



THE TOWN OF OKOTOKS
Engineering Services

GENERAL DESIGN

&

CONSTRUCTION
SPECIFICATIONS

~~**2013**~~

2021 - Updated Road Cross-sections

Prior to commencement of any work, all approvals must be in place. This includes but is not limited to: Development Permits; Development Agreement; Servicing and Construction Agreement; Engineering Approval and Safety Code requirements. Furthermore, the contractor is also responsible for giving notification within the timeframe outlined by each agency.

Services

Engineering	403-938-8053
Planning	403-995-2760
Operations.....	403-938-4372
EPCOR/Utilities.....	403-938-1230
Safety Codes Officer	403-995-2758
Open Spaces	403-938-8958
Engineering / Subdivision Inspection.....	403-938-8910
Municipal Enforcement.....	403-938-8913
Municipal Engineer.....	403-938-8930
Business Licensing.....	403-938-8916
Economic Development	403-938-8907

Field Location Service Calls

Alberta One Call	1-800-242-3447
ATCO Gas.....	403-938-4206
Town of Okotoks Operations.....	403-938-4372
EPCOR.....	403-938-1230
Shaw Cable.....	403-716-6060
Fortis Alberta.....	310-9473

Emergency Services

If you accidentally damage the coating, scrape, sever, or rupture any underground or above ground utilities, please report the incident immediately.

Emergency Calls

Alberta First Call.....	1-800-242-3447
Public Works after hours	403-938-2985
EPCOR.....	403-938-1230 Ext 2
TELUS.....	611
ATCO Gas.....	1-800-511-3447
RCMP (911 – Emergency Calls Only).....	403-938-7046

Scope

These specifications form part of a contract document for construction and development within the Town of Okotoks. The primary focus of these specifications is to ensure that standard sets of overall performance objectives are realized for design and construction within the Town. All work performed within the Town of Okotoks, shall be carried out in accordance with the latest issue of the General Design and Construction Specifications. The Town reserves the right to vary the standards to meet any site issue that may arise in order to sustain the Town's development standards and protect public interest. As a result, specific site specifications may be applied where the Municipal Engineer deems it to be necessary. All deviations from these specifications and accepted construction drawings shall have the written approval of the Municipal Engineer. In these specifications, the term Municipal Engineer shall mean the Town of Okotoks Engineer or his authorized representative. All development and construction issues not addressed within these specifications shall fall under the scope of the current adopted City of Calgary Standard Specifications unless otherwise specified.

Good Engineering Standards

The Municipal Engineer may modify the General Design and Construction Specifications from time to time; or at any time by written notice to the developer if, in the reasonably held view of the Municipal Engineer, the General Design and Construction Standards no longer remain consistent with good engineering practice. The developer, in accordance with the Okotoks Servicing and Construction Agreement or Development Agreement, may arbitrate any such decision by the Municipal Engineer.

Notwithstanding anything contained in this document, all designs shall meet the statutory requirements of the environmental protection policies adopted by the Municipal Council of the Town of Okotoks.

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1 LOCAL IMPROVEMENTS

In the Town of Okotoks, complete Local Improvements within the area covered by the Servicing and Construction Agreement or the Development Agreement shall be installed where applicable by the Developer at the Developer's cost. "Local Improvements" shall mean and include:

1. Water mains, including all fittings, valves, hydrants, and required appurtenances;
2. Sanitary sewer mains, including all manholes and required appurtenances;
3. Storm sewer mains, including all manholes, catch basins, catch basin leads and required appurtenances;
4. Service connections from the storm sewer, sanitary sewer and water mains to the required location for the property;
5. Streets with a stabilized base course and asphalt concrete surface course;
6. Concrete curbs, gutters, and aprons;
7. Concrete sidewalks and walkways of construction materials accepted by the Town;
8. Graveled and/or paved lanes;
9. Street lighting, underground and overhead power, telephone, gas and cable TV services;
10. Landscaping of boulevards and medians between curbs and separate sidewalks and other public lands;
11. Park, pathway, and walkway development on dedicated lands in accordance with Plans accepted by the Town;
12. Traffic signs and street signs;
13. Traffic control signals and controlled pedestrian crossings where required;
14. Overland drainage control facilities, storm water ponds and related structures;
15. Other improvements that are described in the Servicing and Construction Agreement or the Development Agreement.

2 STANDARDS AND REQUIREMENTS

2.1 Design and Construction

The current adopted City of Calgary *Design Guidelines and Construction Specifications* shall be followed unless otherwise accepted or required by the Municipal Engineer. Some exceptions to the City of Calgary specifications are outlined within this document. The Municipal Engineer reserves the right to not accept any City of Calgary specification at his/her sole discretion. These standards and specifications are intended to be the minimum standards. Where conditions dictate and good engineering practice requires, higher standards than those indicated shall be incorporated into the design. It shall be the Developer's responsibility to develop the subdivision or property in accordance with standards, which conform to good engineering and construction practices, and as accepted by the Town of Okotoks.

Subdivisions shall be designed:

1. In accordance with an approved Tentative Plan for the subdivision showing an overall proposal for development of un-subdivided lands; and/or
2. To be integrated with the Town's present system; and
3. To be referenced to the North American Datum (NAD83); and
4. To suit the use for which it is intended; and
5. To accommodate any possible future subdivision of adjacent lands; and
6. Lot areas shall be in conformity with the Town of Okotoks Land Use Bylaw No. 40-98 as amended.

All design work must be in accordance with the Town of Okotoks *Municipal Development Plan* (MDP) (where appropriate). The Town encourages and will show flexibility to accommodate alternative standards to promote conservation, sustainable best practice, and unique and innovative neighborhood design when done in the context of the MDP.

2.2 Line Assignments

Due to the wide variety of conventional and alternate road standards, the Town of Okotoks has not developed a line assignment diagram. In general, the City of Calgary Design Guidelines can be used as a guide. However there are some specific differences to consider. When designing the line assignments for a development the following shall be taken into consideration for deep utilities:

1. Sanitary Sewer mains shall be aligned at the crown (centre) of the roadway where possible. In the event of an inverted crown, cross fall, or lane, the sanitary sewer shall not be located near the lowest elevation in the cross section to minimize infiltration.
2. In the case of alternate road standards, the conceptual line assignments and road design cross sections shall be submitted to the Town for approval at the Outline Plan stage, prior to starting the detailed design. In general, it is recommended that the line assignments be submitted to the Town for approval at the start of a tentative subdivision application prior to detailed design.
3. Unless otherwise accepted by the Municipal Engineer, right of way sizes for municipal utilities shall be a minimum of 9m for a single non sleeved main. If the utility is to be sleeved, the right of way may be 6m in width. For each additional utility in either a sleeved or non sleeved right of way, add 2.5m to its width. For example, a right of way containing non sleeved water and sanitary mains would have to be 9m plus 2.5m for a total width of 11.5m. Utilities that are excessively deep may require wider right of ways.

2.3 Engineering Drawings

All engineering drawings shall be prepared under the supervision of and sealed by a Professional Engineer registered in the Province of Alberta. Detailed Engineering Drawings shall be submitted to the Town of Okotoks for review and approval for all developments. New subdivision developments require a complete set of construction drawings that include cover sheets for all relevant local improvements and appropriate block profiles. All site developments (private commercial, industrial, and multi-unit residential sites) shall submit a development site servicing plan (mechanical site plan) and any other drawings/plans as needed or requested by the Municipal Engineer (depending on the complexity of the development). Each set of drawings shall include (unless otherwise accepted):

1. Existing structures and neighboring subdivisions bordering the proposed subdivision.

2. Contours of the original ground at 0.5m intervals or an appropriate contour interval.
3. Contours of the ground water elevations at 1.0m intervals.
4. The legal description of the portion of land intended for subdivision or development and the name of the Registered Owner.
5. Design elevations for parking lots, top of curbs, top of retaining walls, landscaped areas, property line grades, existing grades of adjacent properties, etc.
6. The general layout of all services including but not limited to water mains, sanitary sewer, storm sewer, service connections, streets, **signage, and line painting**.
7. The general design of the storm water management systems and report if necessary.
8. Line assignments for Gas, Power, Telephone, Cable TV and any other utility installations.
9. Refer to the City of Calgary's *Design Guidelines for Subdivisions* and *Design Guidelines for Development Permits; Development Site Servicing Plans; Waste & Recycling Services for Commercial/Industrial Applications* for more detailed requirements for engineering drawings.
10. The Development Permit number or the Subdivision File number.
11. Any other information as required by the Municipal Engineer.

2.3.1 Engineering Drawings Submissions

Submissions include but are not limited to:

- **Preliminary Construction Drawings:** Overall Servicing Plans which shall be submitted for preliminary approval at a scale of 1:500 unless authorized otherwise by the Municipal Engineer, showing work to be constructed, the area considered, and an insert site location plan at a scale not less than 1:2500. The Engineering consultant shall submit one (1) paper and digital copies (see section 2.4 for digital submission requirements) of the preliminary construction drawings.
- **Shallow Utility Drawings:** Two (2) sets of drawings are required for each shallow utility submission.

- **Final Construction Drawings:** Upon receiving comments and/or acceptance of the Preliminary Construction Drawings from the Town of Okotoks, the Engineering consultant shall submit one (1) paper copies of the final revised construction drawings, digital copies (see section 2.4 for digital submission requirements) of this plan, and one (1) set of 11X17” drawings.
- **Plan Profile Drawings:** Submitted at a scale of 1:500 horizontally and 1:50 vertically for water mains, sanitary sewer, storm sewers, services, roads and lighting. The geometric layout and dimensions of all above noted utilities including lanes, walkways and lots shall be shown clearly on the plan portion of the drawing. The profile section shall show the existing ground profile along centerline and the proposed design street grades, and proposed sanitary sewer, storm sewer, and water main grade. These plans normally accompany the Preliminary and Final Construction Drawings.
- **Development Site Servicing Plan (Mechanical Site Plan):** Overall Servicing Plan that shall be submitted for review/acceptance at a scale of 1:500 unless otherwise authorized by the Municipal Engineer, showing a detailed design of the servicing and storm water management if required for a Development Permit. The Engineering consultant shall submit one (1) paper copies and digital copies of this plan.
- **As-Built Drawings (Drawings of Record):** Prior to, or in conjunction with, any Final Acceptance Certificate (FAC) applications, the consulting Engineer shall deliver two (2) complete paper sets of “as-built” plans to the Municipal Engineer. Cover sheets and profiles in digital format are also to be submitted (see section 2.4 for digital submission requirements). Some FACs may be processed in advance of the as-built submission where deemed appropriate by the Municipal Engineer and additional FACs are still required that impact the as-built plans. As-built submissions for Development Permits not requiring a CCC or FAC are required in conjunction with or prior to Development Completion Certificate (DCC) submission.

2.3.2 As-Built Information Required

1. Revisions to surface gradients and vertical points of intersection. Note that as-built elevation at vertical point of intersection on vertical curve to be existing pavement elevation plus or minus “M” distance to theoretical vertical point of intersection. The “design” lengths and elevations should be struck out and the “As-built” information superimposed.
2. Revisions to type of sidewalk or curb and gutter installed, as accepted by the Municipal Engineer.

3. Revisions to pavement cross section, including location of filter fabric as accepted by the Municipal Engineer.
4. Revisions to lengths, grades, invert elevations, alignments, and locations of vertical points of intersection for sanitary, storm, and water mains.
5. All hydrants, valves, fittings, manholes, catch basins, and other appurtenances shall be noted and dimensioned in two directions from property lines. Also note rim and invert elevations of all manholes.
6. As-built invert of water, sanitary, and storm service stubs at property/easement line (provided on services cards).
7. Location of water, sanitary, and storm services, and curb stops dimensioned in two directions from property lines.
8. Revisions to storm water storage (Trap Low) location(s), volume(s), and spill elevations
9. The month and year of completion of construction shall be shown on each plan for both underground utilities and surface improvements.
10. As-Built drawings are to be clearly identified as being "As-Built" in large, bold letters.
11. "Inventory of New Improvements" showing completed lengths and quantities if changed since Construction Completion Certificate (CCC) application. (See Appendix)
12. Building grading plan.

