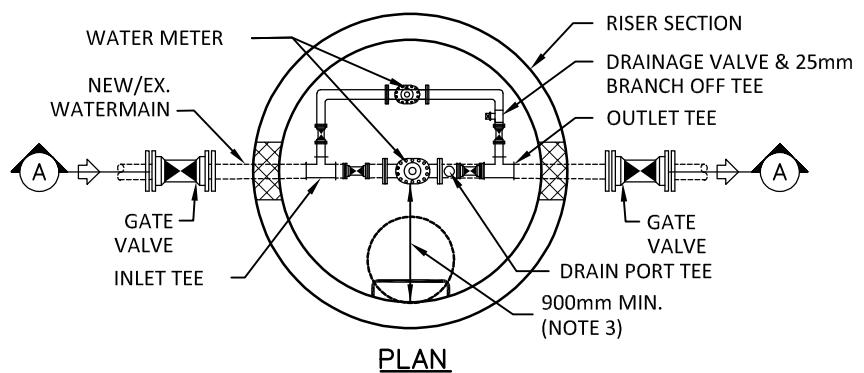
TYPICAL WATER METER INSTALLATION
100mmØ AND GREATER WATER SERVICE

REV No.	SCALE:	N.T.S.
2	DATE:	JULY 2025
STD. DWG. No. 14B		



NOTES:

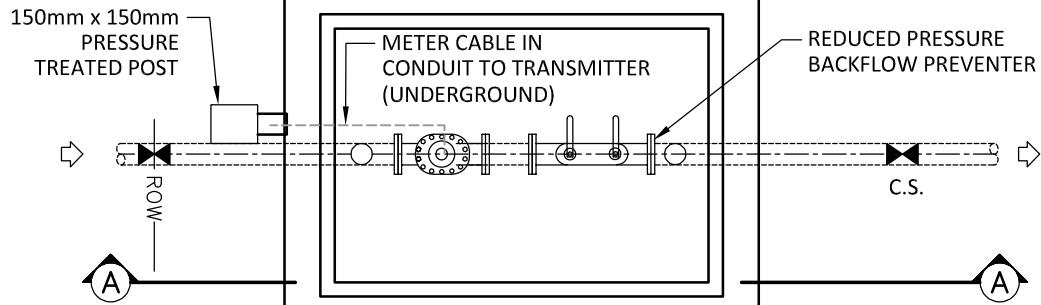
1. FOR WATER SERVICES SMALLER THAN 50mmØ, REFER TO OPSD 1107.010 AND THE TOWN APPROVED MATERIALS LIST FOR WATER METER PITS.
2. FOR WATER SERVICES 50mm TO 250mmØ REFER TO OPSD 1107.020.
3. WATER METERS SHALL BE INSTALLED WITH A MINIMUM 900mm UNOBSTRUCTED CLEARANCE IN FRONT OF WATER METER TO THE NEAREST WALL.
4. BY-PASS PIPING SHALL BE INSTALLED WITH A MINIMUM 300mm UNOBSTRUCTED CLEARANCE FROM THE OUTSIDE WALL OF THE BYPASS PIPE TO THE NEAREST WALL.
 - 4.A. A 75mm METER SHALL HAVE 75mm TO 100mm INCREASERS ON EACH SIDE
 - 4.B. BY-PASS LINE SIZE SHALL BE SAME SIZE AS THE METER LINE, COMPLETE WITH METER ON THE BY-PASS.
 - 4.C. ALL JOINTS SHALL BE RESTRAINED.
5. ACCESS CHAMBERS MUST BE PRE-CAST CONCRETE COMPONENTS CONFORMING TO OPSD 701.011, 701.013, AND 701.014. PRE-FABRICATED CHAMBERS PROVIDED BY DEVINE & ASSOCIATES LTD. ARE PREFERRED.
6. METERS SHALL BE 'OMNI C2' TYPE c/w INTERNAL STRAINER OR APPROVED EQUIVALENT. (c/w FLEXNET REMOTE TOUCHPAD & TRANSMITTER)
7. ADDITIONAL STRAINERS AS MAY BE REQUIRED BY THE TOWN ENGINEER.
8. CONCRETE PIPE SUPPORT REQUIRES BOND BREAKER BETWEEN PIPE AND SUPPORT.
9. METER SIZE AND MODEL AS PER TOWN OF WASAGA BEACH WATER METER INSTALLATION STANDARD DRAWINGS.
10. ALL PIPING/APPURTEANCES/CONSTRUCTION SHALL CONFORM TO CURRENT OPSS AND ONTARIO BUILDING CODE STANDARDS.
11. GRANULAR BACKFILL TO 98% SPMDD
12. OWNER TO PROVIDE A SPOOL PIECE ON SITE FOR METER REMOVAL AND MAINTENANCE.
13. ALL DIMENSIONS SHOWN ARE IN mm UNLESS OTHERWISE NOTED.
14. ALL HOLES AND PIPE CONNECTIONS TO BE MADE WATERTIGHT USING "LINK-SEAL" PIPE TO WALL PENETRATION SEALS OR APPROVED EQUIVALENT.



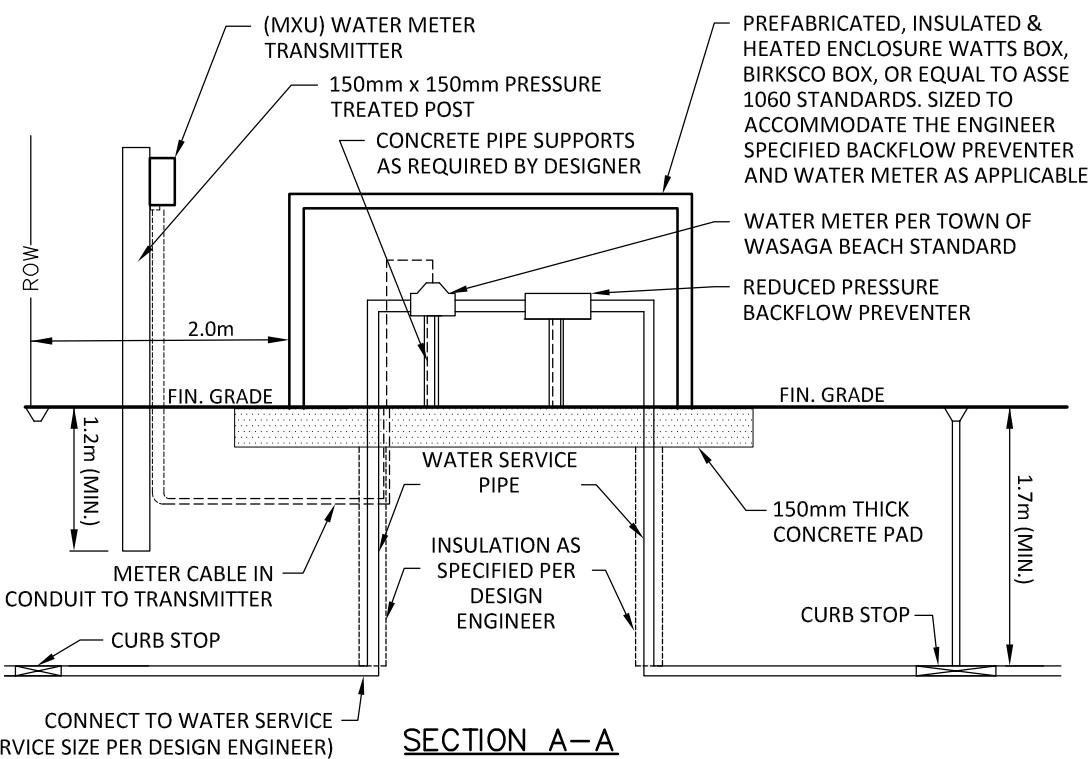
WASAGA BEACH™

WATER METER CHAMBER

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 15A	



PLAN



SECTION A-A

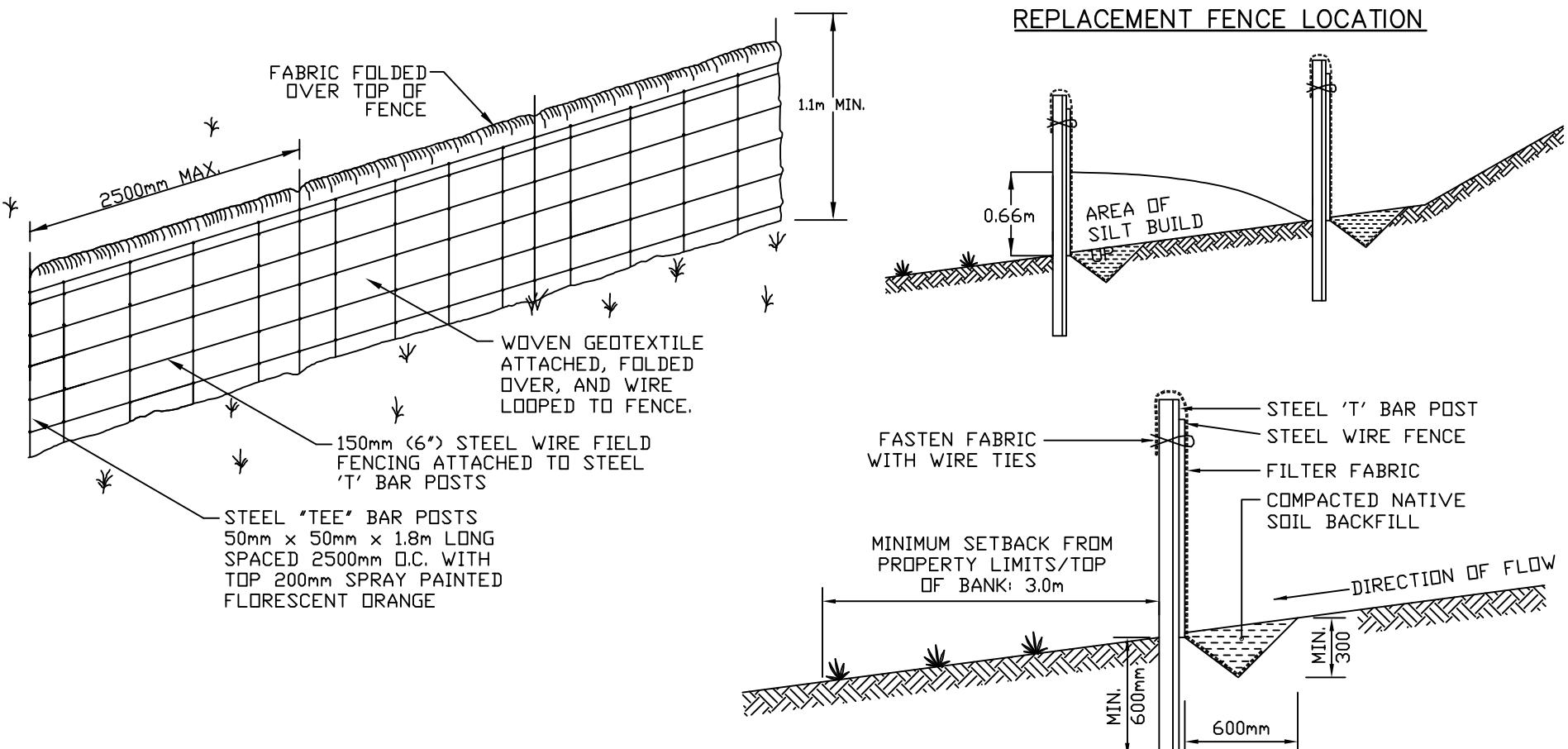
NOTES:

1. TO BE USED ONLY WHERE A BACKFLOW PREVENTER IS REQUIRED AND INSTALLATION WITHIN A BUILDING IS NOT POSSIBLE.
2. CONCRETE PIPE SUPPORT REQUIRES BOND BREAKER BETWEEN PIPE AND SUPPORT.
3. METER SIZE AND MODEL AS PER TOWN OF WASAGA BEACH WATER METER INSTALLATION STANDARD DRAWINGS.
4. ALL PIPING/APPURTEANCES/CONSTRUCTION SHALL CONFORM TO CURRENT OPSS AND ONTARIO BUILDING CODE STANDARDS
5. OWNER TO PROVIDE A SPOOL PIECE ON SITE FOR METER REMOVAL AND MAINTENANCE.
6. ALL DIMENSIONS SHOWN ARE IN mm UNLESS OTHERWISE NOTED.
7. ALL HOLES AND PIPE CONNECTIONS TO BE MADE WATERTIGHT USING "LINK-SEAL" PIPE TO WALL PENETRATION SEALS OR APPROVED EQUIVALENT (WHERE APPLICABLE).
8. CHAMBER SIZES SHALL VARY FOR METER SIZES AS PER MANUFACTURERS SPECIFICATIONS AND TO THE SATISFACTION OF THE TOWN.

WASAGA BEACH™

TYPICAL WATER METER CHAMBER
WITH BACKFLOW PREVENTER
38mmØ TO 250mmØ METER SIZE

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 15B	



NOTES:

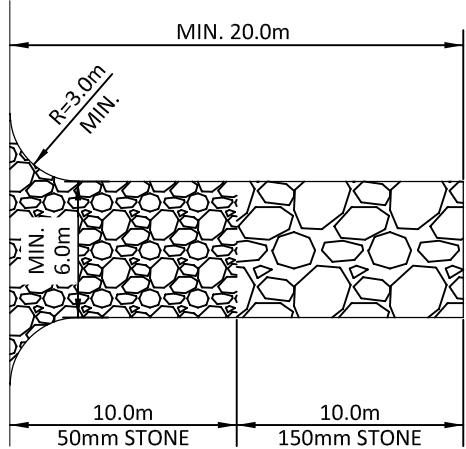
1. SILT CONTROL FENCE SHOULD BE ALIGNED WITH CONTOURS FOR SHEET OVERLAND FLOW.
2. SILT/SEDIMENT CONTROL FENCE IS TO BE LOCATED IN AREAS OF LOW SEDIMENT YIELD ON SLOPES THAT CONFORM TO MTO DRAINAGE MANUAL VOLUME 2 "CHART F4-3C TOPOGRAPHIC FACTOR LS BASED ON SLOPE LENGTH AND GRADIENT."
3. SILT/SEDIMENT CONTROL FENCE SHALL BE INSTALLED WITH FILTER MEDIA FABRIC TOED INTO THE SOIL A MIN. OF 300mm BY EITHER STATIC SLICING OR TRENCH METHODS WITH COMPACTION OF TRENCH MATERIAL MEETING 95% INSITU SOIL STRENGTH.
4. STEEL 'T' BAR POSTS ARE TO BE SPACED MAX. 2500mm ON CENTER.
5. FROZEN GROUND CONDITIONS REQUIRE FILTER FABRIC TO BE BACKFILLED IN TRENCH WITH CLEAR STONE.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
7. GEOTEXTILE FABRIC TO BE COMPRISED OF WOVEN OR NON-WOVEN U.V. STABILIZED MATERIAL. FABRIC TO BE FOLDED OVER TOP OF FENCE MIN. 300mm AND WIRE FASTENED.

WASAGABEACH™

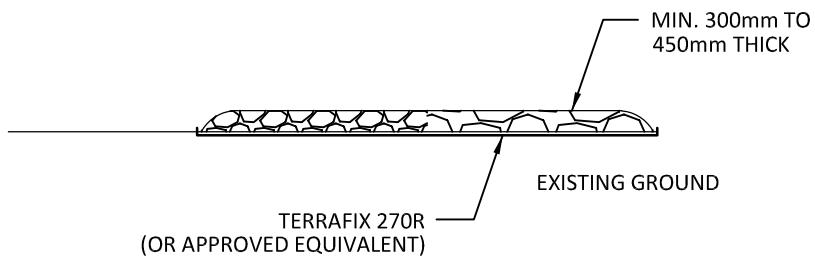
TYPICAL DETAIL OF SILT/SEDIMENT FENCE

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 16	

EXISTING PAVEMENT



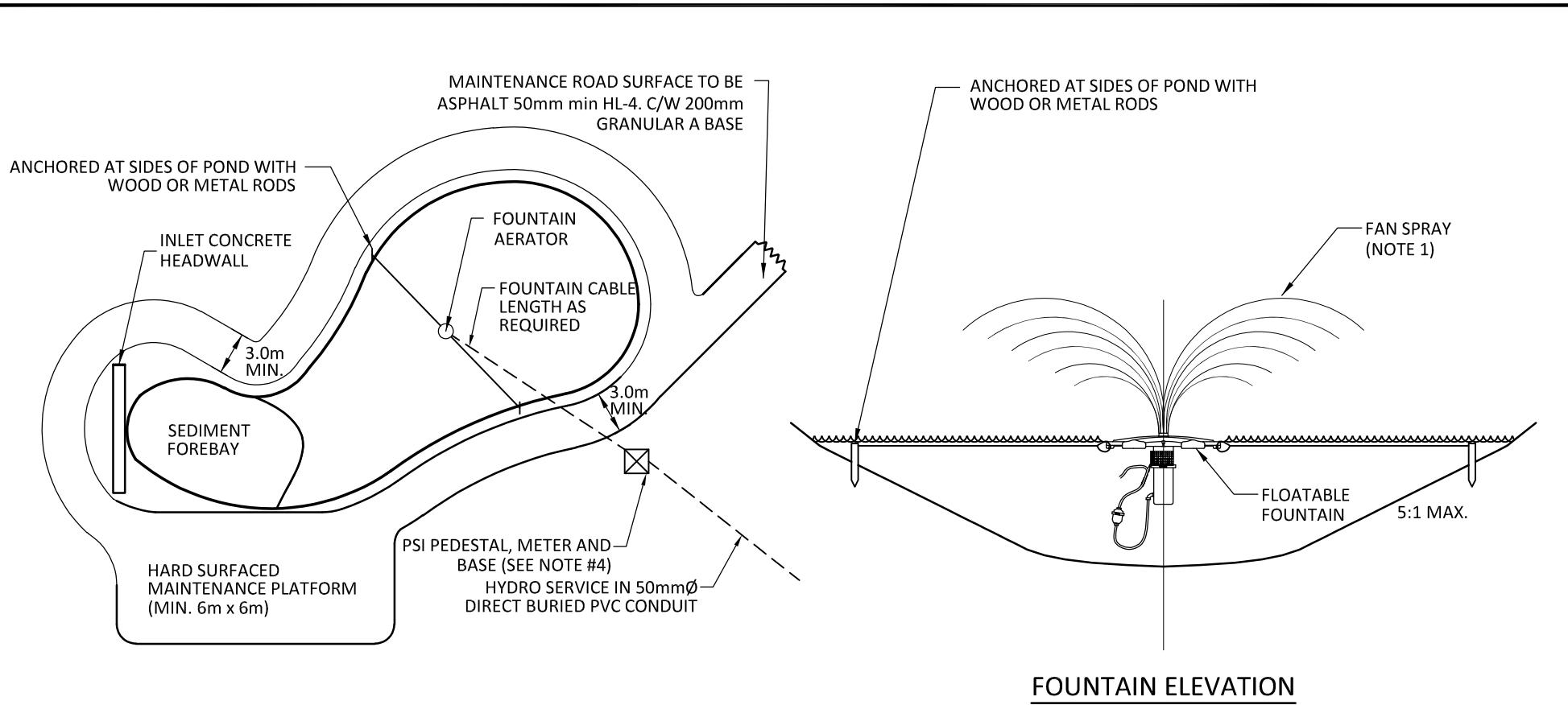
PLAN



PROFILE

NOTES:

1. LENGTH AS REQUIRED BUT NOT LESS THAN 20.0m.
2. WIDTH OF 6.0m BUT NOT LESS THAN THE WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCURS
3. MINIMUM 300mm TO 450mm THICKNESS OF 50mm MINIMUM STONE SIZE EXTENDING FROM THE EDGE OF ROAD FOR 10.0m, THEN 150mm STONE FOR THE REMAINING 10.0m
4. TERRAFIX 270R GEOTEXTILE (OR APPROVED EQUIVALENT) TO BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE
5. ENTRANCES SHALL BE PROVIDED WITH A CULVERT IF REQUIRED FOR ROADSIDE SURFACE DRAINAGE
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN THE ENTRANCE AND PROVIDE ADDITIONAL STONE TO THE SATISFACTION OF THE TOWN SUCH THAT SEDIMENT IS NOT TRACKED ONTO THE ADJACENT ROADWAY
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING ANY SEDIMENT THAT IS TRACKED ONTO MUNICIPAL RIGHTS-OF-WAY TO THE SATISFACTION OF THE TOWN
8. INSPECTED DAILY AND REINSTATED ACCORDINGLY



FOUNTAIN ELEVATION

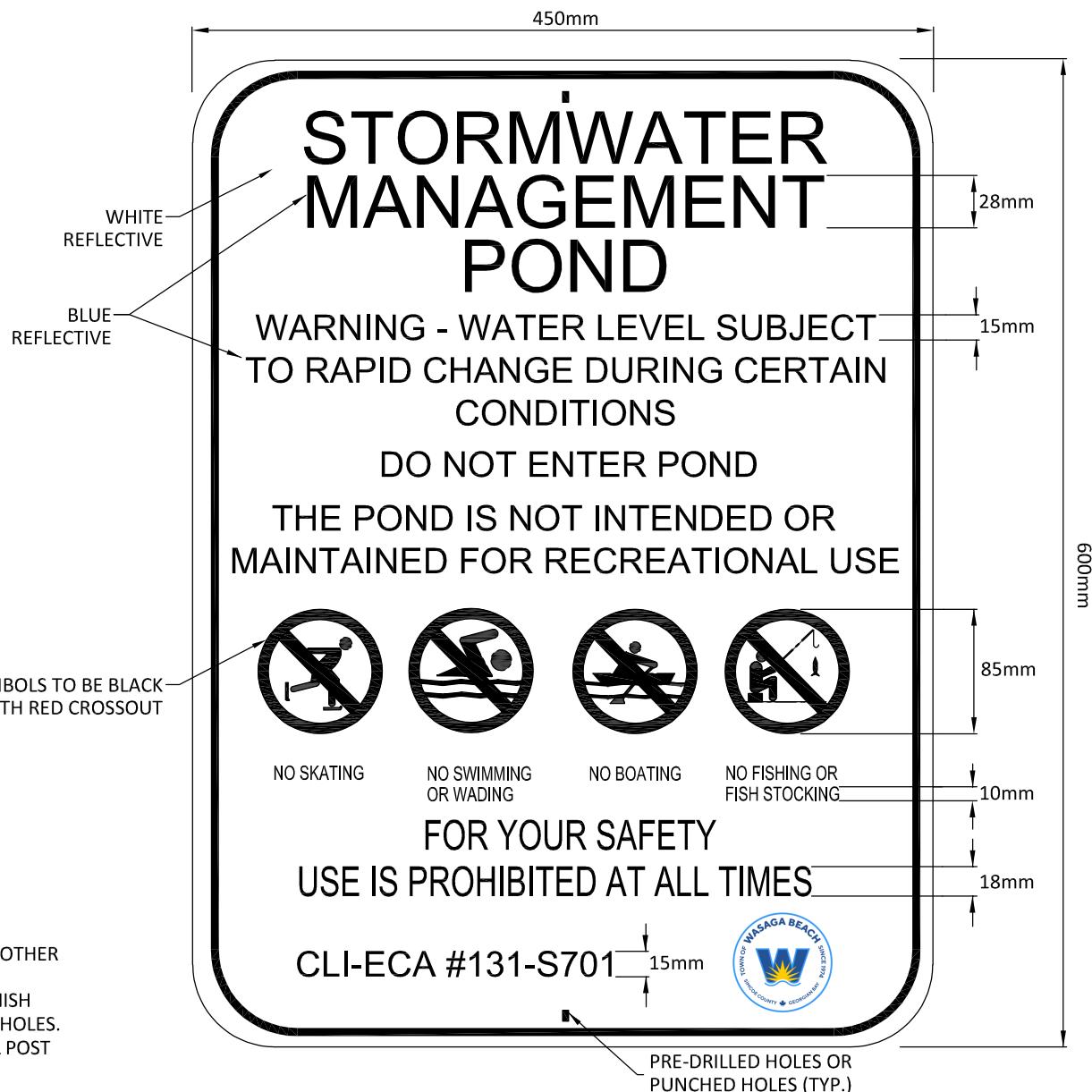
NOTES:

1. STORMWATER MANAGEMENT (SWM) POND FOUNTAIN AERATORS SHALL BE POWERHOUSE FOUNTAINS (DISTRIBUTOR: POND PERFECTIONS) OLYMPUS FOUNTAIN 1 HP MINIMUM (230V), ARTEMIS SPRAY, COMPLETE WITH A MINIMUM 200 FEET LONG CORD, COMPLETE WITH STAINLESS STEEL SCREEN.
2. MINIMUM 1 FOUNTAIN PER SWM POND PENDING POND SIZE AND SHAPE.
3. FOUNTAINS ARE TO BE LOCATED IN PERMANENT POOL AREA WITH MIN. DEPTH OF 1.0m AND MAX. DEPTH OF 3.5m, AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. FOUNTAINS ARE NOT TO BE LOCATED WITHIN THE SEDIMENT FOREBAY.
4. HYDRO METER AND 20amp 230V TWIST LOCK ELECTRICAL OUTLET(S) FOR THE POND AERATOR TO BE PROVIDED WITHIN A METERED PEDESTAL (PEDESTAL SOLUTIONS INC. OR APPROVED EQUIVALENT). PEDESTAL SHALL BE MOUNTED ON A CONCRETE BASE AND POSITIONED ADJACENT TO THE MAINTENANCE ACCESS ROAD IN A LOCATION DEEMED ACCEPTABLE BY PUBLIC WORKS AND WASAGA DISTRIBUTION.
5. SEDIMENT FOREBAY BOTTOM TO BE 30MPa CONCRETE.
6. CLEANOUT REQUIRED PRIOR TO ASSUMPTION, FOLLOWED BY TOPOGRAPHIC SURVEY FOR CERTIFICATION BY THE ENGINEER.

WASAGA BEACH™

STORMWATER MANAGEMENT POND
FOUNTAIN AERATOR DETAILS

REV No.	SCALE:	N.T.S.
2	DATE:	JUNE 2025
STD. DWG. No. 18		



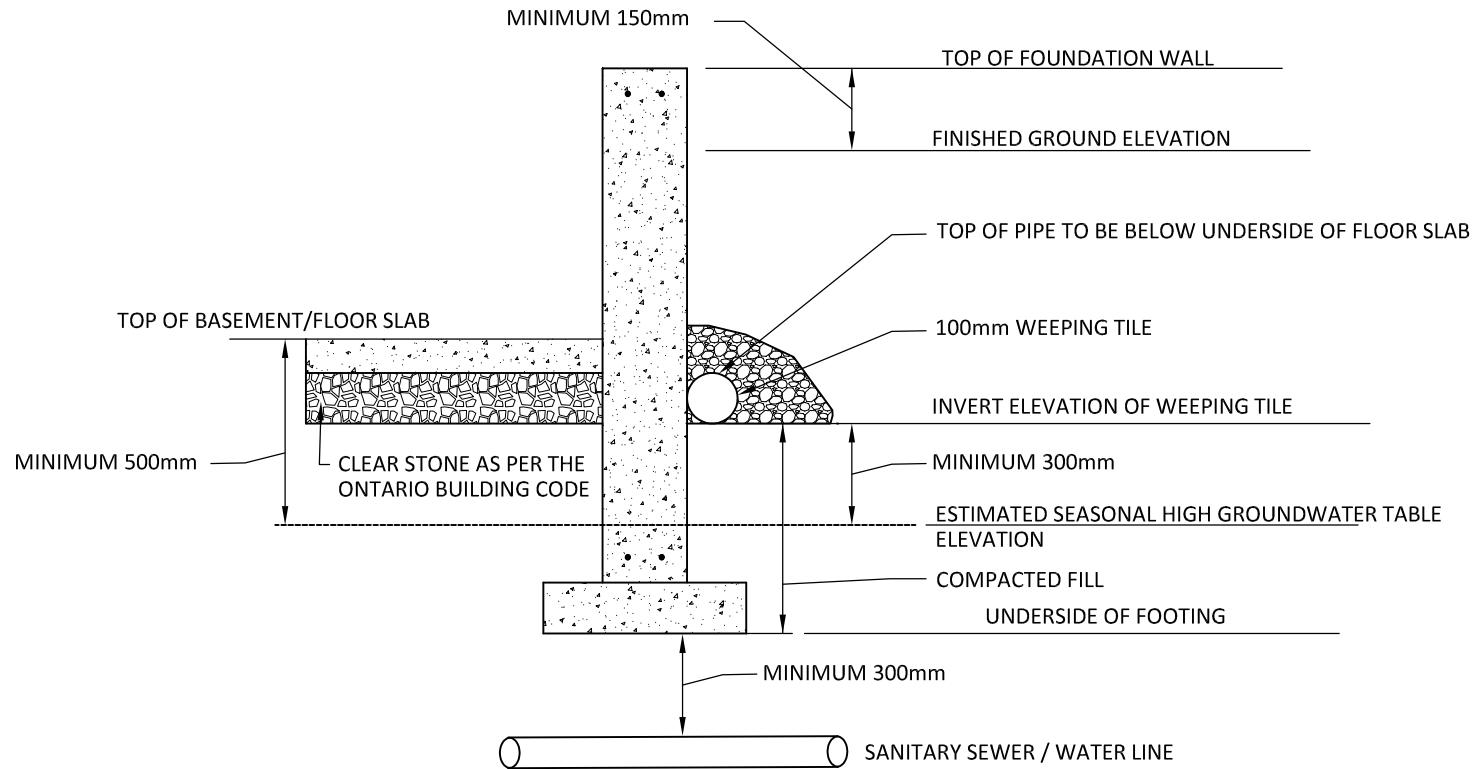
NOTES:

1. SIGN(S) MUST BE PLACED AT ALL POND ENTRANCES & OTHER LOCATIONS TO BE DETERMINED BY THE TOWN.
2. SIGN(S) TO BE MANUFACTURED USING REFLECTIVE FINISH (ENGINEER GRADE), WITH TOP AND BOTTOM MOUNT HOLES.
3. SIGN(S) TO BE MOUNTED TO GALVANIZED U-CHANNEL POST EMBEDDED MIN. 1.2m INTO THE GROUND.

WASAGA BEACH™

STORMWATER MANAGEMENT POND WARNING SIGN

REV No.	SCALE: N.T.S.
2	DATE: JULY 2025
STD. DWG. No. 19	



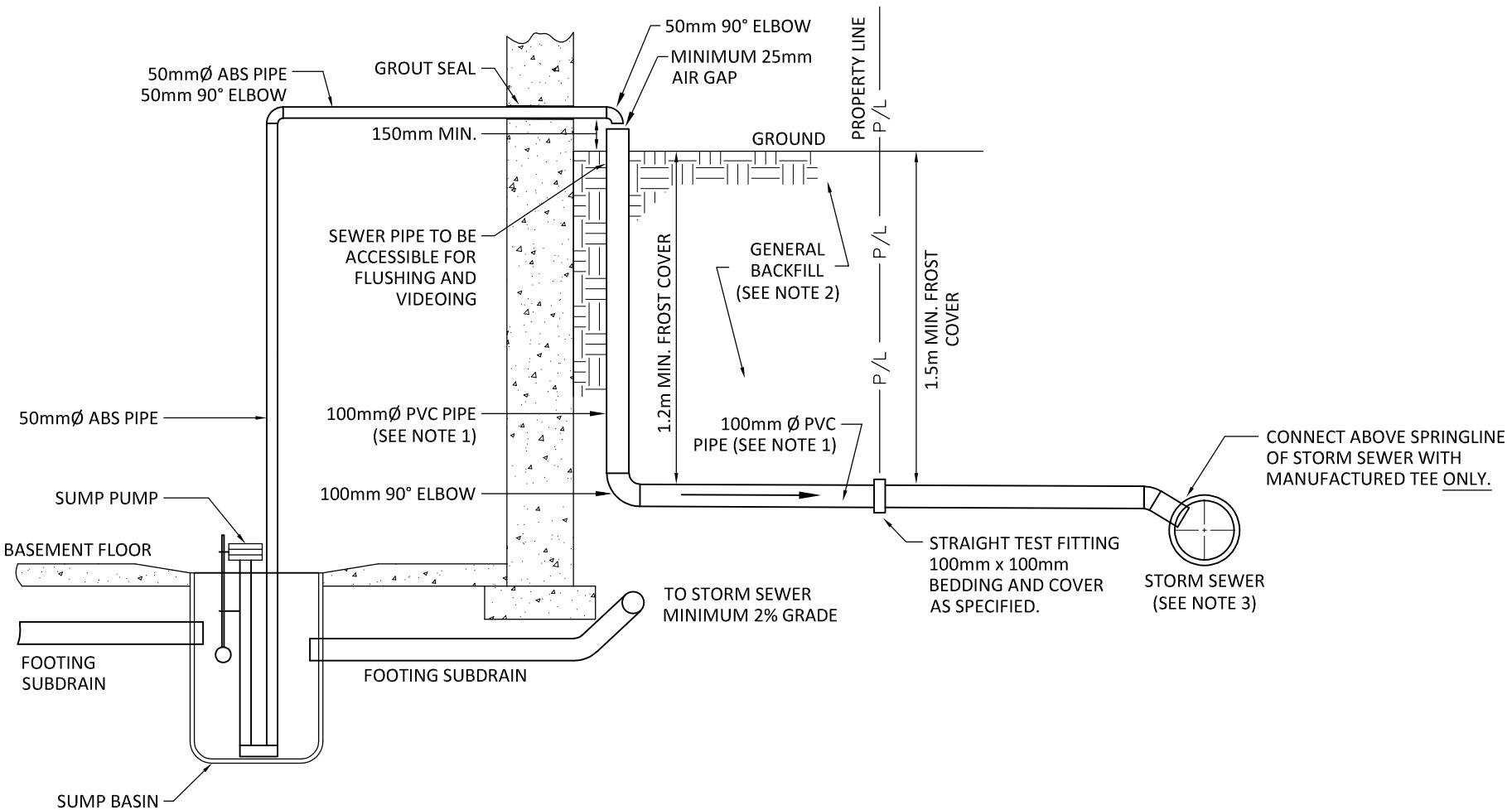
NOTES:

1. FOOTINGS WITHIN PROXIMITY TO THE GROUNDWATER TABLE SHALL BE UPSIZED ACCORDING TO THE ONTARIO BUILDING CODE AND/OR AS PER STRUCTURAL/GEOTECHNICAL ENGINEER DESIGN.
2. THE WEEPING TILE INVERT ELEVATION IS TO BE CONFIRMED IN WRITING BY THE BUILDER TO THE BUILDING INSPECTOR PRIOR TO BACKFILL INSPECTION.
3. SANITARY SEWER / WATER LINE TO BE MINIMUM 300mm BELOW THE UNDERSIDE OF FOOTING.

WASAGA BEACH™

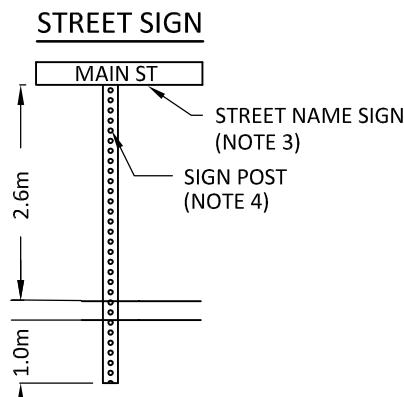
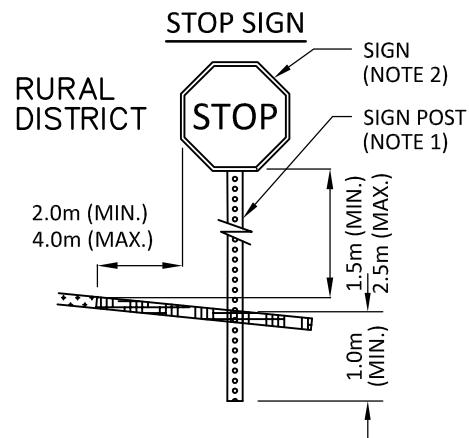
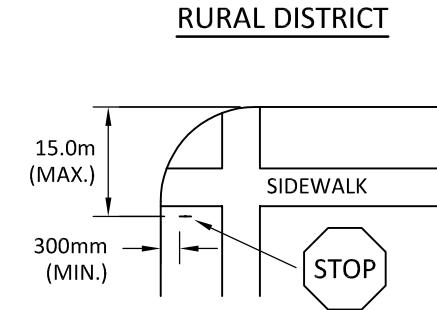
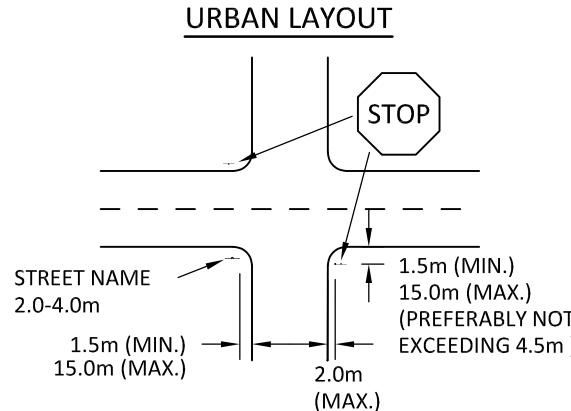
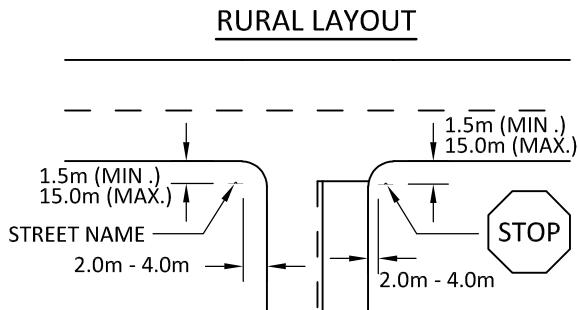
FOOTINGS, WEEPING TILE AND SEASONAL HIGH GROUNDWATER TABLE DETAIL

REV No.	SCALE:	N.T.S.
2	DATE:	JULY 2025
STD. DWG. No. 20		



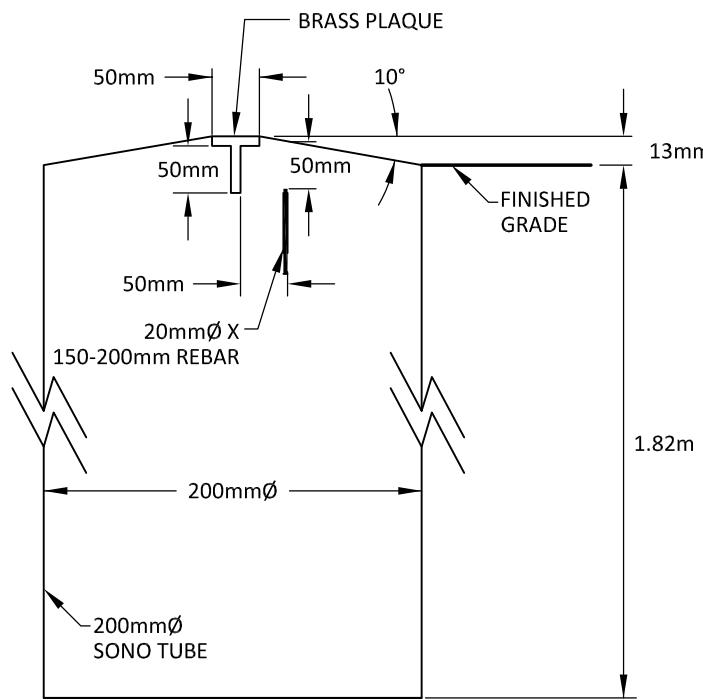
NOTES:

1. REFER TO TOWN DESIGN STANDARDS FOR APPROVED MATERIALS.
2. GENERAL BACKFILL TO BE SELECT NATIVE BACKFILL MATERIAL.
3. STORM SEWER, CATCH BASIN OR OPEN DITCH AS APPLICABLE.
4. ALL FITTINGS ARE TO BE WATER TIGHT.