2.4 Digital Submission

The Town of Okotoks requires all plans and drawings to be submitted in both PDF and AutoCAD. For the AutoCAD submissions, refer to Alberta Registries *Policy and Procedures Manual for the Submission of Digital Plans of Survey for Registration* for more information. The coordinate system of all digital submissions must be 3TM, NAD83. A standard layering system must also be used for utilities. Each utility must also have an individual layer that includes no other information. Separate layers for each utility is required for text, manholes, valves, reducers, elbows, etc. All drafting must exhibit proper connectivity of line work as well as a break in the line at manholes, valves, reducers, tees and fittings.

The digital file must accompany all of the following submissions to the Town:

- Outline and/or Concept plans;
- Tentative subdivision plans;
- All Engineering drawings as outlined in section 2.3;
- Final subdivision plans for registration, including utility right of way plans;
- All landscaping and irrigation plans;
- As-Built drawings;
- Any other submissions as required.

The digital files for the above listed submissions must be included with every submission, including the preliminary, revised, and final submissions. Please arrange the method of submission with the appropriate Town staff. The Town will accept submission by CD/DVD, memory stick, or email. The Town uses AutoCAD LT 2010, ensure your digital submission is compatible with the Town's version of AutoCAD. **All plans submitted become the property of the Town of Okotoks.**

2.5 Inspections

2.5.1 Subdivisions

- Full time inspection of the subdivision by the Developer's Consulting Engineer shall be provided during the construction and maintenance phases of the project.

2.5.2 Site Development

- Full time inspection of the development by the Developer's Consulting Engineer shall be provided during the construction and maintenance phases of the project within all Municipal road right of ways, utility easements and right of ways, any municipal lands, etc. The Developer's consulting engineer shall provide adequate part time inspection of the development during the construction phases of the project within private property. The part time inspection shall be sufficient enough to ensure conformity with good engineering and construction practices, and ensure the construction conforms to the accepted engineering plans. The consultant will be required to submit Construction Completion Certificates (CCCs) and Final Acceptance Certificates (FACs) for the local improvement(s).

2.5.3 Construction Phases

- Construction phases consist of, but are not limited to, the following:

- All underground Utilities installations (water, sanitary sewers, storm sewers and service connections).
- Surface improvements (roads, curbs, gutters, sidewalks, swales, etc.) including Overland Drainage and site grading.
- Maintenance / repair work.

2.5.4 Typical Duties of the Consultant

- Typical duties of the consultant during construction inspection include:
 - Ensure compliance with the accepted engineering drawings. Initiate and oversee all geo-technical testing.
 - Maintain pipeline grades for all deep utilities utilizing laser and batter boards (at least 3) before back filling.
 - Supply a copy of the grade sheets to the Town's Engineering Services.
 - Approve all materials supplied.
 - Supervise all testing of utilities.
 - Compile all information for the supporting documents to be submitted at the CCC Phase
 - Ensure that all construction conforms to the Town of Okotoks General Design & Construction Specifications.
 - All other duties outlined in the current City of Calgary Consulting Engineer's Field Services Guidelines.

2.6 Compaction Testing

Compaction testing shall be performed during construction for: all areas requiring fill; the backfill of any trenches; road base preparation; base preparation for any concrete placing (sidewalks, curbs, gutters, drainage swales, etc); pathway and walkway installation; and any other areas that may be specified. The compaction testing, monitoring, and reporting shall be performed by a qualified geotechnical engineer in accordance with the current adopted City of Calgary Standard Specifications *Roads Construction*, section 304.00.00.

2.7 Supporting Documents for Construction Completion Certificates (CCCs)

Following the completion of construction of the local improvement(s), the Consultant may apply for Construction Completion Certificates. The Consultant shall provide a summary of all test results, Compaction Certification Reports for underground and surface, Concrete and Asphalt test results, Hydrant Certificate, Sewer Inspectors reports, Sewer Video & Report, Inventory of New Improvements (See Appendix), and Structural Design of Asphalt Pavement. **One copy of the bound document**, lot service cards (see Appendix), and four copies of the Town of Okotoks Construction Completion Certificates, each with an attached 8-1/2" X 11" plan highlighting the local improvement are to be submitted to the Town of Okotoks at the CCC stage. Please submit as a complete package, incomplete submissions will cause delays in processing.

2.8 Supporting Documents for Final Acceptance Certificates (FACs)

Following the required warranty period, the Consultant may apply for Final Acceptance of the local improvement(s). Four copies of the Town of Okotoks Final Acceptance Certificates, each with an attached 8-1/2" X 11" plan highlighting the local improvement are to be submitted to the Town of Okotoks at the FAC stage. As-built drawings, test results and certification of repair work, successful Mandrel video/report, and a second Sewer and Video Report must also be submitted at this stage. Please submit as a complete package, incomplete submissions will be returned.

2.9 Warranty/Maintenance Periods

The required Warranty/Maintenance Period for each local improvement can be found in the associated Servicing and Construction Agreement or Development Agreement.

2.10 Erosion and Sediment Control

For all works within the Town of Okotoks, the City of Calgary Guidelines for Erosion and Sediment Control shall be used as a minimum. The exception is that the Town of Okotoks requires an Erosion and Sediment Control (ESC) Plan for all construction activity, submitted by a recognized professional in the industry. This plan and accompanying report (if the area developed is greater than 2.0 hectares or specifically requested by the Municipal Engineer) are to be submitted to the Municipal Engineer for review prior to any construction activity commencing on the site. Once the plan and report is reviewed and the erosion and sediment control facilities have been installed, construction activity may commence, assuming all the other necessary approvals or permits are in place.

The Developer must also identify a Professional Engineer or a recognized professional in the field of Erosion and Sediment Control that will be responsible for monitoring, maintaining, repairing, and revising the Erosion & Sediment Control Plan from the Stripping and Grading phase until the last FAC has been issued. The appointed professional (or his/her designate) must ensure the Erosion and Sediment Control plan/report is being followed, maintained, and is effective. Problem areas must be identified and corrected in a timely manner. The Town of Okotoks will send any correspondence related to Erosion and Sediment Control to the professional identified by the Developer. Copies of all the relevant documentation must also be provided to the Town, such as work orders, plan revisions, inspection reports, etc., as evidence that the Developer has shown due diligence in addressing this issue. Should the erosion and sediment control measures fail, clean up of the site and any downstream areas impacted must be completed within 24 hours (this includes mud tracking). If good housekeeping practices are not followed or if erosion and sediment control measures are not adequately monitored and maintained, the Town of Okotoks will take corrective measures at the expense of the Developer.

The Developer is also responsible to ensure that all vacant lots are adequately protected from erosion, kept clean in appearance, free of weeds, and are not ponding water for an extended period of time.

2.11 Traffic Control during Construction

Traffic control for construction and all related activities shall be in accordance with the City of Calgary *Temporary Traffic Control Manual* (current edition). Any work on or beside a public road (except for local residential roads); will require submission of a traffic accommodation plan to the Town's Municipal Engineer prior to construction for review. 72-hour notice is required before the implementation of any traffic accommodation plan.

2.12 Stripping and Grading

2.12.1 Required Information

A Development Permit or a Servicing and Construction Agreement must be in place for any stripping and/or grading operation within the Town of Okotoks. The following information is required to be submitted to the Town for approval prior to the start of any stripping and/or grading:

1. A "Deep Cut and Fill Plan" identifying any areas of the Land to be cut or filled more than two (2) meters. The Deep Fills Report must be prepared by a qualified Geotechnical Engineer in accordance with the current City of Calgary's *Guidelines for Preparing Geotechnical Reports* and must make

recommendations on any development restrictions (e.g., bearing certificates, special foundation designs, etc.) that may be necessary to ensure the integrity of structures constructed on fill areas.

2. Two copies of a “Drainage Plan” and an “Erosion and Sediment Control Report” prepared in accordance with the current adopted City of Calgary’s *Guidelines for Erosion and Sediment Control* satisfactory to Okotoks’ Engineer.
3. Note: All Erosion Control Features are to be in place prior to commencement of stripping and grading operations, and must be satisfactorily maintained. Where reasonably required, a water truck(s) also must be on the site at all times. Okotoks’ Engineer may direct the Developer to ensure that a water truck is on site at all times.
4. A letter from the Developer’s consulting engineer confirming that all affected utility companies have been contacted regarding the relocation or disposition of their utilities.
5. Plans showing any intended stripping or grading operations on adjacent land(s), including highlighted details of edge conditions over 0.5 m; back sloping requirements; and areas to undergo topsoil replacement, seeding and maintenance until vegetative cover is established.
6. If stripping and grading is intended on adjacent land(s):
 - a. A plan showing the identity of the registered owners of all lands adjacent to the stripping and grading; and
 - b. Written permission from such adjacent landowners granting access to their lands (including, but not limited to, Town of Okotoks right-of-ways used for back sloping or any other purposes). Where the stripping and grading boundary abuts adjacent land, cross-section plans also must be submitted.
7. A phasing plan indicating areas expected to be developed to urban standard subdivisions during the current year, and the type of soil stabilization proposed for areas not to be developed until following years.
8. A plan with:
 - a. The area to be stripped and rough graded outlined in red;
 - b. If the development is to utilize borrow pits, provide a plan detailing the pits including depths, type of material, location, and any other relevant information; and

- c. The proposed location of the stockpile outlined in green, including details of topsoil stockpiling showing planned height, width, length, and volume, for approval by Okotoks' Engineer.
9. The Developer must contact Town of Okotoks Operations Centre and make arrangements for water supply during stripping and grading activities.

2.12.2 Conditions

Upon approval of the above, the Developer agrees to abide by the following conditions:

1. Prior to the commencement of stripping and rough grading of the Lands, the Developer shall:
 - a. Notify the Town Engineer at least 48 hours in advance to arrange a site meeting with both the Developer's consultant and excavating contractor;
 - b. Install perimeter fencing (*i.e.* snow fencing) satisfactory to the Town Engineer to prevent access and stripping and grading encroachment into Environmental Reserve (ER) lands and/or any previously identified or environmentally sensitive area;
 - c. Submit a tree protection plan if any trees are to be retained; and
 - d. Install "Private Property" and "No Trespassing" signs on the perimeter of the Land, stating the Developer's name and contact phone number.
2. Only the lands shown outlined in red on the accepted plan shall be stripped and rough graded.
3. Stripped topsoil shall be stockpiled in the location outlined in green on the accepted plan and the topsoil stockpile shall be neat in appearance, free from any hazardous condition, and treated to prevent soil erosion arising from wind or precipitation. The topsoil shall be posted with "No Dumping", "Private Property", "No Trespassing", and "No Unauthorized Personnel Beyond This Point" signage.
4. The Developer shall be responsible for controlling restricted, noxious and nuisance weeds, and excessive vegetative growth within the development site.
5. The topsoil stockpile shall be removed by the date assigned by the Town of Okotoks, unless the Municipal Engineer grants an extension of time. Extension applications must be requested in writing in advance of the pre-arranged date of removal or the request may be denied and removal procedures may be initiated by the Town at the Developer's expense.
6. Soil screening operations of any topsoil stockpile must have prior approval from the Town Engineer and all of the screening operations will remain the

responsibility of the Developer. Topsoil screening activities may be only conducted under the following conditions:

- a. Only topsoil removed from the Land and stockpiled in accordance with the accepted plan may be screened. No offsite material is to be brought on the stripping and grading area unless a valid Development Permit allowing for an enhanced soil screening operation is in place.
 - b. The topsoil screening operations are to be shut down when adverse windblown dust conditions prevail.
 - c. All access roads within and adjacent to the stripping and grading area must be regularly cleaned by the Developer and as necessary.
 - d. Internal haul roads and working surface areas in and around the lands must be watered regularly and as necessary.
 - e. The stripping and rough grading area must be rehabilitated at the conclusion of the project through either: appropriate grading and re-seeding, or; completion of development of the stripping and grading area.
 - f. No topsoil may be removed from the Town limits unless authorized by the Municipal Engineer.
7. No grading, filling, or excavation is permitted in the following areas unless prior written authorization has been obtained from the utility agencies concerned:
- a. Within utility and road rights-of-way;
 - b. Under any overhead utility lines; or
 - c. Over any underground utilities.
8. The Developer shall periodically submit any modifications to the Drainage Plan and Erosion and Sediment Control Report that may be necessary for any reason including, but not limited to:
- a. Portions of the Land becoming developed;
 - b. Adjacent lands becoming developed; or
 - c. Drainage and/or erosion control facilities requiring rerouting or redesigning.
9. The Developer (at no expense to the Town) before, during and after the stripping, grading and development of the area, shall implement satisfactory drainage control guidelines. The guidelines must provide for control and disposal of storm water in and from the Land, and storm water which may be cut off from its natural drainage route by the development (e.g. inlet protection to any adjacent storm water sewer system, etc.). These drainage control guidelines must be accepted by the Municipal Engineer, prior to being implemented in the development area.
10. The Developer of the lands being stripped and rough graded shall employ appropriate measures to control any dust, particularly in the vicinity of any roadway or occupied dwelling. Dust control measures also will be employed to:
- a. ensure traffic safety;
 - b. minimize dust nuisance complaints from the public;