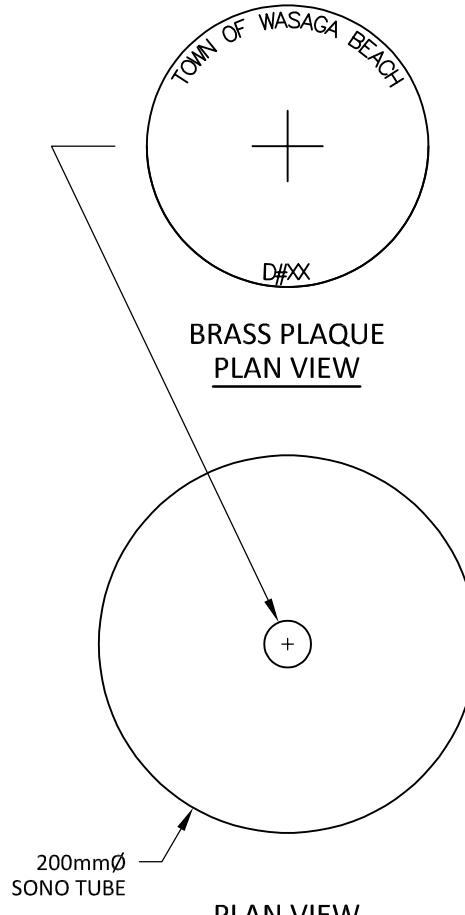


NOTES:

1. ALL SIGN INSTALLATIONS ARE TO BE A MINIMUM 1.0m DIRECT EMBEDDED OR ON BREAKAWAY BASE, MOUNTED ON 14ga GALVANIZED STEEL SQUARE PUNCH OUT (45mm X 45mm) OR UNIFLAGE POSTS, 3.6m LONG.
2. ALL REGULATORY SIGN MATERIAL SHALL BE ON ALUMINUM BLANKS WITH HI-INTENSITY BACKGROUND AND LEGEND MEETING ASTM SPEC. D4956-90 FOR TYPE III AND TYPE IV AND IN ACCORDANCE WITH CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), OTM AND HIGHWAY TRAFFIC ACT MOUNTING.
3. ALL STREET NAME SIGN MATERIAL SHALL BE ON 160mm HIGH EXTRUDED ALUMINUM BLADES WITH A BULB "T" TOP AND BOTTOM. GREEN HI-INTENSITY SCOTCHLITE BACKGROUND WITH PRE-CUT 90mm WHITE HI-INTENSITY UPPER CASE BLOCK HIGHWAY LETTERING, ALL VACUUM APPLIED.
4. STREET NAME SIGNS ARE NOT TO BE MOUNTED ON SAME POST AS STOP SIGN. STREET NAME SIGN MUST BE MOUNTED ON THEIR OWN 100mm dia. ROUND GALVANIZED POST, IN A QUADRANT OTHER THAN A STOP SIGN.
5. THE SUFFIX OF EACH ROAD NAME "AVE., BLVD., RD., ST., ETC." IS TO BE ABBREVIATED.



CROSS SECTION



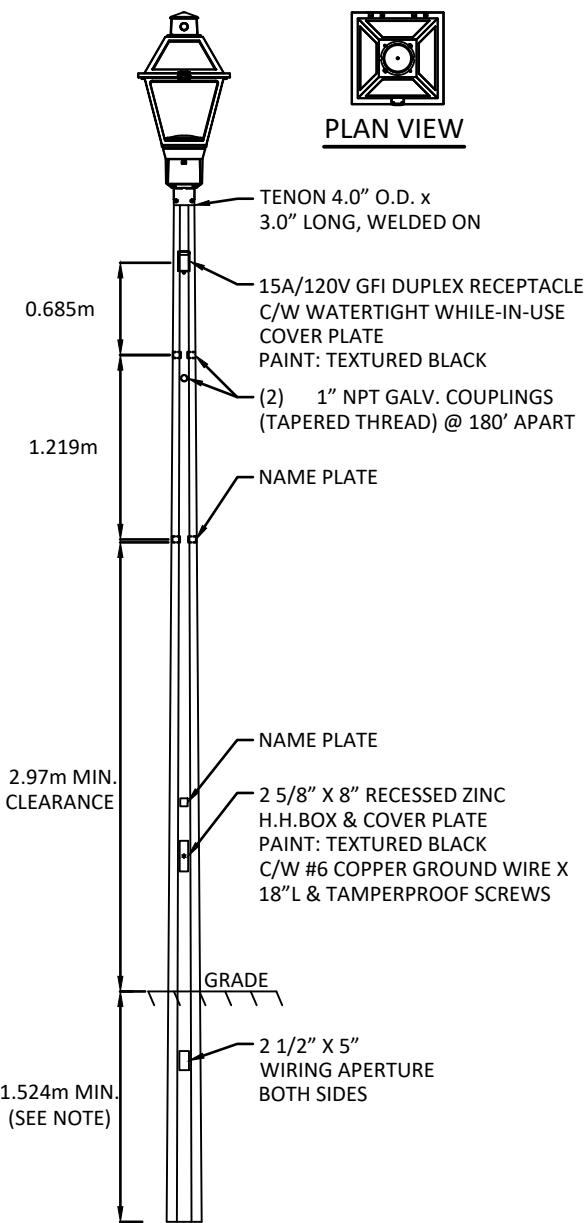
NOTES:

1. BRASS PLAQUE TO BE SUPPLIED BY THE TOWN OF WASAGA BEACH PUBLIC WORKS.
2. REBAR TO BE EPOXY COATED.

WASAGA BEACH™

TYPICAL CONTROL MONUMENTATION LAYOUT

REV No.	SCALE:	N.T.S.
2	DATE:	JULY 2025
STD. DWG. No. 23		



Fixture Specifications:

MANUFACTURER: HADCO
 TYPE: POST TOP LED FIXTURE
 SERIES: URBAN - TOWNVIEW
 MODEL: TVLN-L4-S-*-*-*730-A-S-PHX-N-SP1-N-N-N-BK
 LED COLOUR: 3000 KELVIN
 DRIVER OPTION: FIELD ADJUSTABLE
 FINISH: BK - BLACK TEXTURED

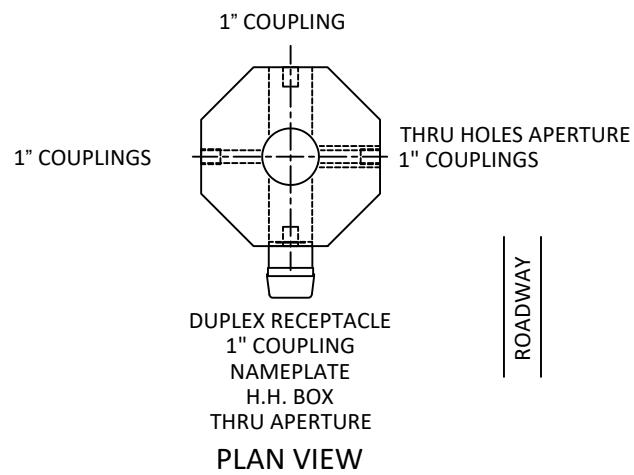
Pole Specifications:

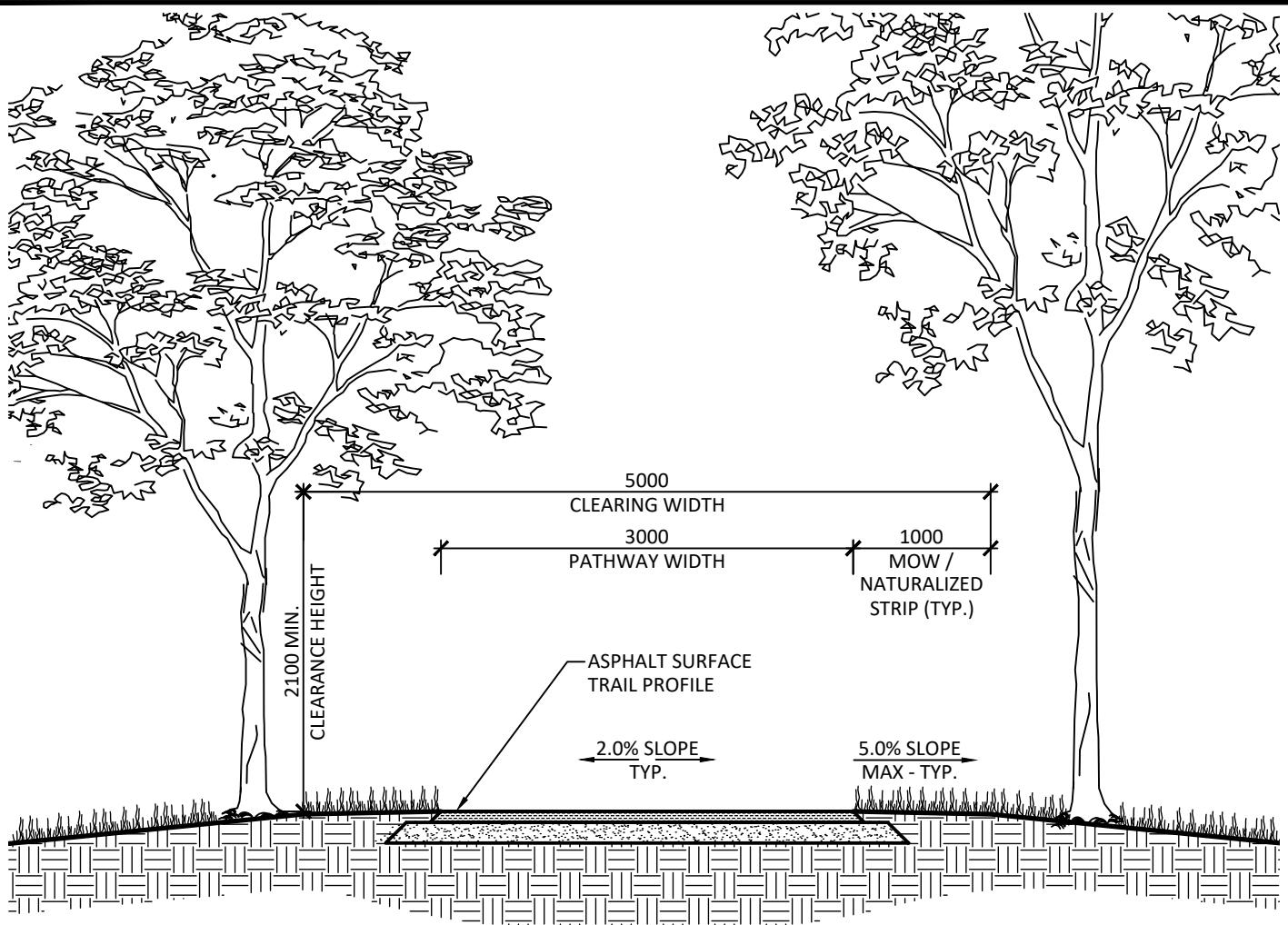
CATALOGUE NO.: E-225-APO-G-S-11-C/W TENON
 SECTION: OCTAGONAL
 COLOUR: ECLIPSE
 FINISH: POLISHED
 TENON: 4" O.D.
 MIN. RACEWAY: 1-1/8"Ø

POLE COATING REQUIRED:
 -2 COATS ACRYLIC, FULL LENGTH

Note:

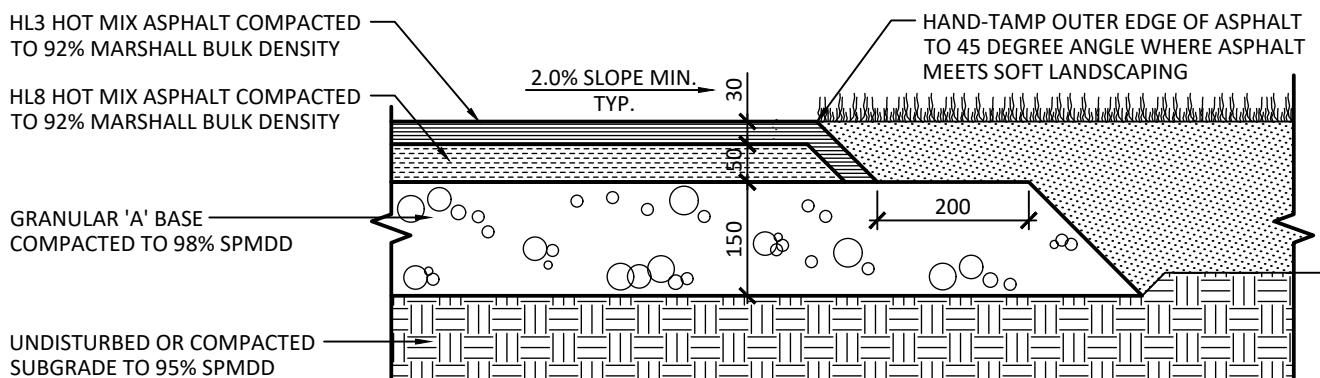
IT IS RECOMMENDED THAT A COMPETENT PROFESSIONAL EVALUATE SOILS PRESENT ON SITE, CONFIRMING REQUIRED EMBEDMENT DEPTH, HOLE DIAMETER AND BACKFILL MATERIAL TO BE USED.

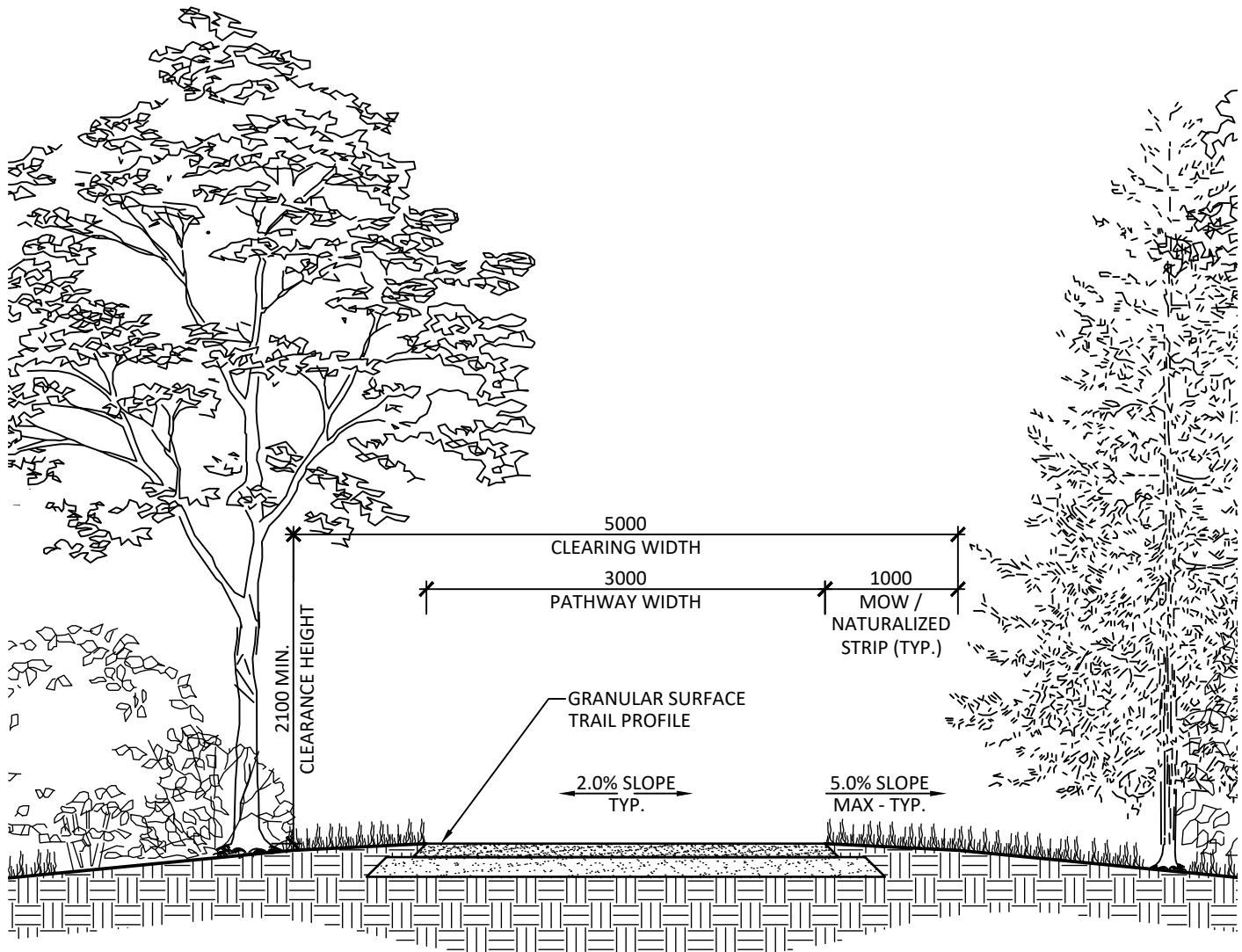




NOTES:

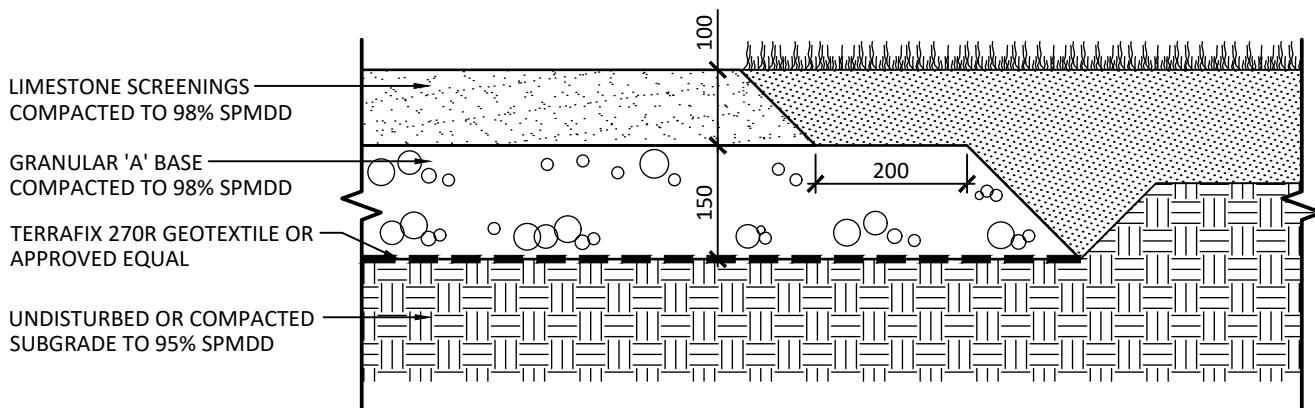
1. ASPHALT TRAIL SHALL BE HOT MIX ASPHALT IN ACCORDANCE WITH OPSS.MUNI 311.
2. GRANULAR BASE SHALL BE IN ACCORDANCE WITH OPSS.MUNI 314 AND OPSS.MUNI 1010.
3. GRANULAR BASE SHALL BE GRANULAR 'A' COMPAKTED TO 98% SPMDD, UNLESS OTHERWISE RECOMMEND BY A GEO-TECHNICAL ENGINEER.
4. THE FINISHED SURFACE SHALL BE OF UNIFORM TEXTURE AND SHALL BE FREE OF SEGREGATION, FLAT SPOTS, OIL SPILLS OR OTHER DEFECTS.
5. DO NOT BACKFILL AGAINST ASPHALT FOR MINIMUM 48 HOURS.
6. DIRECTION OF CROSS SLOPE SHALL BE ADJUSTED TO SUIT GRADING REQUIREMENTS.

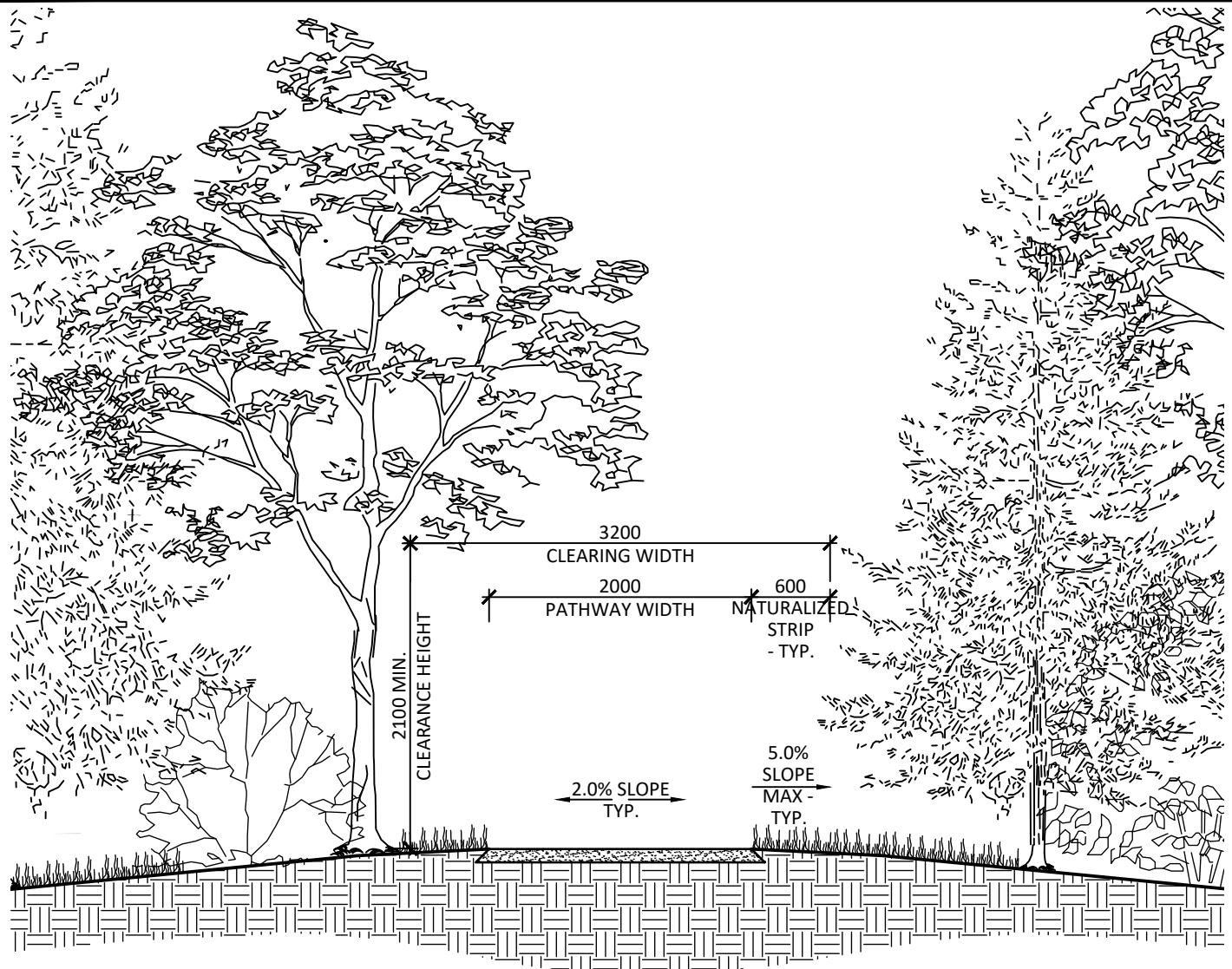




NOTES:

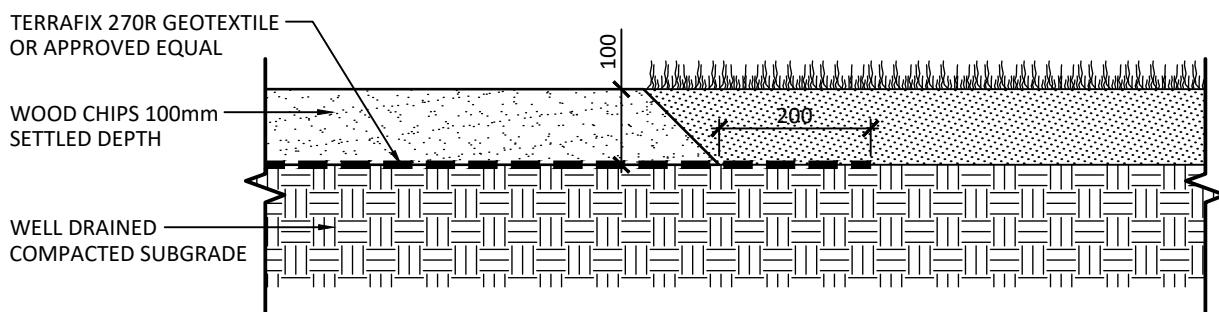
1. EXCAVATE ALL TOPSOIL AND ORGANIC MATTER UNDER TRAIL BED.
2. ALL GRANULAR WORKS SHALL BE IN ACCORDANCE WITH OPSS. 314.
3. DIRECTION OF CROSS SLOPE SHALL BE ADJUSTED TO SUIT GRADING REQUIREMENTS.

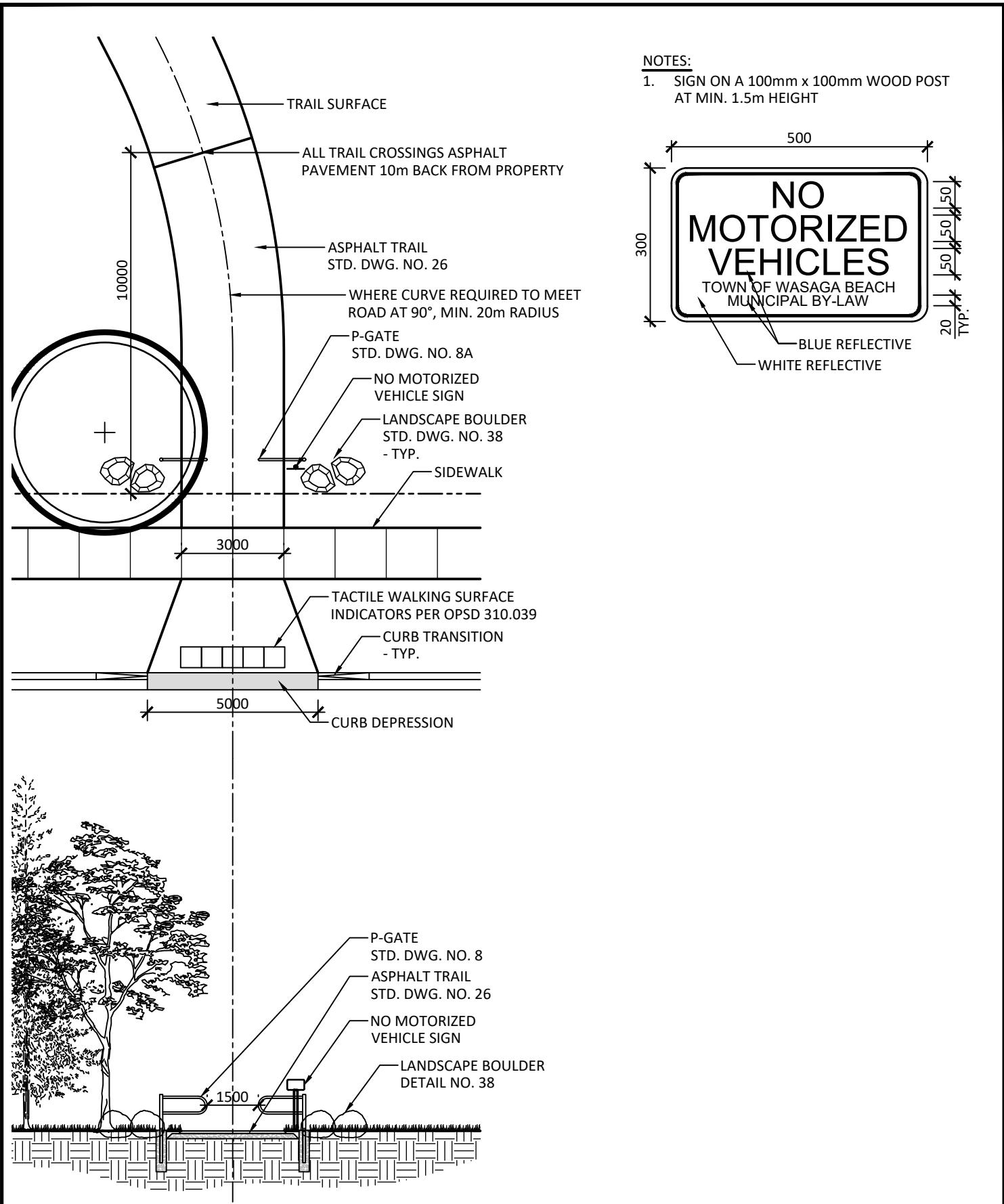




NOTES:

1. EXCAVATE ALL TOPSOIL AND ORGANIC MATTER UNDER TRAIL BED.
2. ALL GRANULAR WORKS SHALL BE IN ACCORDANCE WITH OPSS.PROV 314.
3. DIRECTION OF CROSS SLOPE SHALL BE ADJUSTED TO SUIT GRADING REQUIREMENTS.

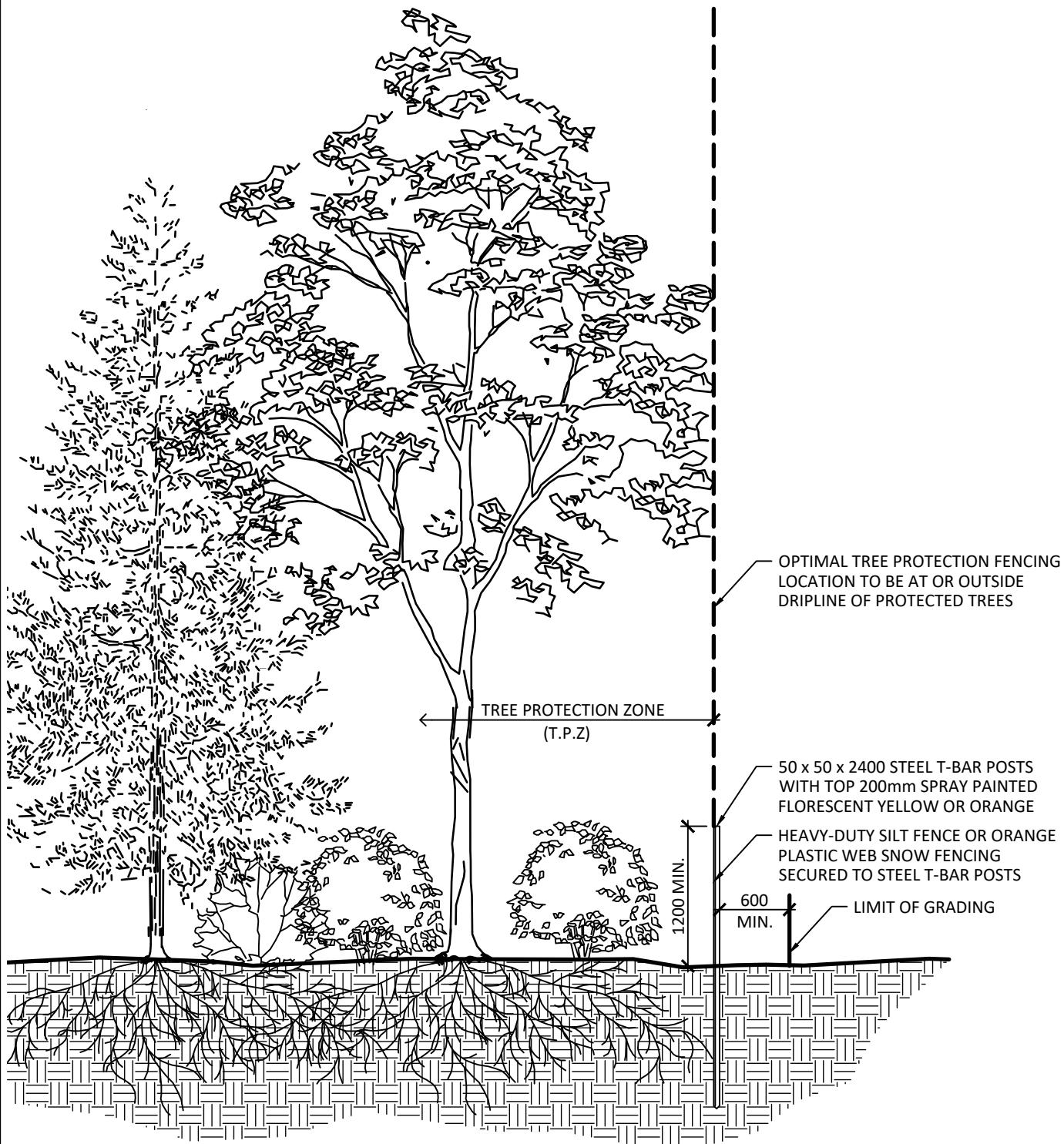




WASAGA BEACH™

TRAILHEAD & ROAD CROSSING

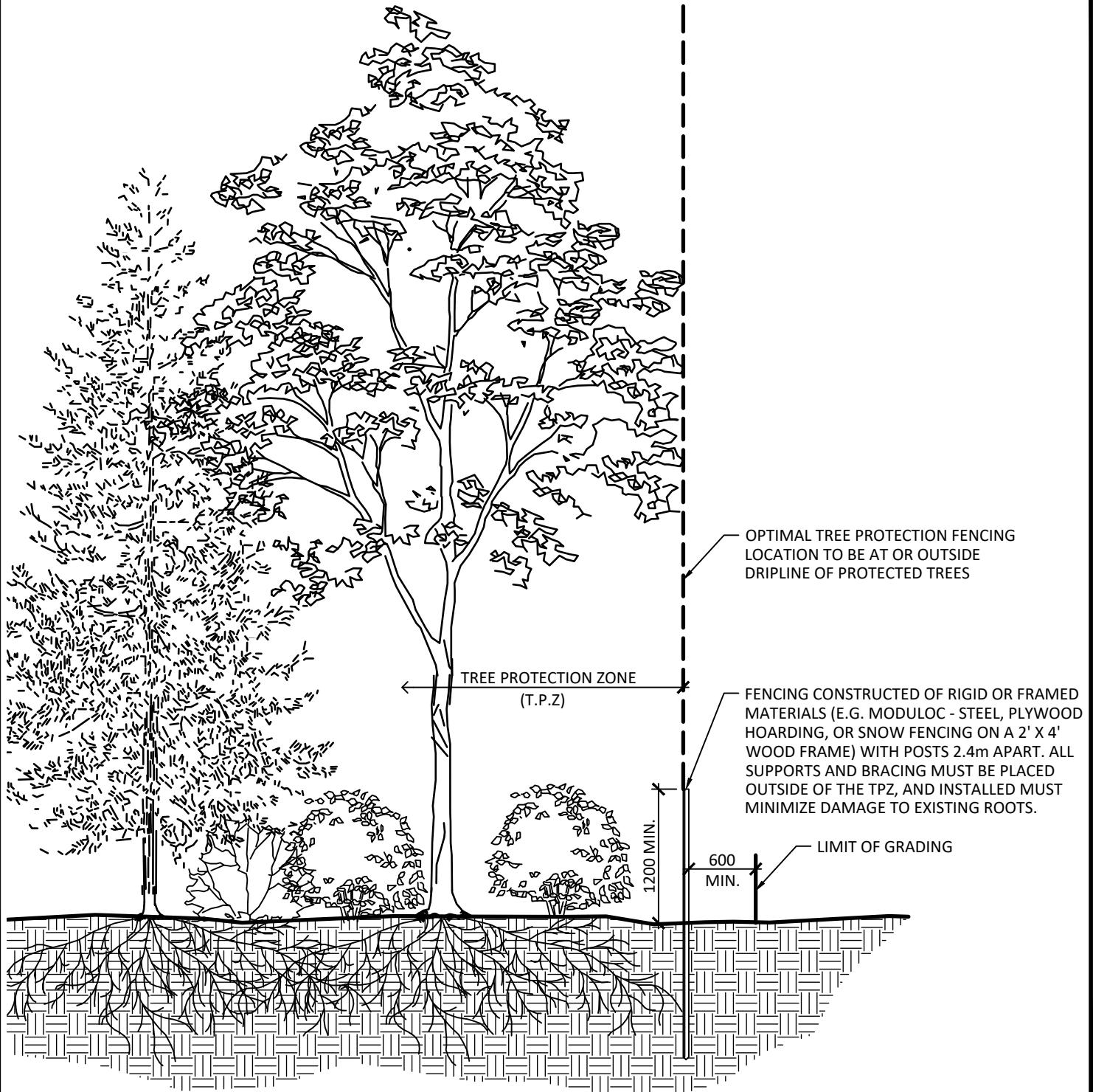
REV No.	SCALE: N.T.S.
1	DATE: JUNE 2025
STD. DWG. No. 29	



WASAGABEACH™

TREE PROTECTION FENCING
LIGHT DUTY

REV No.	SCALE:	N.T.S.
1	DATE: JUNE 2025	
STD. DWG. No. 30		



WASAGABEACH™

TREE PROTECTION FENCING
HEAVY DUTY

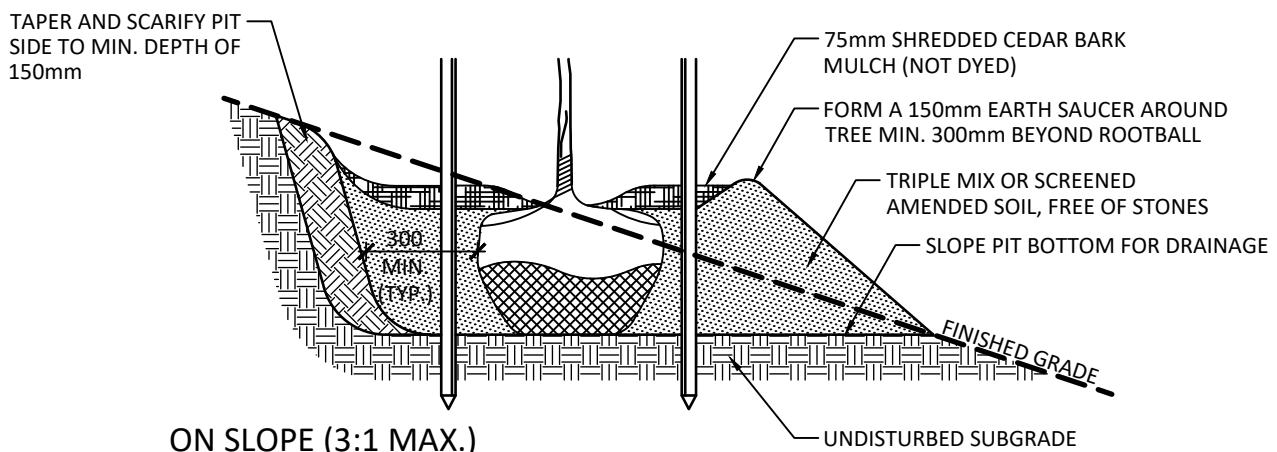
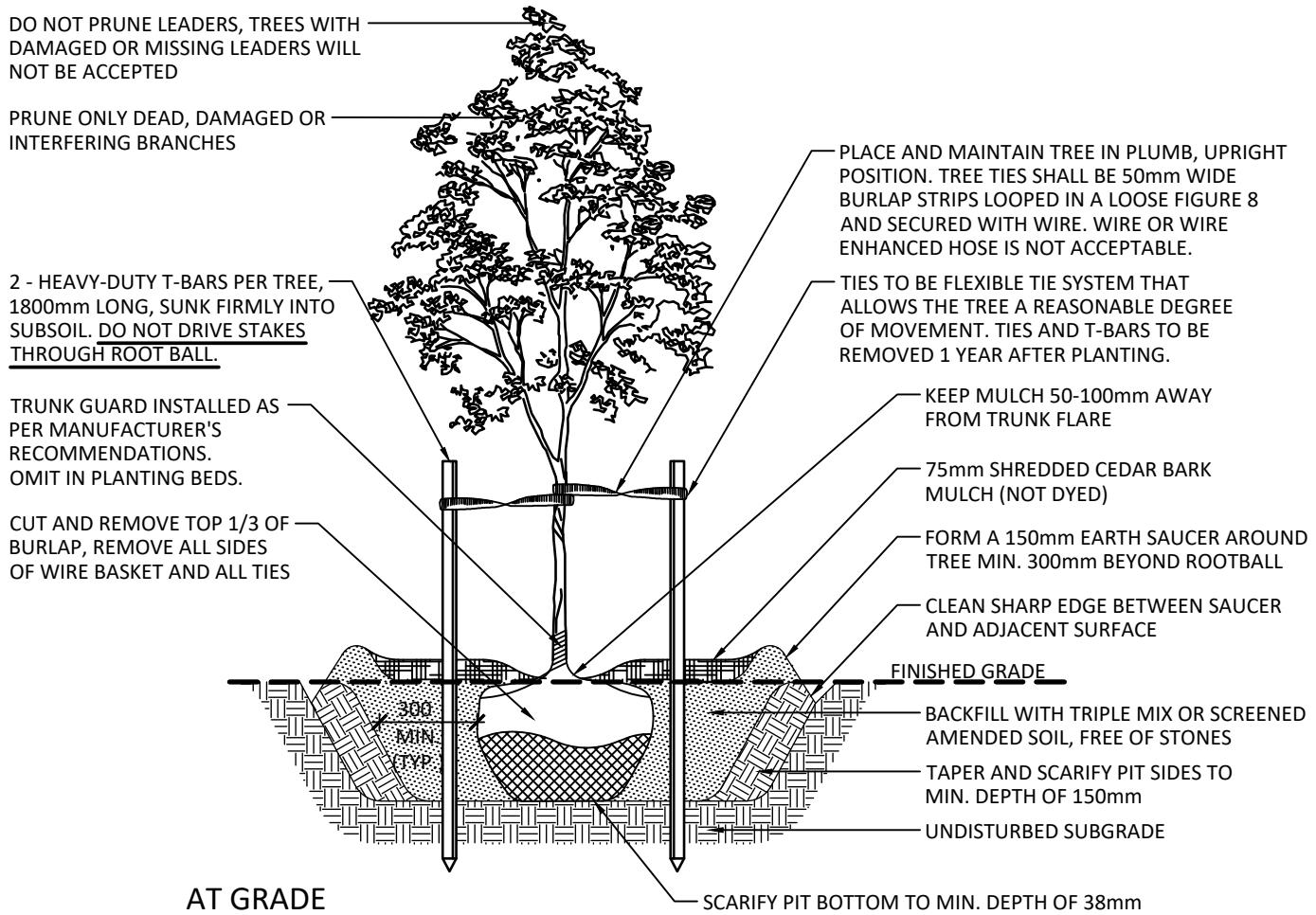
REV No.	SCALE:	N.T.S.
1	DATE: JUNE 2025	
STD. DWG. No. 31		

GENERAL TREE PROTECTION NOTES:

1. THE OWNER/APPLICANT IS RESPONSIBLE FOR DISCUSS ANY POTENTIAL IMPACTS TO TREES LOCATED NEAR OR WHOLLY ON ADJACENT PROPERTIES OR ON SHARED BOUNDARY LINES WITH THEIR NEIGHBOURS. SHOULD SUCH TREES BE INJURED TO THE POINT OF INSTABILITY, DECLINE OR DEATH, THE APPLICANT MAY BE HELD RESPONSIBLE THROUGH CIVIL ACTION. THE APPLICANT SHALL ALSO BE REQUIRED TO REPLACE SUCH TREE TO THE SATISFACTION OF THE TOWN.
2. TREE PROTECTION BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE TOWN'S STANDARDS AND REQUIREMENTS TO THE SATISFACTION OF THE TOWN.
3. ALL SPECIFIED TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITIES, INCLUDING SITE ALTERATION, DEMOLITION OR CONSTRUCTION.
4. UPON INSTALLATION OF ALL TREE/SITE PROTECTION MEASURES, THE APPLICATION SHALL CONTACT THE TOWN TO SCHEDULE A FIELD REVIEW.
5. ANY PROPOSED CHANGES TO THE LOCATION OF THE APPROVED TREE PROTECTION ZONES (TPZ) OR SEDIMENT CONTROL, INCLUDING TEMPORARY ACCESS, REQUIRE PRIOR APPROVAL FROM THE PARKS DEPARTMENT BEFORE ALTERATION.
6. TREE PROTECTION BARRIERS SHALL REMAIN INTACT AND IN GOOD CONDITION THROUGHOUT ALL PHASES OF WORKS, INCLUDING LANDSCAPING. THE TREE PROTECTION BARRIERS SHALL NOT BE ALTERED, MOVED, OR REMOVED WITHOUT AUTHORIZATION FROM THE PARKS DEPARTMENT.
7. THE APPLICANT/OWNER IS RESPONSIBLE FOR MONITORING TREE PROTECTION MEASURES THROUGHOUT THE PROJECT'S DURATION. ANY DAMAGE TO TREE PROTECTION BARRIERS MUST BE REPORTED AND REPAIRED IMMEDIATELY TO PREVENT FURTHER IMPACT ON PROTECTED TREES.
8. THE DESIGNATED TPZ, AS IDENTIFIED ON THE APPROVED TREE PROTECTION PLAN, MUST REMAIN UNDISTURBED AT ALL TIMES. THE FOLLOWING ACTIVITIES ARE STRICTLY PROHIBITED WITHIN THE TPZ:
 - 8.1. CONSTRUCTION, EXCAVATION, GRADING, OR SURFACE ALTERATIONS
 - 8.2. ROOT CUTTING
 - 8.3. STORAGE OF MATERIALS, EQUIPMENT, OR FILL
 - 8.4. VEHICLE OR MACHINERY MOVEMENT OR STORAGE
9. THE APPLICANT MUST ENSURE THAT STORMWATER RUNOFF AND EROSION CONTROL MEASURES DO NOT NEGATIVELY IMPACT THE ROOT ZONES OF PROTECTED TREES. WATER POOLING OR SOIL DISPLACEMENT WITHIN THE TPZ MUST BE MITIGATED TO MAINTAIN TREE HEALTH.
10. ANY ADDITIONAL TREE PROTECTION OR PRESERVATION REQUIREMENTS BEYOND THE INSTALLATION OF BARRIERS MUST BE IMPLEMENTED AS OUTLINED IN THE APPROVED ARBORIST REPORT AND/OR TREE PROTECTION PLAN AND TO THE SATISFACTION OF THE PARKS DEPARTMENT.
11. IF A REDUCTION IN THE TPZ IS NECESSARY TO FACILITATE CONSTRUCTION ACCESS, THE TREE PROTECTION BARRIER SHALL BE MAINTAINED AT A LESSER DISTANCE, AND THE EXPOSED PORTION OF THE TPZ SHALL BE PROTECTED USING AN APPROVED HORIZONTAL ROOT PROTECTION METHOD.
12. TO PREVENT SOIL COMPACTION WITHIN THE TPZ, PROTECTIVE GROUND COVERINGS (E.G., MULCH, GEOTEXTILE FABRIC WITH WOOD CHIPS, OR RUBBER MATS) MUST BE USED IF TEMPORARY ACCESS IS UNAVOIDABLE. NO HEAVY EQUIPMENT OR REPEATED FOOT TRAFFIC SHOULD OCCUR WITHIN THE TPZ WITHOUT APPROVAL.
13. ANY APPROVED PRUNING OF ROOTS OR BRANCHES MUST BE PERFORMED BY A CERTIFIED ARBORIST, ADHERING TO BEST ARBORICULTURAL PRACTICES. APPLICANTS SHALL NOTIFY THE PARKS DEPARTMENT AT LEAST THREE BUSINESS DAYS PRIOR TO THE COMMENCEMENT OF ANY PRUNING WORKS.
14. THE APPLICANT/OWNER SHALL PROTECT ALL BY-LAW-REGULATED TREES NOT APPROVED FOR REMOVAL THROUGHOUT THE DURATION OF THE DEVELOPMENT'S CONSTRUCTION ACTIVITIES.
15. BEFORE ANY SITE DISTURBANCE, THE OWNER MUST ENSURE COMPLIANCE WITH THE MIGRATORY BIRD CONVENTION ACT, CONFIRMING THAT NO ACTIVE NESTS ARE DISTURBED.
16. IF A TREE DESIGNATED FOR PRESERVATION IS DAMAGED OR REMOVED WITHOUT PRIOR APPROVAL, THE APPLICANT/OWNER MUST REPLACE PER THE TOWN'S TREE COMPENSATION REQUIREMENTS
17. UPON PROJECT COMPLETION, THE TOWN MAY REQUIRE A POST-CONSTRUCTION TREE HEALTH ASSESSMENT BY A CERTIFIED ARBORIST. IF TREES SHOW SIGNS OF DECLINE DUE TO CONSTRUCTION-RELATED ACTIVITIES, THE APPLICANT/OWNER MAY BE REQUIRED TO IMPLEMENT REMEDIAL MEASURES, SUCH AS SOIL AERATION, DEEP ROOT FERTILIZATION, OR ADDITIONAL WATERING.

NOTES:

1. DO NOT ALLOW AIR POCKETS WHEN BACKFILLING.
2. POSITION CROWN OF ROOT BALL 50mm ABOVE GRADE TO ALLOW FOR SETTLING.
3. NO TREE PITS SHALL BE LEFT OPEN OVERNIGHT.



NOTES:

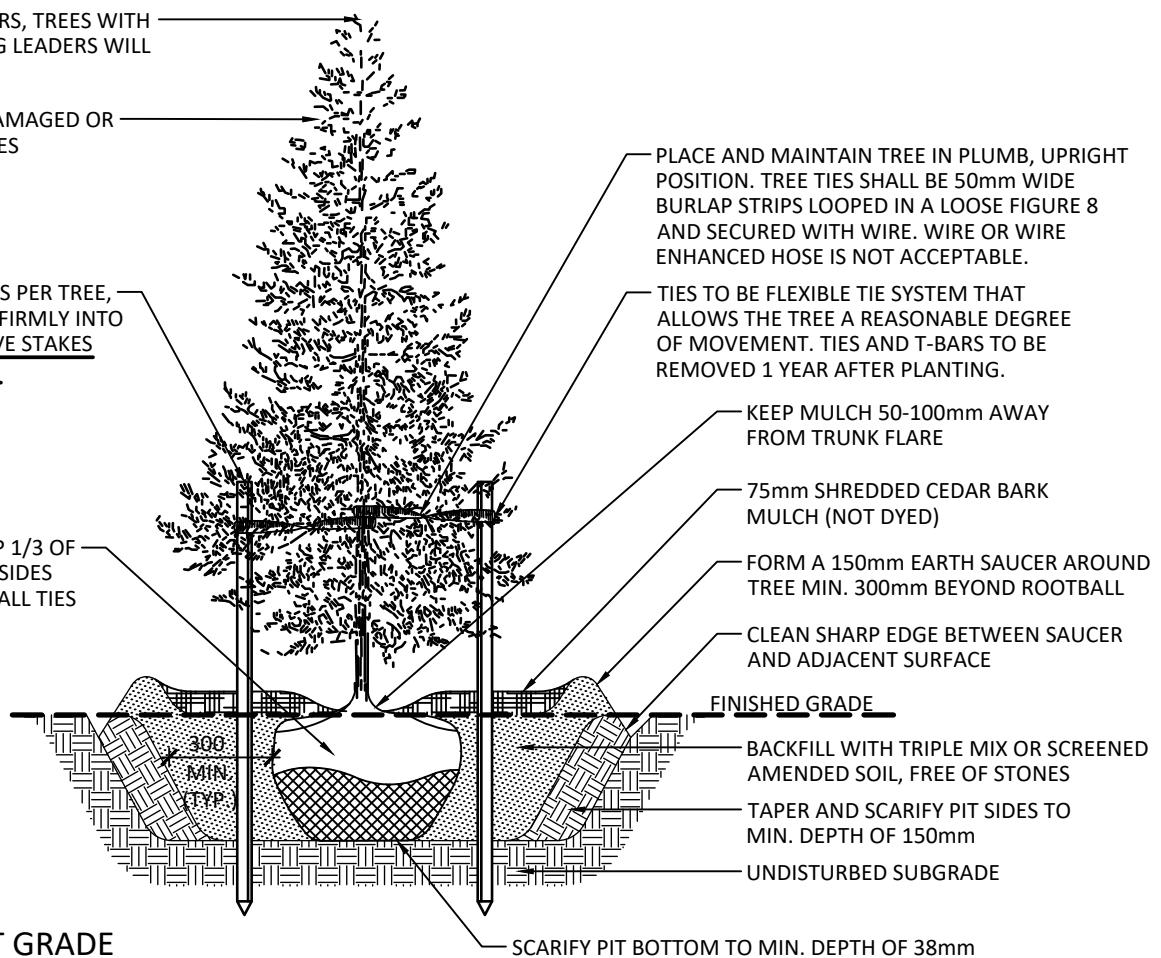
1. DO NOT ALLOW AIR POCKETS WHEN BACKFILLING.
2. POSITION CROWN OF ROOT BALL 50mm ABOVE GRADE TO ALLOW FOR SETTLING.
3. NO TREE PITS SHALL BE LEFT OPEN OVERNIGHT.

DO NOT PRUNE LEADERS, TREES WITH
DAMAGED OR MISSING LEADERS WILL
NOT BE ACCEPTED

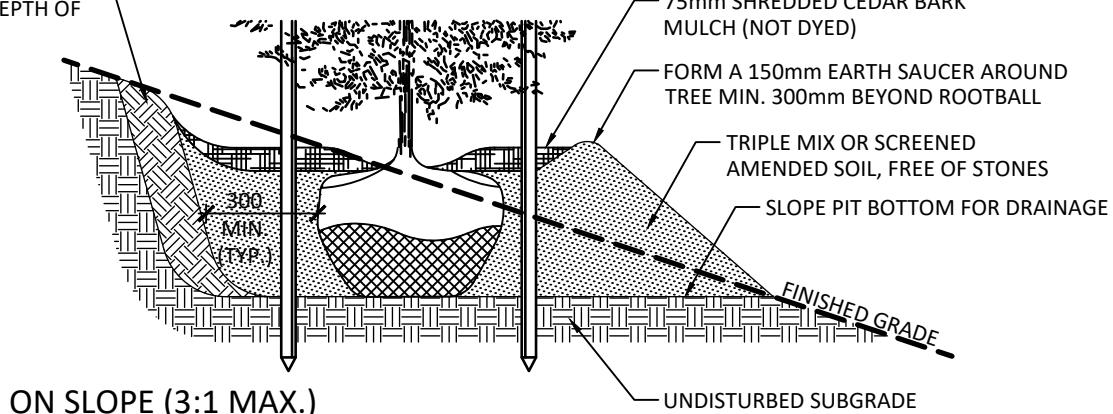
PRUNE ONLY DEAD, DAMAGED OR
INTERFERING BRANCHES

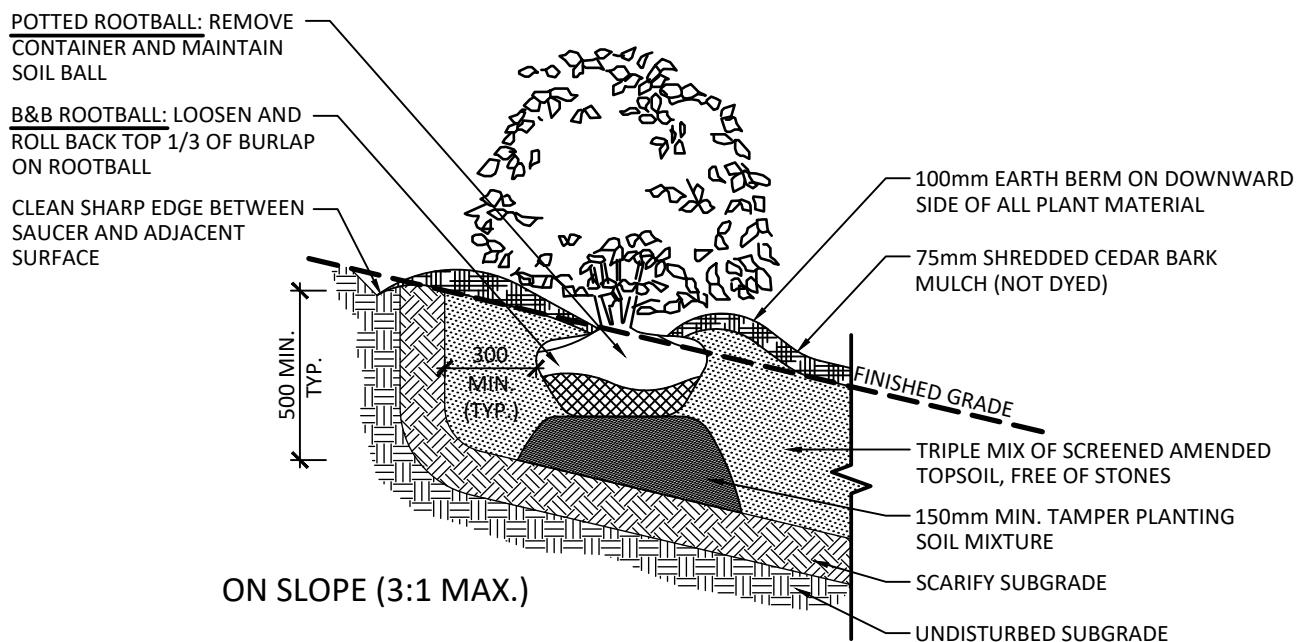
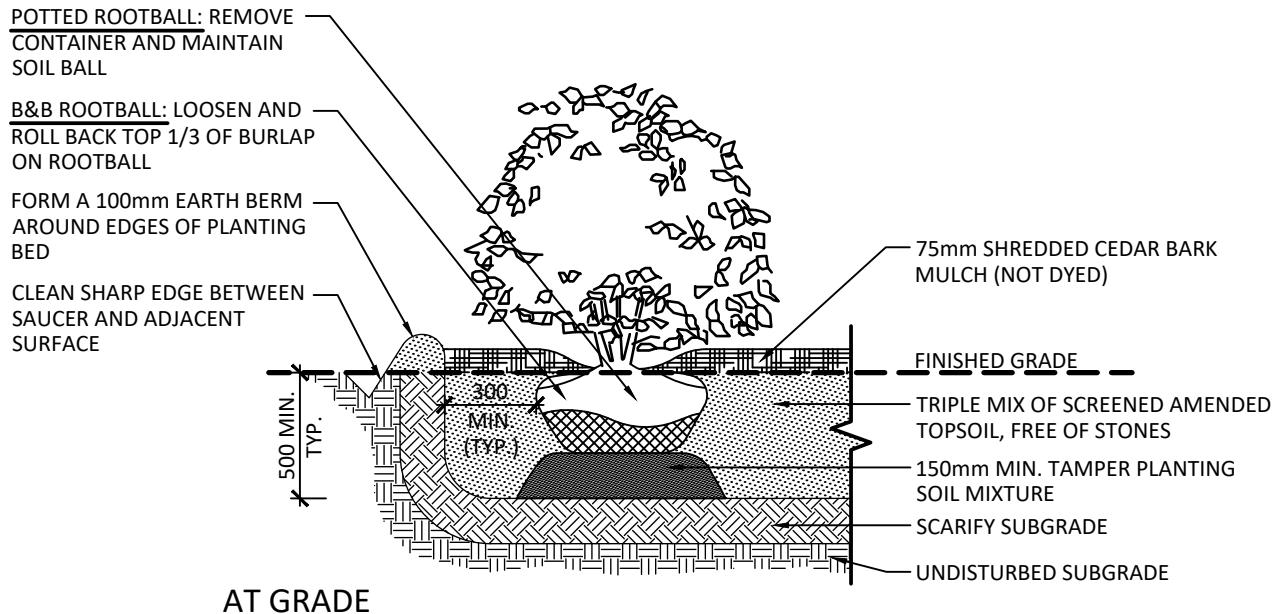
2 - HEAVY-DUTY T-BARS PER TREE,
1800mm LONG, SUNK FIRMLY INTO
SUBSOIL. DO NOT DRIVE STAKES
THROUGH ROOT BALL.

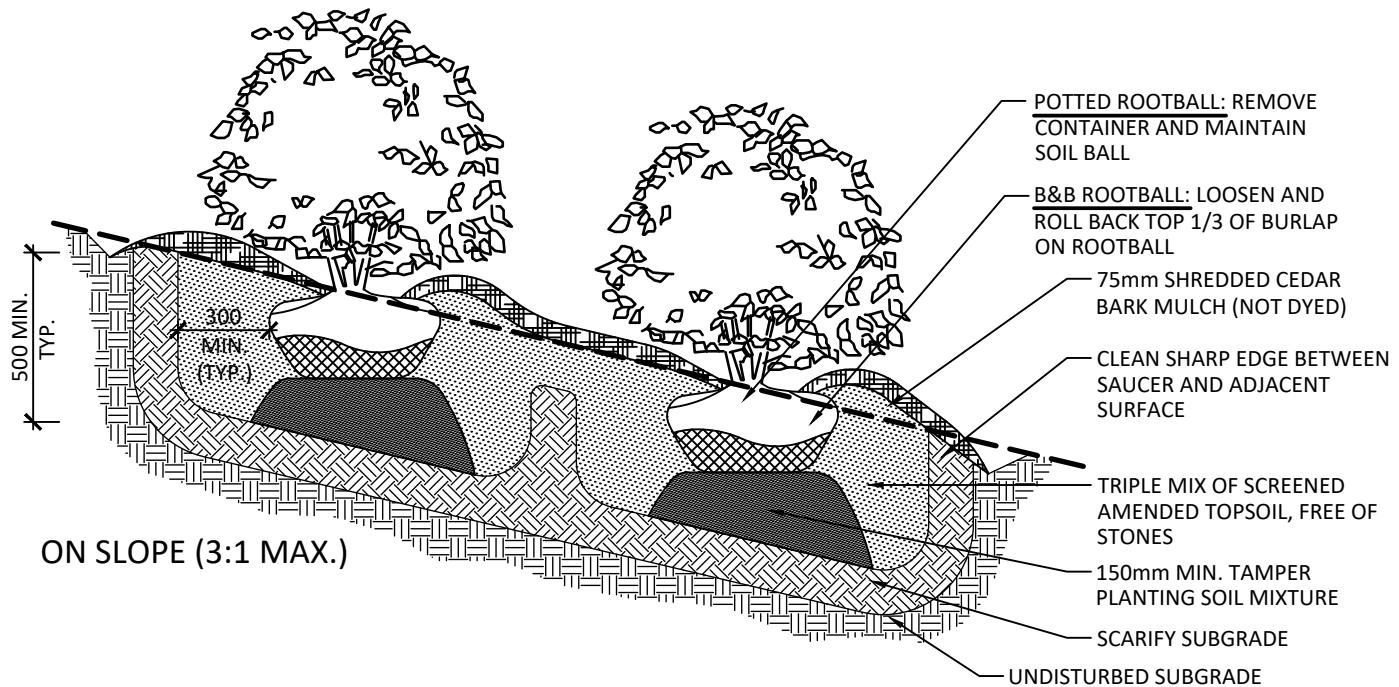
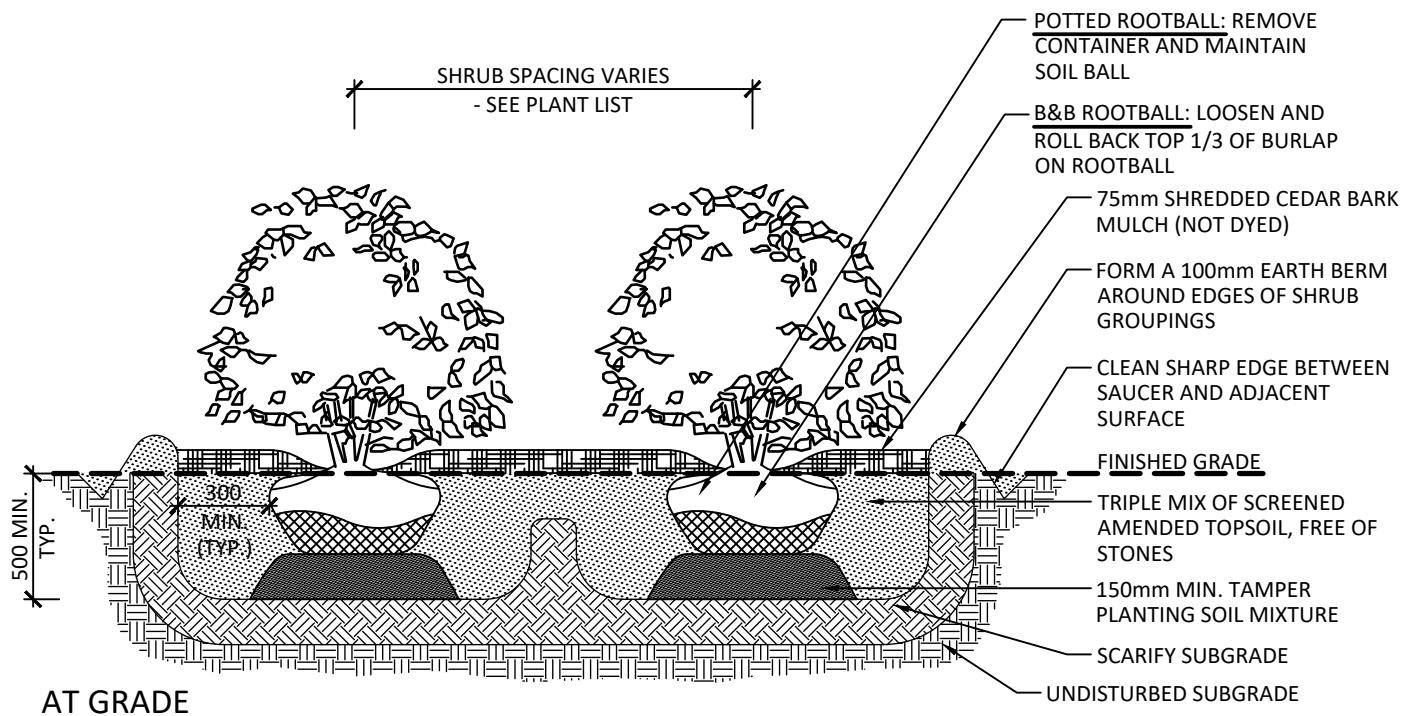
CUT AND REMOVE TOP 1/3 OF
BURLAP, REMOVE ALL SIDES
OF WIRE BASKET AND ALL TIES



TAPER AND SCARIFY PIT SIDE TO MIN. DEPTH OF 150mm







GENERAL PLANTING NOTES:

1. **GENERAL PLANT MATERIAL** SHALL BE IN ACCORDANCE WITH THE CANADIAN LANDSCAPE STANDARD (LATEST EDITION), PUBLISHED BY THE CANADIAN NURSERY LANDSCAPE ASSOCIATION (CNLA) AND THE CANADIAN SOCIETY OF LANDSCAPE ARCHITECTS (CSLA), EXCEPT WHERE SPECIFIED OTHERWISE.
2. **TREES:** ALL TREES SHALL BE SUPPLIED BALLED AND BURLAPPED OR IN WIRE BASKETS (NO POTTED MATERIAL WILL BE ACCEPTED) AND SHALL MEET FOLLOWING MINIMUM CRITERIA:
 - a) DECIDUOUS TREES SHALL BE A MINIMUM OF 60mm CALIPER WITH THEIR LOWER BRANCHES LIMBED UP ABOVE 1.8m FROM THE GROUND-PLANE;
 - b) ORNAMENTAL AND MULTI-STEM TREES SHALL BE A MINIMUM OF 40mm - 50mm CALIPER DBH;
 - c) CONIFEROUS TREES SHALL BE SUPPLIED AT A MINIMUM HEIGHT OF 1.8m;
 - d) TREES SHALL POSSESS A DOMINANT CENTRAL LEADER THAT IS EITHER UN-PRUNED OR HAS BEEN RE-TRAINED AT THE NURSERY USING APPROPRIATE HORTICULTURAL PRACTICES. TREES WITH CUT OR CO-DOMINANT LEADERS WILL NOT BE ACCEPTED.
3. **SHRUBS/PERENNIALS/GROUNDCOVERS:** ARE TO BE SUPPLIED POTTED AND SHALL MEET THE FOLLOWING MINIMUM CRITERIA:
 - a) DECIDUOUS AND CONIFEROUS SHRUBS SHALL BE SUPPLIED IN 3 GAL. POTS, MINIMUM;
 - b) PERENNIALS, ORNAMENTAL GRASSES, AND GROUNDCOVERS SHALL BE SUPPLIED IN 1 GAL. POTS, MINIMUM;
 - c) SHRUBS, PERENNIALS, AND GROUNDCOVERS CHOSEN FOR AREAS WHERE VISIBILITY AND SURVEILLANCE ARE KEY OBJECTIVES SHOULD BE NO HIGHER THAN 1.0m (AT Maturity).
5. **PLANTING SOIL MIXTURE** SHALL BE 50% SCREENED TOPSOIL, 20% COARSE SAND, AND 30% COMPOST, AS SPECIFIED. PROVIDE SOURCE AND SAMPLE OF SOIL MIXTURE FOR APPROVAL BY TOWN PRIOR TO COMMENCING WORK.
6. **MULCH** TO BE SHREDDED CEDAR BARK, FREE OF DYES AND CHEMICALS, OR APPROVED EQUAL.
7. **TREE STAKES** TO BE 40mm X 40mm X 5mm X 1800mm LONG HEAVY-DUTY GAUGE T-BARS.
8. **TIES** TO BE 50MM WIDE BURLAP STRIPS LOOPED IN A LOOSE FIGURE 8 OR ANOTHER WOVEN BIODEGRADABLE TIE SYSTEM THAT REMAINS FLEXIBLE DURING WINTER MONTHS.
9. **TRUNK PROTECTION** TO BE 100mm DIA. HDPE PIPE, 500mm LONG OR TO LOWEST BRANCH, EXCEPT IN NATURALIZATION AREAS WHERE IT IS TO BE WHITE SPIRAL PLASTIC TREE GUARD.
10. REMOVE STAKES AND TIES 1 YEAR AFTER PLANTING AND REMOVE TRUNK PROTECTION AT THE COMPLETION OF THE CONTRACT WARRANTY PERIOD.
11. FOR TREE AND SHRUB GROUPINGS, PROVIDE A CONTINUOUS MULCHED UNDERSTOREY THAT IS 75mm DEEP AND CONTINUOUS ACROSS THE ENTIRE PLANTED AREA.
12. TREES SHALL ONLY BE PLANTED ONCE FINISHED GRADE HAS BEEN ESTABLISHED.
13. PLANTS INSTALLED BETWEEN MAY 15TH TO OCTOBER 15 WILL BE WARRANTED FOR A PERIOD OF TWENTY-FOUR (24) MONTHS FOLLOWING THE TOWN'S ACCEPTANCE OF THE COMPLETED WORK.
14. PLANTS INSTALLED AFTER OCTOBER 15TH WILL BE WARRANTED FOR TWENTY-FOUR (24) MONTHS STARTING FROM MAY 15TH THE FOLLOWING YEAR, UPON ACCEPTANCE OF THE WORK BY THE TOWN. ADDITIONALLY, REPLACEMENT TREES WILL BE WARRANTED FOR TWENTY-FOUR (24) MONTHS FROM THE DATE THE WORK IS ACCEPTED BY THE TOWN.
15. PLANT MATERIAL MUST BE REPLACED DURING THE WARRANTY PERIOD, AS REQUIRED BY THE TOWN. REPLACEMENT OF PLANTS ONLY AT THE END OF THE WARRANTY PERIOD WILL NOT BE ACCEPTABLE.
16. THE TREES WILL ONLY BE ACCEPTED AFTER IT IS VERIFIED THAT ALL PLANTS AND MATERIALS MEET THE FOLLOWING CRITERIA:
 - a) COMPLETELY FREE OF DISEASE AND/OR INSECT INFESTATION;
 - b) ARE IN A HEALTHY AND VIGOROUS GROWING CONDITION;
 - c) CORRECTIVE PRUNING HAS BEEN COMPLETED;
 - d) TREE STAKES ARE REMOVED;
 - e) ALL ACCESSORIES ARE IN GOOD CONDITION AS SPECIFIED;
 - f) PLANTING AREAS AND TREE SAUCERS ARE FRESHLY CULTIVATED AND FREE OF WEEDS AND DEBRIS.

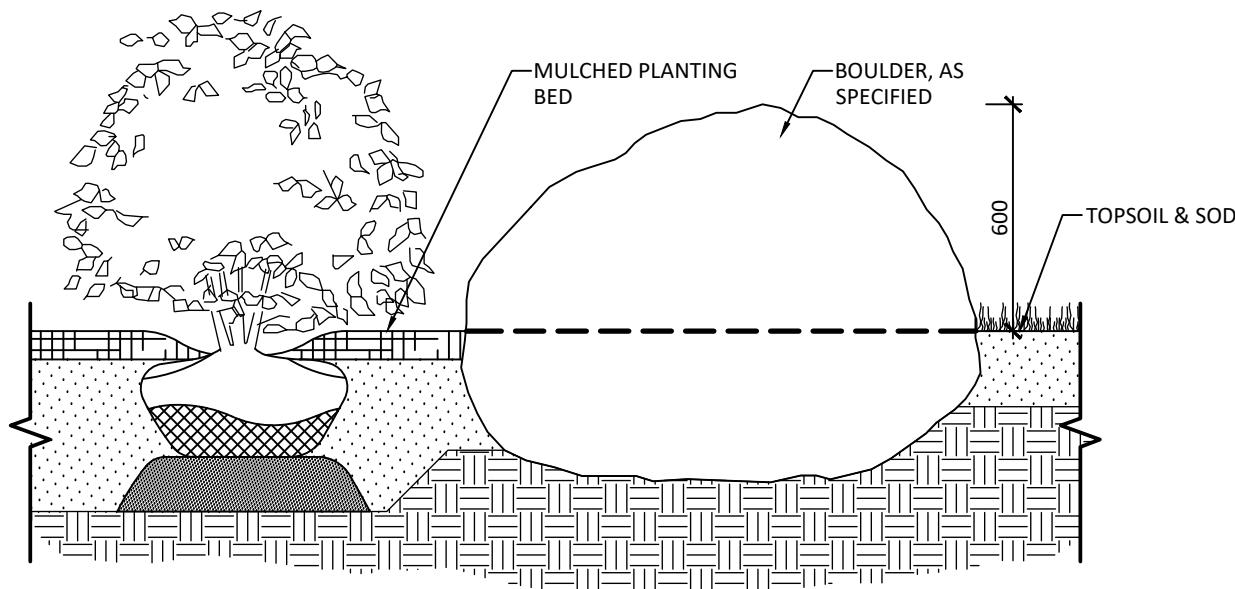


PLANTING NOTES

REV No.	SCALE:	N.T.S.
1	DATE:	JUNE 2025
STD. DWG. No. 37		

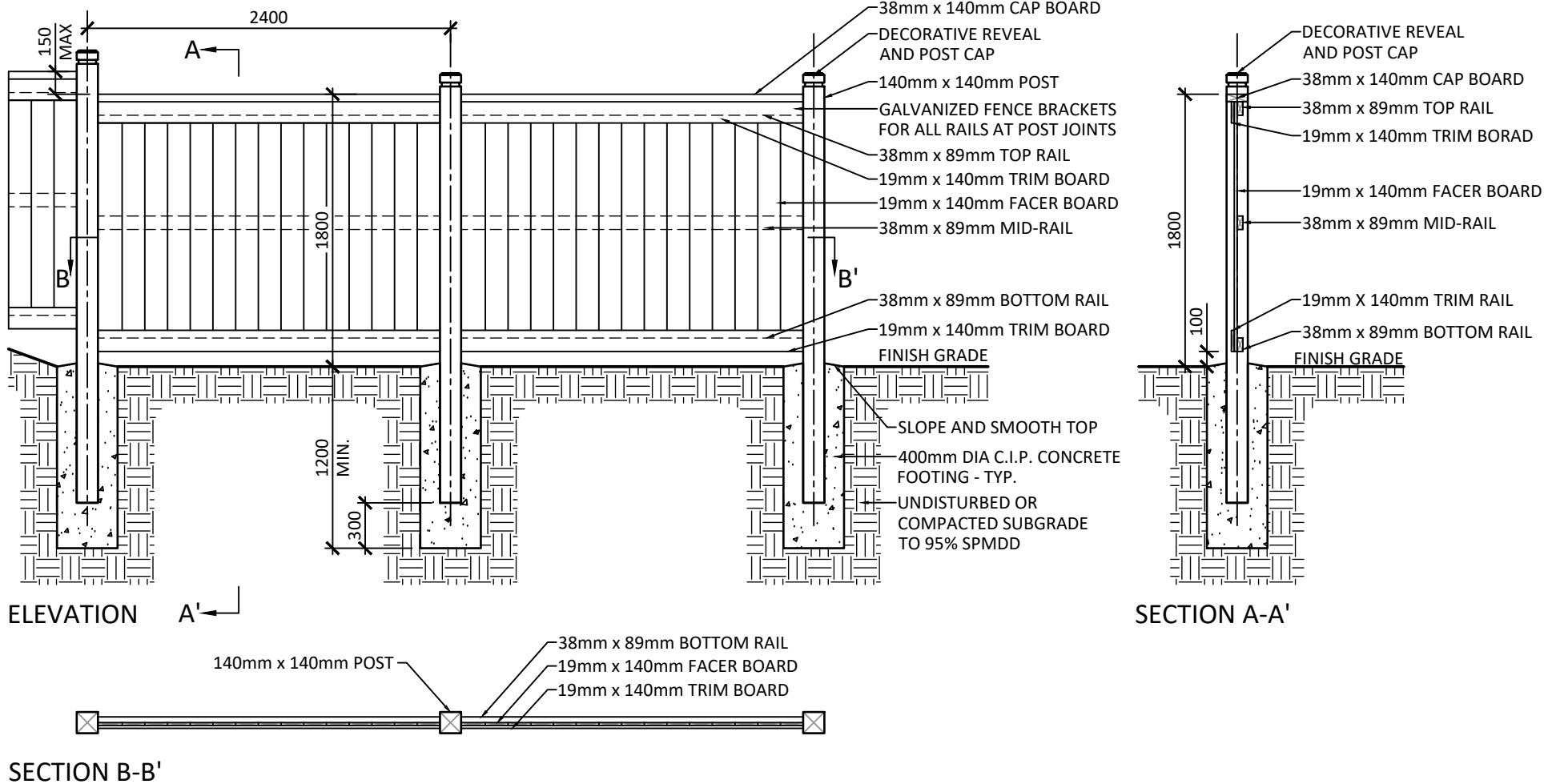
NOTES:

1. BOULDER SHALL BE ROUNDED CAP LIMESTONE ROCKERY.
2. BOULDER SIZE SHALL BE IN ACCORDANCE TO SCALE DEPICTED ON THE LANDSCAPE OR TRAIL PLANS.
3. TRAILHEAD BOULDERS TO BE APPROVED BY THE TOWN PRIOR TO INSTALLATION.