- c. minimize drainage, soil erosion, and soil instability problems; and
 - d. address any other problems arising from stripping, rough grading, topsoil stockpiling, and any related operations or development activities.
11. During construction of the development, if the applicant, owner of the development site, or any of their agents or contractors becomes aware of any type of contamination within the Lands:
- a. The person discovering such contamination shall immediately report the contamination to Alberta Environment and the Town of Okotoks;
 - b. The applicant shall, prior to the approval of a Development Completion Permit, submit a Phase II Environmental Site Assessment (ESA) prepared by a qualified professional to Alberta Environment and the Town of Okotoks;
 - c. If required to do so by Alberta Environment or the Town of Okotoks, the applicant shall submit a remediation plan or risk management plan (Phase III Environmental Site Assessment (ESA) prepared by a qualified professional to Alberta Environment and provide a copy of the report to the Town;
 - d. If submission of a Phase III ESA has been required at any time, a Development Completion Permit shall not be accepted until a qualified professional has submitted a letter to the Town, in a form satisfactory to the Municipal Engineer, certifying that the physical components in the Phase III ESA have been implemented;
 - e. If no contamination is discovered during construction of the development, the applicant shall, prior to the approval of a Development Completion Permit, submit a letter to the Town, in a form satisfactory to the Municipal Engineer, certifying that no contaminants were discovered during construction of the development.
12. In the event that contamination originated from the Land, the Developer, at its own expense, shall rehabilitate adjacent lands to the satisfaction of the affected owners immediately after completion of the stripping and grading of the development lands.
13. The Developer, at its own expense, and to the satisfaction of the Town's Municipal Engineer, shall promptly rehabilitate the following areas:
- a. Any offsite areas or operations related to the stripping and grading activities;
 - b. Areas subject to storm water runoff or soil erosion;
 - c. Areas of soil instability;
 - d. Areas experiencing sedimentation; and
 - e. Areas experiencing windblown dust or any other problem arising from stripping and grading activities.

The Developer also shall employ the use of gravel pads to curb track-out onto streets and roadways, and shall reduce or halt activity when the site has excessive dust emissions.

14. The Developer shall either develop or rehabilitate all of the lands stripped and rough graded within forty-five (45) days from the end of construction activity, unless an extension to this deadline is granted by the Municipal Engineer. At no time shall the lands be left in a stripped stage for more than forty-five (45) days during the construction process. If there is a planned construction break of greater than forty-five (45) days, the site will be rehabilitated immediately after the last day of construction prior to the planned break.
15. The Developer shall submit an indemnity agreement under corporate seal indemnifying and saving harmless the Town and owners of adjacent properties or such other affected parties from any losses or damages which the Town, owners of adjacent properties, or other affected parties may sustain as a result of storm water runoff, soil erosion, soil instability, sedimentation, topsoil stockpiling, dust, and any other problem which may arise from the stripping and rough grading of the Lands. In addition, the developer, at its own expense, shall take any necessary corrective action(s) to rectify the problem(s) and shall do so promptly and in a manner satisfactory to the Municipal Engineer.
16. The Municipal Engineer, upon fifteen (15) days written notice to the developer, may enter upon the Lands and rectify any deficiencies at the Developer's own expense in the event the Developer fails to do any of the following:
 - a. Maintain the lands;
 - b. Rehabilitate any of the land stripped or disturbed;
 - c. Remove the topsoil stockpile;
 - d. Rectify dust, sedimentation, or other nuisance and/or hazard conditions;
 - e. Remedy soil instability problems; and/or
 - f. Remedy drainage and/or soil erosion problems.
17. Notwithstanding Condition 16, in the event of an emergency (in the opinion of the Municipal Engineer), the Town shall have the right, but not the obligation, to enter upon the lands and rectify any dust, storm water runoff, soil instability, soil erosion, sedimentation, grading, nuisance or hazard condition(s) at the Developer's own cost. The Town Engineer, within three (3) working days following such work is to give written notice to the Developer as to what work was undertaken during the emergency.
18. All costs incurred by the Town in exercising its rights under Conditions 16 and 17 shall be due and payable by the Developer within thirty (30) days of receipt of the invoice for such work. In the event the Developer fails to pay the Town, the Town has the right to recover its costs from the Performance Security Letter of Credit posted by the developer.

19. A Stripping and Rough Grading Report shall be prepared by the Consulting Engineer and submitted to the Municipal Engineer certifying that rough grading is in compliance as set out in the current *Consulting Engineer Field Services Guidelines*.
20. Completion Certificates will not be issued until all stripping and grading, topsoil stockpile removal, and site rehabilitation requirements have been completed to the satisfaction of the Town Engineer.
21. The developer shall pay a fee to the Town to replace any or all survey control stations/markers that have been destroyed or damaged due to the development of the area. The replacement charges, per survey controls station, are as follows:
- | | |
|--------------------------------------------|-------------|
| a. 1 st Order (Deep Bench Mark) | \$10,000.00 |
| b. High Precision Network Marker (H.P.N.) | \$7,500.00 |

3 WATER DISTRIBUTION SYSTEM

3.1 Design

Water distribution facilities including water mains, valves, hydrants, and service connections shall be provided. Engineering drawings showing detailed design of the necessary work shall be submitted to and accepted by the Municipal Engineer prior to commencement of construction. The drawings shall show alignment and size of pipes, location and details of all fittings, valves and hydrants, service connections and all other details as may be required.

The water distribution system shall be adequate to supply the peak hourly demands or the peak daily demands plus fire flows, whichever is greater. Fire flow requirements shall be as recommended by the Insurer's Advisory Organization of Canada. In addition, the Town may require a pressure distribution analysis. Water mains shall be looped wherever possible.

Please refer to the current adopted City of Calgary *Standard Specifications for Waterworks Construction* for detailed specifications. The following are Town of Okotoks requirements that may differ from the City of Calgary:

3.2 Water Mains

1. Main sizes may be increased by the Town as considered necessary. Mains shall be located within streets, lanes, or utility right-of-ways wherever possible.
2. Any water system or part of a system must be designed to serve not only the area within the development boundary, but also any area that requires a contributing flow from the system. The Town of Okotoks will not pay for over sizing, but may enter into an Endeavor to Assist for future cost recovery.
3. Mains shall be looped whenever possible. The Municipal Engineer may approve up to a maximum of 35 units on a single feed within the ultimate water main configuration.

3.3 Hydrants

1. Hydrants shall be McAvity M67B or an American AVK High Pressure Dry Barrel Hydrant 2700.
 - Compression type - 5 ¼" opening,
 - Hose Outlets - AMA 2.987" 8TPI,
 - Steamer Outlet - Seagrave - 6.055" - 4TPI,
 - Operating nut size and shape - 1 ¼" square,
 - Outlet nut size and shape - 1 ¼" square.
2. All Hydrants shall be painted **Red with White trim**.
3. **All Hydrants shall be supplied with a break feature at ground line.**
4. Metal bollards (see Appendix, Sheet 8) may be required to safeguard the fire hydrant from vehicle damage, as specified by the Municipal Engineer.
5. Hydrants shall be located no more than 2 meters from the curb or access area with the base flange installed 50 mm above finished grade. The 150mm port (front) must face directly to the Fire Department pump operating area. A 2-metre clearance is required on the port sides of the hydrants and 1 meter clearance on the back or blank side. This area must contain no obstruction that could hamper visibility of the hydrant from the road, within a 3-metre radius.
6. After installation, each hydrant shall be tested for proper operation and flow. Upon completion of the tests, the Consulting Engineer shall forward a "Hydrant Certificate" to the Town, stating the test data (date, time, pressure and flow results) and that the hydrant has been tested and is now in operation. No testing shall be carried out without the Town's Operations Services staff being present.

The Town shall be given at least two full working days notice prior to the testing being undertaken.

NOTE: The construction contractor must obtain a “Hydrant Permit” from the Town of Okotoks (through EPCOR). The Town reserves the right to regulate the rate of flow and the volumes of water that can be used from any hydrant. A deposit shall be charged, and a hydrant permit and a list of conditions of use may be then be issued. At the completion of construction, if the hydrant is in the same condition as prior to use by the contractor, then the deposit will be refunded. If not, the contractor will be refunded the balance of his deposit remaining after repairs are made. All connections must have a back-flow prevention device installed. **Hydrant permits are not issued for irrigation purposes.**

3.4 Valves

If there is a benefit or an increased reliability of service, the Municipal Engineer may require additional valves other than those outlined by City of Calgary specifications. Valves on distribution mains are to be located at the extension of the street property line at street intersections. Valves are required on all hydrant leads. Valves installed in the Town of Okotoks differ from City of Calgary specifications in the following ways:

- All valves shall turn counterclockwise to open.
- The top nut shall be 50mm (2 inches) square.

3.5 Service Connections

1. Where service connections tie into a water main that is **not** PVC, an isolating full wrap clamp/saddle must be used for all service sizes.
2. It is the responsibility of the Developer to remove all unused or abandoned service connections resulting from the development. The service must be completely removed from the main and repaired with an accepted repair clamp. This includes any temporary connections in new main installation used for construction purposes only. Tapping the main for temporary construction use (such as for chlorine injection) shall be avoided whenever possible.
3. Do not cut stem on or below the ‘S’ curve on the rod within curb stops.
4. All PEX services must be installed complete with tracer wire from curb stop to main stop.

3.6 Water Meters

1. The Water Meter shall be installed at the point of entry of service into the building. Multiunit developments are to have a single meter per building and not per unit. In these situations, a single bill will be invoiced for the development; individual unit billing will not be provided. All meters and service valves are to be accessible by the Town of Okotoks at all times.
2. Water meters need to be purchased with the Building Permit application. If the meter details are not provided during the application, meter installation will be delayed.
3. Water meter tree installations must be inspected by the Town of Okotoks (through EPCOR) prior to occupancy of all non Single Detached and Duplex developments.

3.7 Hydrostatic Testing

City of Calgary Hydrostatic Pressure Testing and Disinfecting Procedures shall be followed for all new main installations. **The Town shall be given at least two full working days notice prior to the testing being undertaken. The Developer shall not operate any existing water valves.** Should any test disclose leakage greater than the allowable, the Contractor shall, at his own expense, locate and repair the defect. Any failed test attempt must be rescheduled with at least two full working days notice. The contractor is responsible for collecting the clean water sample(s) and arranging for analysis. The main may not be put into service until the water sample results have been forwarded to and accepted by the Town.

In addition to the Hydrostatic Testing, the Town of Okotoks requires a **Leakage Test**. The leakage test is done at the completion of installation of the services. The duration of the leakage test shall be one (1) hour and the pressure used shall be one and one half times the operating pressure at the lowest elevation of the system or 860 kPa (120 psi), whichever is greater, without exceeding the manufacturer's recommended pressure range. The consultant may not apply for CCC until a satisfactory leakage test has been completed.

3.8 Flushing Assemblies

Manhole covers installed for Flushing Assemblies must have a plain finish and be lockable.

4 WASTEWATER & DRAINAGE SYSTEMS

4.1 Design

Sanitary and Storm sewer facilities including gravity mains, pump stations and force mains (if required), manholes, catch basins, culverts, inlet and outlet structures, service connections, lot drainage systems and all other related appurtenances shall be supplied. Engineering drawings showing detailed design of the necessary works shall be submitted to the Municipal Engineer for approval prior to commencement of any construction.

These drawings shall show alignment and size of pipes, proposed grades, distances between manholes, manhole invert elevations, existing ground line, proposed final ground line, location of all service connections to the property line, all easements, and all other such details as specified in Section 2.3 (Engineering Drawing Standards).

4.2 Sanitary Sewer

The design of the sanitary sewage collection system shall be consistent with The Town of Okotoks Sanitary Master Plan. Please refer to the current adopted City of Calgary *Standard Specifications for Sewer Construction* for detailed specifications.