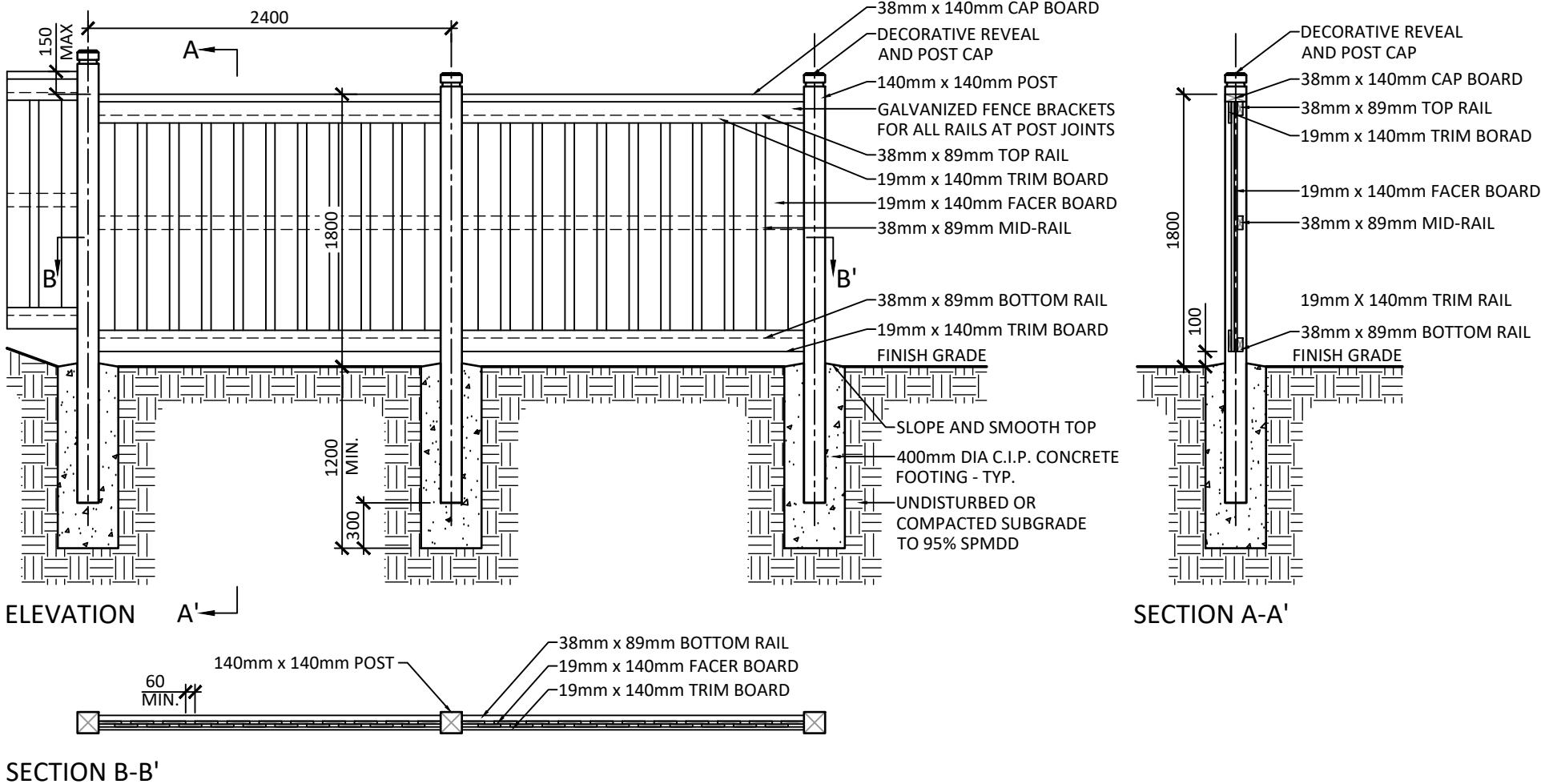
NOTES:

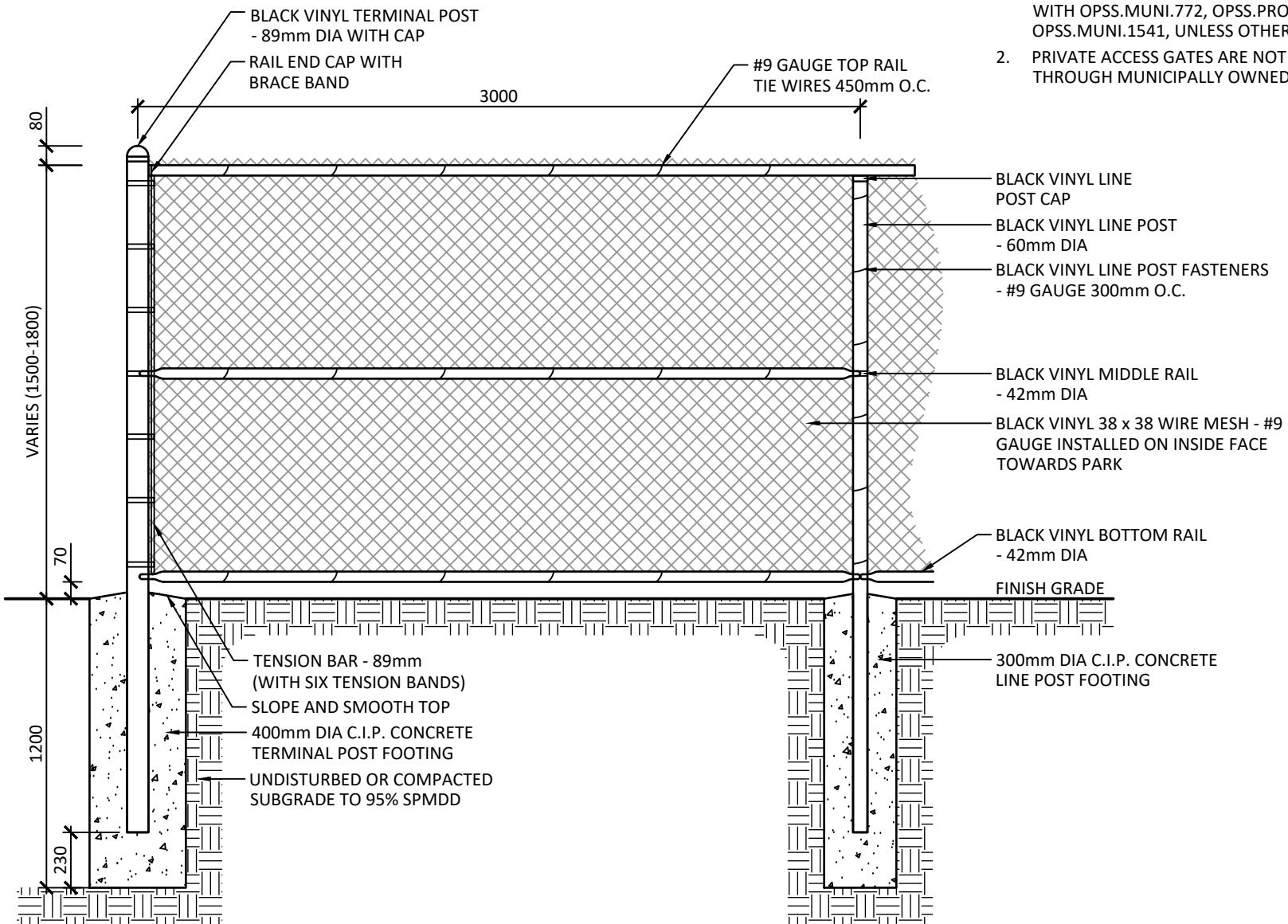
1. ALL MATERIALS, COMPONENTS AND WORKMANSHIP TO CONFORM WITH TOWN BY-LAWS.
2. CONSTRUCT WOOD FENCING IN ACCORDANCE WITH CAN3-086-M80 EXCEPT WHERE SPECIFIED.
3. FENCE LOCATIONS AND DIMENSIONS MUST BE IN ACCORDANCE WITH THE APPROVED LANDSCAPE OR FENCING PLANS.
4. ALL FENCING TO BE CONSTRUCTED WITH No. 1 GRADE CEDAR OR PRESSURE TREATED RED PINE/JACK PINE OR APPROVED EQUAL WOOD.
5. FENCING LUMBER TO BE SELECT TIGHT KNOT OR BETTER.
6. ALL WOOD SHALL BE FREE OF WANES AND BARK. ALL TORN GRAIN SHALL BE PLANED OR Sanded SMOOTH.
7. METAL FASTENERS: TO BE HOT DIPPED GALVANIZED FINISH.
8. ALL SURFACES ON WOOD WHICH HAVE BEEN EXPOSED DUE TO CUTTING OR DRILLING SHALL BE THOROUGHLY TREATED WITH APPROVED PRESERVATIVE BEFORE INSTALLATION.
9. THE WORK SHALL BE LAID OUT TRUE TO LINE AND LEVEL, PLUMB AND TRUE. STRUCTURAL SUPPORTS AND MEMBERS SHALL BE ACCURATELY PLACED IN POSITION AND SECURELY BRACED TO REMAIN PLUMB AND TRUE UNTIL PERMANENTLY FIXED.
10. ALL NAILS AND HARDWARE TO BE GALVANIZED.



NOTES:

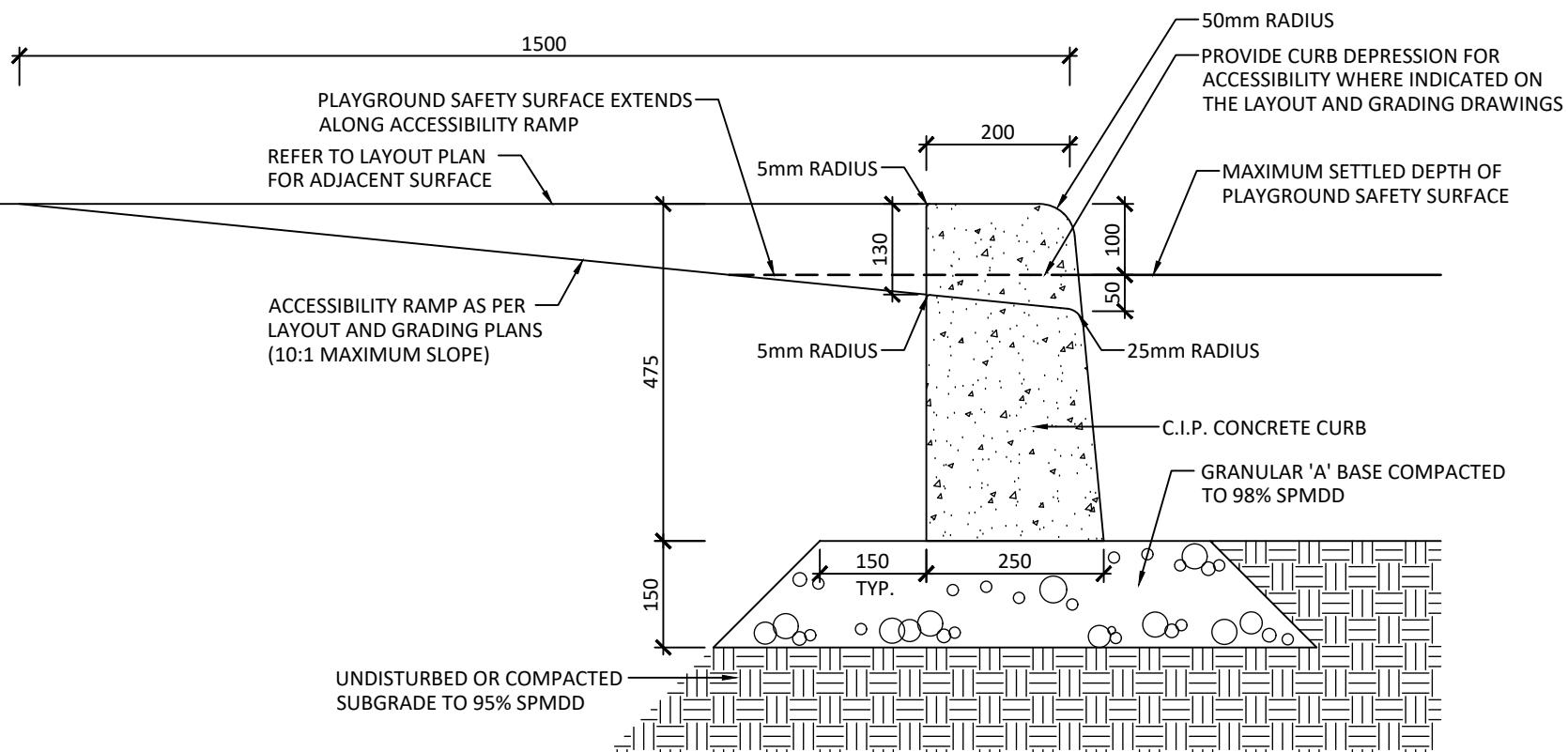
1. ALL MATERIALS, COMPONENTS AND WORKMANSHIP TO CONFORM WITH TOWN BY-LAWS.
2. CONSTRUCT WOOD FENCING IN ACCORDANCE WITH CAN3-086-M80 EXCEPT WHERE SPECIFIED.
3. FENCE LOCATIONS AND DIMENSIONS MUST BE IN ACCORDANCE WITH THE APPROVED LANDSCAPE OR FENCING PLANS.
4. ALL FENCING TO BE CONSTRUCTED WITH No. 1 GRADE CEDAR OR PRESSURE TREATED RED PINE/JACK PINE OR APPROVED EQUAL WOOD.
5. FENCING LUMBER TO BE SELECT TIGHT KNOT OR BETTER.
6. ALL WOOD SHALL BE FREE OF WANES AND BARK. ALL TORN GRAIN SHALL BE PLANED OR Sanded SMOOTH.
7. METAL FASTENERS: TO BE HOT DIPPED GALVANIZED FINISH.
8. ALL SURFACES ON WOOD WHICH HAVE BEEN EXPOSED DUE TO CUTTING OR DRILLING SHALL BE THOROUGHLY TREATED WITH APPROVED PRESERVATIVE BEFORE INSTALLATION.
9. THE WORK SHALL BE LAID OUT TRUE TO LINE AND LEVEL, PLUMB AND TRUE. STRUCTURAL SUPPORTS AND MEMBERS SHALL BE ACCURATELY PLACED IN POSITION AND SECURELY BRACED TO REMAIN PLUMB AND TRUE UNTIL PERMANENTLY FIXED.
10. ALL NAILS AND HARDWARE TO BE GALVANIZED.





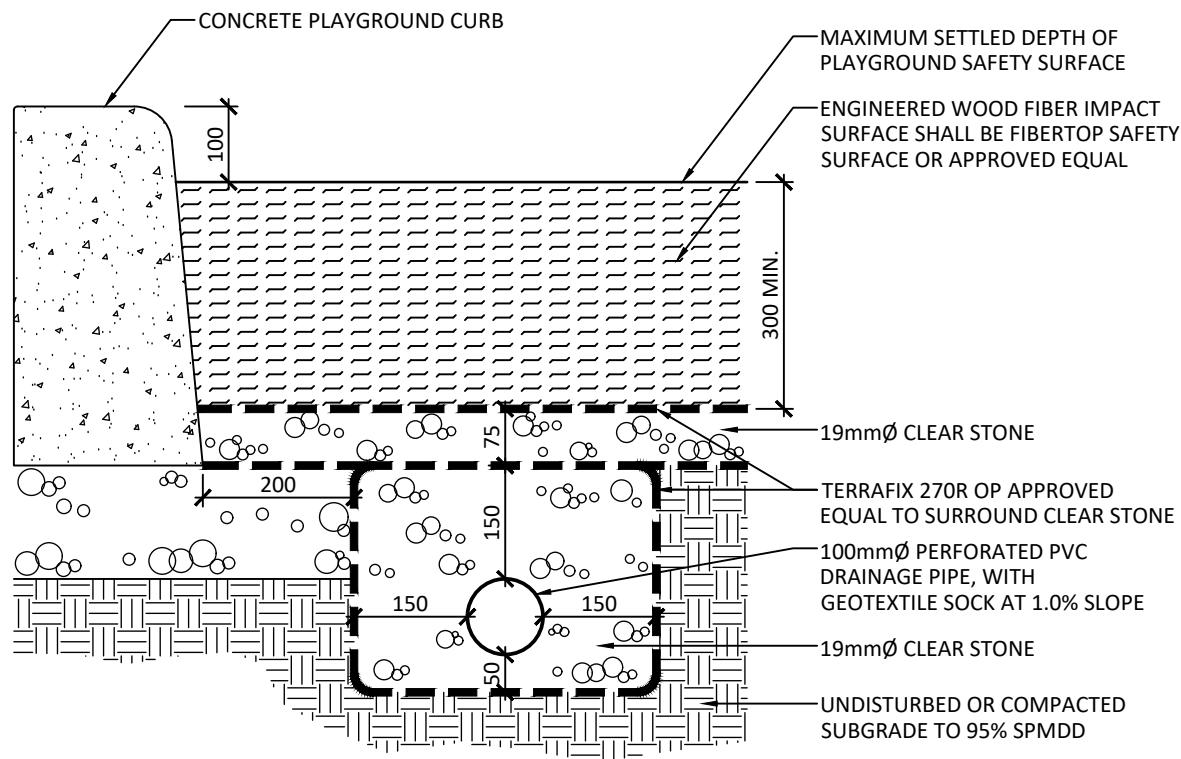
NOTES:

1. CONCRETE PLAYGROUND CURBS SHALL BE IN ACCORDANCE WITH OPSS 353 AND OPSS.MUNI 1350.
2. GRANULAR BASE SHALL BE GRANULAR 'A' IN ACCORDANCE WITH OPSS.MUNI 314 AND OPSS.MUNI 1010.
3. FINISH: LIGHT BROOM FINISH, PERPENDICULAR TO THE LONGITUDINAL CURB ALIGNMENT.
4. LOCATE CONTROL JOINTS AT 2.0m O.C. AND EXPANSION JOINTS AT 6.0m.



NOTES:

1. PLAYGROUND SAFETY SURFACE SHALL BE ENGINEERED WOOD FIBER MEETING THE REQUIREMENTS OF CAN/CSA-Z614-20 (OR LATEST EDITION).
2. PLAYGROUND SAFETY SURFACE SHALL BE PROPRIETARY ENGINEERED WOOD FIBER CHIPS, PURPOSE-INTENDED FOR USE IN PLAYGROUNDS.
3. LOOSE-FILLED SAFETY SURFACING SHALL BE PLACED OVER A CONTINUOUS NON-WOVEN GEOTEXTILE WITH 450mm FABRIC OVERLAP.



16. Appendices – Table of Contents

- Appendix A - Example Lot Grading Checklist
- Appendix B - Municipal Infrastructure Milestones and Requirements
- Appendix C - Road Not Assumed Detail
- Appendix D - SWM Facility Summary
- Appendix E - Operations & Maintenance Manual
- Appendix F - Site Plan Requirements for Private Development
- Appendix G - Approved Materials List
- Appendix H - Parks Standards

APPENDIX A

Example Lot Grading Checklist and Certificate

**TOWN OF WASAGA BEACH
LOT GRADING CERTIFICATION
CHECK LIST**

	YES	NO
1. Lot grading plan is attached.	<input type="checkbox"/>	<input type="checkbox"/>
2. Grading design amendments have received prior Municipal approval.	<input type="checkbox"/>	<input type="checkbox"/>
3. A pre-sod grade check was determined to be satisfactory	<input type="checkbox"/>	<input type="checkbox"/>
4. Sod or alternative ground cover has been placed and is sufficiently established. <ul style="list-style-type: none"> • Front yard and boulevard (Sod Only) • Side Yards (Sod or approved alternative ground cover) • Rear Yard (Sod or approved alternative ground cover) 	<input type="checkbox"/>	<input type="checkbox"/>
5. Final grades have been checked and are in general compliance with lot grading plan. <ul style="list-style-type: none"> - Apron/Garage Floor - Lot Corners - Side yards - Top of Foundation Wall - Underside of Footing 	<input type="checkbox"/>	<input type="checkbox"/>
6. Side yard Swales are well defined.	<input type="checkbox"/>	<input type="checkbox"/>
7. Rear yard Swale is well defined.	<input type="checkbox"/>	<input type="checkbox"/>
8. Splash pads have been placed at all downspouts.	<input type="checkbox"/>	<input type="checkbox"/>
9. Finish grades min 150 mm below brick/siding including veneer.	<input type="checkbox"/>	<input type="checkbox"/>
10. There are no areas of settlement at or adjacent to foundation walls.	<input type="checkbox"/>	<input type="checkbox"/>
11. Grading encroachment on adjacent lots has been reinstated to the satisfaction of the adjacent lot Owner(s).	<input type="checkbox"/>	<input type="checkbox"/>
12. Water service curb stop flush with final grade and accessible.	<input type="checkbox"/>	<input type="checkbox"/>
13. Sanitary service cleanout flush with final grade and accessible.	<input type="checkbox"/>	<input type="checkbox"/>
14. Weeping tile sleeve elevation confirmed (where applicable).	<input type="checkbox"/>	<input type="checkbox"/>
15. Soakaway pits installed per the accepted grading plan.	<input type="checkbox"/>	<input type="checkbox"/>
16. As-Constructed driveway culvert inverts (where applicable).	<input type="checkbox"/>	<input type="checkbox"/>

If NO to any item explain and describe graphically on the attached lot grading plan.

TOWN OF WASAGA BEACH

CERTIFICATE OF LOT GRADING

SUBDIVISION NAME: _____

REGISTERED PLAN NO.: _____

LOT NO.: _____ HOUSE NO/STREET _____

This is to confirm that I/we have inspected the above noted lot (s) and certify that lot grading and associated grading requirements are in general compliance with the overall grading design, which was "Accepted for Construction" for this lot together with the grading check list, copies of which are attached.

CERTIFIER NAME: _____ DATE: _____

COMPANY: _____

CERTIFIER STAMP: TOWN STAMP:

NOTES:

APPENDIX B

Municipal Infrastructure Milestones and Requirements

MUNICIPAL SERVICING TESTING REQUIREMENTS

WATERMAIN

Swabbing (1*)

Hydrostatic Pressure Test (1*)

Chlorination / Chlorine Residual (1*)

Flushing to municipal levels (Cl range to be verified with WBPW) (1*)

Bacteriological Sampling (after 16 hr per AWWA C651 Standard) (1*)

Curb Stop Operation – by Public Works (1 & 3)

Valve Operation – by Public Works (1 & 3)

Hydrant Operation – by Public Works (1 & 3)

Continuity (Tracer Wire) Test – by Public Works (1)

Fire hydrant visual inspection – by Town Engineer (1* & 3*):

- Height and angle
- Paint is acceptable
- Flange mounted hydrant marker installed
- “Pump after each Use” sticker applied (provided by Town)
- Anti-tampering devices (installed after all testing for 1*, removed for 3*)

All connections to the live municipal system to be witnessed by Public Works Staff

SANITARY SEWER

Deflection (Mandrel) Test (1*)

Leakage (Infiltration/Exfiltration) Test (1*)

Visual MH inspection (1*, 2* & 3*)

Flushing (1, 2 & 3)

CCTV Inspection including laterals from trunk to 1.5m past cleanout / observation port (1 & 3)

Sanitary service cleanout / observation port visual inspection by Developer and Public Works (3)

All connections to the live municipal system to be witnessed by Town Engineering

Staff/representative (and Public Works Staff if deemed appropriate)

All connections to the existing system are to remained plugged until after issuance of the

Certificate of Substantial Completion (Basic Services)

STORM SEWER

Deflection (Mandrel) Test – plastic pipe only (1*)

Visual – CB, RLCB, CBMH and MH inspection (1*, 2* & 3*)

SWM Facility Inspection (1* & 3*)

Flushing (1* & 3*)

CCTV Inspection (1* & 3*)

SWM Pond warning signage (2*)

SWM pond cleanout and certification (3*)

ROADWORKS

Sub-grade Proof roll (1*)

Granulars Sieve Analysis & Compaction (1*)

Curb & Gutter (Concrete Strength – 1*; Visual – 2* & prior to placement of surface course asphalt)

Base Course Asphalt (Compaction and Visual – 1*; another visual prior to placement of surface course asphalt)

Geotechnical certification of suitable topsoil for healthy turf growth (1)

Mail box pads installed (2*)

Surface Course Asphalt (Compaction and Visual – 3*)

Sidewalk (Visual) (3*)

Street signs (Visual) (1*, 2* & 3*)

Streetlight (Visual) (2* & 3*)

Assumption/Final inspections (3*)

1 - To be completed prior to issuance of the Certificate of Substantial Completion (Basic Services)

2 - To be completed prior to issuance of the Certificate of Substantial Completion (Full Services) / Occupancy

3 - To be completed prior to issuance of Certificate of Acceptance (Full Services) / Assumption / Final Acceptance.

Town Engineering staff to attend all of the above noted inspections marked with an asterisk.



Town of Wasaga Beach Building Department

30 Lewis Street
Wasaga Beach, Ontario, L9Z 1A1

Watermain Commissioning Plan Review Checklist (2022)

Project Name: _____

Engineering Firm: _____ Phone Number: _____

Contact Person: _____ E-mail Address: _____

General Notes:

The following items shall form part of the watermain commissioning proposal

Live system valves shall be operated by Town staff only

Connections will not be permitted on Fridays

All testing is to be witnessed by Town staff and the developer's consultant, a minimum of 48 hours notice is required prior to testing

Backflow Prevention:

Backflow prevention is required, please note the Town does not supply or certify backflow preventers

Name of the plumbing company who will be providing and certifying the backflow preventer

Licenced 3rd Party Water Operator:

Company name of the 3rd party licenced water operator. Please include the name, address, phone number and email address

Copy of the 3rd party water operators licence attached

Water Meter:

All water consumption must be metered, the Town does allow for use of a 2" water meter, provided they are available. A request for water meter shall be made to the Town Engineering Department representative. Meters larger than 2" will need to be supplied by the developers contractor

Location of water source point (i.e. backflow preventer and water meter) shown on plan

Pressure Test:

Note: It is recommended that a preliminary pressure test be completed by the contractor, please include

There are two options for watermain pressure testing, option a) maximum 300m watermain test sections, with a gauge in each section b) Test the entire watermain system, however, the maximum allowable leakage for the entire system cannot exceed that of a 300m test section.

Pressure testing allowable loss calculation attached

Swabbing:

A swabbing plan has been attached which clearly identifies the swab insertion and discharge locations

3 swabs per line are required, installation to be witnessed by Town staff

Turbidity:

Turbidity of less than 1 NTU, to be achieved prior to chlorination

Chlorination:

Continuous feed method proposed

NSF certified hypochlorite & copy of MSDS sheet attached

Volume of chlorine required to achieve 50-100ppm (i.e. 75ppm) in the system, attached

Proposal identifies that all curb stops shall be chlorinated

Proposal confirms that chlorine content at each sample point and termination point will be confirmed using an electronic direct readout colourimetric or amperometric chlorine meter. NOTE: Litmus paper will not be accepted at sample point locations



**Town of Wasaga Beach
Building Department**

30 Lewis Street
Wasaga Beach, Ontario, L9Z 1A1

Watermain Commissioning Plan Review Checklist (2022)

Project Name: _____

Engineering Firm: _____ Phone Number: _____

Contact Person: _____ E-mail Address: _____

De-Chlorination:

- After a 24hr contact time, testing is required using an electronic direct readout colourimetric or amperometric chlorine meter to confirm the chlorine content has not decrease more than 40% of the initial concentration at any sample point
- Provide details on how the main and curb stops will be de-chlorinated after a 24hr contact time.
- Provide details on how the discharge water will be de-chlorinated and show on plan
- Provide the name and a copy of the MSDS sheet of the de-chlorination product being used

Sampling:

- All sample point locations have been clearly identified on a plan
- Provide the name of the laboratory where the samples will be taken for bacteriological testing
- Samples are required to be tested for E-Coli, Coliform, Background and HPC

Final connections:

- Once Town staff have received satisfactory sample results, permission of the final connection will be granted
- Final Connections will not be permitted on Fridays
- If the final connection occurs 10 days after sampling, residual readings will be required and flushing may be required prior to the final connection.

Comments:

Schedule:

- Provide a proposed schedule, include the dates and times for the proposed works noted above
- All testing is to be witnessed by Town staff and the developer's consultant, a minimum of 48hrs notice is required prior to testing.

Flushing Program:

- A bi-weekly flushing program will need to be provided and accepted prior to the watermain commissioning, please confirm the proposed watermain flushing program has been attached for review and approval

Plans:

- Swabbing plan
- Sample point plan
- Pressure test plan (300m sections)
- Water feed & discharge locations shown on plan

Miscellaneous:

- Is a traffic control plan (TCP) required? If yes, please attach a copy of the proposed TCP
- Is a resident notice required, if yes, please attach a copy of the notice and include the proposed notice distribution area.
- Have provisions for frost protection been included



Town of Wasaga Beach
Public Works
Engineering Department

150 Westbury Road Wasaga Beach, ON
L9Z 2N8
(705)-429-2540

TESTING and INSPECTION REPORT
Backflow Prevention

General Information				
Location of Device:	Address:		Owner Name:	
General Contractor:	Contact Name:		Phone:	
Qualified Person:	Qualified Company:		Test Date:	
OWWA Cross Connection Control Certification #:	Testing Equipment Make & Model:		Testing Equipment Serial #:	
Device Information				
Type of Isolation:	<input type="checkbox"/> Premise Location - Domestic <input type="checkbox"/> Fire System Isolation <input type="checkbox"/> Zone/Area Isolation <input type="checkbox"/> Individual Isolation			
Type of Device:	<input type="checkbox"/> RP <input type="checkbox"/> DVCA <input type="checkbox"/> (SR) PVB	Orientation:	<input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical - Up <input type="checkbox"/> Vertical - Down	
Manufacturer:	Model #:	Size:	Serial #:	
Device Location:	Device Purpose:			
RP				
Check Valve #1	Check Valve #2	Differential Pressure Relief Valve (DPRV)	Check #1 Buffer	Air Break
Closed Tight @ _____ psid <input type="checkbox"/> Leaked	Closed Tight @ _____ psid <input type="checkbox"/> Leaked	Opened @ _____ psi <input type="checkbox"/> Did Not Open	_____ psid	<input type="checkbox"/> Ok
DVCA		(SR) PVB		
Check Valve #1	Check Valve #2	Air Inlet Valve	Check Valve	
Closed Tight @ _____ psid <input type="checkbox"/> Leaked	Closed Tight @ _____ psid <input type="checkbox"/> Leaked	Opened @ _____ psi <input type="checkbox"/> Did Not Open	Closed Tight @ _____ psid <input type="checkbox"/> Leaked	
If Device Was Repaired, Note Repairs. If Device Is A Replacement, Note Serial # Of Removed Device				
Test Results				
I certify that I have tested the above backflow prevention device in accordance with the Safe Drinking Water Act 2002 and CSA B64.10.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Annual <input type="checkbox"/> Initial <input type="checkbox"/> Repair <input type="checkbox"/> Relocation <input type="checkbox"/> Replacement	Test equipment last calibration date: #:	
Signature:				



Town of Wasaga Beach

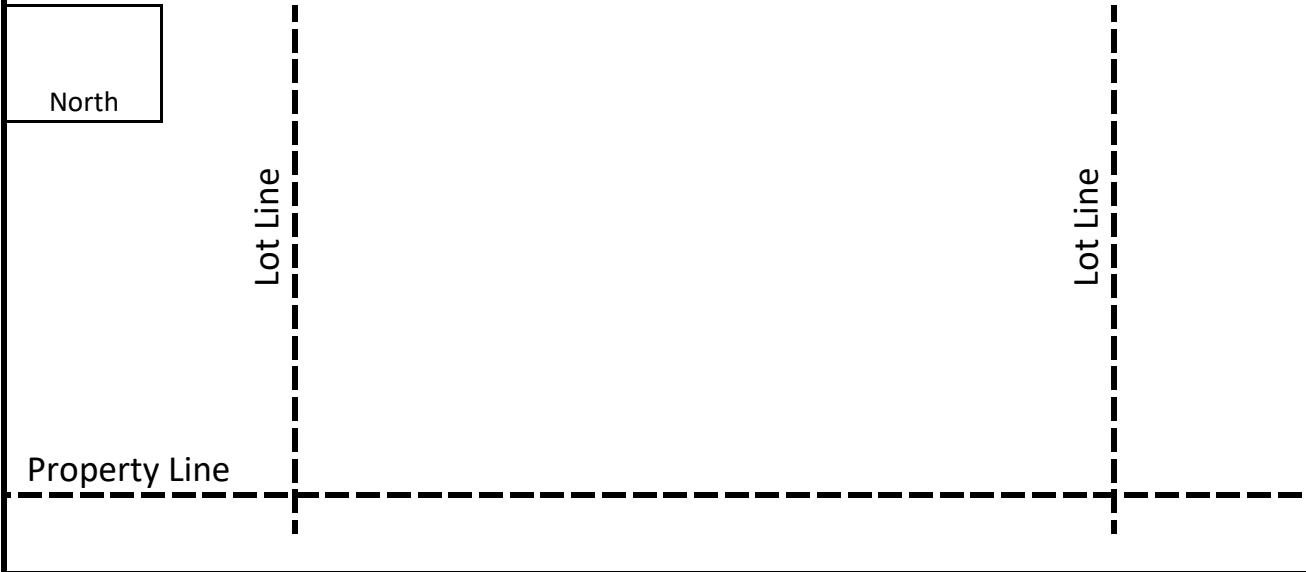
Water & Sewer Service Record

Lot Number:

Roll Number:

Address:

As Constructed Service Location (include swing ties)



Type of Pipe & Diameter:

Water _____ Sanitary _____

Invert Elevations:

Water _____ Sanitary _____

Depth to invert at end:

Water _____ Sanitary _____

Remarks

To the best of our knowledge, the dimensions shown above is correct.