4.3 Storm Sewer

The design of the storm sewer system shall be in accordance with the current adopted City of Calgary *Wastewater & Drainage Storm Water Management & Design Manual*.

NOTE: Should the Report on the Water Table indicate a high level, the Developer may be required to lower the elevation of the storm mains below the water and sanitary mains in order to intercept the flow at clay plugs in the other trenches.

Please refer to the current adopted City of Calgary *Standard Specifications for Sewer Construction* for detailed specifications. The following are Town of Okotoks requirements that may differ from the City of Calgary:

4.4 Storm Water Quality

Storm water treatment is a requirement of **every development**. Best Management Practices shall be used to reduce pollutants at the source and provide storm water treatment as necessary. Alberta Environmental Protection *Storm Water Management Guidelines* and The City of Calgary *Storm Water Management & Design Manual* shall

be followed in all cases where practical. If site constraints limit the ability to effectively treat storm runoff, a storm water levy may apply. Low Impact Development techniques to manage storm water shall be considered where practicable.

Where a storm water treatment facility is necessary, design shall ensure 90% removal of total suspended solids. All other requirements through the City of Calgary and Alberta Environment must be met.

4.5 Sewer Mains

1. The Town, as considered necessary, may increase main sizes. Mains shall be located within the streets, lanes, or utility right-of-ways wherever possible. In addition, improved bedding shall be provided where soil conditions and/or trench load conditions dictate. Insulation will be required for any main that is installed with less than the minimum cover.
2. Any sanitary system or part of a system must be designed to serve not only the area within the development boundary, but also any area that is tributary to the system. The Town of Okotoks will not pay for over sizing, but may enter into an Endeavor to Assist for future cost recovery.

4.6 Sanitary Main Construction

During main construction, the point at which the new main connects to an existing manhole shall be plugged by means of a mechanical plug. This plug shall be supplied and installed by the developer. Once the plug is installed, the Town of Okotoks shall be contacted to arrange for an inspection. Once inspected, the manhole will be secured. This must be done prior to any sanitary main construction. CCCs for the main must be issued and the road immediately above the main must be completed prior to the provision of access to the secured manhole to remove the plugs.

The plug location shall be indicated on engineering drawings, and the location accepted through the engineering review process. In situations where an existing stub is not being used for a tie in, propose alternate options to ensure no flow is seen entering existing sanitary mains during construction.

4.7 Manholes

1. Manhole covers shall be cast in accordance with City of Calgary specifications, however they shall be cast to read "OKOTOKS SEWER SYSTEM", and include the Town of Okotoks "Historic Past, Sustainable Future" logo. See detail in Appendix for manhole detail.

2. Sanitary manholes located in trap lows or graveled lanes require silt bowls.

4.8 Catch Basins

All catch basins in vertical face curb shall be two-piece, regardless of road classification.

4.9 Service Connections

1. All commercial, industrial, and multi-unit developments require an inspection chamber on the sanitary service line (see Appendix for detail). The inspection chamber shall be located at 0.3m outside of property line adjacent to the curb stop unless otherwise accepted. Alternatively, for a commercial development, each unit may discharge to a test manhole. The test manhole must meet all City of Calgary requirements plus the following conditions:
 - A building lead must be a minimum of 45 degrees from the main.
 - A building lead must be a minimum of 90 degrees from another building lead.
 - A maximum of two building leads are permitted per test manhole.
2. Surface drainage that may be contaminated from industrial, agricultural, or commercial operations shall not be discharged to the storm sewer.
3. Connections from roof leaders shall not be made to the storm sewer system, unless approval is received from the Municipal Engineer. Roof drainage from residential housing units, apartments, commercial, and industrial buildings shall discharge to grassed or pervious areas except where building density makes this impractical (e.g. central business district).
4. Weeping tile directly tied into a trunk storm main should be discouraged. However, where no alternative exists, the Town may consider its connection subject to detailed design review.

4.10 Lot Drainage

1. Lot drainage systems shall be designed to the satisfaction of the Municipal Engineer to:
 - Provide for proper drainage of the land and the lots created by the proposed development;
 - Prevent the flow of drainage onto adjacent lands;
 - Prevent any and all ponding; and
 - Prevent erosion both within and without the development.

2. The Developer shall include with the drawings an overall plan of the area to be developed showing the individual lots and the proposed grading of the lots indicated. Also indicated on this plan shall be the design sidewalk or top of curb elevations, sub-grade soil conditions warranting further checking, including all other factors related to the lot drainage. Where extremes in elevation of abutting lots require the construction of a retaining wall, it shall be indicated on the plan and it must meet all requirements of the Land Use Bylaw. No building permit will be issued without a requirement for the owner of the higher lot involved to construct a retaining wall at the time of construction of the proposed dwelling.
3. In general, the lot layouts shall be such that the minimum slope in the front yard from the grade at the house to the sidewalk shall not be less than 2%. The minimum slope in the back yard shall be 2%. In cases where the back yard slope is towards the dwelling provisions are required to keep run-off at least 1.2 meters (4 feet) away from the dwelling and directed to the front yard.
4. In cases where these requirements differ from the Town of Okotoks Lot Grading Bylaw, the Bylaw shall take precedence.

5 LIFT/BOOSTER STATION CONTROL REQUIREMENTS

When designing station, the Town has the following requirements, unless otherwise accepted by the Municipal Engineer.

- PLC's shall be Microsystems or Modicon
- HMI's shall be Cutler Hammer #HMI06CE
- All flow meters shall be ABB
- All sewage lift pumps shall be Flygt
- All gensets shall be Kohler. Gensets shall be natural gas powered unless the power consumption is such that diesel must be used
- All submersible raw water pumps shall be Berkley
- VFD's shall be manufactured by: Allen-Bradley, Cutler Hammer, Mitsubishi, Toshiba, or Yaskawa
- Developers may use a programmer of their choice for station programming, but SCADA integration of the station shall be done by the Town of Okotoks at the Developer's cost

EPCOR design specifications shall be used as a guideline for the design of facilities within the Town of Okotoks' Sanitary Sewer and Water Systems.

6 ROADWAYS

6.1 Design

Engineering drawings showing detailed design of the streets shall be submitted to the Municipal Engineer for approval prior to any construction. These drawings shall show alignment and grade of the street, horizontal and vertical curve information and all other such details as specified in the Engineering Drawing Standards Section.

Please refer to the current adopted City of Calgary *Design Guidelines for Subdivision Servicing*. When preparing your design, please also refer to the Town of Okotoks *Municipal Development Plan* for planning and design considerations for roadways. The Town encourages innovative and unique designs for roadways, giving a strong focus on the pedestrian environment (e.g. separated sidewalks wherever possible). Road standards may be flexible if an appropriate design is proposed. The Town of Okotoks reserves the right to reject any City of Calgary standard road design when, at the sole discretion of the Municipal Engineer, the design is deemed inappropriate for the development.

Any road system or part of a system must be designed to serve not only the area within the development boundary, but also any area that is dependent on, adjacent to, or connected to the system. The Town of Okotoks will not pay for any additional costs associated with road construction that benefits an additional developer(s), but may enter into an Endeavor to Assist for future cost recovery.

Please refer to the current adopted City of Calgary *Standard Specifications For Road Construction* for detailed specifications. The following are Town of Okotoks requirements that may differ from the City of Calgary:

6.2 Vertical Alignment

1. Maximum grade of all roadways (including lanes) shall be 8% unless otherwise accepted by the Municipal Engineer.
2. Maximum grade of roadways at mid block pedestrian crossings shall be 4%.

6.3 Pavement Structure

1. All pavement designs shall be submitted by the Developer to the Municipal Engineer for acceptance. A qualified Professional Engineer shall prepare pavement designs based on the City of Calgary Specifications. All pavement

designs shall consist of a minimum of two lifts, a base lift and a final lift (top lift) at the time of FAC. Pavement designs shall include a review of sub-grade drainage and/or water table concerns and shall provide continuous subdrains and recommendations for separation membranes, if required.

2. The asphalt concrete base course shall be paved once a satisfactory base is prepared. The base course shall be “proof rolled” and inspected by a qualified geotechnical engineer in the presence of a Town representative. The surface course shall be paved immediately prior to the FAC date, after all maintenance work is completed.
3. Positive drainage to the storm sewer system by means of catch basin or storm manhole weeper holes shall be provided from all granular bases.
4. Alternate base course materials may be considered at the Municipal Engineer’s discretion.

6.4 Traffic Calming

In the interest of Traffic Calming, all designs shall try to eliminate the use of super elevation on Residential Collector roads wherever possible and appropriate by increasing the minimum radius sufficiently. Super elevation on Residential Collector roads will be permitted only where traffic volume and curve radius requires it.

Where traffic calming includes ‘pinch points’, bollards must be installed at each curve radius (see Appendix, sheets 8 and 9). Decorative bollards may be required/accepted by the Municipal Engineer. All traffic-calming features are to have vertical face curb. Pinch points shall be 7m face of curb to face of curb. Alternative traffic calming measures are encouraged.

6.5 Sidewalks, Walkways and Pathways

1. Monolithic sidewalks, curbs and gutters, separate sidewalks, walkways and pathways shall be constructed in accordance with City of Calgary specifications or as required by the Town. Access for the physically disabled shall be provided by wheelchair ramps, depressed islands and medians. Curb adjacent to Municipal Reserve must be standard.
2. Mono sidewalks immediately adjacent to and perpendicular to parking stalls shall be a minimum of 2.1m wide. If they are of a smaller width, parking stops will be required in the parking stalls. Should a 2.1m or wider sidewalk be provided, parking stalls adjacent to this wider sidewalk may be shortened by 0.6m.

3. For Local Residential road designs with monolithic sidewalk on one side only, this sidewalk must be 1.5m mono. To accommodate this, hydrant offsets shall be 0.7m from property line.
4. All walkways and pathways shall be constructed in accordance with the current adopted City of Calgary *Development Guidelines and Standard Specifications Landscape Construction* (See detailed specification on sheets 35 and 36). There is no requirement for a painted yellow line on regional pathways.
5. Pathways shall be constructed to the following widths:
 - Regional pathways within parkways as identified by the Municipal Development Plan: 3.0m.
 - Regional multi-purpose pathways: 3.0m.
 - Local or connector pathway: 2.5m.

Widths for regional multi-purpose or local/connector pathways may be reduced to 2.0m where, in the opinion of the Municipal Engineer, the preferred pathway width cannot be accommodated due to limited right of way or physical space, an obstruction, or another valid reason.

Wherever a regional pathway intersects a road, at least a 3.0m break in the protective post and cable fence at the roadway exposure shall be provided to accommodate maintenance and/or emergency vehicle.

Pathways that are to be used for maintenance shall be constructed to a standard sufficient for vehicle travel.

The Municipal Engineer may require that segments of the pathway required to accommodate movement of maintenance and/or emergency vehicle are constructed to a minimum 3.0m width. Pathways that are for storm pond forebay access shall be 4.0m in width and shall be constructed to a road standard.

6. Local and Regional Pathways shall be constructed as part of the park system in all developments as deemed necessary by the Town. Where a mid-block crossing is necessary for the pathway system, special treatment and consideration to pedestrians is required. Special treatment may include, but is not limited to paving stones, lighting, signage, landscaping, etc. Referring to the *Municipal Development Plan*, the pavement should be tapered (remove parking lanes) at the crossing location where appropriate and feasible.
7. Asphalt testing for paved pathways shall be in accordance with section 6.8 of this document.

8. Crosswalks are to be provided and shown on design plans at all mid-block crossings and at high profile intersections as required by the Town. All required crosswalks shall be installed prior to applying for FAC.
9. Crosswalks on public roads are to be painted in the Abby Road style unless otherwise directed/accepted by the Municipal Engineer.

6.6 Road Surface Markings

1. All road paint shall contain glass beads and be installed immediately following Top Lift paving.
2. durable pavement markings shall be used at crosswalks at midblock crossings or on roads designed as collector streets or better.
3. All durable pavement markings shall be inlaid to a minimum depth of 15mm below the pavement surface and completely fill the milled area. Equipment used to install Thermoplastic must be capable of making the marking uniform in all directions; edges of markings must be square. Where the manufacturer's recommended installation for an accepted product differs from the above, the manufacturer's guidelines shall be used.

The Town accepts the following durable pavement marking products:

- System 300
- System 400
- System 600
- Poly Carb Mark 55.4

6.7 Concrete

Concrete for all sidewalk and curb and gutter construction shall be Class "A". All concrete shall meet or exceed City of Calgary specifications. Higher concrete specifications may be applied at the discretion of the Municipal Engineer on a site by site basis. Concrete tests are to be taken a minimum of one per 50 m³ of concrete poured (surface and underground). If concrete pours are less than 50 m³ per day, a minimum of one concrete test per day will be required.

Where curb and gutter front a Municipal Reserve, Standard curb and gutter shall be used.

Where mud-jacking is used for concrete maintenance, the City of Calgary Specifications, current edition, shall apply.

6.8 Asphalt Testing

All asphalt must meet City of Calgary specifications. Core sample testing shall be provided for all paving projects. The Consultant shall provide a minimum of one representative test sample per 1000 square meters of paved area, or a minimum of two test samples per day of paving. **Core samples for Top Lift pavement are required at the discretion of the Municipal Engineer and shall be provided only when requested.** All test results shall be clearly summarized in a report format submitted at CCC and FAC applications.

6.9 Driveways

1. All residential driveways and aprons in new or existing areas shall be constructed of reinforced concrete, or an alternate hard surface as accepted by the Municipal Engineer.
2. The Developer shall coordinate the location of all community mailboxes, hydrants, catch basins, light standards, boulevard trees, service pedestals and transformers to eliminate any conflicts with driveway locations. All such structures shall be a minimum of 1 meter (3.3 feet) clear of driveways and aprons. When such structures installed by the Developer are required to be relocated, the Developer shall assume full responsibility.
3. The Developer shall provide lowered driveway entrances where finished lot grades exceed 4% or as required by the Municipal Engineer.
4. The Developer shall provide appropriate sidewalk crossings where applicable in accordance with City of Calgary specifications. The Developer shall also provide concrete driveway aprons between curb and sidewalk (or property line) in boulevards where applicable.
5. Maximum grade of a driveway shall be 8% unless otherwise accepted by the Municipal Engineer.
6. Driveway width may be restricted at the discretion of the Municipal Engineer.

6.10 Lanes

1. All lanes shall be built to City of Calgary specifications with the following exception: instead of the typical 100mm of 50mm gravel, 150mm of 25mm base course gravel shall be used.

2. All gravel lanes shall have an asphalt apron extending a minimum of 6m into the lane, as measured from the road right of way
3. Dead end lanes shall end with a paved turn-around designed to accommodate an SU-9 vehicle (e.g. Garbage Truck).
4. Developers shall be responsible for the upgrading of existing lanes as necessary when the re-development causes the lane use to be intensified.
5. Trap lows in lanes shall be avoided whenever possible. Lanes designed with trap lows shall be paved for the entire area of the trap low and up to the spill point.

6.11 Cul-De-Sacs

Cul-de-sacs with a lip of gutter radius greater than 12.5m shall have an island. The island shall employ low impact development techniques, (i.e. rain garden) complete with underdrain.

6.12 Road Crossings

Developed roads shall be returned to their original condition when it is necessary to excavate an existing road or lane for the purpose of providing a crossing for a water or sewer main, gas main, telephone, cable, or other public utilities. Such excavations must be backfilled and all concrete, asphalt, landscaping and anything else that may have been disturbed shall be replaced in accordance with City of Calgary specifications and to the satisfaction of the Town. Full time geotechnical testing, monitoring, and reporting is required for any such work.

6.13 Road Cross-Sections

Okotoks uses modified road cross-sections. See attachments at the back of this document. Okotoks reserves the right to decide when and where each cross-section will be used. This decision may consider road capacity *and/or* function for best use in the area.

7 CLOSING OF ROADS OR EXISTING FACILITIES

The Developer must apply in writing to the Municipal Engineer to obtain permission for any closing of developed Town streets or shutting off of existing facilities such as water service. This application must be received at least five (5) working days prior to the proposed interruption, and the Developer is required to

notify all affected residents, businesses, schools, and emergency services a minimum of three (3) days prior to the disruption. Also included with this application will a Traffic Accommodation Plan. If in the opinion of the Municipal Engineer, the interruption will cause excessive traffic delays, the Developer will be required to advertise (ie. portable sign, newspaper, etc.) the interruption as necessary, or schedule the work for off-peak times. The Municipal Engineer must also receive notification when these streets are open to traffic and/or services are back in operation.

8 STREET LIGHTING

Street lighting shall be arranged for by the Developer to a standard of lighting in accordance with good engineering practices for several types of streets. Street light cables shall be installed underground and an acceptable type of steel post with fixtures shall be provided. All street lighting and underground electrical power distributions systems are to be paid for by the Developer or constructed by the electrical franchisee pursuant to the "Investment Rate Option". Please refer to the Town of Okotoks Municipal Development Plan that encourages the use of decorative street light fixtures. The Town shall review and accept Fortis' approved design for street lighting layout and line assignments prior to installation. Street lights shall be placed at locations not interfering with proposed driveways and in general, shall be located in line with the extension of common property lines between two lots. Lighting shall be provided for each internal park area that does not abut a lighted street. A street light shall be located at the point where a pathway intersects a road. All street light fixtures must be approved by Fortis. Flat lens luminaries as accepted by Fortis, are to be used on all cobra head light standards.

9 TRAFFIC CONTROL SIGNS AND STREET NAME DEVICES

9.1 Naming and Standards

The Developer in accordance with the Town of Okotoks Traffic Control Manual shall install standard traffic control signs and street name signs. All signs shall be reflective. Street name signs shall have white lettering on blue background, sign brackets shall be of bolt on cast aluminum type construction complete with adjusting bolts (not set screws), in accordance with Town standards and specifications. The Town must approve the street names prior to the installation of signs. The Town of Okotoks Roadway, Parks, Neighbourhoods, and Facilities Naming Policy shall be followed when formulating a proposed naming program for a subdivision. All road names are subject to approval. All street signs must be installed prior to the approval of CCC for paved roads and boulevards and prior to issuance of building permits

9.2 Installation

All signs shall be mounted on 2.4 inch outside diameter 18 gauge **galvanized** steel pipe posts and placed at locations accepted by the Town. The signpost must be set in concrete with a minimum bury depth of 3 feet. The signpost must be appropriately secured within the concrete to prevent the post from becoming loose and turning. This may be accomplished with a securely fastened bolt or a properly welded steel reinforcing bar through a hole drilled directly through the bottom of the post. The bolt(s) or steel bar must protrude at least 3 inches into the concrete on two sides of the post. If the sign is to be installed on a concrete median or island, all mounting plates must be accepted by the Town prior to installation. Signs are to be attached to the post with a bolt through the post and sign. Signs are **not** to be attached using hose clamps.

9.3 Considerations

The Developer shall pre-install conduits at major intersections for future traffic control and monitoring purposes. Inserts shall be installed in islands/curbs as instructed by the Municipal Engineer for traffic counters. If requested by the Municipal Engineer, the Developer shall install traffic detectors and a receptacle for a traffic counter at important intersections.

9. TRAFFIC SIGNALS

Traffic Signal installations are to follow Alberta Infrastructure specifications. All traffic controllers are to be an **Econolite ASC/3** fully actuated system, complete with telemetry, Autoscope Encore , or approved equal, and complete integration into the Town's fiber optic system is required. All traffic signals shall have 12 inch LED signal heads with black enclosures and backing plates. Additional information will be provided during review of the proposed installation.

Signalized intersections shall have oversized street name signs on the masts that are consistent with the area of Town where the intersection is located.

10 SHALLOW UTILITIES

The Developer shall arrange with the gas, power, telephone and cable TV companies to have the respective services installed. The services shall be installed underground and the line assignments shall be submitted to and accepted by the Town of Okotoks. The Developer shall pay any cost for these services charged by the respective utility companies. Shallow utilities shall be located within rear lanes wherever possible. Where development is in existing areas with overhead utilities, the Developer will be required to relocate these utilities underground.

The Developer shall provide right-of-ways in each subdivision or register easements in the name of the Town of Okotoks for the purpose of utility services of sufficient size and location to the satisfaction of the Town of Okotoks.

Utility Right of Ways (U/RWs) shall be 3.5m from property line unless there is a single utility, in which case, the U/RW will be 2.4m from property line (unless otherwise accepted by the Municipal Engineer).

11 PARKS, RESERVES AND BOULEVARDS

City of Calgary Development Guidelines and Standard Specifications, Landscape Construction (Current Edition) shall apply except in the following or unless specifically and mutually agreed to by the Town and the Developer. In case of differences in interpretation or ambiguity, the Town of Okotoks Municipal Development Plan (September 1998) shall take precedence. Construction Completion and Final Acceptance Certificates for landscaping shall be signed by a qualified Landscape Architect or Landscape Designer accepted by the Town.

11.1 Submission of Plans

The submission of landscape plans applies to (but is not limited to) subdivision phases as well as development permits. The Developer shall submit to the Town detailed plans for park, reserve and boulevard development for approval. Plans shall be **prepared by a qualified Landscape Architect or Landscape Designer** and shall include, but are not limited to:

- Existing and proposed elevations;
- Direction of drainage and drainage collection facilities;
- Proposed location, number, species and size of trees and shrubs;
- Where permitted, Irrigation system design including meter and meter box detail;

- Perimeter fencing of any amenities (benches, play equipment, garbage receptacle, etc.);
- Detail of Fence/Posts in relation to finished grade;
- Location of overhead and underground utilities;
- Location of existing and future accepted driveways;
- Location of existing trees and associated tree protection plan if applicable for trees being retained

Irrigation plans must be submitted at the same time as the landscape plans.

The Landscape Plans must be consistent with the accepted engineering and site plans.

Five sets of the Landscape Construction drawings are required (preferred scales 1:200, 1:250, 1:500). Two 11"X17" reduced sets must be provided. Two sets will be returned marked "Accepted" before construction may begin. Three sets of "as built" plans, digital file(s) (.DWG format required) and pdf must be received before an FAC can be issued. "Accepted" plan must be on site and available during all construction activities.

11.2 Supporting Documents for CCC

At time of CCC application, submit Asphalt Compaction Reports, Seed Tags and Seed Certificates of Analysis, any additional site specific required reports (i.e. geotechnical), completed Open Spaces Meter Report and Irrigation Inspection Checklist (See appendix # #). For play equipment, submit a letter from the manufacturer/supplier attesting that equipment meets CSA Standards.

11.3 Supporting Documents for FAC

Written documentation confirming the inspection of play equipment by a Certified Playground Inspector must be submitted to the Town prior to issuance of FAC's. Three sets of the "as built" plans and the digital file(s) (.DWG and pdf format preferred) must be received and accepted before an FAC can be issued. Two sets of Irrigation "as built" plans-one hard copy, one digital pdf. Prior to FAC, a maintenance log is to be submitted, including irrigation documentation , Irrigation scheduling, Open Spaces Meter Report and Irrigation Inspection Checklist or truck watering log. Plant material replacements (Number/Species/Date/Location), Weeding (Date/Location-any herbicide application to be documented here and must be in compliance with Town's Right to Know Bylaw).

11.4 Xeriscaping

In all landscaping projects, the seven principles of Xeriscaping are to be considered and applied (1. Planning, 2 Top Soil 3. Vegetation Selection 4. Mulch 5. Turf Areas 6. Water 7. Maintenance).

Minimum 40% percent of required landscape area, to be vegetated (can consist of a mix of turf, perennials, and shrubs).

Any Industrial and business sites with turf areas are to use more drought tolerant turf species.

Large rocks/boulders not to be used within a meter of sidewalk or road or pathway.
Gravel: Colours are to be in a color range native to the Okotoks area - greys, beiges, whites. Samples are to be submitted to Town for acceptance prior to installation.
No rounded rocks are to be within a meter of a sidewalk, road or on slopes.
Angular/shattered rock that will not roll onto adjacent surface are to be used.

Gravel mulch to be installed at same depth as organic mulch (75mm), and *all* landscaped areas including those under non vegetated areas are to still have a minimum depth of 300mm of topsoil.

11.5 Irrigation

The Town of Okotoks is a leader in conservation and sustainability initiatives. In keeping with this, significant changes to our irrigation specifications follow.