Signature

Complied by

Date



Town of Wasaga Beach
Full Services - Substantial Completion (Occupancy) - Checklist

<u>Item No.</u>	<u>Description</u>	<u>Responsibility</u>	<u>Date Received / Inspected</u>	<u>Date Accepted</u>	<u>Comments</u>
1.0	Complete all basic service deficiencies to the satisfaction of the Town.	Developer			
2.0	Prepare and submit service record sheets for all lots within the phase/ stage of development being occupied.	Developer			
3.0	Submit plan and profile record drawings for review and acceptance by the Town (<i>including .DWG files</i>).	Developer			
4.0	Utility Designer to confirm in writing that all streetlights have been installed as per the AFC Drawings, include date of energization.	Developer			
5.0	Submit a complete set of streetlight record drawings (plans and details) for review and acceptance by the Town (<i>including .DWG files</i>). Light fixture Q setting to be included on record drawings.	Developer			
6.0	Developer to supply 1 streetlight fixture to the Public Works Department	Developer			
7.0	Confirmation in writing that a daytime and nighttime inspection of streetlights has taken place by the developers consultant and that all streetlights were fully operable.	Developer			
8.0	Developer to provide streetlight warranty package to the Town, refer to Engineering Standard for details.	Developer			
9.0	Installation of all mailboxes at a location acceptable to Canada Post.	Developer			
10.0	Conduct rough grading; including safe positive drainage away from the house and within 300mm of finish grade for all lots to be occupied.	Developer			
11.0	Ensure the removal of materials and debris from all lots to be occupied, boulevards and public areas (<i>subject to evaluation by the Town</i>).	Developer			
12.0	Flush and vac the sanitary sewer (required prior to 1st occupancy).	Developer			
13.0	Confirm that all stop signs, street signs, no parking signs, fire route signs and all pond warning signage have been installed and are not damaged.	Developer			

<u>Item No.</u>	<u>Description</u>	<u>Responsibility</u>	<u>Date Received / Inspected</u>	<u>Date Accepted</u>	<u>Comments</u>
14.0	Line painting: Stop bars for residential development.	Developer			
15.0	Confirm that all roads unassumed signage is in place at all appropriate locations.	Developer			
16.0	Affix civic addresses to the dwelling and lot number signage to all properties.	Developer			
17.0	Fulfill all occupancy requirements outlined in the Site Plan or Subdivision Agreement.	Developer			
18.0	Installation of pond fountain aerators (weather permitting).	Developer			
19.0	Concrete curb and gutter visual inspection (any missing pieces to be reinstated).	Developer			
20.0	Confirm installation of all pond fencing and noise fencing (as applicable).	Developer			
21.0	Completion of all items in accordance with ToWB Engineering Standards - Appendix B	Developer			
22.0	Certification of noise and structural walls by a Professional Engineer.	Developer			
23.0	Installation of dead end barricades in accordance with the AFC drawings	Developer			
24.0	Tree Clearing / Removals Inspection	Developer / Town			
25.0	Advise WDI to start billing Town for streetlight hydro consumption on public roads	Town			
26.0	Visual Structure inspection (Storm and Sanitary)	Developer / Town			



Town of Wasaga Beach
Public Works/ Engineering Department
150 Westbury Road
Wasaga Beach, Ontario, L9Z 2N8

Sewage Pumping Station Checklist (2025)

Project Name: _____

Engineering Firm: _____ Phone Number: _____

Contact Person: _____ E-mail Address: _____

1 DESIGN

ACTION

- | | |
|---|--|
| <input type="checkbox"/> OCWA to operate developer built SPS's until assumption in a consistent manner to that of the Town's 'assumed' facilities. (Per OCWA Agreement Schedule C) | <input type="checkbox"/> To be indicated in Subdivision Agreement |
| <input type="checkbox"/> Provisions for future upgrades be incorporated into Phase 1 build (to Town satisfaction) to minimize the need to shut-down or disrupt the operations of the site during upgrades/expansion | <input type="checkbox"/> Developer responsibility for Town review |
| <input type="checkbox"/> OCWA to review design drawings and SPS design brief | <input type="checkbox"/> Town coordinate with OCWA |
| <input type="checkbox"/> Design aspect - at time of commissioning, there may not be sufficient flow to avoid the waste water from going septic | <input type="checkbox"/> Developer requirement - Specify requirements re. maintaining min. flows/flushing volume to mitigate odours. |

2 CONSTRUCTION

ACTION

- | | |
|---|---|
| <input type="checkbox"/> Copy of close-out permit from ESA | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Installation test reports of feeders, pumps, etc. | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> I/O point-to-point checklists | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Documentation for load bank testing of generator set, testing report | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Facility to be re-keyed to Town's w/ww sites lock cylinder at the Owners expense | <input type="checkbox"/> Developer responsible for cost and to coord with Town (OCWA coordinates the locksmith) |
| <input type="checkbox"/> 11" x 17" plastic laminate fact sheet on the pumping station including lowest basement elevation, mounted adjacent to the control panel. | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> 11" x 17" plastic laminate with process flow diagram indicating valves and key interlocks | <input type="checkbox"/> Developer responsibility |

3 SCADA INTEGRATION/ COMMISSIONING

ACTION

- | | |
|---|---|
| <input type="checkbox"/> Prior to commissioning, developer to provide all schematic drawings, equipment manuals and O&M manual to meet CLI-ECA, complete with appended PCN. Refer to section 3.4 of CLI-ECA Guidelines. | <input type="checkbox"/> OCWA to provide O&M template; developer to provide completed manuals |
|---|---|

Sewage Pumping Station Checklist (2025)

<p>Project Name: _____</p> <p>Engineering Firm: _____</p> <p>Contact Person: _____</p>	<p>Phone Number: _____</p> <p>E-mail Address: _____</p>		
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><input type="checkbox"/> Integration of pump station into the Town's SCADA system by OCWA or 3rd party hired by OCWA</p> <p><input type="checkbox"/> Alarm monitoring of site by 3rd party alarm company</p> <p><input type="checkbox"/> Phone service setup under the Town's name and paid for by the Town</p> <p><input type="checkbox"/> OCWA O&M labour is high at startup of new facilities for training, site meetings, deficiencies etc.</p> <p><input type="checkbox"/> Generator fuel system 3rd party TSSA inspection report</p> <p><input type="checkbox"/> Confirmation that "Normal" and "Emergency" power is in phase and demonstration of the generator set operation from Normal to Emergency and back to Normal mode, proving louvre operation.</p> <p><input type="checkbox"/> Engineering certification of substantial completion in relation to the overall pumping station construction and performance in writing, signed and stamped by the Developer's Professional Engineer.</p> </td> <td style="width: 50%; vertical-align: top;"> <p><input type="checkbox"/> Town to discuss with OCWA</p> <p><input type="checkbox"/> Developer responsible to coordinate 3rd party alarm dialer; service paid by OCWA</p> <p><input type="checkbox"/> Developer responsible to make arrangements with Town for Town to make payments from deposit</p> <p><input type="checkbox"/> Town to cover reasonable cost from deposit. Developer to pay T&M for additional costs.</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility for Town and OCWA acceptance</p> </td> </tr> </table>		<p><input type="checkbox"/> Integration of pump station into the Town's SCADA system by OCWA or 3rd party hired by OCWA</p> <p><input type="checkbox"/> Alarm monitoring of site by 3rd party alarm company</p> <p><input type="checkbox"/> Phone service setup under the Town's name and paid for by the Town</p> <p><input type="checkbox"/> OCWA O&M labour is high at startup of new facilities for training, site meetings, deficiencies etc.</p> <p><input type="checkbox"/> Generator fuel system 3rd party TSSA inspection report</p> <p><input type="checkbox"/> Confirmation that "Normal" and "Emergency" power is in phase and demonstration of the generator set operation from Normal to Emergency and back to Normal mode, proving louvre operation.</p> <p><input type="checkbox"/> Engineering certification of substantial completion in relation to the overall pumping station construction and performance in writing, signed and stamped by the Developer's Professional Engineer.</p>	<p><input type="checkbox"/> Town to discuss with OCWA</p> <p><input type="checkbox"/> Developer responsible to coordinate 3rd party alarm dialer; service paid by OCWA</p> <p><input type="checkbox"/> Developer responsible to make arrangements with Town for Town to make payments from deposit</p> <p><input type="checkbox"/> Town to cover reasonable cost from deposit. Developer to pay T&M for additional costs.</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility for Town and OCWA acceptance</p>
<p><input type="checkbox"/> Integration of pump station into the Town's SCADA system by OCWA or 3rd party hired by OCWA</p> <p><input type="checkbox"/> Alarm monitoring of site by 3rd party alarm company</p> <p><input type="checkbox"/> Phone service setup under the Town's name and paid for by the Town</p> <p><input type="checkbox"/> OCWA O&M labour is high at startup of new facilities for training, site meetings, deficiencies etc.</p> <p><input type="checkbox"/> Generator fuel system 3rd party TSSA inspection report</p> <p><input type="checkbox"/> Confirmation that "Normal" and "Emergency" power is in phase and demonstration of the generator set operation from Normal to Emergency and back to Normal mode, proving louvre operation.</p> <p><input type="checkbox"/> Engineering certification of substantial completion in relation to the overall pumping station construction and performance in writing, signed and stamped by the Developer's Professional Engineer.</p>	<p><input type="checkbox"/> Town to discuss with OCWA</p> <p><input type="checkbox"/> Developer responsible to coordinate 3rd party alarm dialer; service paid by OCWA</p> <p><input type="checkbox"/> Developer responsible to make arrangements with Town for Town to make payments from deposit</p> <p><input type="checkbox"/> Town to cover reasonable cost from deposit. Developer to pay T&M for additional costs.</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility</p> <p><input type="checkbox"/> Developer responsibility for Town and OCWA acceptance</p>		
4 OPERATIONS AND MAINTENANCE			
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><input type="checkbox"/> The developer is responsible to fund OCWA to maintain the facility per Sched C of OCWA / Town Ag't; OCWA shall provide annual report (based on monthly inspections) until Town assumption.</p> <p><input type="checkbox"/> 30-day Notice to MECP for completion of new works</p> <p><input type="checkbox"/> Water Metering - at time of commissioning, there may not be sufficient flow to avoid the waste water from going septic.</p> <p><input type="checkbox"/> Annual wet well cleanout</p> <p><input type="checkbox"/> Snow removal - Maintain access to the station during winter months</p> <p><input type="checkbox"/> Landscaping - Grass Cutting</p> <p><input type="checkbox"/> Other utilities accounts to be held and paid by Town.</p> <p><input type="checkbox"/> Asset data collection and incorporation into OCWA WMS.</p> </td> <td style="width: 50%; vertical-align: top;"> <p><input type="checkbox"/> OCWA responsibility. (Note: Year 1 typ costs more)</p> <p><input type="checkbox"/> Developer's eng. Prepare notice for Town to issue.</p> <p><input type="checkbox"/> As per design, maintain min. flows/flushing volume to mitigate odours.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> Developer to coordinate with Town; Town to draw from deposit.</p> <p><input type="checkbox"/> OCWA to coordinate with Town.</p> </td> </tr> </table>		<p><input type="checkbox"/> The developer is responsible to fund OCWA to maintain the facility per Sched C of OCWA / Town Ag't; OCWA shall provide annual report (based on monthly inspections) until Town assumption.</p> <p><input type="checkbox"/> 30-day Notice to MECP for completion of new works</p> <p><input type="checkbox"/> Water Metering - at time of commissioning, there may not be sufficient flow to avoid the waste water from going septic.</p> <p><input type="checkbox"/> Annual wet well cleanout</p> <p><input type="checkbox"/> Snow removal - Maintain access to the station during winter months</p> <p><input type="checkbox"/> Landscaping - Grass Cutting</p> <p><input type="checkbox"/> Other utilities accounts to be held and paid by Town.</p> <p><input type="checkbox"/> Asset data collection and incorporation into OCWA WMS.</p>	<p><input type="checkbox"/> OCWA responsibility. (Note: Year 1 typ costs more)</p> <p><input type="checkbox"/> Developer's eng. Prepare notice for Town to issue.</p> <p><input type="checkbox"/> As per design, maintain min. flows/flushing volume to mitigate odours.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> Developer to coordinate with Town; Town to draw from deposit.</p> <p><input type="checkbox"/> OCWA to coordinate with Town.</p>
<p><input type="checkbox"/> The developer is responsible to fund OCWA to maintain the facility per Sched C of OCWA / Town Ag't; OCWA shall provide annual report (based on monthly inspections) until Town assumption.</p> <p><input type="checkbox"/> 30-day Notice to MECP for completion of new works</p> <p><input type="checkbox"/> Water Metering - at time of commissioning, there may not be sufficient flow to avoid the waste water from going septic.</p> <p><input type="checkbox"/> Annual wet well cleanout</p> <p><input type="checkbox"/> Snow removal - Maintain access to the station during winter months</p> <p><input type="checkbox"/> Landscaping - Grass Cutting</p> <p><input type="checkbox"/> Other utilities accounts to be held and paid by Town.</p> <p><input type="checkbox"/> Asset data collection and incorporation into OCWA WMS.</p>	<p><input type="checkbox"/> OCWA responsibility. (Note: Year 1 typ costs more)</p> <p><input type="checkbox"/> Developer's eng. Prepare notice for Town to issue.</p> <p><input type="checkbox"/> As per design, maintain min. flows/flushing volume to mitigate odours.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> OCWA responsibility - Include in O&M cost.</p> <p><input type="checkbox"/> Developer to coordinate with Town; Town to draw from deposit.</p> <p><input type="checkbox"/> OCWA to coordinate with Town.</p>		
ACTION			

Sewage Pumping Station Checklist (2025)

Project Name: _____

Engineering Firm: _____ Phone Number: _____

Contact Person: _____ E-mail Address: _____

5 ASSUMPTION

- | | ACTION |
|---|---|
| <input type="checkbox"/> The Town will not assume the facility until a minimum of 80% of the dwelling units are occupied and until such time as the Town is prepared to assume all other municipal aspects of the subdivision. It should be clearly detailed that the developer shall be fully responsible for the full 100% cost to operate the sewage pump station (including OCWA and Town costs) until the facility is assumed by the Town. | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Wet Well cleanout; unless the annual was previously completed within 6 months. | <input type="checkbox"/> OCWA responsibility, Developer cost. |
| <input type="checkbox"/> Pull out pumps for inspection and repairs (if any) | <input type="checkbox"/> OCWA responsibility, Developer cost. |
| <input type="checkbox"/> Conditional assessment of site/assets and incorporation into the Town's 10-year capital plan. | <input type="checkbox"/> Town and OCWA responsibility. |
| <input type="checkbox"/> Engineering certification of acceptance (performance) in relation to the overall pumping station and performance in writing, signed and stamped by the Developer's Professional Engineer. | <input type="checkbox"/> Developer responsibility for Town and OCWA acceptance. |
| <input type="checkbox"/> Final as-constructed drawings, 3 copies of operation and maintenance manuals the original design report and approved shop drawings for all equipment, prior to final inspection. Provide one digital copy of each. | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> All electrical enclosures shall be clean and operational (unless previously completed within 18 months). | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Demonstration that alarms function locally and remotely. | <input type="checkbox"/> Developer responsibility |
| <input type="checkbox"/> Demonstration of a complete pump cycle, including as well as initiating a pump failure to prove lag pump | <input type="checkbox"/> OCWA responsibility; Developer cost |
| <input type="checkbox"/> Pump servicing reports. | <input type="checkbox"/> OCWA to provide |
| <input type="checkbox"/> TSSA compliance certificate for the generator and fuel | <input type="checkbox"/> Developer responsibility |



Town of Wasaga Beach (Subdivision Name)

Municipal Requirements - Assumption of Roads and Services Checklist

<u>Item No.</u>	<u>Description</u>	<u>Responsibility</u>	<u>Date Received / Inspected</u>	<u>Date Accepted</u>
Certificate of Acceptance	1.0 Completion of all Full Services / occupancy deficiencies	Developer		
	2.0 Lot Grading including inspection and certification for all lots	Developer / Town		
	3.0 SWM Facilities Cleanout and Inspection	Developer		
	4.0 Certificate from Engineer INCL. BATHYMETRIC OR TOPOGRAPHIC SURVEY certifying that all SWM related works have been constructed in accordance with the designs	Developer		
	5.0 Storm Sewer System Cleanout and Video Inspection (prior to surface course asphalt)	Developer		
	6.0 Sanitary Sewer System Flushing and Video Inspection (prior to surface course asphalt)	Developer		
	7.0 Lateral Videos for all sanitary laterals (prior to surface course asphalt)	Developer		
	8.0 Water Distribution System - verify all Valves, Hydrants & Services are Functional	Developer / Town		
	9.0 Concrete Curb & Gutter Inspection	Developer / Town		
	10.0 Surface Asphalt Inspection	Developer / Town		
	11.0 Boulevard Inspection	Developer / Town		
	12.0 Block / Buffer Inspection	Developer / Town		
	13.0 Streetlight Inspection by Town	Developer / Town		
	14.0 Fencing / Walkways / additional landscaping Inspection	Developer / Town		
	15.0 Parkland / Parkland Improvements Inspection	Developer / Town		
	16.0 Tree Clearing / Removals Inspection	Developer / Town		
	17.0 Tree Planting Certification	Developer / Town		
	18.0 Signage Inspection	Developer / Town		
	19.0 Construction Debris to be removed	Developer		
	20.0 Correction of All Outstanding Deficiencies	Developer		
	21.0 Removal of Hydrant ATD's	Developer		
	22.0 Sanitary sewer - flush and visual MH inspection	Developer		
	23.0 Storm Sewer - flush visual CB, RLCB, CBMH and MH Inspection	Developer		
	24.0 Complete set of Record Drawings (.dwg, .pdf)	Developer		

<u>Item No.</u>	<u>Description</u>	<u>Responsibility</u>	<u>Date Received / Inspected</u>	<u>Date Accepted</u>
25.0	Surveyor's Certificate	Developer		
26.0	Clearance from Canada Post	Developer		
27.0	Clearance from All Utilities	Developer		
28.0	MECP ECA - Change's as Required	Developer		
29.0	Confirmation that all Deeds are registered and deposited	Developer		
30.0	Plan of Easements and Registration of Same	Developer		
31.0	Payment of All Capital Contributions & Accounts	Developer / Town		
32.0	Unassumed Road signs to be relocated / removed	Developer		
33.0	WSIB Clearance Certificate	Developer		
34.0	Statuatory Declaration that Accounts are Paid	Developer		
35.0	WDI confirmation re: hydro bills for SWM fountains &/or SPS	Developer/Town		
36.0	Pavement Markings are acceptable to the Town	Developer/Town		
37.0	BM Installation prior to assumption of the 1st Ph Develop. (includes elevation from surveyor).	Developer		
38.0	OSIM Inspection for vehicular and pedestrian bridges	Developer		
39.0	Retroreflectivity testing of all roadway signs per MMS	Town		
40.0	Complete all inspections in accordance with Town Standard Appendix B	Developer/ Town		
41.0	Provide updated Apppendix D (Eng. Stds.) for SWM pond assumption	Developer		
42.0	Final Acceptance Certification from the Developer's Engineer	Developer		

Assumption Requirements

APPENDIX C

Road Not Assumed Sign Detail

**ROAD NOT ASSUMED
BY MUNICIPALITY**

1.22m
(48")

USE AT YOUR OWN RISK

180mm

180mm

225mm

1.83m
(72")

BLACK LETTERING
ON WHITE BACKGROUND

APPENDIX D

Stormwater Management
Facility Specification Summary

Town of Wasaga Beach
Stormwater Management Facility Specification Summary

The Town maintains a digital database for stormwater management facilities.

This database is used to assist in maintenance and operation of these facilities.

The developer's engineer/consultant shall provide the following summary list of information in order for the Town to update their inventory of facilities.

This list shall be provided in the final design report and in the Operations and Maintenance Manual and shall be updated by the consultant at the time of assumption.

- Facility Type: (wetland, wet pond or hybrid)
- Quality Control Level: (e.g. Level 1 - 80% TSS removal)
- Erosion Control Level: (e.g. 25 mm event - 48 hr. detention)
- Quantity Control Level: (e.g. 2 to 100 year post to pre)
- Pre Treatment: (e.g.. oil/grit separator)
 - Pre-treatment structure type and model
 - Pre-treatment structure size
 - Structure maintenance schedule included in Operations and Maintenance Manual
- Flow Splitter: (yes or no)
- Online: (yes or no)
- Off-line: (yes or no)
- Sediment Forebay: (yes or no)
- Forebay Lining Type: (e.g. Concrete)
- Forebay Ramp: (e.g. Turfstone and Width)
- Forebay Pool Volume: (m³)
- Water Table Elevation: (distance above or below permanent pool)
- Facility Liner: (e.g. native or synthetic clay liner)
- Minor System Drainage Area: (ha)
- Major System Drainage Area: (ha)
- Permanent Pool Volume: (m³)
- Permanent Pool Elevation: (geodetic)
- Permanent Pool Required: (m³)
- Max. Permanent Pool Depth: (m)
- Permanent Pool Surface Area: (m²)
- Erosion Control Volume: (m³)
- Erosion Control Elevation: (geodetic)
- Max. Erosion Control Depth (m)
- 5 year Ponding Depth (m)
- 100 year or Max. Ponding Depth (m)
- Outlet Description: (detailed description of control structure including size and elevations of orifices, weirs and ditch inlets)
- SWM Block Area: (ha)

- Access Type and Width: (e.g. 3.0m pavement)
- Landscaped
- Fencing
- Aquatic Plantings (yes or no)
- Warning Signage locations
- Fountain/aeration equipment (specifications)

APPENDIX E

Operations & Maintenance Manual Requirements **For Private Development**

OPERATIONS & MAINTENANCE MANUAL

1.0 Introduction

2.0 Site Location

3.0 Watermain Distribution System

- Domestic Supply
 - Size, material type
 - Water meter location and details
 - Backflow preventer or check valve details and associated maintenance/inspection requirements
 - All valves exercised twice annually to ensure they are accessible and remain operational
- Fire Supply
 - Fire Hydrant
 - Details (type, location, etc...)
 - Hydrant to be inspected annually and after each use
 - Hydrant & Valve inspection and maintenance in accordance with Subsection 6.6.5 of the Fire Code
 - Associated snow removal requirements
 - Anti-freeze process prior to winter
 - Sprinkler System
 - Siamese Connection Location / Details
- Watermain Testing Requirements
 - Shall conform to AWWA and OPSS
 - WBPW require 48 hours notice prior to operation of valves
 - Watermains are to be disinfected in accordance with AWWA C651 (latest revision), Standard for Disinfecting Watermains.
 - Swab, hydrostatic pressure test OPSS 441, Chlorination, Chlorine Residual, Bacteriological Sampling – 2 sets (after 16 hr per AWWA C651 Standard), Continuity test of the tracer wire
- Operation and Maintenance by Qualified Operator
 - Inspection and operation of valves, etc. shall be undertaken by a qualified operator certified by the Ministry of the Environment (MOE) and a copy of the inspection / maintenance report is to be provided to the Public Work Department
 - Alternatively, arrangements can be made with the Town to have the certified operators of the Public Works Department undertake the inspection and maintenance of hydrants and valves, at the Owner's expense.
- The owner is responsible for their service and associated maintenance from their site to the trunk watermain situated within the municipal right-of-way.
- Backflow Prevention
 - An annual report prepared by a certified inspector must be submitted to the Wasaga Beach Building Department confirming that all backflow

prevention devices have be inspected, tested and certified in accordance with MECP and Building Code requirements.

4.0 Sanitary Collection System

- Maintenance hole at property line of development and cleanout at frontage of lots for access for inspection and cleanout
- SAN MH inspection twice annually
- In the event of blockage, a CCTV inspection may be undertaken by a plumber/mechanical contractor to determine the cause and subsequent cleaning or flushing requirements
- The owner is responsible for their service and associated maintenance from their site to the sanitary maintenance hole situated at the municipal right-of-way property line.

5.0 Storm Sewer System

- Maintenance hole at property line for inspection/access
- Catchbasins, catchbasin Maintenance holes and storm Maintenance holes must be inspected regularly to ensure that the grates are not clogged with debris.
- CB sumps must be inspected every Spring and Fall and cleaned once annually to remove debris accumulated over the year including sand from winter snow clearing operations.

6.0 Stormwater Management Facility

- Stormwater Quantity Control
 - Detention/Retention Facility
 - Rooftop Storage Details (for commercial buildings only)
 - Max. 150mm depth
 - Overflow weir details, location, etc.
 - Roof drain location, type, etc.
 - Controlled flow roof drains c/w anti-tampering screens
 - Storm service connection details
 - Parking Lot Storage Details
 - Max. 200mm depth
 - No ponding up to and including the 1:5yr event
 - Overland Flow Route
 - Reduced pipe/orifice plate details, location, etc.
 - Lot level control / Low Impact Development (LID) Details
 - Type, location and sizes of facilities
- Stormwater Quality Control
 - Oil/Grit Separator
 - Details
 - Manufacturers recommended maintenance requirements
 - Removal of sediment and petroleum deposits, together with approved disposal location.
 - Local maintenance contractors
 - SWM Pond

- Sediment forebay cleanout frequency, measures and estimated cost
- General maintenance requirements, etc.
- Soakaway Pit
 - Details, location, etc.
 - Eaves trough and screens to be inspected min. twice annually – spring and fall
 - Access port cap – flushing
- Lot level control / Low Impact Development (LID) Details
 - Frequency of maintenance / cleanout
 - Details for cleanout measures including depth of removals and disposal of materials
 - Type and quantity of material required to replace filtration materials

7.0 Snow Storage/ Removal

- The owner is responsible to provide snow clearing operations for the parking facilities and all accesses
- Snow storage locations must not encroach municipal right-of-way or adjacent properties and must not conflict with drainage systems
- In the event that the site does not have sufficient area for snow storage in accordance with the accepted Site Plan, snow accumulation is to be removed off-site at the owner's expense

8.0 Pavement Markings & Signage

- Site pavement markings including directional guidelines, parking stalls, and symbols are to be re-painted at minimum once a year and/or as required to maintain adequate information for motorists and pedestrians
- All required traffic signage, such as, but not limited to Fire Route, No Parking, etc. is to be inspected and maintained regularly to ensure visibility and reflectivity
- Estimated costs for maintenance

9.0 Lighting

- Type of light fixtures
- Replacement

10.0 Summary and Conclusions

APPENDIX F

Site Plan Requirements
for Private Development

Site Plan Requirements

The following items are standard planning and engineering requirements applied to the development or redevelopment of a site. These requirements are to be read in conjunction with the Town of Wasaga Beach Engineering Standards and the Site Plan application requirements as available at the Town Planning Office.

1. General

- All plans must be prepared by a qualified professional (planner, engineer, architect, landscape architect).
- All plans shall be drawn to scale (a metric scale of 1:200 or 1:250 is recommended) and shall include a key plan showing the property location (1:10,000).
- All plans shall be based on a plan of survey prepared by an Ontario Land Surveyor and should include a complete legal description, all property bearings and dimensions, geodetic data, location of bench marks, north arrow and a detailed title block showing the owner's name, the person/firm that prepared the plan and the date (including a revision box.)
- All Site Plan and building design must include accessibility requirements in conformance with the Ontario Building Code Section 3.8 and the Accessibility Ontario Disabilities Act.

2. Reports

- All Reports are to be prepared by a qualified professional (Planner, Engineer, Architect, Landscape Architect, etc.)
- The relevant studies that are applicable to each application shall be confirmed through the Pre-consultation process, which is managed through the Town Planning Department. Such documentation is to include (as applicable), but shall not be limited to, copies of the following reports unless waived by the Town Engineer:
 - Functional Servicing Report
 - Geotechnical/Soil Stability Report
 - Hydrogeological Study / Hydrology Study or Water Budget
 - Planning Needs/Justification Report
 - Stormwater Management Report
 - Natural Hazards Study and/or Coastal Engineering Study
 - Noise Impact Analysis
 - Source Water Protection Land Use Questionnaire
 - Traffic Impact Study
 - Arborist Report
 - Tree Inventory and Protection Plan
 - Operations & Maintenance Manual
 - Vibration Monitoring Report
 - Environmental Impact Study
 - Environmental Site Audit (as applicable)

3. Site Plan

All existing site conditions must be shown on the Site Plan, including:

- All site plans must demonstrate the designs are in conformance with the requirements of Zoning By-law 2003-60 as amended.
- Boundary dimensions, property lines and area of the site.
- Location of all buildings and structures indicating all building dimensions, setbacks, separations, projections, canopies, ground signs, retaining walls etc.
- Location and width of existing walkways, driveways, parking and loading areas, width of all streets abutting the site, street widenings, curbs, sidewalks.
- 0.3 m reserves, rights-of-way, easements.
- Existing natural features – vegetation, watercourses, wetlands, steep slopes etc.
- Abutting land uses, structures and features.

All proposed features must be shown on the Site Plan, including:

- Location and dimensions of all proposed buildings and structures (Note: please refer to the Town's By-law for specific zoning provisions).
- Location and dimensions of all proposed driveways/access points/drive-thru.
- Location, dimension and type of all parking and loading areas (i.e. surface, garage, deck, underground). Indicating any areas to be assigned to visitors, tenants, employees, and handicapped parking (Note: please refer to the Ontario Building Code and Town's Zoning By-law for specific accessibility and parking/loading provisions).
- Location and nature of all landscape areas including walkways, sidewalks, courts, walls, fences, entrance features, etc.
- Location and size of any signs and lighting thereof (Note: all signs should be designed/installed in accordance with the Town's By-law No. 96-10).
- Location and direction of exterior lighting.
- Location and type of garbage enclosure.

The following development statistics in chart form must be shown on the Site Plan:

- Zoning of the site – the standards required by the zone and those provided (i.e. site area, density, frontage, setbacks, parking/loading etc.)
- Building type, number of floors, total number of units and height.
- Total gross floor area of both the existing and the proposed buildings.
- Area and percentage of the site (i) covered by buildings (lot coverage) (ii) paved and (iii) landscaped.

The following landscape information must be shown on the Site Plan, or contained in a separate landscape plan:

- Existing trees/shrubs by type and size – identify which vegetation is to be preserved (vegetation to be removed should be indicated by a hatched line).

- Location, type, size, spacing and number of new plantings where substantial landscaping is proposed, include a plant materials list showing the name, size and quantity of all new plantings.
- Location, type and size of all planters.
- Location, dimensions and construction materials for all sidewalks, walkways, fences, acoustic fences, walls, ramps, stairs, patios, decks, and similar features.
- Location and dimensions of all recreational facilities and amenity areas.
- When planning the landscape features, the following considerations should be incorporated into the layout:
 - Appropriate plant species for Zone 5a hardiness and for areas prone to salting and snow loading, sunny or shade areas, wet or dry soils, and acid or alkaline soils.
 - Landscape buffer strips, being a row of trees or a continuous hedgerow of evergreens or shrubs approximately 1.5 m high, along the lot lines adjacent to existing residential uses and a minimum 1.8 m high tight board privacy fence.
 - Decorative planting schemes along the street frontages.
 - Shade trees planting adjacent to parking areas and within parking islands.
 - Shrub massing to soften fence lines and to add relief to asphalt surfacing.
 - Sufficient area for snow storage.
 - Planting schemes should emphasize the use of native species.

4. Site Servicing Plan:

The following information must be shown on the site-servicing plan:

- Existing and proposed contours and/or spot elevations, benchmarks and elevations on site (at all grade changes and intervals no greater than 10.0 metres over the entire site) and on abutting roads and properties.
- Existing and proposed grades and ground floor elevations, including:
 - The first floor building elevations, together with underside of footings, basement floors and top of foundation wall.
 - The proposed finished ground grades (use spot elevations) sufficient to show all surface drainage, including elevations, gradients and cross sections of ditches and swales.
- Existing and proposed utilities and services on and adjacent to the site, including:
 - Sanitary sewers, storm sewers, catch basins, waterlines, ditches and swales, electrical system, driveway, culverts, etc.
 - Type, size, grades, class and CSA standards for all pipes.
 - Locations and size of any septic systems, tile beds, soakaways, holding tanks, wells.
 - Location and size of meter rooms, transformers, vault valves, Siamese connections, etc.
 - Top of grate and invert elevations of all Maintenance holes and catchbasins.
- Show existing and proposed roads, driveways and curbs including:
 - Type of and thickness of the surfacing material.
 - Traffic circulation, traffic signs, curbs and line painting.

- Drive-thru location, complete with sign locations and minimum queue length providing for 10 vehicles.
- Proposed road widenings, daylight triangles, or any other related dedications or easements.
- Proposed stormwater management quantity and quality control structures, together with construction and permanent erosion and siltation control structures.

5. Building Elevations:

The building plans must show the exterior walls of the proposed buildings in sufficient detail to indicate the following:

- Design concept of the building and exterior building materials.
- Entrances, doors, arcades, any recesses, projections or special features
- Finished grade, floor and roof elevations
- Proposed fascia, signs, lights, equipment and equipment housings

APPENDIX G

Town of Wasaga Beach Approved Materials List



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Main Line	Polyvinyl Chloride (PVC) Solid Wall 200mm ø to 400mm ø inclusive	CSA B182.2 ASTM D 3034 SDR 35 minimum Minimum pipe stiffness - 320 kPa	Ipex Inc	Ring Tite	· Rubber gasket bell and spigot joints
	JM Eagle				
	Next Polymers		DURALOC	CSA certified	
	National Pipe				
	Westlake		Royal Seal		
	Diamond Plastic Corp.		SANI-21		
Non-Pressure Pipe	Polyvinyl Chloride (PVC) Solid Wall 450mm ø and larger	CSA B182.2 ASTM F 679 (T-1) SDR 35 minimum Minimum pipe stiffness - 320 kPa	Ipex Inc	Ring Tite	· Green in Colour
	JM Eagle				
	Next Polymers		DURALOC	CSA certified	
	National Pipe		Ever-Green	· Rubber gasket bell and spigot joints	
	Diamond Plastic Corp.		SANI-21		
	Westlake		Royal Seal		
	Polyvinyl Chloride (PVC) Profile (Ribbed) Wall 250 to 450mm ø inclusive	CSA B182.4 ASTM F-794 Minimum pipe stiffness - 320 kPa	Ipex Inc	Ultra-Rib	· Rubber gasket bell and spigot joints
				· Green in Colour	

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Main Line Non-Pressure Pipe (Cont'd)	Concrete up to and including 900mm Ø	CSA A257.1, A257.2 and A257.3 (whichever applies per design) OPSS 1820	Decast Rinker		<ul style="list-style-type: none"> Manufactured at a prequalified plant and marked with a "Prequalification Stamp" (triangular symbol)
	Concrete larger than 900mm Ø	CSA A257.2 Joints - CSA A257.3 OPSS 1820	Decast Rinker		<ul style="list-style-type: none"> Manufactured at a prequalified plant and marked with a "Prequalification Stamp" (triangular symbol)
	Profile Wall Polypropylene Pipe 300 to 1500mm Ø	CSA B182.13 Minimum pipe stiffness RS 320 kPa Large Diameter Ring Stiffness (RS)	ADS	Sanitite HP	<ul style="list-style-type: none"> Dual Wall construction (300mm-750mm) Triple Wall construction (750mm-1500mm) Fittings must be watertight gaskets meeting ASTM F477
Service Connections	Polyvinyl Chloride (PVC) Solid Wall	CSA B182.1 ASTM D 3034 Fittings - ASTM D 3034 Minimum pipe stiffness 628 kPa (SDR 28)	IpeX Westlake Diamond National JM Eagle		<ul style="list-style-type: none"> Rubber gasket ball and spigot joints Green in Colour for Sanitary White only for storm water connections

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Saddles	Concrete and Vitrified Clay Pipe	Factory made Tees are to be used for any new construction	NPC Inc.	Kor-N-Tee	Concrete pipe only ·300mm ø and larger
			Romac Industries	CB - Sewer Saddle	
			Galaxy Plastics	Core-Bell Adapter	·Concrete pipe only
			Crowle	Cast Iron Saddles	
	PVC Pipe	Factory made Tees are to be used for any new construction	Crowle	Cast Iron Saddles	·CSA B182.2 (ASTM D3034) Pipe only
			Romac Industries	CB - Sewer Saddle	
			NPC Inc.	Kor-N-Tee	
			Ipex		
			Galaxy Plastics		
			Westlake		
	Various		Westlake	"Epoxy On" Saddle	CSA B182.4 (ASTM D3034) pipe only
			Clow	D50	Epoxy Coated
			ADS Pipe	Inserta Tee	
			Fernco	QwikSeal	

Couplings			Rollee	Kwik Coupling	
			Mission Rubber Co.	Adjustable Repair Couplings (ARC)	
			Fernco Couplings	RC Series	
			Fernco Couplings	5000 Series	
			Straub Tadco Manufacturing	Straub Flex/open	
				Straub Grip	
			Preper-PLS	Preper	

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Joint Restraints	PVC Pipe	ASTM A536	Ford Meter Box Co. Inc.	UniFlange Series 1300C	·PVC pipe used with Mech Joint/Push-on Fittings (360° contact)
				UniFlange Series 1350C	·For PVC pipe bell joints (360° contact)
				UniFlange Series 1500C	·MJ retainer gland joint restraint (360° contact)
			Sigma	PV-Lok Series PWM	4-48" Serrated for DI & C900 PVC
				PV-Lok Series PWP	4-48" Serrated Joint Restraint for C900 PVC
Sanitary Inspection Chamber	PVC tee	125 x 125 x 200	Westlake Galaxy Plastics	PV-Lok Series PWPF Multi/Joint 3057	4-12" Restraint for C900 PVC & PVC Fittings
					·PVC locking lids include metal detectable cap ·all per Town Std. Dwg. No. 12 Cast Iron Lids for Driveways
Repair Clamps		CSA B602	Rollee	Kwik Coupling	
			Mission Rubber Co.	Flex-Seal- ARC	
			Cambridge Brass	Series 425	
			Robar		
			Romac Industries	SS Repair clamp	
Service plugs	Plastic		Crowle		
	Zinc Plated				
	Epoxy Coated				

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Pressure Pipe (Forcemains)	Polyvinyl Chloride (PVC)	CSA B 137.3 Joints - ASTM D3139 Pressure Class / DR defined by design engineer	Ipex		·Bell and spigot joints
			National		IPS Outside Diameter - Series Pipe
			Diamond		CIOD Outside Diameter C900
			Westlake		DR / Pressure class defined by engineer
					Installed w/ Green "Sanitary" Tape above pipe
			JM Eagle		·Installed with 12 Gauge stranded tracer wire
					·Jointed by thermal butt fusion, Electrofusion or approved mechanical coupling
	Polyethylene (HDPE)	CSA B137.0, B137.1 ASTM D3035, D3350 (size and DR / pressure class as per design engineer) PE4710	Infra Pipe	Sclairpipe	·Installed with 12 Gauge stranded tracer wire, 4x12 Gauge stranded tracer wire for HDD installations
			JM Eagle	Performance Pipe	Driscoplex
					·Bell and spigot joints ·Installed with tracer wire

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Tracer Wire	12/7 AWG Type	Approved for direct bury			To be installed on all plastic watermain and plastic services as per Wasaga Drg. PE or PVC or HMWPE Coating RATED FOR DIRECT BURIAL UNDERGROUND USE
Connectors	For Tracer Wire	Approved for direct bury	Klick-It II -PCS Ltd	Model C8816	Connectors shall be used on all non-metallic
			Dryconn King Innov.R	Blue (lug Type)	force mains
			Copperhead	Snakebite	
Sanitary Marking Tape		50 mm (2") or 75mm (3") wide non detectable	Sigma		marked with sanitary sewer or sewer green in color to be installed with all force main Buried above pipe in close proximity
Check Valves	EVR Duckbill Check Valve	CSA Z299.3-85	EVR	CPO, CPI, CPJ, CPF CPJ, CPF	Approved for use in Wastewater Applications only
			Red Valve / Tideflex		
	Rubber Flapper Check Valves		Apco Valmatic	Series 100	
	PVC Backwater Valves	Tested to ASTM D3212	Galaxy Plastics		Inline or Terminal / Gasketed or Hub

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Gravity PVC Fittings	Gasketed Molded or Fabricated PVC	CSA B182.1 CSA B182.2 ASTM D3034 ASTMF1336	Ipex Westlake Galaxy Tigre		All Gaskets meet requirements of ASTM F477 and D3213
Gravity PVC UltraRib Fittings	Gasketed Molded or Fabricated UltraRib PVC	CSA B182.4 ASTM F794	Ipex Galaxy		All Gaskets meet requirements of ASTM F477 and D3213
Forcemain Fittings	Ductile Iron Compact Fittings Short Body MJ - Mechanical Joint Buried Materials	ANSI A21.10 AWWA C110 Cement-mortar lined as per ANSI A21.4 (AWWA C104)	Sigma Star Bibby	MJ	<ul style="list-style-type: none">- Stainless steel nuts and bolts- for use w/ PVC IPS or CIOD PipeTransition Gaskets required for IPS PVC <ul style="list-style-type: none">- Corrosion protective applied to fittings as per design engineer
	Polyvinyl Chloride (PVC)	AWWA C907 CSA B137.2	Ipex Westlake Harcos Galaxy GPK		<ul style="list-style-type: none">- Push on Joint- PVC Fittings to be pipe restraint compatible- Corrosion protective applied to restraints as per design engineer- Fitting pressure rating to match PVC pipe

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Air Release Valves	Combination Air Release/Vacuum Breaker		Crispen Valve	S/LS Series	· Shall be tall bodied valves complete with flushing port and flood safe
			Vent-O-Mat	Sewer RGX Series	
			Val-Matic		
			A.R.I.	D020 D025P D025SS / D-025 SB	
			H-TEC	986-01	
Casing Spacers		T-304 Stainless Steel	Cascade Cambridge Brass CCI Pipeline Systems APS PSI	CCS Model 4810 Powerseal CSS8 and CSS12	· Ultra high molecular weight polymer runners (or equivalent) · Position of pipe within liner to be centered and restrained, sufficient to provide no less than 19mm clearance between casing and bell of pipe · Pipe restrained laterally for the entire length of the liner · Sealed using wrap around rubber ends complete with stainless steel (T-304) banding

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
---------	------	----------------	--------------	--------------------	----------

Precast Maintenance Hole and Components	Concrete	CSA A 257.4	Con Cast Pipe		·Includes precast drop structure
		ASTM C-478	M Con Pipe & Product		
		OPSS 1351	Decast		
			Rinker		
	Pre-Benched	same as concrete			

Maintenance Hole Frame and Cover	Standard	OPSD 401.01 - Type A, no lugs "SANITARY OR SEWER" embossed on lid			
			DomCast		·Cast iron, square frame with circular closed cover
			East Jordan		
			Star		"SANITARY OR SEWER" embossed on lid
			Sigma Corp		
	Water Tight	OPSD 401.03, no lugs "SANITARY OR SEWER" embossed on lid			·Frame to be attached to the precast section
			East Jordan		"SANITARY OR SEWER" embossed on lid
			Star		
			Sigma Corp		



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
3 Piece Maintenance Hole Frame and Cover	3 Piece Adjustable	OPSD 401.01 - Type A Lid Two Piece base "SANITARY OR SEWER" embossed on lid		Autostable	3 piece self leveling frame and cover
			DomCast	Self Leveling	
			East Jordan	Adjustable	"SANITARY OR SEWER"
			Star	Self Leveling	embossed on lid
			Sigma Corp	3 pc Self Level	
	Water tight hinged		Saint-Gobain PAM	Pamrex	·Within easements, outside of ROW only
			East Jordan	Duoseal	
Maintenance Hole Adjustment Units	Pre-Cast Concrete	OPSS 1853	Decast Rinker Brooklyn Concrete	Moduloc	

CORROSION PROTECTION FOR METALLIC COMPONENTS AS PER DESIGN ENGINEER BASED ON SOIL CONDITIONS

Protective Coatings & Structure Sealing	Corrosion Prevention System (3 stage system)	ANSI / AWWA C-217	Denso North America	Denso System	·Denso Paste, LT Paste, Profiling Mastic Applied to all metallic fittings and components
			BrenTech/PCS	PCS System	·PT150ST, PP04 and PM3ST
			RPH Distributors		·TC Envirotape, Enviroprime and Envromastic
			Advanced Corrosion	PetroGuard System	·Paste PP04St, Mastic PM3ST, Tape PT LT
			River Run Industrial	Longwrap Petrolatum Tape	- Installed as per manufacturer guidelines

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

LINEAR WASTEWATER

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Sacrificial Caps	Cathodic Protection (Nuts and Caps)	ASTM B418 - Type 2	BrenTech		99.9% High Grade Zinc, Steel Core, Coated
			ProtectoCaps		with Low Resistant Depolarizing Material
					: 175 grams
					19 mm dia Zinc Cap installed on each T-Bolt
Anodes	High Potential Magnesium	ASTM B843 14.5 kg 3m AWG#12 solid copper wire	ICCC	32D5GG	
			Exothermal Ind.	MA-32	
			Bren Tech		
			Maple Agencies		
Protective Coatings	Corrosion Prevention Tape	ANSI / AWWA C-217	Denso North America Inc.	Corrosion Protection System	Denso Past, Lt Tape and Profiling Mastic
			Advanced Corrosion	Petro Guard System	Paste PP04ST, Mastic PM3ST, Tape PTLT
			Petro Coating System	PCS System	PT150ST, PP04 and PM3ST
			RPH Distributors		TC Envirotape, Enviroprime and Enviromastic