Irrigation systems using the Town's potable water supply are no longer acceptable in new development and development permits. The following exceptions apply:

- Sportsfields (mandatory irrigation with head to head coverage)
- Quick coupler systems for establishment of caliper size stock.
- Temporary above ground irrigation for plant material establishment (must be in compliance with Town Water Schedule)
- School sites

Developers are encouraged to design non-irrigated sites or use rain water harvesting for irrigation. Irrigation systems using rain water harvesting must be in compliance with any and all applicable codes and regulations.

Contact Open Spaces for open trench inspections, testing, Construction Completion Inspection including pressure test and Final Acceptance Inspection for irrigation systems.

For sites that meet the requirements for irrigation, irrigation plans must include flow rates per zone, suggested schedules and application rates and total consumption per application. The developer shall provide the estimated total volumes of water used per application, per day, and per week. Before irrigation system operation, the Developer must supply the contact number for their designated Irrigation Technician for after-hours emergencies to the Town of Okotoks.

Irrigation (or alternative watering) schedules to be identified at the time of submission of Irrigation and Landscape Plans. Irrigation schedules **must** adhere to the Town of Okotoks Outdoor Watering Schedule:

- No watering on Fridays.
- Odd numbered addresses may water Thursday and/or Sunday.
- Even numbered addresses may water Wednesday and/or Saturday.
- Watering may occur only during the following hours: 6:00 a.m.-9:00 a.m. and/or 7:00 pm-11:00 pm,

Unless the Developer/Contractor has a Water Exemption Permit, they must follow the Town's mandatory outdoor watering schedule. To obtain a Water Exemption Permit, contact Town of Okotoks Operations at 403-938-4372 (1112 North Railway Street). Under no circumstances will irrigation (sprinklers) be permitted on Fridays. Schedule sod and tree/shrub installation accordingly.

All underground systems are to include (at Developer's expense) fully automatic controllers (IQ2 Compatible) with seasonal adjust features. Remote wireless valve mounted controllers are not acceptable. The electrical control cabinet/panel shall be mounted in a weatherproof lockable heavy gauge painted metal box installed on a concrete base.

All water usage must be metered. Appropriate water meters for irrigation use, accepted by the Town of Okotoks Municipal Engineer, must be supplied and installed by the Developer prior to any water being used. Meter assembly is to have union fittings to facilitate removal and reinstallation of meter. Any water meter that is installed in any site shall be self-draining. Water meter drain must be accessible.

All underground irrigation systems shall be equipped with a rainfall sensor to the satisfaction of the Town. Irrigation boxes must be properly installed and supported to be flush with ground level. Thrust blocks are to be installed at the corners and ends of main lines. Gate valves are to be used with the double check valves and 20mm insert coupling installed in the main valve box for winterizing the system.

Insert couplings of 20mm shall also be installed at the terminus of the main line and every 30m along the main line. Quick Coupler Valves to have 150mm (6") round valve box (equivalent or equal to a Carson 6" round valve box) and be flush with finished grade.

A tracer wire must be installed to facilitate the future location of all pipes. Spare wires as per City of Calgary Landscape Construction Specifications.

All tree and shrub beds must: have a 20mm Quick Coupler Valve installed within 30m of all tree and shrub beds; or be watered using water truck (watering log must be available upon request at anytime, and submitted with maintenance log prior to release of DCC or FAC)

Irrigation Boxes must provide maintenance clearance on all sides (as illustrated in appendix sheet 15).

Prior to the issuance of CCC's and FAC's, a completed Open Spaces Meter Report and Irrigation Inspection Checklist must be submitted (see Appendix, Sheets 16 & 17). Prior to FAC irrigation as built, one hard copy and one digital copy (pdf) are to be submitted to the Town. Irrigation Information Sheet (as per City of Calgary Development Guidelines and Standards, Landscape Construction Current Edition) to be submitted with as built.

11.6 Berm Construction

Where berms are constructed, the maximum side slope cannot exceed 4:1. Slopes should consist of smooth gradual arc at the base and a smoothed crown on top, sufficient to prevent scalping of the turf during grass cutting. In areas where maintaining less than a 4:1 slope is impractical, the Town of Okotoks must approve alternatives.

11.7 Topsoil

1. All topsoil required shall consist of a loam-textured dark topsoil, a fertile, friable material neither of heavy clay nor of very light sandy nature containing by volume a minimum of 6% to a maximum 25% organic matter (ie peat, rotted manure, and/or composted material) and capable of sustaining vigorous plant growth. Topsoil shall be free of subsoil contamination, roots, stones over 25mm in diameter, baler twine or subsoil clay lumps over 25mm in diameter and other extraneous matter. Topsoil shall not contain quack grass rhizomes, Canada thistle roots or other noxious weeds. Upon delivery or thirty days following delivery, electrical conductivity shall be less than 4.00 dS/m on a saturated paste basis. The pH range shall be between 6.0 and 8.0.
2. Topsoil may be either on-site topsoil or imported topsoil (from within Town boundaries). On-site topsoil which has been stockpiled properly can be reused.
3. The Developer shall indicate the proposed source of topsoil a minimum of two weeks prior to placing the soil. Should the quality of topsoil be in question, the

Town will request the Developer to test the topsoil (prior to placement) to these specifications.

4. The Town of Okotoks reserves the right to reject topsoil not conforming to these requirements.
5. The finished topsoil surface shall be smooth and firm with a loose texture. Ensure that finished grades meet flush and smooth with adjacent grades and surfaces such as curbs, manholes, sidewalks, etc. The minimum depth of topsoil shall be 300mm in all landscaped areas. Topsoil depth shall not exceed 500mm. In natural or environmentally sensitive areas the City of Calgary guidelines would apply.

11.8 Slope

All park areas, playing fields, green spaces or reserves and areas of level terrain are to have a minimum slope sufficient to prevent the collection of water.

11.9 Boulevards and Medians

All boulevard areas (between sidewalk and curb and gutters or between property line and curb and gutters), medians (2.0m or greater in width, or as identified by the Town) and buffer strips, shall be filled to final grade with 300mm (12 inches) of topsoil. The slope across boulevards shall be 2%. Boulevards, medians and buffers must be seeded, sod, or have an accepted alternate treatment subject to approval by the Municipal Engineer. Boulevards, medians and buffers shall not be altered without Town approval. Grass in the boulevards must be established with no bare spots in evidence before an FAC can be issued. Trees in Boulevards or Medians to follow specifications under section 11.12. Medians are to have a 300mm hard surface (i.e. concrete or paver stones) apron that is on a 2% slope from the back of curb.

11.10 Turf

Turf areas are to be designed to accommodate efficient mowing maintenance in accordance with parcel size and layout. Areas behind private property in naturalized areas that will require a firebreak buffer, are to be planted with a 6m wide strip of fescue turf and be mowed as needed where topography permits.

11.11 Grass Seed

All grass seed shall be certified Canada No. 1 seed. It shall be free of disease, weed seeds or foreign materials, meeting the requirements of the Seeds Act. During seed establishment weeds must be controlled and destroyed to prevent seed production and dispersal. Species substitution on all 'Accepted' plans is not permitted without written approval from the Town. All grass seeding shall conform to the following outline:

1. The following mix may be used for slopes, non irrigated areas, boulevards substituted for traditionally manicured areas as an excellent low maintenance ground cover. Contact Open Spaces for site specific approval.

30-35%	Creeping Red Fescue
15-25%	Chewings Fescue
15-35%	Hard Fescue
15-20%	Sheep Fescue
0-30%	Kentucky Bluegrass

2. For irrigated areas, playfields, and joint use sites use cultivars that provide good hardiness characteristics, density as well as good early spring and late fall colour for a fine mixture composed of:

75%	Kentucky Bluegrass (three cultivars)
15%	Creeping Red Fescue
10%	Perennial Ryegrass

3. Areas where the land has been partially stripped and/or will not be developed for one or more years and no other use will be designated, to reduce the incidents of weed and unsightly premises, the Developer will plant a cover crop of the following:

20%	Cicer Milkvetch
20%	Red Clover
60%	Perennial Ryegrass

Natural or environmentally sensitive areas shall be replanted with locally native species. If these areas are disturbed or stripped, the original topsoil shall be stockpiled in non-compacted low piles (not more than 3m in height) and for not more than 2 years. As each site is unique, the Town of Okotoks must approve seed mixtures and rates of application. The City of Calgary through its Natural Areas Guidelines has suggested mixtures for many of these sites. MRs, Boulevards, slopes over 4:1, and other areas that are adjacent to a natural area, semi-natural area or ER must use a site specific turf species to be determined by the Town,

Should some of the above mixtures not be available the Town of Okotoks must approve a comparable substitute. **Under no circumstances will Yellow or White**

Sweet Clover (*Melilotus officinalis* or *M. Alba*), Crested Wheatgrass, Timothy, or Smooth Brome be allowed.

Seed mixtures in Section 1 to 4 shall be applied at a rate of not less than 30 g/m² or 300 kg/ha. Seed mixtures in Section 5 shall be applied at a rate not less than 15 g/m² or 150 kg/ha.

The preferred time for seeding is from May 30 until September 30, or as weather permits.

The two accepted means of applying seed are Hydro-seeding or mechanical (Brillion). Hand broadcasting is unacceptable under any conditions except for isolated repair work.

Upon completion of seeding, arrange for an inspection with the Town. Give timely notice for such inspection.

Protect all newly seeded or sodded areas as required. Remedy all damages, washouts and eroded areas resulting from weather, improper protection or other causes.

Prior to sodding or seeding, 12-51-0 or 11-52-0 ammonium phosphate fertilizer shall be applied at the rate of 400 kg/ha (9 lbs / 1000 ft²). This rate may be subject to adjustment upon receipt of the topsoil analysis report. Fertilizing in natural areas must be pre-accepted regarding rates and type of fertilizer.

11.12 Trees and Shrubs

1. Trees shall be planted in MR sites at the rate of:
 - Minimum of 20 to maximum of 40 trees per acre for sub-neighbourhood parks.
 - Minimum of 15 to maximum of 30 trees per acre for neighbourhood parks.
 - Minimum of 10 to maximum of 15 trees per acre for community parks (MR, MSR, SR).

2. The total number of trees planted in any park must conform to the following:
 - Minimum 30% Coniferous. No more than 50% of either Spruce, Pine or Larch.
 - Minimum 30% Deciduous.
 - Maximum 50% of any one species.
 - Minimum of 3 different species.
 - Minimum 97% from Preferred List
 - 1 specimen from Trial list (based on availability)

Species substitution on any 'Accepted' plans is not permitted without written approval from the Town.

3. All boulevards and landscaped medians shall have trees of alternating species, using a minimum of 2 different species (where possible, 3 different species is preferred), in accordance with these guidelines, planted at a maximum spacing of twelve (12) meters. **No coniferous trees may be planted on boulevards.** All plantings must take into consideration "Line-of-sight" near traffic signs, intersections and vehicular access to parks. If obstacles such as driveways or streetlights interfere with tree spacing, tree groupings of similar species must be provided to maintain minimum tree density requirements. If the minimum density requirements cannot be met, the remaining trees shall be planted in an accepted alternate location to maintain the density requirement. Trees and shrubs should be planted in groups, in mulched planting beds. In boulevards and medians, trees shall be planted in continuous tree trenches. Trenches will not be excavated any deeper than the depth of the root ball to avoid settling. Trenches are to be scarified.
4. Trees require a separate CCC and FAC application from landscaping. Trees must exhibit two years of new growth beyond original condition at CCC before an FAC will be issued. At time of CCC and FAC, plant material must be true to name and type; structurally sound; well branched; healthy and vigorous and free from disease, insect infestations, rodent damage, sun scald, frost cracks, and other untreated abrasions to the bark; and densely foliated with a healthy well developed root system. Pruning wounds must show vigorous callus growth on all edges and all parts must show live and green cambium tissue when cut. Final inspection of all plant material will be made at the end of the specified warranty period. Maintenance periods for trees and shrubs shall be two years. Deciduous trees exceeding 90mm calliper and coniferous trees taller than 4m will require a warranty and maintenance period of five years.
5. Planting beds (Tree or shrub) should be set back from areas designed for play structure a minimum of 3.5m from the outside edge of the play area. Type and spacing of plants shall ensure clear sight lines into the play structure area. A minimum of 2 meters between a tree and any other object in the park (fences, pathways, etc) is required. Trees are not to be planted on a slope of greater than 3:1 or within 2 meters of the base or crest of a slope. Top of the root ball to be level with finished grade on down slope side. **Coniferous trees must be planted at least 3 meters from back of curbs, buildings, concrete swales, sidewalks and pathways. Shrubs shall be setback a minimum 1.5 m from curbs, pathways and amenities.**
6. The trees listed in the Appendix, sheets 18-23, may be planted on MR, MSR, and SR sites within the Town of Okotoks according to the guidelines set out in item 2 above (unless otherwise noted).
7. All trees planted must have at least 300 mm of topsoil surrounding the sides of the root ball including those planted with a tree spade. The base of the root ball

must sit on undisturbed sub-soil (option is to compact bottom of hole to 95% standard proctor density). Plant with root (trunk) flare at finished grade level unless otherwise specified..At the time of planting cut away the strappings and **remove** the top 1/3 of the wire and burlap. Cut back the wire at burlap and cut down the sides of the burlap in three equally spaced locations