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Main Line Non-Pressure Pipe	Polyvinyl Chloride (PVC) Solid Wall 300mm ø to 375mm ø inclusive	CSA B182.2 ASTM D 3034 SDR 35 minimum Minimum pipe stiffness - 320 kPa	Ipex Inc	Ring Tite	· Rubber gasket bell and spigot joints
			JM Eagle		
			National Pipe		
			Diamond Plastic Corp.		
			Westlake	Royal Seal	
			Diamond Plastic Corp.	SANI-21	
	Polyvinyl Chloride (PVC) Solid Wall 450mm ø and larger	CSA B182.2 ASTM F 679 (T-1) SDR 35 minimum Minimum pipe stiffness - 320 kPa	Ipex Inc	Ring Tite	· Fittings ASTM F679 (T-1) · Rubber gasket bell and spigot joints
			JM Eagle		
			National Pipe	Ever-Green	
			Diamond Plastic Corp.	Royal Seal	
			Westlake	SANI-21	
			Ipex Inc.	Ultra-Rib	
Concrete up to and including 900mm ø	Profile (Ribbed) Wall 300mm ø to 600mm ø inclusive	CSA B182.4 ASTM F-794 Minimum pipe stiffness - 320 kPa			· Rubber gasket bell and spigot joints
	Concrete up to and including 900mm ø	CSA A257.1, A257.2 and A257.3 (whichever applies)			· Manufactured at a prequalified plant and marked with a "Prequalification Stamp" (triangular symbol)

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
	Concrete larger than 900mm ø	CSA A257.2 Joints - CSA A257.3 OPSS 1820			· Manufactured at a prequalified plant and marked with a "Prequalification Stamp" (triangular symbol)
Main Line Non-Pressure Pipe (Cont'd)	High Density Polyethylene (HDPE)	CSA B182.6 / B182.8 Minimum pipe stiffness - RS 320 kPa	Infra Pipe	Weholite	· Corrugated outer & smooth interior walls
			Armtac	BOSS Poly-Tite	- Fittings must be watertight gaskets meeting ASTM F477
	Polyethylene (HDPE)	Large Diameter Ring Stiffness (RS) 1050mmRS140, 1200mmRS125,1500mmRS95	ADS Soleno	N12 WT	
Culvert Pipe	High Density Polyethylene (HDPE)	ASTM F894	Infra Pipe	Weholite	smooth interior walls
		Minimum pipe stiffness 320 kPa CSA B182.8	ADS Soleno	N-12 ST/WT	Plain end or gasketed
		CSA G401	Armtac	BOSS 2000	
	Corrugated Steel Pipe (CSP)	Galvanized (minimum) Minimum pipe thickness - 2mm	Armtac Atlantic Industries Ltd	Hel-cor	Couplings - 30cm (5 Corr)
Subdrain	Corrugated High Density Polyethylene (HDPE) 150mm	ASTM F405	ADS	ADS	single wall perf HDPE Pipe w/ factory applied filter cloth for under curb line
			Armtac		single wall solid subdrain for connecting to catch basins
		ASTM F667 AASHTO M-294 AASHTO M-252	Soleno		

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Adaptor Couplings			Rollee	Kwik Coupling	
			Mission Rubber Co.	Adjustable Repair	
			Fernco Couplings	Couplings (ARC)	
			Preper-PLS	Preper	
Repair Clamps		CSA B 602	Rollee	Kwik Coupling	
			Mission Rubber Co.	Flex-Seal - ARC	
			Cambridge Brass	Series 425	
			Romac Industries	SS Repair Clamp	
			Con Cast Pipe		
Precast Maintenance Hole and Components	Concrete	CSA A257.4 ASTM C-478	M Con Pipe & Product		Includes precast drop structure
			Decast		
			Rinker		
		OPSS 1351	Con Cast Pipe		
			Decast		
	Pre-Benched		Rinker		
	Same as Concrete	Con Cast Pipe			
		Decast			
		Rinker			

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Precast Catch Basins	Concrete	OPSS 1351 705.010 705.020 (double)	Con Cast Pipe Decast Rinker		
Precast Ditch Inlet Maintenance Hole	Concrete	OPSS 1351 OPSD 702.040	Con Cast Pipe Decast Rinker		
Maintenance Hole Frame and Cover	Standard	OPSD 401.01 - Type B, no lugs "STORM OR SEWER" embossed on lid	DomCast East Jordan Star Sigma Corp		Cast iron, square frame with circular open cover "STORM OR SEWER" embossed on lid
3 Piece Maintenance Hole Frame and Cover	3 Piece Adjustable	OPSD 401.01 - Type B Lid Two Piece base "STORM OR SEWER" embossed on lid	Autostable DomCast East Jordan Star Sigma Corp	Autostable Self Leveling Adjustable Self Leveling 3 pc Self Level	3 piece self leveling frame and cover "STORM OR SEWER" embossed on lid

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Catch Basin Frame and Cover	Curb Inlet	OPSD 400.081	DomCast East Jordan Star Sigma Corp		Cast Iron, Curb Inlet Frame with Two-Piece raised cover for catch basins out of roadway
	Perforated Openings	OPSD 400.020	DomCast East Jordan Star Sigma Corp		Cast Iron, Square Frame w/ Flat Grate for catch basins, perforated openings
	Flat				
Maintenance Hole/ Catch Basin Adjustment Units	Pre-Cast Concrete	OPSS 1853	Decast Rinker Brooklyn Concrete	Moduloc	
Noise Walls	Precast Concrete	CSA A23.1 and A23.4 35 MPa at 28 days (min)	International Fence Durisol Incorporated		Acoustic / noise fence to be installed in accordance with the recommendations of the Noise Impact Study.
	Vinyl		Homeland Vinyl Fence		
	Composite Systems	Concrete/Wood chip	Durisol Incorporated		
	Wood	Western Red Cedar			

Approved equivalents may be considered



APPROVED MATERIALS LIST

Jul-25

TOWN OF WASAGA BEACH

STORM SEWER, ROADS AND TRAFFIC

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Tactile Walking Surface Indicators	Cast Iron	610mm x 610mm	Tuftile	TTC12424-WS-XX	XX represents colour=natural
TWSI		24" x 24"	DomCast	Tactile Detector Plate	
			East Jordan	Detectable Warning Plate	
			Star	Detectable Warning Plate	
			Sigma Corp	Tactile Detector Plate	
			Bibby St. Croix	TWSI	
APS (Audible Pedestrian Signal)		Guardian c/w bluetooth	Campbell		

***Electrical Conduit, Handwells and all other electrical signalling components must comply to the latest OPSS and Contract documents.**



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Pipe Up To and Including 300mm Diameter	Polyvinyl Chloride (PVC)	DR 18 / PR 235	Ipex	Blue Brute	spigot joints
		CSA B137.3	National Pipe	Dura Blue	- Color Coded Blue
		AWWA C900 Cast Iron Outside Diameter (CIOD)	Next Polymers	Aqualoc	· Installed with 12 Gauge stranded tracer wire
			Diamond Plastics Corp.		· Joints restrained where required by design
		Westlake			- Cast Iron Outside Diameter (CIOD)
			JM Eagle	Blue Brute	- Corrosion protective applied to fittings as per design engineer

Pipe 350mm to 1500mm Diameter	Polyvinyl Chloride (PVC)	DR 18 CSA B137.3	Ipex	Big Brute	· Rubber gasketed bell and spigot joints
		Westlake			- Color Coded Blue
		Diamond Plastics Corp.			· Installed with 12 Gauge stranded tracer wire
		AWWA C900/C905 Cast Iron Outside Diameter (CIOD) Wall Thickness/ PR as per design engineer	JM Eagle		· Joints restrained where required by design
					- Cast Iron Outside Diameter (CIOD)
					- Corrosion protective applied to fittings as per design engineer

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Pipe Diameter Larger than 450mm	Concrete Pressure Pipe up to 500mm Diameter	AWWA C301 and C304 or AWWA C303	Decast Rinker		<ul style="list-style-type: none">· Supplied with Bell & spigot joints· Joints sealed with wrap around cement mortar· diapers· Shop drawings shall be supplied to the Town for review & approval prior to construction· Restrained where required by design
Directional Drill Pipe Dia. Larger Than 100mm	HDPE	DR 11 IPS or DIPS (CIOD) AWWA C906	Infrapipe Performance Pipe JM Eagle		<ul style="list-style-type: none">· Thermal butt fusion joining of pipe & fittings· Elecotrofusion Coupllings and fittings

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Fittings	Ductile Iron	ANSI A21.10	Sigma	MJ	·Mechanical Joint (MJ) type ends - Corrosion protective applied to fittings as per design engineer
	Compact Fittings	AWWA C110 Cement-mortar lined as per ANSI A21.4 (AWWA C104)	Star		
	Short Body MJ - Mechanical Joint	Bibby			
	Polyvinyl Chloride (PVC) 100mm Diameter & Larger	AWWA C907 CSA B137.2	Ipex		- Push on Joint ·PVC Fittings to be pipe restraint compatible
			Westlake		
			Harcos		- Corrosion protective applied to restraints as per design engineer
			Galaxy		- Fitting pressure rating to match PVC pipe
	Victaulic				·Acceptable for all AWWA approved pipes excluding PVC

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Protective Coatings & Structure Sealing	Corrosion Prevention System (3 stage system)	ANSI / AWWA C-217	Denso North America	Denso System	· Denso Paste, LT Paste, Profiling Mastic Applied to all metallic fittings and components
			BrenTech/PCS	PCS System	· PT150ST, PP04 and PM3ST
			RPH Distributors		· TC Envirotape, Enviroprime and Enviromastic
			Advanced Corrosion	PetroGuard System	· Paste PP04St, Mastic PM3ST, Tape PTLT
			River Run Industrial	Longwrap Petrolatum Tape	- Installed as per manufacturer guidelines
Sacrificial Caps	Cathodic Protection (Nuts and Caps)	ASTM B418 - Type 2	BrenTech		99.9% High Grade Zinc, Steel Core, Coated
			Integrity Pipe Products	ProtectoCaps	with Low Resistant Depolarizing Material
					: 175 grams
					19 mm dia Zinc Cap installed on each T-Bolt
Anodes	High Potential Magnesium Zinc	ASTM B843 14.5 kg 3m AWG#12 solid copper wire	ICCC	32D5GG	
			Exothermal Ind.	MA-32	
			Bren Tech		
			Maple Agencies		

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Hydrants	Hydrant Depth Min. Depth 1.98M 6 ft 6 inches MECHANICAL JOINT	<p>AWWA C502 FM approved ·Two 63.5mm (2.5") diameter hose nozzles at 180 degrees - 4" Storz Threadless Pumper Connection facing roadway ·Hose nozzle and operating nut threads in accordance with Province of Ontario Standards ·Base (boot) with 150mm mechanical connection end ·Safety breakaway flanges and breakaway couplings</p>	Mueller Canada	Canada Valve Century	<ul style="list-style-type: none">·Installation per Town Std.Dwg.No.6·Hydrants to be painted yellow (BEHL Chemicals
				Mcavity M67B	<ul style="list-style-type: none">No. 236 or equivalent) with silver top and caps.
			Clow Canada	Concord D67-M	<ul style="list-style-type: none">·Hydrants shall be non self-draining
				Clow-Bibby	<ul style="list-style-type: none">(internally plugged)
			AVK	Sentinel	<ul style="list-style-type: none">·Installation per Town Std.Dwg.No.6
				Dry Barrel - Model 2780	<ul style="list-style-type: none">·If a hydrant extension is required to adjust the length of a hydrant barrel, it shall be obtained from the manufacturer and installed per the manufacturer's instructions.
					MECHANICAL JOINT END

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
PIPE TO FITTING	For PVC Pipe (CIOD) to MJ (D.I.) Fittings DR 18 / PR235 PVC Pipe	ASTM F1674 for Use with MJ Fittings to PVC DR 18 PIPE USED W/ MJ GASKET, TEE BOLT AND NUTS	Star Pipe Products	StarGrip 3500/3600/4000	MJ PVC DR 18 Pipe to DI Fitting Restraints
			Clow Canada	Tuff-Grip	- Corrosion protective applied to fittings as per
			Sigma Corp	One-Lok, PV-Lok	design engineer
			EBAA Iron Sales Inc.	2000PV MegaLug	- Working pressure rating must equal or exceed that of pipe
			Romac	GripRing	- Serrated Grip design as per manufacturers
			Ford Meter Co./Uniflange	Series 1300C/1500/3500	
			Smith Blair	112 / 120	- installed as per manufacturer with Torque
					wrench as per recommendations
MJ Gasket, Tee Bolt and Nuts	PVC PIPE to MJ (D.I.) Fittings	MJ GASKET w/ Tee Bolts and Nuts FOR USE W/ PVC PIPE TO MJ D.I. FITTINGS	Star Pipe Products		Gasket Material SBR (Sytrene Butadiene Rubber)
			Clow Canada		MJ PVC Pipe to DI Fitting Restraints
			Sigma Corp		- Corrosion protective applied to fittings as per
			EBAA Iron Sales Inc.		design engineer
			Pique Supply		- installed as per manufacturer with Torque
			Ford Meter Co./Uniflange		wrench as per recommendations

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
PIPE TO FITTING	For PVC Pipe (CIOD) to PVC Fittings DR 18 / PR235 PVC Pipe	ASTM F1674 for Use with Push on PVC fittings to PVC DR 18 PIPE	Star Pipe Products	PVC 3500PF	MJ PVC DR 18 Pipe to Push on PVC Fittings
			Clow Canada	360C	- Corrosion protective applied to fittings as per
			Sigma Corp	PVLok PWPF	design engineer
			EBAA Iron Sales Inc. - 2500		- Working pressure rating must equal or
			Ford Meter Co./Uniflange	Series 1369	exceed that of pipe - Serrated Grip design as per manufacturers
					- installed as per manufacturer with Torque wrench as per recommendations
			Star Pipe Products	Series 1000/1100/1200/9100	PVC Pipe to PVC Pipe Harness Style Restraints
			Clow Canada	390C	- Corrosion protective applied to fittings as per
			Sigma Corp	PV-Lok PWP	design engineer
			EBAA Iron Sales Inc. - 1900		- Working pressure rating must equal or
PIPE TO PIPE	For PVC Pipe (CIOD) Gasketed Bell and Spigot	ASTM F1674	Ford Meter Co.	Series 1350/1355/1390	exceed that of pipe - Serrated Grip design as per manufacturers
				Series 1399 / 1559	- installed as per manufacturer with Torque wrench as per recommendations

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Flange Adapters PIPE TO FLANGE		FLANGE ADAPTERS IN CHAMBERS	Clow Canada	Series 90-C	Flange Adapter
			Sigma Corp	SigmaFlange	
			EBAA Iron Sales Inc.	2100 MEGAFLANGE	
		FLANGED CONNECTION NOT RECOMMENDED FOR BURIAL	Ford Meter Co.	UniFlange 900C	
Tracer Wire	12/7 AWG Type TWU				To be installed on all plastic watermain and plastic services as per Wasaga Drg. PE or PVC or HMWPE Coating RATED FOR DIRECT BURIAL UNDERGROUND USE
Connectors	For Tracer Wire	approved for direct bury	Klick-It II -PCS Ltd	Model C8816	Connectors shall be used on all non-metallic watermains, hydrant laterals and non metallic water services
			Dryconn King Innov.R	Blue (lug Type)	
			Copperhead	Snakebite	
Restrained Couplers	Restrained Couplers		Kraus HyMax	Grip	Epoxy coated w/ SS hardware
			Georg Fischer	Multi Joint 3000 - Waga	
			Romac Industrial Inc.	Apha Restrained	

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Couplings	Transition Couplings	Complete with T-304 Stainless steel nuts and bolts	Dresser Piping Specialties	Styles 53 and 153	·all wm couplings must be self restrainer type or installed with approved restrainers
				Style 38	·for 400mm watermains and larger
			Cambridge	Model 3501	
			Smith-Blair Inc.	Model 441	
			Victaulic Co. of Canada Inc.	Style #44	
				Style #31	·Ductile housing with grade "M" gasket
			Kraus Hymax	Hymax Flip2	
			Kraus Hymax	Grip	Epoxy coated w/ SS hardware
			Georg Fischer	Multi Joint 3000 - Waga	
			Robar Industries	1406	
	Centre sleeves and end rings shall be shop coated		Straub Tadco Manufacturing	Straub Flex/Open	
				Straub Grip	
				Hymax (Large Dia)	·to be installed with split-ring restrainer/tie-rods
			Ford Meter Box Co. Inc	FC1, FC2	·to be installed with approved restrainers
				RCPP-x	·restrained coupling, PVC x PVC
			Romac Industrial Inc.	Macro HP	
			YNC Pipe Couplings Inc	YNC Pipe Couplings	·all stainless steel

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments	
Couplings (Cont'd)	Flanged Couplings FLANGED CONNECTIONS NOT RECOMMENDED FOR BURIED APPLICATIONS	Complete with stainless steel nuts and bolts	Smith-Blair Inc.	Model 912		
			Dresser Piping Spec.	Style 127		
			Viking Johnson	MaxiDaptor		
			Kraus Hymax	Hymax Grip Flange Adapter		
			Robar Industries	7406		
	Insulating Couplings		Victaulic Co. of Canada Inc.	#341.2	·Ductile housing with grade "M" gasket	
			Romac Industrial Inc.	FCA 501		
			Clow Canada	Series 90C	·for PVC pipe	
				Series 40C	·for DI pipe	
			Smith-Blair Inc.	Model 416		
			Robar Industries	1406	·complete with insulating boot	



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Valves	Gate Valve < 100mm diam.		Crane		<ul style="list-style-type: none">·Rising spindle·Installed in above ground applications or in chamber only
	Gate Valve 100mm - 200mm diam.		Mueller Canada	A-2360	
			Clow Canada	F6102	<ul style="list-style-type: none">·T-304 stainless steel nuts & bolts, corrosion protection system
	Resilient Wedge Gate Valve	100mm to 300mm dia. Inclusive	AVK	Series 25	MECHANICAL JOINT ENDS
			Clow Canada	2639/2640	<ul style="list-style-type: none">·T-304 stainless steel nuts & bolts·Open left (counter clockwise)·50.0mm square operating nut
		AWWA C509	Mueller Canada	A-2360	
	350mm dia. and larger AWWA C515	MJ ENDS	J & S Valve	Series 6600, 6800, 6900	<ul style="list-style-type: none">·Inside non-rising stemDuctile Iron Body
			Clow Canada		
			Mueller Canada		
			AVK	Series 25, 45	<ul style="list-style-type: none">·Fusion Bonded Epoxy (FBE) Coated
	Check		Mission	Duo-Check series 125	<ul style="list-style-type: none">·T-304 stainless steel nuts & bolts, corrosion protection system
			Mueller Canada	A-2600	

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Valves (Cont'd)	Valve		Val-matic	Swingflex	·Not to be used for backflow prevention unless two inline & certified for that purpose
			Clow Canada	Kenflex #506	
	Detector Check Valve	AWWA C508 suitable for continuous submerged conditions	Viking/Automatic Sprinkler	Model E-1	·All DCV to have min 25mm bypass port outlets
			Mueller Canada		·100mm to 250mm inclusive
			Watts	Series 07-F	·100mm to 250mm inclusive
	Tapping Valve		Mueller Canada	T2360	·100mm diameter and larger ·All taps done by Town of Wasaga Beach
				A2360	
			AVK	Series 25	
			Clow Canada	F6114	
	Pressure Regulating Valve		Cla-Val	Series 90	·Model to be approved on a site specific basis ·Provided with filter canisters ·Provided with stainless steel rings
			Singer	106-PR, 206-PR	
	Flow Control Valve		Cla-Val		·Model to be approved on a site specific basis ·Provided with filter canisters ·Provided with stainless steel rings
			Singer		

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Valve Boxes	5SL Complete	5SL-48 Sliding Valve Box C/W Guide Plate ASTM A48M-03 Class 30B. LID has "Water" embossed on it	Mueller		
			Bibby	VB1100 + GP	Epoxy paint or Black Aspaltic Bitimous Paint Cast Iron
			Star Pipe Products	VB-5002	
			DomCast	DF64	Valve and Valve boxes to be installed
			Sigma Corp		as per OPSS 441.
					4 pc - Upper / Lower / Lid / Guide plate
Air Valves	Air Release	AWWA C512	Vent-O-Mat	RBX	Vented
			Apco	143C, 145C, 149C Threaded	
			Val-Matic	201C, 202C, 203C Threaded	
			Crispin	UL 10.1, UL20.1, UL 41.1	
			A.R.I.	D-040P	
				D-040CV	
				S-050-C	
	Air/Vacuum Release		H-TEC	996-00	
				997-00	
	Air Release Backflow Preventer		Val-Matic	Floodsafe	·(on all air installations)

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
---------	------	----------------	--------------	--------------------	----------

Backflow Preventer			Watts	Series 900 or 9D	·above ground chamber in accordance with
			Cla-Val	Model 3 or R.P.	Town Std.Dwg.No. 15
			Febco	825Y	

Repair Clamps	All repair clamps to be supplied with stainless steel (passive 304) nuts and bolts	TPS-Cromer Ind Corp	Ex-max Repair Clamp	·all stainless steel-full seal
		Robar Industries		·all stainless steel
		Mueller Canada		·all stainless steel
		Cambridge Brass	Teck	·with taper gasket
		Straub-Tadco Inc	Straub Clamp	
		Romac Industries	LSS1	·1 piece with full seal
		YNC Pipe Couplings Co		·all stainless steel
		Robar Industries	5600 Series	
		Clow Canada	Concord D76R Series 200	
		Smith-Blair Inc	274	
		Romac Industries	516	
	Bell Joint Repair Clamps	Dresser	60 and 160	



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments	
Tapping Sleeves (taps to be done by certified installer/welder per Town acceptance)	PVC Pipe	All tapping sleeves to be supplied with stainless steel (passive 304) nuts and bolts	Robar Industries	6606	·with full liner	
			Ford Meter Box Co. Inc	Ford "Fast Tap"	·all stainless steel	
			Romac Industries	SST		
			Smith-Blair Inc	663 SS		
			Mueller Canada	H304		
	DI and CI		Robar Industries	6906	·with full liner	
			Ford Meter Box Co. Inc	Ford "Fast"	·all stainless steel	
			Romac Industries	SST		
			Smith-Blair Inc	663		
			Mueller Canada	H304		
	Asbestos Cement pipe (rough barrel)			H613	Ductile iron only	
			Mueller Canada	H304 SS	·350mm and larger	
				H619	·300mm and larger	
			Robar Industries	6606	·with full liner	
			Romac Industries	SST		
	Concrete Pressure Pipe		Ford Meter Box Co. Inc	Ford "Fast"	·all stainless steel	
			TPS-Cromer Ind Corp	Ez-Tap plus serv/sad	·all stainless steel	
			Smith-Blair Inc	663		

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Water Service Tubing 25mm - 50mm	Copper	Type K Soft Copper ASTM B88-49			
	Polyethylene	AWWA C901 CSA B. 137.10 High Density Polyethylene (HDPE)	Trinus Pipes and Tubes	ProGold	<ul style="list-style-type: none">·Stainless steel inserts required, in accordance with manufacturers recommendations·12/7 gauge TWU stranded Tracer Wire required for all
	HDPE	Copper Tube Size (CTS) Municipal Service Tubing	Polytubes		

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Service Saddles (must be double bolt, for all service taps)	PVC	PVC - DR 18 / PR 235 (CIOD) AWWA THREADED OUTLET	Romac Industries	306 double bolt	AWWA THREADED OUTLET Stainless Steel
			Robar Industries	2706 double strap	
			Smith-Blair	323	
				373 s.s. with band	
			Cambridge Brass Powerseal	- 8403 Teck 3412AS / 3416AS	
	PVC IPS O.D.	PVC - DR 26 / Series 160 (IPS OD) AWWA THREADED OUTLET	Mueller Canada	H13428 H13431 H13433	IPS - Iron Pipe Size Outside Diamter PVC Stainless Steel 50mm dia to 150 mm dia IPS Mains
			Robar Industries	1606 2606	
			Cambridge Brass Powerseal	- 8403 Teck 3412AS / 3416AS	
			Romac Industries	306 double bolt	
			Concord Daigle	D71	
			Smith-Blair	373	
			Continental Ind	PVS Fast Tap	
			Robar Industries	2508	· Cast iron Epoxy coated with dual s.s. bales · Cast iron Epoxy coated with dual s.s. bales Stainless Steel
			Smith-Blair	313	
			Romac Industries	306 double bolt	
			Cambridge Brass Powerseal	- 8403 Teck 3412AS / 3416AS	

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
PVC Service Coupling 19mm to 50mm	Tapped Couplings	AWWA C907 PVC Gasketed Coupling	Ipex Hanco	Blue Brute Tapped Coupling	·150mm to 200mm PVC watermains in 19mm to 50mm service sizes, restrained AWWA Threaded Outlet
Service Saddles (must be double bolt, for all service taps)	Asbestos Cement Pipe (existing pipe only)		Smith-Blair Romac Industries Cambridge Brass Powerseal	323 306 double bolt - 8403 Teck 3412AS / 3416AS	·ACP not permitted for new pipe installation Stainless Steel
	Concrete	Manufactured to AWWA C301, C303 and C304 Welded outlets are to be as per pipe manufacturers recommendations	Smith-Blair Robar Industries	362	·T-304 stainless steel nuts and bolts Robar saddles made to order - require spec
Corporation (Main) Stops	19mm To 50 mm	Ball Valve, Compression Type Nut AWWA Thread AWWA C800 ASTM B-62 ASTM B-584 NO LEAD ALLOY	Ford Meter Box Co Inc Cambridge Brass Mueller Canada	FB1000-X-NL Series 301NL Series 300N	
					NO LEAD
					Installed as per manufacturer recommendations
					Use Corporation Wrench (NO PIPE WRENCH)

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
---------	------	----------------	--------------	--------------------	----------

Curb Stops	19mm To 50 mm	Compression type - Stainless steel ball style non draining - ANSI / AWWA C800 05 and NSF/ ANSI 61 NO LEAD ALLOY	Ford Meter Box Co Inc	B44 Series NL	NO LEAD
				BH 44-233G NL	Installed as per manufacturer recommendations
			Mueller Canada	Series 300N	Use Corporation Wrench (NO PIPE WRENCH)
			Cambridge Brass	202NL	

Service Box		To be supplied with stainless steel rod and brass cotter pin for 1.52m to 1.83. bury, use rod 1.14m long. Extension required if special depths are encountered (as per manufacturers recommendations).	Bibby	VSB1/B2	
			Clow	D1 /D2	Epoxy paint or Black Aspaltic Bitimous
			Mueller	A726/A728	Paint Cast Iron Cast Iron
			SigmaCorp	#8	
			Star Pipe Products	SB-5001/5002	

Approved equivalents may be considered



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Casing Spacers	Casing Spacers	T-304 Stainless Steel	Cascade	CCS	·Ultra high molecular weight polymer runners
			Cambridge Brass	Model 4810 Powerseal	(or equivalent)
			CCI Pipeline Systems	CSS8 and CSS12	·Position of pipe within liner to be centered & restrained, sufficient to provide no less than
			APS		19mm clearance between stainless steel bands
			PSI		and glass polymer runners
					·Watermain restrained laterally for the entire length of the liner
					·Sealed using wrap around rubber ends complete with stainless steel (T-304) banding
	Casing Ends Seals	Seal-Virgin SBR & Bands T304 S.S.	Cascade	CCES	
			PSI		
			APS		

Precast Chamber and components	Concrete	CSA A257.4 OPSS 1351	Con Cast pipe		
			M Con Pipe & Prod.		
			Decast		
			Rinker		



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

WATERMAIN

Product	Type	Specifications	Manufacturer	Description /Model	Comments
Chamber Frame and Cover	Standard	OPSD 401.01 - Type A, no lugs "WATER" embossed on lid	Bibby St. Croix		
			DomCast		·Cast iron, square frame with circular closed
			East Jordan		or open cover
			Star		"WATER" embossed on lid
			Sigma Corp		
	Water Tight	OPSD 401.03, no lugs "WATER" embossed on lid	Bibby St. Croix		·Frame to be attached to the precast section
			East Jordan		"WATER" embossed on lid
			Star		
			Sigma Corp		
	Water tight hinged		Saint-Gobain PAM	Pamrex	·Within easements, outside of ROW only
			East Jordan	Duoseal	
Chamber Adjustment Units	Pre-Cast Concrete	OPSS 1853	Decast Rinker Brooklyn Concrete	Moduloc	

Approved equivalents may be considered



APPROVED MATERIALS LIST TOWN OF WASAGA BEACH TRAFFIC SIGNAL CONTROLLER BOX

Nema ts2type2 ma 8ph. cabinet assembly

- . M- aluminum cabinet, polyester powder asa70 grey, c/w 2 shelves(1 with slide out tray) c/w neopreen gasket. Vertical shelf support channels shall be provided to permit adjustment of shelf location in the field (keyhole slots are not permitted)
- . Main door lock #2 c/w2 keys, police door lock c/w 1 long key
- . disposable air filter c/w aluminum plate
- . Exhaust Fan c/w guard, 250 watt heater c/w guard and adjustable thermostat controls
- .trouble lamp c/w switch
- . GFI receptical

Wiring

All wiring within the cabinet shall be neat and routed such that opening and closing the door or raising or lowering the back panel will not twist or crimp the wiring. Harnesses shall be either braided, sheathed in nylon mesh sleeving, or made of PVC or polyethylene insulated jacketed cable.

Cabinet wiring shall include a Novax DS3000 APS unit wired to all pedestrian Phases (2,4,6,8) within cabinet, DS3000 units are to be mounted in a suitable location. The internal speaker shall be disconnected, speaker wires to be terminated to spare terminal strip labled "external speakers"

12 position 12 channel ts2 type2 back panel assembly

The back panel shall be wired for a standard NEMA 8-phase operation . Diodes shall be installed to prevent the traffic controller from re-servicing left turn phases from corresponding thru phases.

Load switches 1,3,5,7 shall be wired for fast flash left turn movements.

Load switches 2,4,6,8, shall be wired for thru movements.

Load switches 9,10,11,12 shall be wired for pedestrian movements 2,4,6,8.

Emergency flash shall be wired for red/red flash

The backpanel shall incl. the following componants.

- .NEMA Standards Publication TS 2-1992
- .12ea N.E.M.A. Model 200 load switch
- .1ea N.E.M.A. Model 204 flasher
- .4ea flash xfer relay
- . 40a Power supply panel c/w plexi-glass cover
- .2ea. circuit breakers, 15A aux and 40A main
- .radio frequency interference (RFI) suppresser
- .A 50 Amp, solid state relay
- .lightning/surge supressor
- .12 position detector rack, wired for:

. 8ea.-2 channel det.

- . 1ea.-2 channel pre-empt
- . 1ea.- spare
- .1ea. 24v power supply
- .Field input panel
- .All inputs - 16 vehicle 4 pedestrian and 2 pre-empt shall be wired to a field input panel with sufficient terminals to accommodate all input wiring plus 1ea. 12pos. Spare terminal block labeled "external speakers"

The detector rack shall incl. the following components:

- 4 ea. 2 channel detector cards(EDI LMD602TR or approved equal).
- 1 ea. 24vdc power supply (EDI PS175 or approved equal).
- 1 ea. Tomar model 2070-2spm pre-empt card(or approved equal)

(Note: alternate pre-empt cards must be supplied with detectors to provide 2 channels of pre-empt)

.aux. i/o harness

1ea. Aux. i/o harness terminated to a 72pos. Interface panel c/w plexi-glass cover. The harness is to be configured for a Naztec model 980ts2type 2 controller operating TX2-V14 pin assignment.

.test switch panel c/w cover

. 8 veh. 4 ped. 2 pre.empt (on-off-momentary)
.auto/stoptime, auto/flash, interval adv. Pushbutton

.police door switches

signal on/off, auto/manual. Signal/flash, retractable (int. adv.) police cord.

.conflict monitor

1ea. 12 channel NEMA conflict monitor complete with event logging and LCD display capable of recognizing fast flash signal operation, per channel. (EDI SSM12LE-CAN or approved equal)

.traffic controller

1ea. Nema 8 phase traffic controller
c/w AUX I/O harness fully wired to a termination panel.

Traffic UPS installed in Controller Cabinet External Piggybacked battery enclosure consisting of:

Model# 017-230-23 FXM 1100, UPS, 120VAC In / Out, 48VDC, SNMP, F/W1.7 or later
Flash mode point customer adjustable

Model# 740-756-21 Wall mounting Kit-ATS/GTS MBP(different mounting kit maybe required for Alpha S6)

Model# 020-165-21 UATS, 120V, 30A, Novus ATS w/ continuous load
Operates in UPS mode, with fail safe automatic transfer to utility if UPS failure

Model# 181-230-10 195GXL-HP Battery, 12V, 100Ah, Gel Cell, Top terminal, Silver Alloy

Alpha S6

Outdoor Enclosure Grey consisting of:

- 1 x 189-208-10 Battery Heater Mat
(1 x Master, 2 x Slave)
- 1 x 033-078-20, Enclosure
- 1 x 020-098-24, Plug-in lightning arrestor
- 1 x 189-209-10, Battery Heater Mat (1 x Slave)
- 1 x SP96-022-94, Battery Cable Kit

OR ACCEPTED EQUIVALENT

A qualified traffic technician (I.M.S.A. level 2 field cert.) shall be present for the duration of all equipment setup/programming and testing on day of turn on.



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

STREETLIGHTS

PRODUCT	MATERIAL TYPE	SPECIFICATION	DISCRIPTION	MANUFACTURER	CATALOGUE NUMBER	COMMENTS
STREETLIGHT POLE						
Direct Buried Poles	Concrete	OPSS.MUNI 2421 OPSS.PROV 2421	Octagonal Tapered, Black Eclipse colour, Polished finish, 2 coats of acrylic paint on full length of pole. Complete with FIN CAP	Utility Structures Inc	MA-300-C-2-BE-10-F	9.14 metres (30 feet) pole overall length
				Stresscrete Group	E300-CPO-G-S11	Poles shall have provision for #6A WG CU electrical ground. Catalogue number shall be shown on Contract Drawings. Poles shall be complete with pole cap, handhole for underground wiring and handhole cover.
LUMINAIRE BRACKET						
Luminaire Bracket (Arm) Type	Aluminum	OPSS.MUNI 2428 OPSS.PROV 2428 OPSD 2250.010	Tapered Elliptical, Textured Black (powder coated),	Stresscrete Group	KA120-A-S-1-6	6 feet long & 32 inch rise
					KA120-A-S-1-8	8 feet long & 39 inch rise
					KA120-A-S-1-10	10 feet long & 47 inch rise
					-	12 feet long & 60 inch rise
				Utility Structures Inc	Fixture Mount	6 feet long & 32 inch rise
					Option 10	8 feet long & 39 inch rise
						10 feet long & 47 inch rise
						12 feet long & 60 inch rise



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

STREETLIGHTS

POWER SUPPLY EQUIPMENT						
In-Line Fuse Holder		OPSS 614	Break-away	ABB Electrification Canada Inc.	(D)65U	
Fuses		OPSS 2414.05	250V-15A	Mersen Canada Toronto Inc.	OTM15, J216737	
PHOTOELECTRIC CONTROLLER						
Photoelectric Control	Photocell	OPSS.MUNI 2485 OPSS.PROV 2485	Control Relay: 120V, 60Hz (105-130V) Contacts: SPST N.C. rated 1800W Enclosure: Weather -proof case with plug to fit EEI-NEMA ANSI C136 compliant.	Sun-Tech	TRS-2-CUL	Turn-on Level: 1.0 foot candle – normal; factory set. Turn-off Level: 3.0 foot candles – average. Lighting Arrester: Open type – 2.5 kV spark over minimum 5000 Amp follow through. Rated Life: 10-year design minimum at rated load.



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

STREETLIGHTS

LUMINAIRE						
Roadway Lighting Type	Housing constructed of high strength, lightweight bulk molding compound. UV stabilized polymeric door		LED IES, Product Series GWY, Cobrahead Style, Horizontal Tenon Mounting, CCT/CRI: 3000K/70CRI, 120 Voltage, Black Colour, Utility Label, Receptacle: NEMA 7-Pin Photocell Receptacle, Field Adjustable Output	Cree Lighting	GWY-*.A.*L-30K7-UL-BK-N- Q*	<ul style="list-style-type: none">- Shall have zero degree tilt and socket position factory set.- Must achieve the performance specifications as defined in the supporting IES file and ANSI/IES RP-8 Roadway Lighting ANSI approved- Shall be, prewired to operate at 120 Volts, C.S.A. approved, with 10kV surge suppression protection tested- Shall be equipped with photocell control receptacle, ground lug and photocell.- 10 year Warranty- No rear house shields- Illuminating Engineering Society of North America (IESNA). Further, Dark Sky Friendly and IDA Approved



APPROVED PRODUCTS LIST

Jul-25

TOWN OF WASAGA BEACH

STREETLIGHTS

Roadway Lighting Type	Square Roof Housing complete with latch made of stainless steel. Roof and Cage made of 360 die-cast aluminum alloy, low copper.		LED Module, TownView style, TVLN model, Coach-Style luminaire. CCT: 3000K, 120-277 Voltage, Black colour, Square roof, NEMA 7 Pin (Long Life) Photocell, FAWS (Field Adjustable Wattage Selector)	Hadco - Genlyte Solutions	TVLN-L4-S-(16/32/48)-G1-7-3S-730-A-S-PHX-N-SP*-N-N-N-BK	<p>The luminaire should be square roof, have no lens, and mountable with a 4" Post Top fitter.</p> <ul style="list-style-type: none">- Must achieve the performance specifications as defined in the supporting IES file and ANSI/IES RP-8 Roadway Lighting ANSI approved- Shall be, prewired to operate at 120 Volts, C.S.A. approved, with 10kV surge suppression protection tested- Shall be equipped with a photocell control receptacle, ground lug and Long Life photocell.- 10 year Warranty- Illuminating Engineering Society of North America (IESNA). Further, Dark Sky Friendly and IDA Approved
-----------------------	---	--	--	---------------------------	---	---

Proposed Equivalents must be approved through the Town's Approved Product Application process.

APPENDIX H

Park Standards



WASAGA BEACH PARKS STANDARDS

Rev 1 - June 2025

TABLE OF CONTENTS

PARK PLANNING & GENERAL GUIDELINES.....	2
1.1 Introduction.....	2
1.2 Parkland Dedication	2
1.3 Park Classifications.....	3
1.4 Park Planning Characteristics	4
1.5 Facility Fit.....	5
1.6 Professional Park Design Services	5
PARK DEVELOPMENT	6
2.1 Minimum Park Development Requirements	6
2.2 Parkland Conveyance.....	7
2.3 Park Development Options.....	8
2.4 Option 1: Town Design & Implementation.....	8
2.5 Option 2: Developer Design-Build	9
2.6 Option 3: No Park Block	10
PARK DESIGN REQUIREMENTS.....	11
3.1 General	11
3.2 Parkland Design Standards	11
3.3 Pedestrian Circulation & Destinations	11
3.4 Parking	13
3.5 Children's Playspaces	14
3.6 Facility Sizes & Buffers	17
3.7 Outdoor Sports Fields & Diamonds.....	18
3.8 Sports Fencing & Amenities.....	19
3.9 Planting & Landscape	20
TECHNICAL DESIGN STANDARDS.....	21
4.1 Temporary Construction Fencing.....	21
4.2 Sediment & Erosion Control	21
4.3 Tree Preservation & Removals	22
4.4 Topsoil Stripping, Screening, & Stockpiling	22
4.5 Earthworks & Rough Grading	23
4.6 Armourstone Retaining & Seat Walls.....	24
4.7 Granular Walkways & Trails.....	25
4.8 Concrete Walkways & Trails	25
4.9 Asphalt Walkways & Trails.....	26
4.10 Chain-link Fencing	27
4.11 Play Structures	27
4.12 Concrete Playground Curb	28
4.13 Subdrainage.....	28
4.14 Playground Safety Surface	29
4.15 Shade Structures	30
4.16 Site Furnishings	30
4.17 Topsoil & Finish Grading	32
4.18 Sodding	32
4.19 Seeding	33
4.20 Trees, Shrubs, & Groundcovers.....	33
PARK DRAWING REQUIREMENTS.....	36
5.1 Park Design Drawings.....	36

EXECUTIVE SUMMARY

The Wasaga Beach Parks Standards were created by the Public Works Department of the Town of Wasaga Beach to define the requirements and standards for municipal parkland development. This document shall guide the design and construction of public parks, whether completed by the Town of Wasaga Beach or the development community.

The Wasaga Beach Parks Standards shall not be a static document, and the information contained herein is subject to change without notice. It is the intent of the Public Works Department to update these standards as required to comply with applicable federal and provincial regulations, municipal policy and by-laws, and the most recent industry standards and guidelines as they relate to parks and recreation facilities/amenities, accessibility, and public health and safety.

The standards should be used in conjunction with other planning policies, engineering standards, and guidelines referenced throughout. The goal is to guide the process of submitting or reviewing a development application within the Town of Wasaga Beach and to inform individuals of parkland requirements. The reader must ensure they have the most current version of these standards and all other documents referenced therein.

PART 1 PARK PLANNING & GENERAL GUIDELINES

1.1 INTRODUCTION

The Parks & Trails Master Plan (December 2020) defines 'Parkland' as:

"all lands owned, leased and/or managed by the Town and classified as Community Parks, Neighbourhood Parks, Parkettes and Urban Plazas. Parkland typically consists of tableland suitable for the development or installation of built recreational or civic amenities (such as sports fields, playgrounds, courts, gardens, etc.) that may be used for both organized and unorganized activities, although these parks may also incorporate natural features".

The Park Standards focus specifically on the development of parkland within the Town of Wasaga Beach and outlines key requirements and expectations for the following:

- Allocation and planning of parkland through the planning process (Draft Plan);
- Minimum parkland requirements for municipal assumption under the Development Agreement;
- Park development process for the design and construction of public parks and associated amenities (3 options);
- Minimum design, construction, and technical standards;
- Parkland drawing requirements.

This document does not address standards or requirements for designing and developing public open spaces (e.g., natural areas, open space linkages, etc.) or trails. Requirements for open spaces and trails will be defined on a case-by-case basis to suit specific site and environmental conditions and community needs.

1.2 PARKLAND DEDICATION

For new subdivisions, parkland dedications will be determined through the Draft Plan of Subdivision in accordance with the requirements of the Provincial Planning Act, the Town of Wasaga Beach Official Plan, and the Comprehensive Zoning By-law 2003-60. Parkland calculations and requirements in this regard will be determined by Planning and Development Services through the Town's formal development application process.

Park classification will also be determined through this process to guide the siting and configuration of parkland within the community in the context of its intended uses, facilities, and amenities. In addition, urban design principles will be applied to ensure that parks are thoughtfully integrated into the surrounding built environment, supporting connectivity, accessibility and a high quality of public space for all residents. Classification and intended recreational uses will be in response to recommendations made through the Parks & Trails Master Plan (December 2020), Wasaga Beach Parks, Facilities and Recreation Master Plan (2012), or any other guiding document applicable in this determination.

If it is determined that the parkland facilities, uses, or programming anticipated for a given neighbourhood or the greater Wasaga Beach community requires land that exceeds the calculated parkland dedication, the Town may choose to acquire the balance needed. This land will be subject to the same performance standards as the surrounding conveyance, and developers shall be responsible for ensuring that the lands are free of encumbrances, fully prepared as described herein and in a condition acceptable to the Town.

1.3 PARK CLASSIFICATIONS

The Parks & Trails Master Plan proposes classifications to provide a framework for park planning and policymaking. It also provides a general list of potential amenities that are suitable for each park classification type.

The Wasaga Beach Parks Standards support and recognize the Master Plan classifications, which are as follows:

COMMUNITY PARKS

Community Parks are used by groups of residents and tourists for community events, festivals, and active recreation. They may contain athletic amenities for organized recreation (such as sports fields, support buildings, and community-wide recreation amenities), as well as pathways, pavilions and/or unique elements that make the park a 'destination'. Full services (water, sanitary, etc.) are generally required.

Community parks should have good transportation access along adjacent arterial or collector roadways and provide adequate parking to meet anticipated demand. Community Parks in urban areas should be appropriately located along transit routes.

Community Parks serve a Town-wide area and beyond and are to be provided at a rate of 2.11 hectares per 1,000 population, with a target size of 4.0 hectares or more.

Example: Wasaga Sports Park

NEIGHBOURHOOD PARKS

Neighbourhood Parks primarily support children's play activities and are often situated within subdivisions to promote walkability. Neighbourhood Parks contain playgrounds, local-level play features, and/or passive open space intended to serve the immediate area. Unlike community parks, most do not have off-street parking, though they may be coordinated with school sites.

Neighbourhood Parks serve the surrounding neighbourhood (800-metre radius) and are provided at a rate of 0.41 hectares per 1,000 population, with a target size of 0.5 to 4.0 hectares.



Example: Ramblewood Park

PARKETTES

Parkettes are generally smaller and less developed than neighbourhood parks. Their primary purpose is to provide access to green space and respite for nearby residents and travelers. They may contain seating areas, pathways, floral/ornamental gardens, shade trees, etc. Most will not contain playground equipment unless there are no suitable options nearby.

Parkettes serve a localized area (500-metre radius) and are provided at a rate of 0.07 hectares per 1,000 population, with a target size of 0.5 hectares or less.

Example: Golfview Park

URBAN PLAZA

Urban Plazas are publicly-owned lands that are located in highly visible and accessible locations, typically in gateways or higher density urban areas. They serve to support the Town's social and cultural fabric, create a sense of place, and may contain elements of historic or cultural significance that are of local importance. They are typically characterized by hardscaped areas for events and gatherings, public art, seating areas, related civic uses, etc.

Urban Plazas serve a Town-wide area and are provided at a rate of 0.01 hectares per 1,000 population, with a target size of 0.5 hectares or less.

Example: Beck Square and the planned park in Sunnidale Trails (Pacific Homes/River's Edge)

1.4 PARK PLANNING CHARACTERISTICS

Further to policy objectives such as land area, classification, and intended uses, the layout and placement of parkland blocks within the overall development plan is critical to the successful realization of healthy, integrated, and sustainable communities. Parks should be located as defining community features that unify the community and are integrated as focal destinations within an interconnected pedestrian and active transportation network. Draft Plans for developments should be structured around the parkland as a central activity node, reinforcing the center as a symbolic and spatial heart of the neighbourhood.

Although it is recognized that various factors influence the design of each community, generally, the Draft Plan should demonstrate parkland blocks that achieve the following objectives:

- Lot patterns and road and pedestrian/trail networks should be designed to place parkland in prominent site locations to create visual and physical focal points within the community (corner or focal sites, mid-block locations, etc.);
- Park blocks should be located to provide convenient and accessible pedestrian access, servicing community areas consistent with that defined by their specific park classifications;

Where possible, parks should be located adjacent to natural features (e.g., watercourses, water bodies, forested areas, etc.) or naturalized SWM facilities to provide a greater green space impact;

- Similarly, parkland should also be located adjacent to community institutions (e.g., schools, civic buildings/sites, places of worship, etc.);

- Community Parks shall have a minimum of 120m of street frontage on at least one side with additional walkway connections (blocks or easements) to other nearby streets or community nodes/housing clusters;
- Park parcels with square or rectangular configurations are preferred as they provide the most versatility for incorporating public amenities, particularly sports facilities. Parks with odd shapes will not be accepted, unless approved by the Town based on design merit;
- Mid-block pedestrian crossings may be required to access parks where appropriate to ensure direct access from walkways, trail easements, and other pedestrian connections;
- Micro-climatic conditions should be considered and managed through park orientation and relationships between natural and built features as much as practical, to maximize and balance sun/shade opportunities and to provide shelter from winds and winter conditions;
- Parks should be located to permit convenient access from public road allowances for maintenance operations.

The following parkland conditions are not acceptable under any circumstances:

- Parkland dedications shall not be the result of awkward portions of the lot fabric that could not be developed into marketable residential or commercial properties;
- Blocks with odd shapes and excessive grades will not be accepted as parkland;
- Parks shall not be hidden from view from the street or neighbouring uses;
- Parkland shall be conveyed to the Town free of any physical encumbrances above/below grade;

- Easements in favour of the Town or local utilities creating limitations on the development of functional public space shall not be considered a component of the parkland calculation;
- Stormwater management ponds (SWM Ponds), valley lands, or floodplains are unacceptable as parkland dedication.

1.5 FACILITY FIT

Parkland shall possess sufficient shape, configuration, size, and topography to accommodate the intended parkland program and design objectives. As a component of the Draft Plan of Subdivision process, the Town may define the required objectives and user programming for the park blocks, and the developer will be required to prepare a Facility Fit Plan to demonstrate that the proposed parkland can accommodate these requirements.

The Facility Fit Plan is generally a park concept plan intended to demonstrate that the parkland dedication is of a sufficient size and configuration to accommodate the required park amenities/facilities, grading, drainage, facility setbacks, fencing, and other requirements. The plan also serves to identify potential conflicts between the desired facilities, the size and configuration of the proposed park parcel and adjacent land uses, allowing the Town and developer to address these issues early in the development process.

The Facility Fit Plan shall generally demonstrate the following:

- Tree preservation conforms to the Draft Plan and other related Town or regulatory authority requirements;
- Park configuration and size suitable to accommodate intended recreational facilities/amenities;
- Required setbacks accommodated between active recreational facilities/uses and to buffer against neighbouring properties and roadways;

- Orientation and layout of facilities/amenities meeting Town standards;
- Required services for the future construction of the park verified and generally located;
- Encumbrances identified (easements, utility corridors, etc.)

A Class D cost estimate is required at this stage to confirm that sufficient capital is available to fulfill the requested park program through allocated development charges or other financing sources. The town will determine the need for a budgeting exercise on a case-by-case basis.

Following the town's approval of the Facility Fit Plan, associated Draft Plan Conditions would be developed to ensure that the integrity of the expressed objectives is maintained throughout the subdivision's engineering design and development approvals.

1.6 PROFESSIONAL PARK DESIGN SERVICES

All park planning, design and construction oversight shall be completed by a landscape architect who is a full member in good standing with the Ontario Association of Landscape Architects (OALA) with Seal and Certificate, who shall be responsible for the preparation of drawings and specifications to the satisfaction of the Town.



PART 2 PARK DEVELOPMENT

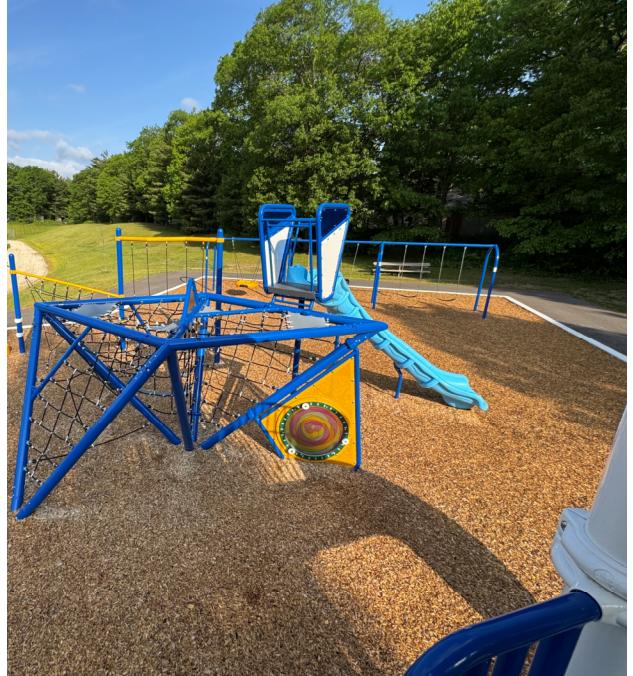
2.1 MINIMUM PARK DEVELOPMENT REQUIREMENTS

As a component of the Subdivision Agreement, all new parkland developments shall be designed and developed to meet the minimum standards required by the Town of Wasaga Beach Engineering Standards. A summary of these minimum requirements is as follows:

- Graded to provide positive surface drainage, with care given to preserving the root systems of existing trees to remain. Minimum grades for parkland shall be 2.0% for turfgrass areas.
- Parkland trees shall be preserved and protected unless removals are necessary to accommodate the overall grading/servicing design and/or as formally directed and approved by the Town.
- The entire park shall have or receive a minimum of 200mm of topsoil, unless the Town requires deeper topsoil profiles for special features (pond embankments, naturalized areas, etc.)

All parks shall be sodded. Select areas may also be considered for seeding (hydro-seeding and/or terra-seeding) at the discretion of the Town (e.g., naturalization areas, no-mow areas, etc.)

- All public-to-private property interfaces shall be fenced with 1.5m high black vinyl chain-link fencing. Park frontages along streets and boundaries shared with schools, open spaces, or stormwater management facilities do not require fencing unless required by the Town.



- The developer shall provide walkways and trails network that are designed and implemented to ensure accessibility, connectivity, and recreational opportunities for users of all abilities.
- NEIGHBOURHOOD PARKS: install services to park block from the road allowance as follows:
 - 25mm diameter water supply line with curb stop;
 - single phase electrical supply line from a local transformer.
- COMMUNITY PARKS: install services to the park block from the road allowance as follows:
 - 150mm diameter water supply line with valve at property line;
 - sanitary sewer stub, including manhole or inspection port at property line;
 - 3-phase electrical power.

- For all park types, the developer is required to provide an appropriately sized storm sewer outlet in the form of a ditch inlet, catch basin, or stormwater management pond. Connections from these structures to the surrounding storm sewer system shall be set at an invert elevation low enough to drain the entire park block positively.
- Where a Community Park has two or more street frontages, all or some of these services will be provided at each park frontage, as confirmed by the Town.
- All services shall be stubbed and clearly marked with a permanent monument at ground level.

In some instances, natural gas and/or telecommunication utilities (Rogers, Bell, etc.) may be required to service specific facilities or amenities within a park. This would typically be associated with Community Parks, where recreation centres, arenas, or other municipal buildings/facilities may be integrated into public parkland. The need for such utility infrastructure will be assessed on a project-by-project basis, as determined by the Town.



2.2 PARKLAND CONVEYANCE

At a minimum, parkland will be completed as per the requirements of Section 2.1 and will be conveyed to the Town at the development's assumption stage under the Subdivision Agreement.

In some specific instances, earlier parkland conveyance may be requested to accommodate advanced Town priorities, community pressures for parkland/amenities, or other influencing factors. In these instances, the terms and responsibilities associated with early parkland conveyance will be determined in collaboration with the developer.

As part of the terms of early conveyance, the Town may require the developer to complete servicing, fencing, and rough grading and transfer the park in a pre-graded condition. This would occur at an appropriate time to correspond with the mobilization of the Town's park contractor. In this scenario, all outstanding development 'securities' for items not completed under the Subdivision Agreement (e.g., topsoil, sod, walkway etc.) would be retained by the Town and applied to the same work under the Town's park contract. This transfer would be negotiated in context of ensuring that duplicate work and unnecessary throw-away costs are minimized. Pre-grade condition would typically be set at 200mm below finished grade, which is the depth determined by the unplaced topsoil.

If both the developer and the Town prefer that the developer complete the parkland, then the 'Developer Design-Build' option (Option 2) outlined in the next section should be followed. Under this option, the development assumption would include the fully completed park works in accordance with the parkland agreement established with the Town.

2.3 PARK DEVELOPMENT OPTIONS

There are three possible parkland development approaches available for consideration. Two are focused on the transformation of 'park blocks' into active and engaging public parks with passive and recreational amenities and community focused spaces. The third recognizes that not all developments are appropriate for the inclusion of parkland and provides an option to omit park blocks. The preferred parkland approach applied to any given development will be at the sole discretion of the Town.

Available parkland options are as follows:

OPTION 1: Town Design & Implementation

OPTION 2: Developer Design-Build

OPTION 3: No Park Block



2.4 OPTION 1: TOWN DESIGN & IMPLEMENTATION

Option 1 is the most common and preferred approach in the Town of Wasaga Beach. Under this approach, the developer will fulfil the minimum parkland requirements as outlined in Section 2.1 and will transfer ownership and responsibility of the park block to the Town through the assumption process defined by the subdivision agreement. At a time when deemed appropriate, the Town will proceed to retain consultants to design the park to meet the needs of the community.

Parks are developed using applicable development charges and/or other available budgets or funding opportunities approved by Council and deemed necessary to meet public needs. As a result, the timing of park development under this approach can take longer and are typically triggered by the occupancy of a certain percentage of the new community. Parks will generally be constructed by the Town based on budget and demand.

The advantage of this approach is that designers have access to the community that the park will service (residents, stakeholders, and future users). As a result, further to needs expressed through guiding planning documents, the design programming and amenities can be developed in collaboration with local residents through a public engagement process. This process ensures that the results capture the needs, preferences, and desired activities of the community, based on an understanding of actual neighbourhood demographics (e.g., age distribution, cultural diversity, socio-economic factors, etc.).

Furthermore, the 'process' of engagement and design can also have extended community-building benefits, as residents collaborate on ideas, becoming invested in the outcome, and ultimately take ownership of the public space. This can forge ongoing neighbourhood relationships and increase community stewardship of the park (e.g., reduced vandalism, reporting of issues, etc.).

The following provides a general summary of the respective roles and responsibilities for parkland development under Option 1.

DEVELOPER'S MINIMUM RESPONSIBILITIES

- Planning Documentation
- Draft Plan of Subdivision (Program Development, Facility Fit Plan, Draft Plan Conditions)
- Facility Fit Plan for Future Park
- Subdivision Agreement
- Drawing Submissions (Minimum Park Requirements - see Section 2.1)
- Construction and Assumption (Minimum Park Requirements - see Section 2.1)

TOWN RESPONSIBILITIES

- Capital Budgeting
- Park Design Development (Public Engagement, Concept Design, and Functional Plan of Facilities)
- Detailed Park Design (Construction Drawings and Specifications)
- Tendering
- Park Construction

Detailed expectations for each of the above responsibilities will be determined in the early stages of the Town's planning and development review process, based on project specific requirements, objectives, and budgets for park development.

2.5 OPTION 2: DEVELOPER DESIGN-BUILD

Under Option 2, the developer retains designers and contractors to design and implement the parkland as a component of the developer's responsibilities under the subdivision and parkland agreements. As this is done in advance of the development, the design is completed in absence of end-user input. As such, the design program is based on the Town's guiding planning documents, contemporary recreational trends, anticipated needs/amenities defined by the Town, and general best practices.

The advantage of the developer design-build approach is that parks can be completed early in the implementation of a new subdivision, to deliver usable parks and recreational amenities to early residents. Furthermore, the developer's early investment in parks can serve to present a complete neighbourhood product to potential homebuyers to drive sales.



Option 2 is available only if both the developer and Town agree that the developer will undertake the design and construction of the park on behalf of the Town. Such an option may be negotiated with the Town if it is deemed advantageous for the subdivision developer and does not impose undue additional administrative or operating costs on the municipality.

Through this option, the Town reimburses the developer with the development charges collected by the Town for park development following the timeframes, re-payment structure, and terms of the Town's parkland development agreement.

The following provides a general summary of the roles and responsibilities for parkland development under Option 2.

DEVELOPER'S RESPONSIBILITIES

- Planning Documentation
- Draft Plan of Subdivision (Program Development, Facility Fit Plan, Draft Plan Conditions)
- Subdivision Agreement
- Park Design Development (Concept Design and Functional Plan of Facilities)
- Detailed Park Design (Construction Drawings and Specifications)
- Tendering
- Parkland Development & Financing Agreement
- Park Construction and Assumption

TOWN RESPONSIBILITIES

- Consultation with the developer and their consultant team.
- Review and approval of Park Design Development and Detailed Park Design.

Detailed expectations for each of the above responsibilities will be determined in the early stages of the Town's planning and development review process based on project-specific requirements, objectives, and budgets. At this time, appropriate legal agreements and financial reimbursement, reporting, and accountability/transparency mechanisms shall be agreed upon prior to advancing the Developer Design-Build option (Option 2).

2.6 OPTION 3: NO PARK BLOCK

In some instances, the provision of parkland within a development is not desirable and the Town may choose cash-in-lieu of the required parkland dedication. This situation could result from a variety of factors, such as:

- Sufficient parkland is already available nearby to accommodate residents' needs;
- Town identifies a more appropriate or accessible location for parkland;
- Usable/functional land is not available on the development site for parkland purposes (not large enough, not of sufficient quality, not tableland, etc.);
- Taking parkland from a development site may render the development not economically feasible as a result of the reduction in dwelling units (smaller developments).

As a result, the Town may find it preferable to use the cash-in-lieu to expand or enhance existing parks directly serving the area.

PART 3 PARK DESIGN REQUIREMENTS

3.1 GENERAL

The following section identifies the key design standards, regulations, guidelines, and best practices that affect parkland development and sets minimum performance-based requirements for various park development works, recreational amenities, and supporting features.

This section is not intended to be comprehensive to all possibilities but defines criteria for elements that are common to most Wasaga Beach parkland, particularly at Neighborhood Park and Parkette levels.

Community Parks and Urban Plazas tend to be more complex and include public facilities (e.g., arenas, sports complexes, community centres, etc.), outdoor sports fields and courts for different competitive levels, as well as waterplays, skateboard parks, BMX courses, outdoor skating rinks, and other specialized public amenities. Such features will be reviewed on a project-by-project basis and design parameters supporting each facility will be guided through stakeholder consultation and preferences, contemporary best practices, and design guidance provided by specialists with specific expertise in the relevant works.

3.2 PARKLAND DESIGN STANDARDS

- Park development works, servicing and grading shall be designed and constructed in accordance with the requirements of the Wasaga Beach Engineering Standards (WBES), where applicable;
- All building and structures within parkland shall be designed and constructed in accordance with the Ontario Building Code (OBC);
- Design and implementation of all aspects of public parks shall be in full compliance with the

Accessibility for Ontarian with Disabilities Act (AODA) - Design of Public Spaces Standard;

- Design and implementation of children's playspaces, playgrounds, and water play areas shall be in full compliance with the Canadian Standards Association's (CSA) CAN/CSA-Z614-20: Children's Playground Equipment and Surfacing (or latest edition);
- Further to the above, children's playspaces shall comply specifically with Annex H of CAN/CSA-Z614-20) 'Children's Playgrounds and Equipment that are Accessible to Persons with Disabilities';
- Park design shall consider ISO 22341:2021 'Security and Resilience - Protective Security - Guidelines for Crime Prevention Through Environmental Design (CPTED).

3.3 PEDESTRIAN CIRCULATION & DESTINATIONS

Pedestrian routes within parks not only serve to provide walking and bicycle access, but also establish an overall spatial structure that unifies and connects various principal and secondary spaces. Beyond their functional role, they are also recreational amenities in of themselves, serving as stable running, walking, and biking surfaces for physical exercise.

The choice of surface materials, widths and grades for pedestrian routes must be well-considered in context of their anticipated use, recognizing that they are essential to providing necessary access to amenities and spaces for users of varying ages and abilities.

The following are some key considerations when planning parkland pedestrian systems:

1. Pedestrian routes should be designed as barrier-free 'Exterior Paths of Travel' in accordance with AODA, particularly walkways

- that connect surrounding neighbourhood sidewalks or parking lots to park amenities, spaces, or features.
2. It is acknowledged that not all walkways and trails within a larger park setting can be designed for accessibility as a result of grade constraints and sensitive environmental conditions, particularly in natural areas. These routes should be designed as 'Recreational Trails and Beach Access Routes' in accordance with AODA and signed appropriately.
 3. All park areas accessible to the public should be designed in consideration of creating safe and comfortable environments for all users. Designs should consider visibility and surveillance and be approached to eliminate or reduce factors that tend to lead to crime, or the fear of crime, within a built environment, in accordance with CPTED principles.
 4. Pedestrian routes should directly connect with open space trails and municipal sidewalk systems surrounding or adjacent to the park.
 5. Pedestrian gateways should be established at trail and sidewalk routes entering the park and at parking areas. Gateways should clearly demarcate pedestrian routes and should be enhanced with plantings, signage, and/or wayfinding features.
 6. Walkways and trails should connect key amenities, spaces and features within the park and provide barrier-free access.
 7. Walkways and trails should be laid out to provide spatial structure to open spaces by bordering edges. They can also be utilized to provide spatial separation between areas intended for different users or age groups (e.g., playspaces, etc.)
 8. For exercise and recreational purposes, walkways and trails in large parks (circumference greater than 400mm) should provide a walking/running/biking loop around the park's perimeter. Where practical, smaller loops should also be integrated at mid-points to offer a diversity of experiences and to accommodate users of various physical abilities. If constraints exist, portions of these looped systems may be substituted for sidewalks along street frontages, if required to complete the circuit.
 9. Walkways and trails should be sized in consideration of anticipated user type (pedestrian, bicycle, in-line skating, etc.), frequency and volume of users, and environmental context. In general, all pedestrian routes shall have the following minimum spatial standards:
 - a) Accessible pedestrian routes: 1.5m wide
 - b) Multi-use Recreational Trails: 3.0m wide (<500 user/day) and 4.0 to 4.5m (>500 user/day)
 - c) Vertical clearance height: 3.0m
 - d) Mow strip (either side of all trails): 1.0m
 10. The Town may decide that a park route is critical to year-round pedestrian connectivity and may decide to maintain such routes during winter months. All routes subject to winter maintenance shall be a 3.0m wide minimum and be either asphalt or concrete surfaced.
 11. Walkway and trail surfaces shall generally be concrete, asphalt, or compacted limestone screenings to ensure that a firm accessible surface is available throughout. The application of surface materials will be evaluated on a case-by-case basis, but will generally consider the following:
 - a) Concrete is recommended to highlight featured amenities/spaces (playground, central seating area, etc.), for areas of high-use and wear, and/or for urban parkettes.
 - b) Asphalt may be considered for high-use running/walking or biking trails, as they provide more energy-absorption for exercise (less joint impact) and tend to wear better than granular trails. Asphalt trails may also be utilized around playgrounds and other amenity areas in neighbourhood parks, where budgets are limited.

- c) Limestone screening surfaces are recommended in natural areas where accessibility is important, but the natural context is not conducive to concrete or asphalt.
12. Incorporate curb ramps and tactile walking surface indicators on a concrete base within the walkway surface at transitions between pedestrian and vehicular areas in accordance with AODA and/or the Ontario Building Code (OBC), if applicable.
 13. Pre-cast concrete unit pavers can be utilized selectively as a decorative surface to highlight feature areas or in urban parkette settings.
 14. Timber boardwalks, woodchip trails, or natural footpaths may be required to respond to certain environmental conditions and will be evaluated on a case-by-case basis.
 15. Seating and other public amenities (e.g., bench, etc.) shall provide users with a choice between social and quiet/ contemplative seating areas throughout the park and trail system.
 16. Rest areas along trail networks shall be provided at an interval of 300m.
 17. For public eating areas, provision should be made for accessible tables/picnic tables (on hard surfacing) with sufficient space for manoeuvring.
 18. Bike racks should be provided at each play space, activity hub, or destination facility. The quantity is to be determined by the Town on case-by-case basis (6 bike spaces minimum).

3.4 PARKING

On-site parking is typically provided for community parks, but on occasion, can be required for neighbourhood parks, depending on local conditions and amenities provided. Typically, neighbourhood parks are serviced by on-street parking from adjacent municipal road corridors.

Parking accommodations will be determined based on available park facilities and amenities. Drop-off areas, bus parking, and other such accommodations, may also be required on a park specific basis.

Accessible parking quantities, type, layout, and signage shall be provided to comply with AODA - Design of Public Spaces Standards.



3.5 CHILDREN'S PLAYSPACES

Designs prepared for playgrounds, playspaces, and waterplay areas should demonstrate a comprehensive understanding of how children play, as well as consider the physical needs of both children and caregivers. This will involve the development of engaging spaces and environments further to the selection of play equipment and furnishings.

In this regard, careful consideration should be given to the nature of children's play, which generally ranges between the following Types of Play:

ACTIVE PLAY

Moving, running, jumping, climbing, sliding, twirling, swinging, spinning, rolling around, balance

ARTISTIC PLAY

Drawing, crafting, painting, colouring, writing, singing, drumming, dancing

CREATIVE PLAY

Dress-up, pretend play, props, manipulating, building, molding, sifting, pouring, scooping, stacking, combining, altering

GAMES PLAY

Organizing, communicating, collaborating, and following rules

SENSORY PLAY

Touching different textures, smelling, hearing music and sounds, tasting edible plants and fruits, seeing different perspectives and angles, as well as shapes and colours

SOCIAL PLAY

Talking, sharing, cooperating, taking turns

REFLECTIVE PLAY

Watching, resting, reflecting, thinking, daydreaming

As the above types of play are generally consistent across all children (regardless of age or physical/cognitive ability), this approach enables a more inclusive approach to 'accessibility'. It focuses on the creation of shared play experiences/features, as opposed to accommodating differences and disabilities.

Specific minimum requirements are as follows:

1. Playspaces should be located within public parks to be:
 - a) clearly visible from adjacent streets, neighbouring uses, and neighbouring residents to provide passive surveillance.
 - b) along secondary pedestrian pathways, to ensure that primary pedestrian routes do not separate adult supervision areas from playspaces.
2. At a minimum, each playground should incorporate separated play spaces that offer a range and diversity of play types for the following groups:
 - 1 Tot Area: 0 - 5 years
 - 1 Youth Area: 5 - 12 years
 - 1 Swing Area: Adult swings, toddler swings, accessible swings, basket swings, etc.
3. Tot and Youth play structures/areas may be combined for smaller playgrounds, as approved by the Town.
4. Inclusive and/or accessible play features shall be integrated into the playground design and where practical, play equipment should include features that can be used by children with attending adults (e.g., double width slides, etc.)
5. Surface treatments that promote accessibility and inclusiveness for playground users and caregivers should be prioritized.

6. To minimize costs, playground safety surfacing should not be significantly oversized relative to the required fall protection zones for playground structures, unless design merits and approved by the Town.
7. Playgrounds with loose-filled safety surfacing shall be graded generally flat and be contained with a curb to reduce migration and mixing of safety surface material. The top of curb and adjacent finished grade should be 100mm to 150mm higher than the playground safety surface for containment.
8. All playgrounds shall provide a minimum of 1 accessible ramp to allow access into the play space. The ramps should extend to the bottom of the playground pit to ensure that access is maintained should loose safety surface material become displaced or migrate.
9. To prevent flooding of playgrounds, safety surfacing may require a drainage under-layer and be sub-drained to an appropriate surface outlet or storm sewer connection, where soils are conducive to compaction and water retention. Requirements for a sub-drainage system will be determined by the Town in consultation with the playground design consultant.
10. Where sub-drainage is required, the playground subgrade shall be sloped at a minimum of 1% and crowned to ensure that sub-surface drainage can access the sub-drain system. Sub-grades are to be maintained/repaired throughout construction, particularly following the sub-drain and footing installations.
11. Install wear mats under swings and slide exits, 100mm below the top of the safety surface and anchored in place as per manufacturer's specifications.
12. Playgrounds shall include safety signage indicating the appropriate age range for the use of the equipment and contact information for the Town regarding maintenance and security.
13. Further to playground structures/equipment, children's playspaces should also include the following:
 - a) Consideration of all-season play, highlighting seasonal changes and providing for winter activities.
 - b) Seating areas for adults and caregivers with appropriate amenities, furnishings, and environmental considerations (shade, wind-protection, etc.) to support supervisory and social activities.
 - c) Social areas, seating and activities for teenagers and youth to provide for social interaction, showing-off, people watching, etc.
 - d) Pedestrian-oriented or 'morality' lighting in unlit areas for added surveillance opportunities and to extend evening usage hours. At least one (1) light standard must be provided at playgrounds for security.
 - e) Small lawn spaces near adult supervision areas for toddlers and larger lawn areas for games and active recreational use by youth.
 - f) Landscaping, plantings, or structures for shade and to reduce sun and temperature exposure.
 - g) Natural features, materials, and planting incorporated to add to play opportunities.



14. 'Natural Playgrounds' may also be permitted should they be deemed appropriate by the Town based on design merit and acceptance of maintenance commitments. Further to the above playground requirements, natural playgrounds should also consider the following:

- a) Design of natural play spaces shall predominantly use natural materials, landscape features, landforms, and plantings to achieve the intended uses while adhering to the requirements of CAN/CSA-Z614-20 (or latest edition).
- b) Further to achieving a diversity of play types, the play experience should be focused on interaction with natural materials and the environment and opportunities to play with loose materials (manipulative/discovery play).
- c) Activities should be spread around the entire area, allowing for diversified play, running between activities, and reduced exclusionary play (avoid single centralized piece).
- d) Play equipment provided within natural playgrounds (slides, climbers, etc.) should be integrated with landforms to manage access and grade transitions (e.g., hill-slides, web climbers secured to rock features, etc.)
- e) Topographic changes in the landform of a natural playground are beneficial (e.g., berms, stone walls, natural amphitheatres, etc.)
- f) Incorporation of nature learning is beneficial (sundials, rain gauges, nature trails, etc.)
- g) Interpretive signage should be incorporated highlighting the local environment and natural systems, as well as the natural features within the play space (butterfly garden, use of natural material, etc.)
- h) Variations in pathway materials can add to ground-level tactile experiences.



3.6 FACILITY SIZES & BUFFERS

When park planning, it is important to consider the relationship of facilities/amenities to each other and to surrounding properties/uses. This is particularly relevant for outdoor sports fields and courts that are lit and/or have the potential for ball spray hazards (e.g., baseball, softball, golf, etc.), or require runouts (e.g., soccer, football, rugby, etc.)

The following provides a list of typical facility sizes and setback buffers to consider when demonstrating ‘Facility Fit’ for parks. Actual facility footprints, layout, and buffers will be determined through consultation with stakeholders (local sports organizations/users) and design specialists and shall be agreed upon by the Town prior to preparation of the Facility Fit Plan.

FACILITY	SIZE (APPROX.)	BUFFER TO OTHER FACILITIES
Artificial Turf Field	64m x 110m	15m on all sides
Senior Soccer Field	60m x 100m	10m on sides/12m on ends
Junior Soccer Field	36.6m x 55m	5m on sides/10m on ends
Football Field	65yds x 110yds	10m on sides/5m on ends
Senior Hardball Diamond	122m x 122m	15m on all sides
Senior Softball Diamond	80m x 80m	12m on all sides
Intermediate Softball Diamond	70m x 70m	9m on all sides
Multi-use Court	29.6m x 17.24m	N/A (possibly fenced)
Basketball Court	29.6m x 17.24m	N/A
Basketball Half-Court	14.8m x 8.62m	N/A
Tennis Court	18m x 36m	N/A (fenced)
Bocce Courts (set of 2)	13m x 37m	N/A (fenced)
Lawn Bowling Green	40m x 40m	N/A (fenced)
Playground (Neighbourhood)	500m ²	N/A
Playground (Community)	1,000m ²	N/A
Waterplay/Splash pad (Neighbourhood)	500m ²	N/A
Waterplay/Splash pad (Community)	1,000m ²	N/A
Skateboard Park (Community)	930m ² to 1115m ²	N/A
Skateboard Park (Neighbourhood)	185m ²	N/A
Bike Park	1.50 ha	N/A
Off-leash Dog Park	100m x 100m	15m+ buffer
Outdoor Ice Rink	0.08ha	N/A
Community Garden Plot	0.05 ha	N/A
Fieldhouse (storage/change/washrooms)	12m x 7.4m	N/A
Tennis Clubhouse	55m ²	N/A
Washroom Building (standalone)	45m ²	N/A
Storage Building (stand-alone)	55m ²	N/A

Where sports facilities are located adjacent to private properties or road corridors, an additional 10m buffer (minimum) shall be applied to the above buffers. Buffer requirements will be assessed on a project specific basis and will be confirmed or increased based on perceived conflicts, hazards, or sensitivity of neighbouring uses.

3.7 OUTDOOR SPORTS FIELDS & DIAMONDS

Natural turf outdoor sports fields support local recreational and competitive league sport organizations, such as soccer, baseball, softball, rugby, football, and ultimate frisbee. These activities are important to the health and development of the community's youth and the physical and social well-being of adults.

Depending on the level and competitiveness of play, outdoor sports fields range greatly in requirements for design, construction, supporting servicing and amenities, and associated capital and operational costs.

The 'Athletic Field Construction Manual' (latest edition) prepared by the Sports Turf Association sets the accepted standard for the categorization, specification, field evaluation, and layout/dimensioning of natural turf sports fields in Ontario. This manual establishes 5 categories of field construction ranging from national/international competitive use (Category 1) to fields intended for regular casual use by neighbourhood residents (Category 5).

Further to retaining a sports field specialist to guide the design and development of outdoor sports fields, all field sizing and layout, specifications, and details should be based on one of the five field categories, as determined by the Town and specified in accordance with the 'Athletic Field Construction Manual'.

Further to the above, specific minimum requirements are as follows:

NATURAL TURF FIELDS

1. For higher quality sports fields, the contractor may be responsible to retain a certified sports field soils specialist/agronomist to test and evaluate the native topsoil, make recommendations for blending/amendment to meet the desired specifications (Category 1 to 5), and to confirm compliance prior to laying the rootzone material.
2. If rootzone mixes are blended/amended on-site utilizing stockpiled native topsoil, then screening and blending must be completed with purpose-intended equipment designed for such applications, to create a consistent and even rootzone blend. Blending with 'buckets' from excavators or other such equipment will not be accepted.
3. If rootzone mixes are imported and blended off-site, the supplier's testing reports are required to confirm compliance with the relevant rootzone specifications outlined in the Athletic Field Construction Manual.
4. All rough and finish grading for sports fields shall be completed with a track type blade using an automatic laser-controlled dual slope or GPS guided system, operated by an experienced operator.
5. Sub-drain trenching for sports fields shall be completed using automatic laser-controlled or GPS guided equipment capable of maintaining a maximum variance of +/- 25mm in the grade line and operated by an experienced operator. Trenching machinery shall be capable conveying excavated materials for removal from site without spillage onto adjacent turf areas.
6. All other machinery used for sports field construction will be equipped with low compaction flotation tires and no equipment will be permitted on fields when saturated.



7. Sub-drains shall be wrapped in a knitted geotextile sock only where surrounding soil material contains greater than 50% silt plus very fine sand, as determined by laboratory analysis or as recommended by the soil agronomist.
8. Sod for sports fields shall be 1 Number One Kentucky Bluegrass Sod: grown from a minimum mixture of three (3) Kentucky Bluegrass cultivars recommended for sports turf areas. Sod cultivar content shall be approved by the Town prior to placement.
9. For sod intended for rootzone mixtures with a sandy loam/loamy sand composition, sod shall be grown in a soil with a sandy loam texture on the U.S.D.A. Soil Textural Triangle.

BASEBALL INFIELD

1. Infield mixes shall be purpose-intended granular products mixed specifically for baseball and softball uses. Examples include 'Standard Ball Park Mix' by Hutchinson Sand Mixes (lower-end) or a clay-based infield by Marco Clay (higher-end).
2. Stone dust or limestone screenings shall not be used for infields unless otherwise approved by the Town.

3.8 SPORTS FENCING & AMENITIES

1. Baseball and softball backstop, foul line, and outfield fencing, as well as all sport court fencing (tennis, pickle ball, multi-court, etc.) shall be in accordance with relevant Ontario Provincial Standard (OPS) specifications for chain-link fencing and designed appropriately for the given facility.
2. Backstop fencing and batter's cages shall be welded structures and should be designed and stamped by a structural engineer licenced in the province of Ontario. Contractors should also submit shop drawings for backstop fencing and batter's cage fabrications for approval by the design engineer and Town.

3. Mesh for baseball, softball, and sport courts shall be placed on the inside of the facility, towards the play environment.
4. Backstop fencing and batter's cages shall have 38mm mesh fabric to prevent climbing and be made from 6-gauge fabric to minimize the potential of high-impact deformation.
5. Sport court fencing, which tends to taller, should also use 38mm mesh fabric to prevent climbing but can be made from standard 9-gauge fabric.
6. All gates for sports facilities shall be welded and furnished with galvanized malleable iron hinges, latch and latch catch, with provision for a padlock. Access gates shall open outward away from the play environment, shall be self-closing, and shall have a self-latching device.
7. Sports furnishing, goal posts, and nets shall be selected to best suit the intended facility type, volume of use, and project budget with input and approval from Town staff. Furnishings may include player benches, bleachers, soccer goals/nets, football goosenecks, tennis net/posts, etc.

3.9 PLANTING & LANDSCAPE

Trees, shrubs, and groundcovers shall be planted in parkland to rehabilitate lost or disturbed forested areas, buffer or support existing natural landscapes, enhance community aesthetics, and to provide improved micro-climatic conditions for park users (e.g., shade, windbreaks, controlled snow drifting, etc.)

Specific minimum requirements are as follows:

1. Selected tree species should be urban tolerant, hardy, low maintenance, reasonably resistant to disease and pests, and suitable in size, form, and structure for their given environment.
2. The plant hardiness zone in the Town of Wasaga Beach is 6a. Native soils in Wasaga Beach are also typically sandy and species selected should consider these soil conditions.

3. A mixture of coniferous and deciduous trees should be planted with sufficient species diversity to minimize the potential for species specific mortality from pests, disease, or changing climatic conditions.
4. Emphasis should be given to native species to replace, support, and enhance local forest systems. Non-native non-invasive species will be acceptable in areas where urban conditions, salt-use, and other maintenance practices may create unfavourable conditions for the survivability of native species (e.g., adjacent to parking lots, etc.)
5. Horticultural shrub and perennial plantings requiring a medium to high level of maintenance are generally discouraged, as they do not add value in restoring the park's natural plant communities and require additional resources and budget to maintain. However, such decorative feature plantings would be deemed appropriate at park entrances, gateways, or public congregation areas and will be considered by the Town based on design merit.
6. All plantings in a park shall be located and sized in consideration of public safety, visibility, and surveillance, and should demonstrate consideration of CPTED principles.

PART 4 TECHNICAL DESIGN STANDARDS

The following section is intended to define minimum technical standards for parkland development. These standards establish a baseline of quality and expectations for the design, specification, detailing, and construction of park amenities and features.

As such, applicants and consultants involved in park development projects, whether advanced by the Town or the developer, shall ensure that they are familiar with the most current version of the technical standards and that all design submissions meet or exceed requirements.

Higher standards will be permitted at the request of the applicant on a case-by-case basis, following review and approval by the Town.

Technical standards in this Section shall be designed, specified, and constructed in accordance with the applicable Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Details (OPSD) – latest edition, unless otherwise noted.

4.1 TEMPORARY CONSTRUCTION FENCING

All parkland that is accessible to the public shall be protected and enclosed during construction utilizing temporary construction fencing. The project site, materials, and equipment shall be secured from public access and temporary fencing shall be maintained as an effective barrier throughout construction.

All playspaces and playground equipment installed prior to completion (or formal playspace certification) shall be secured with construction fencing in accordance with Section 8.3 of CAN/CSA-Z614-20 (or latest edition). Construction fencing shall be removed only after playgrounds are certified as compliant with CAN/CSA-Z614-20 by a third-party CSA reviewer and a Substantial Performance Certificate has been issued, unless otherwise directed by the Town.

Specific minimum requirements are as follows:

1. Construction fencing shall be a minimum of 1.2m high orange plastic fencing, secured with wire ties to heavy gauge T-bars spaced every 2.4m O.C.
2. 1.8m high modular metal construction fencing is recommended to enclose unopened and uncertified playgrounds, or other areas of high public risk, as required by the Town.
3. Construction fencing shall be erected prior to commencing any work and removed upon completion of the works, following approval by the Town.

4.2 SEDIMENT & EROSION CONTROL

Prior to clearing, grubbing, stripping or removal operations, erosion and sediment control measures shall be installed to control erosion and to protect waterways. Typical methods utilized are heavy duty-silt fence barriers, straw bale flow check dams, mud mats, erosion control blankets, etc. The location and type of measures utilized is site specific and shall be determined by the professional responsible for the park design (engineer, landscape architect, etc.)

Where required, siltation control measures shall be erected prior to commencing any work and shall not be removed until after restoration, groundcover, and landscaping are established, and following approval by the Town.

Specific minimum requirements are as follows:

1. Silt/sediment fence shall be in accordance with the Town of Wasaga Beach Engineering Standards. Light duty silt fence will not be accepted.
2. Mud and debris tracked onto any road, parking area, walkway, trail, or other surface, both on and off the site, shall be immediately cleaned up to the satisfaction of the Town.

4.3 TREE PRESERVATION & REMOVALS

All efforts should be made to preserve existing healthy trees and vegetation communities within park development blocks. No parkland trees shall be removed without the written permission of the Town.

Specific minimum requirements are as follows:

1. An Arborist Report and Tree Inventory/Preservation Plan may be required by the Town as a component of the pre-design studies to ensure that design work for the park is completed in consideration of tree preservation objectives and required construction restrictions.
2. Tree Inventory/Preservation Plans shall be prepared in accordance with the Town's Engineering Standards.
3. All arborist reports and inventories shall be prepared by a certified ISA Arborist.

4.4 TOPSOIL STRIPPING, SCREENING, & STOCKPILING

Prior to grading operations, native topsoil/organic material shall be stripped from all disturbed areas to full depth and screened and stockpiled where suitable for re-use.

Specific minimum requirements are as follows:

1. Strip topsoil when dry enough and in a manner to prevent contamination with subsoil material. Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
2. Native topsoil intended for re-use shall be stockpiled and tested in accordance with the Town's Engineering Standards to ensure that the fertility and composition are suitable for use in a public park. Test results shall be submitted to the Town for approval prior to the park development.
3. Native topsoil shall be amended to conform with the Engineering Standard's specifications for 'Topsoil', based on testing laboratory recommendations.
4. Topsoil for general parkland applications shall be screened through a 25mm (1") size screen and be reasonably free from debris, sub-soil, clay lumps, roots and stones over 25mm diameter, and coarse vegetative material occupying more than 2% of soil volume.
5. Where applicable, stockpile sufficient quantities of screened/amened topsoil to ensure enough is available to complete the specified topsoil and finished grading works to the required compacted depths. Once screened topsoil material has been approved for use, the stockpile must not be changed without further approval by the Town.

6. Dispose of surplus or unsuitable stripped topsoil and all topsoil waste/by product off-site in accordance with provincial regulations.

4.5 EARTHWORKS & ROUGH GRADING

All earthworks and rough grading for general park areas shall be in accordance with the Town's Engineering Standards and the recommendations of the geotechnical engineer, where applicable.

Specific minimum requirements are as follows:

1. Cut and fill native sub-grade and supply, haul, place, shape, and compact imported fill material as required to achieve compacted sub-grade elevations.
2. Provide suitable imported structural fill below all hard-surface areas, including pathways, paved recreation facilities, and parking areas within the park.
3. Imported fill material requires geotechnical confirmation/certification regarding the source of the material and the suitability of its intended use. If the material source is from any site other than a licensed source pit/quarry, then the geotechnical certification must also indicate that the material has been tested for contamination and has been confirmed to be "clean fill" suitable for publicly accessible sites.

All soils to meet O.Reg 406/19. Additional supporting and informative references in terms of imported fill can be reviewed at the following website: <https://www.ontario.ca/page/rules-soil-management-and-excess-soil-quality-standards>.

4. If imported fill is supplied from a licensed pit/quarry, it shall be Select Subgrade Material (SSM) as per Ontario Provincial Standards (OPS). Provide source and sample of imported SSM fill and obtain approval from the Town prior to delivery.
5. Limestone screenings shall not be accepted as imported fill in parkland, as it changes soil pH and alters availability of nutrients, which can negatively affect existing and new plant material.
6. Fill shall be placed in layers not exceeding 300 mm thick and shall be thoroughly compacted to 95% Standard Proctor Maximum Dry Density (SPMDD) minimum, and/or as approved by the geotechnical engineer. Engineered fill shall be placed and compacted under direct supervision and testing by a geotechnical engineer. Test results shall be submitted to the Town for record.
7. Slope rough grade away from existing features and grade slopes and berms to a maximum of 4:1 for ease of maintenance.
8. Areas intended for turf-grass (except purpose-designed athletic fields) shall have a minimum surface grade of 2.0% for drainage purposes.
9. Swales shall be graded at 2.0% along their length whenever possible, however, a minimum gradient of 1.0% will be accepted over short distances in native sandy soils where constraints exist or to avoid overly steep side slopes for swales.
10. Although not preferred, swales with gradients less than 1.0% will be considered in unavoidable circumstances, provided that a 150mm diameter pipe sub-drain is provided, as follows:
 - a) Sub-drains shall be perforated, corrugated plastic pipe with geotextile placed at 0.5 m offset from property line at a minimum.
 - b) Sub-drains shall be bedded in a 300 mm x 300 mm clear stone trench below the swale and shall conform to applicable OPS specifications.

- c) In such cases, the subdrain is to connect to a positive outlet (e.g., CB, etc.)
11. Tolerances: all earth grade surfaces shall on completion be shaped to the grades and cross sections specified within the following vertical tolerances of established grade over a 3m straightedge (not uniformly high or low):
 - a) General landscape areas, embankments, ditches, and swales: +/-25mm
 - b) Concrete, asphalt, and granular sub-surfaces: +/- 10mm
 - c) Playground subsurface: +/- 10mm
 - d) Sports Fields and play courts +/- 10mm
 12. Finished rough-grade surfaces to be free of debris or stones larger than 25mm diameter.
 13. Dispose of surplus/unsuitable fill or deleterious material off-site in accordance with provincial regulations.
 14. For standards and guidelines related to grading of outdoor sports fields, refer to Section 3.

4.6 ARMOURSTONE RETAINING & SEAT WALLS

Armourstone retaining walls are common in park settings to retain low grade transitions (0.5m - 1.5m on average) and offer a natural aesthetic. Armourstone is also considered a locally sourced and readily available natural material.

For this reason, armourstone is also often used as informal seating or edging in many park environments, either in free-standing single units or in rows. As armourstone has an uneven surface and does not offer back support, it should only be used for secondary seating in support of nearby primary seating, such as benches and picnic tables.

Armourstone retaining walls 1.0m high or greater shall be designed, stamped, and certified by a structural engineer licensed in the Province of Ontario.

Specific minimum requirements are as follows:

1. Armourstone retaining/seat walls shall be firmly set on a granular base so that units exhibit no tendency to rock or slide when lateral force is applied and shall be buried 100mm - 150mm below grade.
2. Non-woven geotextile shall provide a barrier between the stone and the backfill to prevent erosion of soil/granular backfill material through the stone seams.
3. Armourstone seat walls shall ideally be set approximately 400mm - 500mm high to provide a comfortable seating height for both adults and children.
4. Retaining walls shall be stepped appropriately to match grading requirements.
5. Armourstone blocks shall be:
 - a) square cut quarried limestone, split face, with uniform dark grey colour, exhibiting split faces or naturally weathered faces, with reasonable flat bottom, top and sides;
 - b) show no excessive drill or machine marks and shall be placed with best face outside, so the wall presents an integrated uniform appearance;
 - c) appropriately sized to suit project requirements.
6. Where seams are required to be tight (e.g., playspaces, outdoor classrooms, etc.) stones shall be cut to create tight seams. In these locations, crevices and openings between stones shall not exceed 25mm.

7. Granular base shall be 150mm Granular 'A' compacted to 98% SPMDD, unless otherwise recommended by a geo-technical engineer.
8. Geo-textile shall be Terrafix 270R or approved equal.
9. Where upland surface drainage or groundwater conditions warrant, sub-drainage may need to be incorporated behind the wall to alleviate groundwater build-up.

4.7 GRANULAR WALKWAYS & TRAILS

Typically, parkland trails and walkways will be 3.0m wide granular surface trails, constructed and signed in accordance with the Town's Engineering Standards. Alternative widths may be considered when spatial conditions are constrained or when supported by site specific project objectives, at the sole discretion of the Town.

Specific minimum requirements are as follows:

1. Granular walkways and trails shall be limestone screenings over a Granular 'A' base, placed on a non-woven geotextile layer as per the Town's Engineering Standards, unless otherwise recommended by a geo-technical engineer.
2. Provide curb ramps and tactile walking surface indicators on a concrete base within the granular surface, at transitions between pedestrian and vehicular areas, in accordance with AODA and/or the Ontario Building Code (OBC), if applicable.
3. Maximum grade for granular walkways and trails is 8% to reduce the potential of surface erosion.

4.8 CONCRETE WALKWAYS & TRAILS

Concrete surfaces are suitable for urban parks where concrete materials match the context and aesthetic of the space (e.g., urban plazas, parkettes, etc.) Furthermore, concrete surfacing should be utilized for high traffic areas in all parks, such as playgrounds, washrooms, and other amenities.

In consideration of those using assistive mobility devices (e.g., wheelchairs, walkers, etc.) or those pushing strollers, concrete jointing should be sawcut and all required tooling should be troweled flat to provide a smooth user experience. However, the edge of concrete walkways and slabs should have tooled edges to provide tactile relief detectable by canes or other similar assistive devices.

Specific minimum requirements are as follows:

1. Concrete walkways and trails shall be 150mm cast-in-place (CIP) concrete on a 150mm Granular 'A' base, unless otherwise recommended by a geo-technical engineer.
2. Concrete surfaces shall meet the following criteria:
 - a) 32 MPa compressive strength, C-2 exposure at 28 days with 7% +/- 1.5% air entrainment, measured at point of placement in accordance with CAN/CSA-A23.1.
 - b) Finish: light broom finish, perpendicular to the general direction of pedestrian travel.
 - c) Expansion Joints: full depth expansion board with joint edges tooled and then trowelled flat for a smooth accessible surface. Raised tooled joint edges will not be accepted. Expansion joints shall be placed to suit design parameters and where concrete abuts adjacent concrete surfaces, curbs, and building foundations.

- d) Control Joints: saw cut to 1/4 depth of slab and spaced to suit design parameters (between 1.5m and 3.0m O.C. based on slab proportions and to achieve relatively square panels). Saw cut joints shall be by wet diamond blade, commencing 8 to 24 hours after concrete placement, as soon as the concrete surface has hardened sufficiently to resist dislodging aggregate while cutting.
 - e) Slab Edges: outside edges of concrete walkway shall be tooled.
3. Where subsurface soils are poor or questionable, or where conditions merit, welded wire mesh (WWM) shall be incorporated into the slab design. Size of mesh and slab placement depth shall be determined by the design consultant based on specific design objectives and conditions.
 4. Granular base shall be Granular 'A' compacted to 98% SPMDD, unless otherwise recommended by a geo-technical engineer.
 5. Provide curb ramps and tactile walking surface indicators (TWSI) at transitions between pedestrian and vehicular areas in accordance with AODA and/or the Ontario Building Code (OBC), if applicable.
 6. Tolerances: all work shall be subject to the following vertical tolerances of established grade over a 3m straightedge (not uniformly high or low):
 - a) Granular base: $\pm 10\text{mm}$
 - b) Concrete surface (after texturing): $\pm 6\text{mm}$
 - c) Concrete thickness: $\pm 8\text{ mm}$

4.9 ASPHALT WALKWAYS & TRAILS

Asphalt surfaces may be considered for high use running/walking or biking trails, as they provide more energy-absorption for exercise (less joint impact). They may also be considered in other park applications where grades are too steep for granular surfaces (or where water crosses) or where hard surfacing is desired, but budgets are constrained.

Specific minimum requirements are as follows:

1. Asphalt walkways and trails shall be 50mm HL3 hot mix asphalt on 200mm Granular 'A' base, unless otherwise recommended by a geo-technical engineer.
2. Hot mix asphalt shall be continuously rolled to achieve a density not less than 97% Marshall Bulk Density.
3. Granular base shall be Granular 'A' compacted to 98% SPMDD, unless otherwise recommended by a geo-technical engineer.
4. Provide curb ramps and tactile walking surface indicators (TWSI) on a concrete base within the asphalt surface, at transitions between pedestrian and vehicular areas, in accordance with AODA and/or the Ontario Building Code (OBC), if applicable.
5. The finished surface shall be of uniform texture and shall be free of segregation, flat spots, oil spills or other defects.
6. Tolerances: all work shall be subject to the following vertical tolerances of established grade over a 3m straightedge (not uniformly high or low):
 - a) Granular base: $\pm 10\text{mm}$
 - b) Asphalt surface: $\pm 5\text{mm}$

4.10 CHAIN-LINK FENCING

Chain-link fencing shall be provided to separate privately owned lands from municipally owned lands/blocks as required in the Development Agreement. Such fencing shall be constructed wholly on municipal property.

Park frontages along streets and boundaries shared with schools, open spaces, or stormwater management facilities do not require fencing, unless required by the Town.

Specific minimum requirements are as follows:

1. Chain link fencing and gates shall be 1.5m black vinyl fencing with a top rail per OPSD 972.130 and shall include all required posts, concrete footings, bracing, rails, fence fabric, lockable gates, and all hardware, attachments, and accessories.
2. Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts and provide minimum clearance between bottom of fence and ground surface of 25mm.
3. Chain link fencing and gates shall meet the following requirements:
 - a) The mesh fabric shall have 50mm diamond-shaped openings made from 9-gauge wire before vinyl coating, unless otherwise indicated (e.g., sport facilities).
 - b) Terminal posts shall be a minimum of 89mm (3 1/2") OD pipe, line posts 60mm (2 3/8") OD pipe and rails 43mm (1 7/8") OD pipe.
 - c) All piping shall be Schedule 40, galvanized steel.
 - d) Mesh fabric to be installed on inside face towards park.
4. Concrete footings shall be as per OPSD 972.130.
5. Where ground conditions prevent the creation of smooth sided augured post holes, footings shall be poured into sono-tubes to full depth. Voids around the outside of the form shall be filled with compacted limestone screenings.
6. Private access gates are not permitted through Municipally owned fences, other than as stipulated in the Town's Corporate Gate Policy.

4.11 PLAY STRUCTURES

Play equipment elements, structures, and layout shall be reviewed and approved by the Town, based on recommendations provided by the design landscape architect and supplier, conveyed through functional plans, detailed budget estimates, and/or a play equipment program document.

Specific minimum requirements are as follows:

1. Play structures shall conform to the requirements of CAN/CSA-Z614-20: Children's Playground Equipment and Surfacing (or latest edition) and the Accessibility for Ontarian with Disabilities Act (AODA) - Design of Public Spaces Standard.
2. All prefabricated play structures shall be installed by the manufacturer (or their trained sub-contractors) in accordance with the manufacturer's specifications and layout plans.
3. Playground equipment may be installed on concrete pier footings or steel stringer footings.
4. Submit the following to confirm regulation compliance and for Town record:

- a) CSA compliant layout plans for the play structures prepared by the manufacturer/supplier, including all required dimensions, fall protection zones, and no-encroachment zones.
- b) Engineered fabrication drawings for each playground product, outlining the materials, colours, options for approval by the Town prior to fabrication.
- c) Product information, specifications, installation instructions and a detailed part list as required by CAN/CSA-Z614-20 - Clause 8.1.
- d) Manufacturer's certification of structural integrity of the equipment in accordance with CAN/CSA-Z614-20 - Clause 9.1.
- e) Maintenance data for care and cleaning of the equipment.
- f) Following installation, the manufacturer/installers shall submit a signed 'Certificate of CSA Compliance' formally confirming that the design, fabrication, and installation of all play structures are in full compliance with CSA. Compliance must be provided by a third-party CSA inspector.

4.12 CONCRETE PLAYGROUND CURB

Playgrounds with loose-filled safety surfacing shall be contained with a curb to reduce migration and mixing of safety surface material.

Specific minimum requirements are as follows:

1. Concrete play space curbs shall meet the minimum dimensional requirements of OPSD 600.110 - Concrete Barrier Curb, and shall be:
 - a) 30MPa compressive strength, C-2 exposure at 28 days with 7% +/- 1.5% air entrainment, measured at point of placement in accordance with CAN/CSA-A23.1.
 - b) Finish: Light broom finish, perpendicular to the longitudinal curb alignment.
 - c) Control Joints: Saw cut to 1/4 depth of curb thickness and spaced maximum 2.0m O.C. Saw cut control joints shall be by wet diamond blade, commencing 8 to 24 hours after concrete placement, as soon as the concrete surface has hardened sufficiently to resist dislodging aggregate while cutting.
2. Granular base shall be 150mm Granular 'A' compacted to 98% SPMDD, unless otherwise recommended by a geo-technical engineer.
3. The curb shall be depressed to accommodate a minimum of 1 accessible ramp permitting accessible entry into the playspace in an appropriate location.
4. Tolerances: all work shall be subject to the following vertical tolerances of established grade over a 3m straightedge (not uniformly high or low):
 - a) Granular base: $\pm 10\text{mm}$
 - b) Concrete curb height (after texturing): $\pm 6\text{mm}$

4.13 SUBDRAINAGE

To prevent flooding of playgrounds, a sub-drainage system may be required under loose-filled playground safety surfacing, where soils are conducive to compaction and/or water retention, as determined by the Town. Sub-drains will drain positively to an appropriate surface outlet or storm sewer connection. Omission of the sub-drain system may be considered by the Town Engineer if supported by a report from a qualified soils consultant, in areas of native sandy material only.

Specific minimum requirements are as follows:

1. A perimeter sub-drain shall surround the playspace. The edge of the sub-drain trench shall be offset from the inside face of the playground curb by 200mm. Depending on soil conditions, linear lateral subdrains may also be required and spaced every 3.0m to 5.0m.
2. Sub-drain pipe shall conform to the following requirements:
 - a) 100mm to 150mm dia. perforated, corrugated, HDPE sub-drainage pipe (Big 'O') and fittings wrapped in a knitted sock geotextile.
 - b) 150mm to 200mm dia. non-perforated (solid) HDPE outlet drainage pipe (Big 'O') and fittings.
 - c) Appropriate fittings and rodent grates to attach to perforated polyethylene drainage pipe as per manufacturer's specifications.
 - d) Nominal pipe sizes as required by design.
 - e) Bedding, embedment and backfill material shall be 19mm diameter clear stone Type I or Type II.
 - f) Non-woven geotextile shall be TerraFix 270R or approved equal.
3. Pipes shall be appropriately sized to suit conditions.
4. Sub-drains shall be bedded in a 300mm deep (min.) x 400mm wide trench wrapped in geotextile with a 300mm fabric overlap.
5. Lay pipe on 50mm bedding material at a minimum slope of 0.5%, with maximum variation from true slope of 3mm over 3m, prior to embedment.
6. If outletting to storm sewer infrastructure, make watertight connections to existing drains or new/existing manholes and catch basins, in accordance with Town standards.
7. Provide rodent grates at sub-drain outlets where daylighting to surface ditches, swales, or ponds.
8. For standards and guidelines related to sub-drainage for outdoor sports fields, refer to Section 3.

4.14 PLAYGROUND SAFETY SURFACE

Playground safety surface shall be engineered wood fiber with a minimum 300mm settled depth, meeting the requirements of CAN/CSA-Z614-20 (or latest edition). Minimum depths should be increased to conform to the fall protection requirements of adjacent play equipment/ structures and to accommodate variations in sloped sub-grade conditions.

Playgrounds with loose-filled safety surfacing shall be graded generally flat and be contained with a curb to reduce migration and mixing of safety surface material. The top of curb and adjacent finished grade should be 100mm to 150mm higher than the playground safety surface for containment.

Specific minimum requirements are as follows:

1. Playground safety surface shall be proprietary engineered wood fiber chips, purpose-intended for use in playgrounds.
2. Loose-filled safety surfacing shall be placed over a continuous non-woven geotextile with 450mm fabric overlap.
3. Where drainage is a concern in poor soils, the Town may require that engineered wood chips be placed over a 75mm thick min. $\frac{3}{4}$ " clear stone drainage layer wrapped in a non-woven geotextile. A proprietary drainage system is also acceptable upon approval by the Town.

4. Geotextile shall be Terrafix 270R or approved equal.

In some cases, poured-in-place EPDM rubber safety surfacing may be required for Community Parks in consideration of enhanced accessibility objectives or where prevalence of drug-use may be of concern (better visibility of hazards such as needles, glass, etc.), based on design merit and where budget permits.

Where required by the Town, EPDM rubber shall be sub-drained and supplied and installed in accordance with manufacturer's specifications.

4.15 SHADE STRUCTURES

Shade is an important component of user comfort, as it provides protection from harmful UV exposure and results in micro-climatic cooling. Where mature trees are not available, it is sometimes necessary to erect structures to provide shade to support amenities. The establishment of these structures also has design benefits, as they provide a visual focus to key park areas through their architectural presence and the introduction of colour and form.

Examples of shade structures include prefabricated picnic pavilions, gazebos, trellises, shade sails, etc. These features are often incorporated into primary seating areas, as well as around children's play areas and adult supervision/social spaces.

Specific minimum requirements are as follows:

1. Prefabricated shade structures/sails and associated structural pier footings or concrete slabs shall be designed and installed, in accordance with the manufacturer's specifications and layout plans.
2. If utilizing concrete pier footings, a concrete paved surface shall be provided under the shade structure.
3. Designs shall include provisions to accommodate electrical conduit, wiring, power outlets, and light fixture attachments associated with the shade structure to meet the Town's project specific lighting and event needs.
4. If a slab footing is utilized, electrical conduit for the structure's power supply shall penetrate the concrete slab to be tight to the base of the nearest post for adequate concealment.
5. Submit the following to confirm design compliance and for Town record:
 6. Engineered shop drawings for the shade structure and the structural concrete slab/pier footing, stamped by a structural engineer licenced in the province of Ontario.
 7. Inspection and formal certification of the shade structure installation and structural concrete slab/pier footing installation by the manufacturer's/contractor's structural engineer.
 8. All manufacturer's product information, specifications, installation instructions and maintenance data for care and cleaning of all shade structure components.
 9. The contractor shall be responsible for securing necessary building permits for the shade structure, if required.

4.16 SITE FURNISHINGS

Town standard site furnishings shall be provided for all parks (e.g., benches, bike racks, waste receptacles, picnic tables, etc.) Should the park's context or design approach require unique or customized furnishings to support the desired aesthetic, alternatives may be considered by the Town based on design merit, on a project specific basis.

Similarly, where Town standards do not currently exist, selection of appropriate furnishings will be conducted in coordination with Town staff in consideration of context, costs, and maintenance requirements.

Specific minimum requirements are as follows:

1. Install site furnishing products true, plumb, and firmly anchored as per manufacturer's specifications.
2. Site furniture shall be mounted to concrete paved surfaces/pads or be secured to concrete footings.
3. All fasteners and anchors used to secure furnishings shall be stainless steel, unless alternatives are approved by the Town.
4. Submit the following to confirm design compliance and for Town record:
 - a) Engineered fabrication drawings for each site furniture product, outlining the materials, colours, and options for approval by the Town, prior to fabrication.
 - b) All manufacturer's product information, specifications, installation instructions and maintenance data for care and cleaning of all site furnishing components.
5. For parkland, the following site furnishings shall be supplied by Classic Displays:

Bench

- Model No.: Heritage Bench
- Metal Finish: Hot dipped galvanized
- Footing/Attachment: Secured to concrete pad with stainless steel tap-con fasteners

Bicycle Ring

- Model No.: H35 Bike Rack or H40 Bike Rack
- Metal Finish: Hot dipped galvanized
- Footing/Attachment: Surface-mounted to concrete pad with stainless steel tap-con fasteners

5/10-Bicycle Rack

- Model No.: Coil Bike Rack
- Metal Finish: Hot dipped galvanized
- Footing/Attachment: Free-standing or surface-mounted to concrete pad with stainless steel tap-con fasteners, as required by Town

6. Specifications for supply of waste receptacles and picnic tables to be confirmed in consultation with Town staff.
7. For standards and guidelines related to sports furnishings for outdoor sports fields and courts, refer to Section 3.

4.17 TOPSOIL & FINISH GRADING

Parkland shall typically receive a minimum of 200mm of topsoil, unless deeper topsoil profiles are required by the Town for special features (pond embankments, naturalized areas, etc.)

Specific minimum requirements are as follows:

1. Imported topsoil for parkland shall be in accordance with the Town's Engineering Standards.
2. Imported topsoil shall be tested in accordance with the Town's Engineering Standards to ensure that the fertility and composition are suitable for use in a public park. Test results shall be submitted to the Town for approval prior to placement. Once topsoil material has been approved for use, the source or stockpile must not be changed without further approval by the Town.
3. Amend native topsoil with soil additives (compost, sand, bonemeal, peat, etc.) or a slow-release fertilizer treatment, where required by soil tests and agronomic analysis as per Item 4.4 of these standards.
4. Schedule placement of topsoil mixture and finish grading to permit sod and seeding operations under optimum growing conditions.
5. Tolerances: all topsoil finish grade surfaces shall be shaped to the grades and cross sections specified within the following vertical tolerances of established grade over a 3m straightedge (not uniformly high or low):
 - a) General landscape areas, embankments, ditches and swales: +/-25mm
 - b) Sports fields and courts: on a project specific basis
6. For standards and guidelines related to topsoil/rootzone for outdoor sports fields, refer to Section 3.

4.18 SODDING

All high-use areas of parks shall be sodded. Select areas may also be considered for seeding (hydro-seeding and/or terra-seeding) at the sole discretion of the Town.

Specific minimum requirements for sod are as follows:

1. Sod for general parkland shall be in accordance with the Town's Engineering Standards.
2. Provide source of sod for approval by the Town. Once sod source has been approved, it must not be changed without further approval by the Town.
3. All sodding shall occur within 7 days of topsoil placement and finished grading. The developer will be responsible for weed eradication if they fail to place the specified sod within this period.
4. Ensure finished sod surface is flush with adjoining grass areas, pavement or top surface of curbs and provide close contact between the sod and the underlying root zone mix by rolling with a light roller.
5. Water sod immediately after laying to obtain moisture penetration into top 100mm of topsoil.
6. On slopes, lay sod sections longitudinally along contours and start laying sod at the bottom of the slope.
7. Peg sod on slopes steeper than 3:1 with wooden pegs (17 x 8 x 200mm) or approved proprietary system. Pegs shall be staked 100mm below top edge of the first sod sections at 200mm O.C. and not less than 4 pegs per square meter with pegs driven to 50mm above surface. Remove sod pegs after sod has established.

8. Maintenance requirements during contract establishment and warranty periods, warranty duration, and sod acceptance criteria will be determined by the Town and developer prior to tendering.
9. For standards and guidelines related to sodding of outdoor sports fields, refer to Section 3.

4.19 SEEDING

Naturalized areas, no-mows, and environmental rehabilitation areas shall be seeded with native seed mixtures, as directed by the Town.

Specific minimum requirements are as follows:

1. Terra-seed and mulch all naturalization areas with an approved meadow mix.
2. Hydro-seed and hydro-mulch turf grass seeded areas (or naturalization areas) when approved by the Town for project specific reasons.
3. All seeding and mulching shall occur within 7 days of topsoil placement and finished grading. The developer shall be responsible for weed eradication if they fail to place the specified seed and mulch within this period.
4. For each seed mix application, the permanent seed mix, annual nurse crop, mulch type and associated application rates should be identified. This includes the seed supplier's product name and code (if a proprietary mix) and the type and percentages of seed types in each mix.
5. Turf seeding shall be performed between April 30 and November 1 and naturalization meadow mix seeding shall be performed between April 30 and November 30.
6. Seed shall be delivered in containers with the appropriate 'certified seed' tag attached in accordance with the regulations of the Canada Seeds Act.
7. Ensure that the soil is moist to a depth of 150mm prior to seeding.
8. Maintenance requirements during contract establishment and warranty periods, warranty duration, and seed acceptance criteria will be determined by the Town and developer prior to tendering.

4.20 TREES, SHRUBS, & GROUNDCOVERS

Trees, shrubs, and groundcovers shall be planted in parkland to rehabilitate lost or disturbed forested areas, buffer or support existing natural landscapes, enhance community aesthetics, and to provide improved micro-climatic conditions for park users (e.g., shade, windbreaks, controlled snow drifting, etc.)

Specific minimum requirement are as follows:

1. General Plant Material shall be in accordance with the Canadian Landscape Standard (latest edition), published by the Canadian Nursery Landscape Association (CNLA) and the Canadian Society of Landscape Architects (CSLA), except where specified otherwise.
2. Trees: All trees shall be supplied balled and burlapped or in wire baskets (no potted material will be accepted) and shall meet following minimum criteria:
 - a) Deciduous trees shall be a minimum of 60mm caliper with their lower branches limbed up above 1.8m from the ground-plane;
 - b) Ornamental and multi-stem trees shall be a minimum of 40mm - 50mm calliper dbh;

- c) Coniferous trees shall be supplied at a minimum height of 1.5m;
- 3. Trees shall possess a dominant central leader that is either un-pruned or has been re-trained at the nursery using appropriate horticultural practices. Trees with cut or co-dominant leaders will not be accepted.

4. Shrubs/Perennials/Groundcovers: are to be supplied potted and shall meet the following minimum criteria:
 - a) Deciduous and coniferous shrubs shall be supplied in 3 gal. pots, minimum;
 - b) Perennials, ornamental grasses, and groundcovers shall be supplied in 1 gal. pots, minimum;
 - c) Shrubs, perennials, and groundcovers chosen for areas where visibility and surveillance are key objectives should be no higher than 1.0m (at maturity).
5. Planting Soil Mixture shall be 50% screened topsoil, 20% coarse sand, and 30% compost, as specified. Provide source and sample of soil mixture for approval by Town prior to commencing work.
6. Mulch to be shredded cedar bark, free of dyes and chemicals, or approved equal.
7. Tree Stakes to be 40mm x 40mm x 5mm x 1800mm long heavy-duty gauge T-bars.
8. Ties to be 50mm wide burlap strips looped in a loose figure 8 or another woven biodegradable tie system that remains flexible during winter months.
9. Trunk Protection to be 100mm dia. HDPE pipe, 500mm long or to lowest branch, except in naturalization areas where it is to be white spiral plastic tree guard.
10. Remove stakes and ties 1 year after planting and remove trunk protection at the completion of the contract warranty period.
11. For tree and shrub groupings, provide a continuous mulched understorey that is 75mm deep and continuous across the entire planted area.
12. Trees shall only be planted once finished grade has been established.
13. Plants installed during the period between May 15th to October 15th for which a Certificate of Substantial Performance has been issued, shall be warranted for twenty-four (24) months from date of Substantial Performance, providing adequate maintenance has been provided.
14. Plants installed after October 15th for which a Certificate of Substantial Performance has been issued, shall be Warranted for twenty-four (24) months from May 15th of the following year, providing adequate maintenance has been provided.
15. Plant material must be replaced during the warranty period, as required by the Town. Replacement of plants only at the end of the warranty period will not be acceptable.
16. The Town will accept trees only after it is verified that all plants and materials meet the following criteria:
 - a) completely free of disease and/or insect infestation;
 - b) are in a healthy and vigorous growing condition;
 - c) corrective pruning has been completed;
 - d) tree stakes are removed;
 - e) all accessories are in good condition as specified;
 - f) planting areas and tree saucers are freshly cultivated and free of weeds and debris.

PART 5 PARK DRAWING REQUIREMENTS

The following section is intended to serve as a supplemental to the Town of Wasaga Beach Engineering Standards. As such, applicants and consultants involved in park development projects shall ensure that they adhere to the submission, drawing, and approvals process outlined through the Engineering Standards.

5.1 PARK DESIGN DRAWINGS

Park drawings shall be in AutoCAD format and shall consist of the following:

- Cover Sheet
- Existing Conditions, Site Protection, & Removals Plan
- Tree Inventory/Preservation Plan
- Layout Plans
- Grading Plans
- Planting Plans
- Detail Sheets including standard and special details with material and construction specifications
- Electrical & Lighting Plan
- Irrigation Plan
- Other Plans as required

All drawings must be in AutoCAD format acceptable to the Town and shall be stamped, signed, and dated by a Professional Landscape Architect or Engineer, where applicable (e.g., supporting civil, structural, electrical, and/or mechanical engineering works). The digital submission of design drawings shall be in pdf file format.

The following standards shall be adhered to in preparation of these drawings.

1. Drawings shall be metric size A1 (594 mm x 841 mm)

2. Scales for drawings shall be as follows:

General Overall Plan Drawings	1:250 or 1:300
Plan Enlargement Areas	1:100 or 1:150
Elevation Drawings	1:25 or 1:50
Details	1:10, 1:20, or 1:25

Scales shall be shown on all drawings

3. The drawings shall show clearly:

- a) all street names in larger font and bold;
- b) all lot lines and numbers per registered plan of subdivision;
- c) north arrows pointing towards the top or right of page;

- d) Geodetic or temporary benchmark locations (brass tablets)
 - e) Town's name in lower right corner;
 - f) up-to-date revisions block;
 - g) ditch/swale and berm details, profiles and cross-sections;
 - h) grading, complete with underside of footing, basement floor, top of foundation wall, first floor elevations and site corner elevations existing and proposed, recommended seasonal high ground water table (where park building are proposed/present and applicable);
 - i) snow storage areas to demonstrate that there are no conflicts with proposed plantings;
 - j) all existing and proposed light standards and servicing and utility infrastructure (above and below ground);
 - k) all limits of construction and phasing;
 - l) all easements and appropriate labels;
 - m) any special design information not covered by standard drawings;
 - n) key plan on each drawing;
 - o) supporting engineering drawings for civil, structural, electrical, or mechanical prepared in accordance with the Town's Engineering Standards;
 - p) any other requirement of the Engineering Standards not listed but relevant.
4. The Developer's Landscape Architect shall add their professional seal, signed and dated, to all submitted drawings.
 5. All drawings shall include a blank/empty box location within the title block for the Town to stamp "Accepted for Construction", near the stamp of the signing landscape architect or engineer, where applicable. On the cover sheet/index, staff will affix the stamp at the bottom right-hand corner such that the stamp may be visible when drawings are folded or rolled.
 6. The Town Engineer shall be consulted as to the manner of showing information not set out in the above requirements.