8. All trees and shrubs must be mulched with 75mm depth of accepted wood mulch.
9. Shrub/tree beds should be grouped in contiguous/continuous pits/trenches. Trenches must be backfilled with topsoil and allow for 300mm of topsoil on sides of root balls. Beds containing trees and shrubs are to be excavated to depth of tree root ball. Minimum 600mm depth is required for beds containing shrubs only. Trench subsoil to be scarified.
10. Trees planted should have a minimum caliper of 50mm. Bur Oak are to have a maximum caliper of 60mm.
11. Prior to any pesticide application on trees, the Town of Okotoks must be made aware and approve any application. Pesticide application shall be performed in accordance with the Town of Okotoks' 'Right to Know' bylaw by a certified pesticide applicator
12. Plant material to follow CNTA standards.
13. Phytosanitary Certification Program Standards are to follow City of Calgary specifications. Alternatively, a letter from an independent ISA certified arborist confirming trees have been inspected and are visually free from pest and disease can be submitted to the Town. Documentation to be presented when trees arrive on site (prior to CCC).
14. Trees shall be pruned by an ISA certified arborist Tree maintenance pruning (between CCC and FAC) to adhere to City of Calgary specifications (VII Landscape Maintenance 21 Tree Pruning). Prior to any pruning, notify the Town of Okotoks (minimum of 24 hours notice required) to arrange a start up meeting with the ISA certified arborist.

Tree Protection: Tree protection plans are to be submitted for any development site where existing trees are planned to be retained within the construction zone, and are to include any public tree within 6m of the construction zone. Tree protection plans are to be prepared by either the consulting landscape architect or an ISA certified arborist and are to be submitted to the Town. Tree protection must be in place prior to stripping and grading. Barrier fencing is to be installed as close to the outside edge of the existing drip line of the tree(s) as feasible. Tree protection plans must identify protection zones, type of fencing to be used, construction limits, stockpiling and hoarding areas and provide a

contact name for construction representative responsible for the protection fencing throughout the project. Protection fencing is to be maintained throughout the construction of the project. Metal panel construction fencing is the preferred type of barrier fencing and in certain situations may be required. **Tree protection areas must not be used for storage or stockpiling of construction materials at any time.** The Town of Okotoks is to be contacted for an inspection once fencing is installed.

11.13 Amenities

All amenities are to be located at least 1m off a pathway.

Provide concrete foundation or engineered geo-fabric under all cobblestones, interlocking bricks or decorative brick walkways to prevent sinking, if utilized for vehicular traffic.

Unless otherwise accepted by the Town of Okotoks, benches must be installed on a suitable hard surface (concrete, pavers, pavement, etc) which will allow for efficient landscape maintenance and designed such that all portions of the bench are over the pad. Benches are to be all steel construction. If the bench is along a pathway or sidewalk, it must have armrests. Bench seating surface to be 440-457mm above finished grade.

Garbage receptacles must be of all steel construction, black in colour (wood cladding for aesthetics is acceptable), unless otherwise requested by the Town, with wind and weatherproof self-closing lid and placed on a concrete pad. Concrete pad to be flush with finished grade. The bag must be completely enclosed, non-locking, and have a slide out bag feature. Capacity must be 120 L (Haul All Hide-a-bag type). Sites with sports fields or other high use recreational facilities to have all steel beverage recycling containers adjacent to garbage receptacles.

Install at least one Dog-i-pot, the Junior Bag Dispenser, in all parks. Parks with multiple entrances may require more than one. Dispensers are to be maintained by the developer for one year (until FAC with amenities).

Playground equipment must meet or exceed CSA Standard CAN/CSA-Z614-07 for playground equipment and play spaces. Playgrounds to include a main structure and may have additional components. The playground should contain at least five components (i.e. slide, swing bay, climber, play panel, spinning, and overhead) and accommodate both age groups 2-5 years old and 5-12 years old. The maintenance period for playground equipment is one (1) year from CCC. The Developer must provide a letter from the manufacturer/supplier attesting that equipment meets CSA Standards and have the equipment inspected by a Certified Playground Inspector prior to an FAC being issued. Written documentation confirming the inspection must be submitted to the Town prior to issuance of FAC's.

New play structures or equipment are the sole responsibility of the Developer prior to FAC; this includes, but is not limited to, inspections and maintenance. After issuance of FAC, the equipment is taken over by the Town (Town of Okotoks Playground Risk Management Policy 1998). All below ground components of the playground equipment must be steel. No plastic slides or tubes will be allowed. The Developer shall provide copies of construction plans and drawings as well as installation and maintenance details.

The protective surfacing material for playgrounds shall be 10mm washed natural rounded rock to a depth that meets or exceeds the CSA Standards. A sample is to be provided to the Town of Okotoks prior to installation.

Playground Edge Restraints to follow City of Calgary specifications. Where a grass berm is required (due to overland drainage issues), build according to supplied detail. Concrete edging to be installed along hard-surface walkway areas.

Install weeping tile in playground equipment area to ensure drainage and do not locate playgrounds in areas where surface drainage water will collect. Playfields shall be constructed in such a manner as to provide positive drainage of water off the play surface. Rectangular play fields shall be crowned with a suitable cross fall, and shall be level in the long direction of the field.

Bicycle racks are to be installed at playgrounds and sports fields. The racks shall be of all steel construction, permanently fixed, and the functional area shall be an appropriate hard surface located adjacent to the logical point of access.

1.2m chain link fencing shall be provided adjacent to all MRs unless otherwise designated by the Town of Okotoks. The mesh must be 9 gauge galvanized.

11.14 Post and Cable Fencing

Wood post and cable fencing shall be provided as per City of Calgary specs, with a difference in spacing. Wood posts shall be no further than 2.4m (8') apart. Fencing is to be 1.5 m back from sidewalk, where practicable. Park access points to be 3.65m (12') wide minimum (with a removable bollard) to allow for water truck and emergency services vehicle access with topography/park design to permit the appropriate turning radius.

11.15 Park Signage

1. Standard Town of Okotoks Open Spaces Signage (See detail 10) must be installed at all normal points of access to a park. The contractor shall obtain the park name and address shall from the Town of Okotoks prior to fabrication. Park signs must be installed prior to CCCs for landscaping. All signs must take into consideration visibility with relation to trees and placement related to vehicular access to parks.
2. Town will provide park name and address prior to fabrication.
3. Signs to be mounted on 2 3/8" OD galvanized steel pipe concreted into the ground, with the bottom of the sign to be 7 ft from the ground. Signs are to be fastened to posts with carriage bolts or other approved alternative banding system (not clamped to post).

11.16 Bollards

Standard Permanent Bollards and Removable Bollards shall be installed where deemed necessary by the Town of Okotoks. As an alternative, 'T' (traffic/shape) 'L' bollards may be used. The bollard style and colour must be accepted by the Town. Upon receipt of FAC, an appointment shall be made with the Town of Okotoks to change Developers locks to Master Lock #1KA-2001.

11.17 Lighting

Park and pathway lighting will be installed where deemed appropriate by the Town of Okotoks. A decorative light fixture (accepted by the Town) shall be used. Consideration to light pollution will be incorporated into the design. All outdoor lighting must meet the Town of Okotoks Outdoor Lighting standards as per Section 9.22.0 of Town of Okotoks Land Use Bylaw.

11.18 Protection of Work

The developer is responsible to appropriately protect all new landscaping (trees, shrubs, turf, amenities, etc.) from any potential damage until properly established, including (but not limited to) damage caused by people, vehicles, machines or equipment, wildlife, weather, etc. The Developer is responsible to replace or repair any damaged items as directed by the Town of Okotoks.

11.19 Weed Management

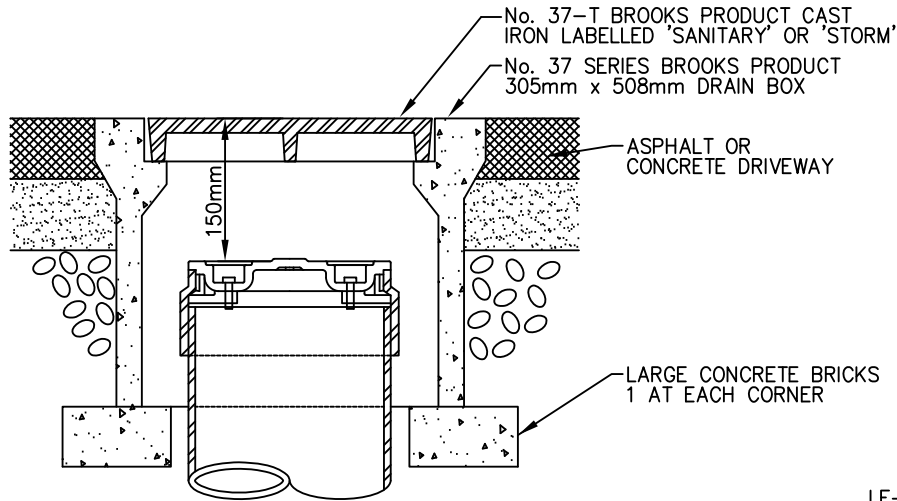
A Weed Awareness and Weed Management Plan is required for all construction activities. All areas of gravel must have an accepted weed management plan. A threshold of 5 weeds per square metre is to be attained on all classes of parks and development lands.

12 Appendix

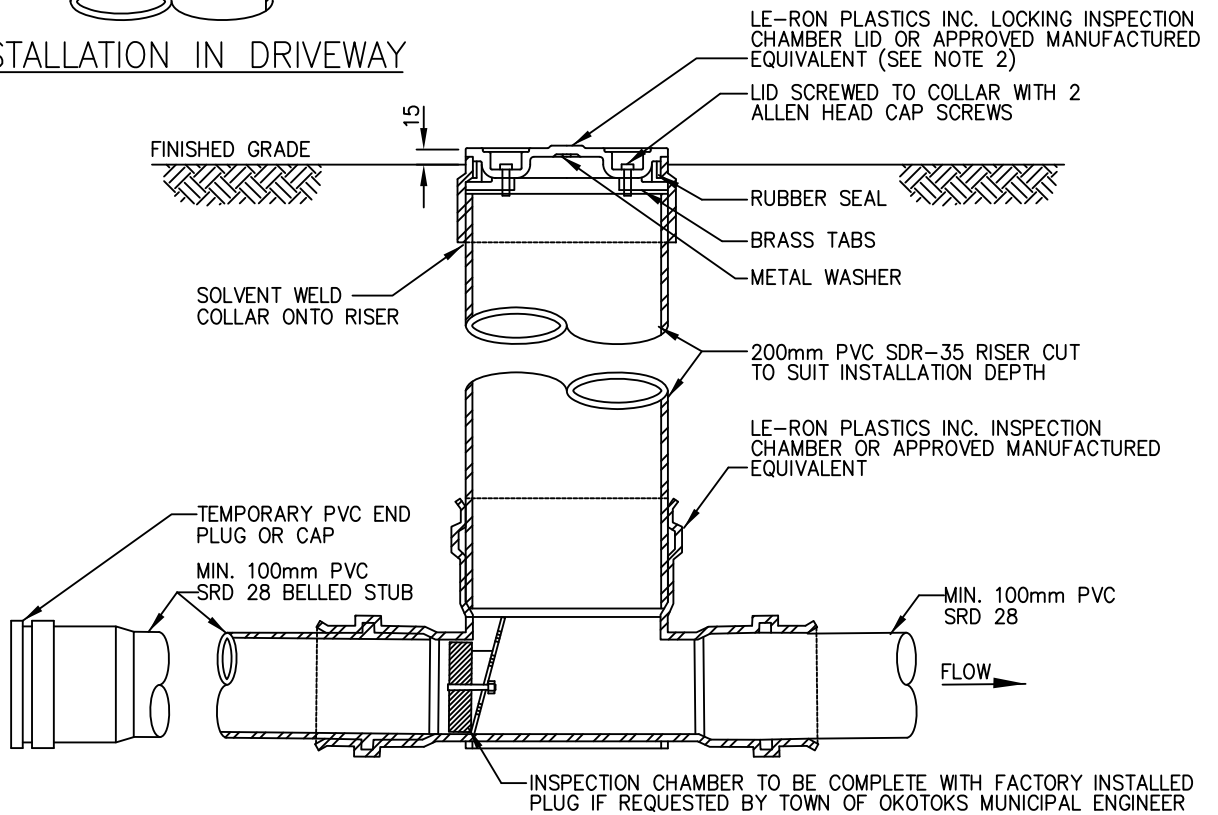
Please refer to City of Calgary specifications for Standard Drawings and details except for the following:

List of sheets

1. Inspection Chamber
2. Manhole Cover
3. Typical Service Card
4. Inventory of New Improvements - Utilities
5. Inventory of New Improvements - Transportation
6. Planting Detail
7. Playground Berm Detail
8. Permanent Bollard Detail
9. Bollard Placement
10. Open Spaces Signage
11. Primary Collector Road (30m)
12. Primary Collector Road (29m)
13. Collector Road (25.2m)
14. Collector Road (22.5m)
15. Collector Road (21m)
16. Collector Road - 3m Path One Side (22m)
17. Residential Entrance Road (25.5m)
18. Residential Road (18.4m)
19. Residential Road (16m)
20. Residential Road - Separate One Side (16m)
21. Irrigation Box Detail
22. Open Spaces Meter Report
23. Irrigation Inspection Checklist
24. Tree list (Sheets 24-39)



INSTALLATION IN DRIVEWAY



INSTALLATION IN BOULEVARD

NOTES:

1. PAINT UPSTREAM BELL AND END PLUG FOR A MINIMUM OF 50mm BELOW BELL, AT TIME OF INSTALLATION AS FOLLOWS:
 - SANITARY SERVICE GREEN
 - STORM SERVICE WHITE
2. INSPECTION CHAMBER LID AS FOLLOWS:
 - SANITARY SERVICE GREEN
 - STORM SERVICE WHITE



Title:

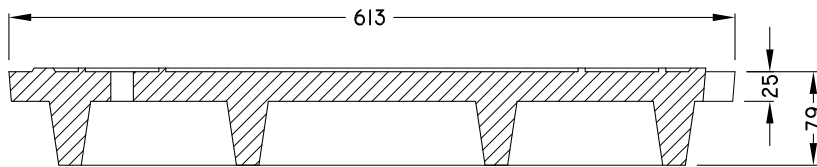
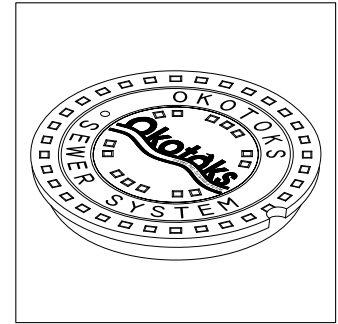
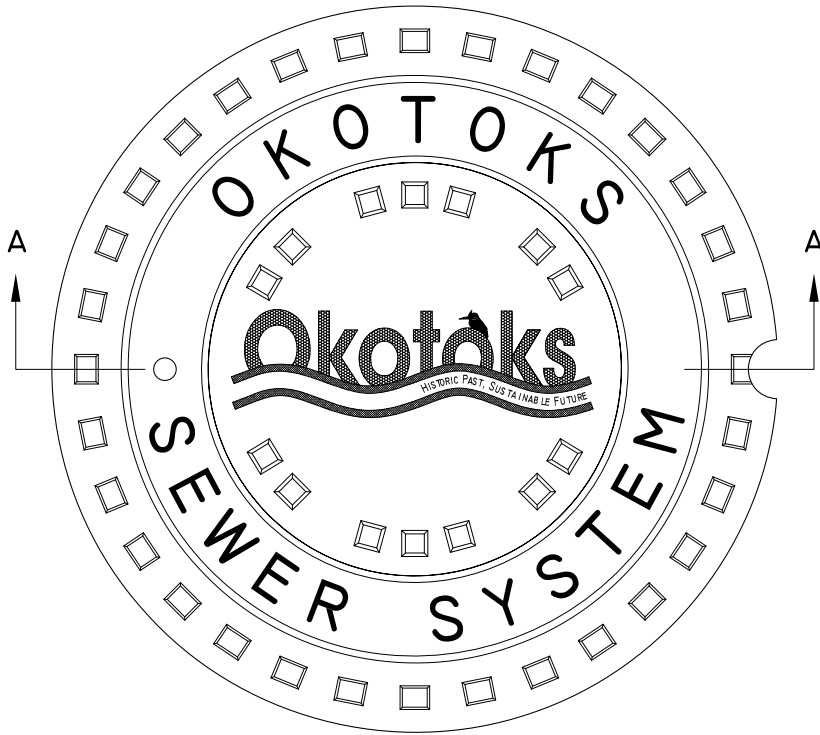
INSPECTION CHAMBER

Town of Okotoks - Engineering Services

Scale: NTS
 Date: January 2000
 Drawn: DF
 Checked: MO/DF
 Revision: _____

Sheet No.

1



SECTION A-A

ISO 9001-2000 CERTIFIED

RATED FOR HS-20 LIVE LOAD

MEASUREMENTS IN MILLIMETERS

Title:

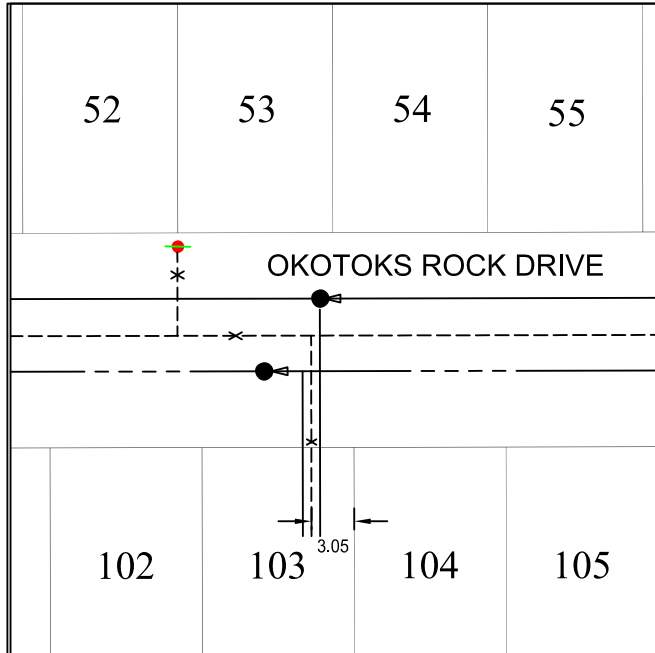
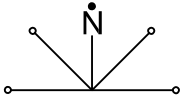
Okotoks Manhole Cover

Scale: NTS
 Date: March 2006
 Drawn: Trojan
 Checked: WRM
 Revision: 1

Town of Okotoks - Engineering Services

Sheet No. **2**

TOWN OF OKOTOKS PROPERTY SERVICE CONNECTIONS RECORD



155 OKOTOKS ROCK DRIVE
HOUSE NO. STREET NAME
BIG ROCK RIDGE PH. 5
NAME OF SUBDIVISION
001 2345 5 103
PLAN BLOCK LOT

REMARKS:

- DEPTH MEASURED FROM TOP OF CURB
 - MAX. DISTANCE BETWEEN SEWER AND
 WATER SERVICE = 1.0m
 - CURB STOP IS LOCATED 5.3m EAST OF
 MAIN VALVE

WATER		SANITARY SEWER		STORM SEWER	
DATE OF INSTALLATION	SEPT, 22, 2000	DATE OF INSTALLATION	SEPT, 22, 2000	DATE OF INSTALLATION	SEPT, 22, 2000
SERVICE SIZE	20 mm	SERVICE SIZE	100 mm	SERVICE SIZE	75 mm
SERVICE TYPE	1/2" COPPER	SERVICE TYPE	PVC SDR28	SERVICE TYPE	PVC SDR30
DIST. FROM PL TO MAIN	12.7 m	DIST. FROM PL TO MAIN	9.5 m	DIST. FROM PL TO MAIN	15.6 m
DIST. FROM EAST PL	3.05 m	DIST. FROM EAST PL	3.35 m	DIST. FROM EAST PL	2.75 m
TYPE OF CURB STOP	FORD	FITTING AT MAIN	IPEX STRAP ON TEE	FITTING AT MAIN	TIED TO MH
DEPTH AT PL	2.7 m	DEPTH AT PL	2.5 m	DEPTH AT PL	2.3 m
DIST FROM PL TO CURB STOP	0.3 m	RISER HEIGHT	N/A	DIST. FROM DOWNSTR. MH TO FITTING ON MAIN	N/A
TYPE OF SADDLE	TAPPED	DIST. FROM DOWNSTR. MH TO FITTING ON MAIN	3.6 m	MAIN SIZE	450 mm
MAIN SIZE	250 mm	MAIN SIZE	200 mm	MAIN TYPE	PVC SDR35
MAIN TYPE	PVC DR18	MAIN TYPE	PVC SDR35	LENGTH OF STUB INSIDE PL	5.0 m
LENGTH OF STUB INSIDE PL	5.0 m	LENGTH OF STUB INSIDE PL	5.0 m		



Title:

Typical Service Card

Town of Okotoks - Engineering Services

Scale: NTS
 Date: January 2001
 Drawn: DF
 Checked: MO/DF
 Revision: _____

Sheet. No. **3**

Summary of Work Completed for the Year _____

Subdivision: _____

Plan: _____

Developer: _____

Consulting Engineer: _____

Water System

Mains			Valves			Hydrants	
Type	Size (mm)	Length (m)	Type	Size (mm)	Number	Type	Number
Total (m)			Total			Total	

Sanitary Sewer System

Mains			Manholes	
Type	Size (mm)	Length (m)	Type/Size	Number
Total (m)			Total	

Storm Sewer System

Mains			Manholes		Stormwater Treatment Ponds		
Type	Size (mm)	Length (m)	Type/Size	Number	Type	Number	Volume
					Dry		
					Wet		
					Total Number of New Outfalls		
					To River:		
					To Drainage Channel:		
Total (m)			Total				

Total Number of Service Connections

Water:		Sanitary Sewer:		Storm Sewer:		Parks:	
--------	--	-----------------	--	--------------	--	--------	--



Title:

Inventory of New Improvements - Utilities

Town of Okotoks - Engineering Services

Scale: NTS
 Date: January 2001
 Drawn: DF
 Checked: MO/DF
 Revision: _____

Sheet. No.

4

Summary of Work Completed for the Year _____

Subdivision: _____

Plan: _____

Developer: _____

Consulting Engineer: _____

Surface Improvements

Roads			Lanes			Pathways		
Type	Width (m)	Length (m)	Type	Width (m)	Length (m)	Type	Width (m)	Length (m)
Total (m)			Total (m)			Total (m)		

Sidewalks			Curbs, Gutters, and Swales		Culverts	
Type	Width (m)	Length (m)	Type	Length (m)	Type/Size	Number
Total (m)			Total (m)		Total	

Catch Basins

Catch Basin Leads			Catch Basins		I.C.D.'s	
Type	Size (mm)	Length (m)	Type/Size	Number	Size (mm)	Number
Total (m)			Total		Total	



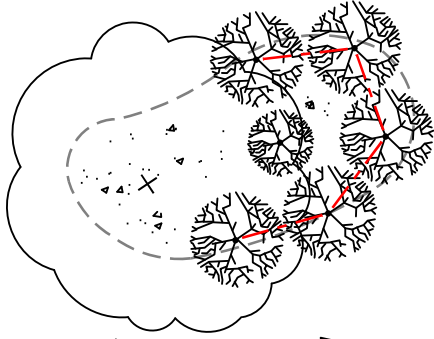
Title: **Inventory of New Improvements - Transportation**

Scale: NTS
 Date: January 2001
 Drawn: DF
 Checked: MO/DF
 Revision: _____

Town of Okotoks - Engineering Services

Sheet. No. **5**

EXAMPLES OF PLANT CONFIGURATIONS

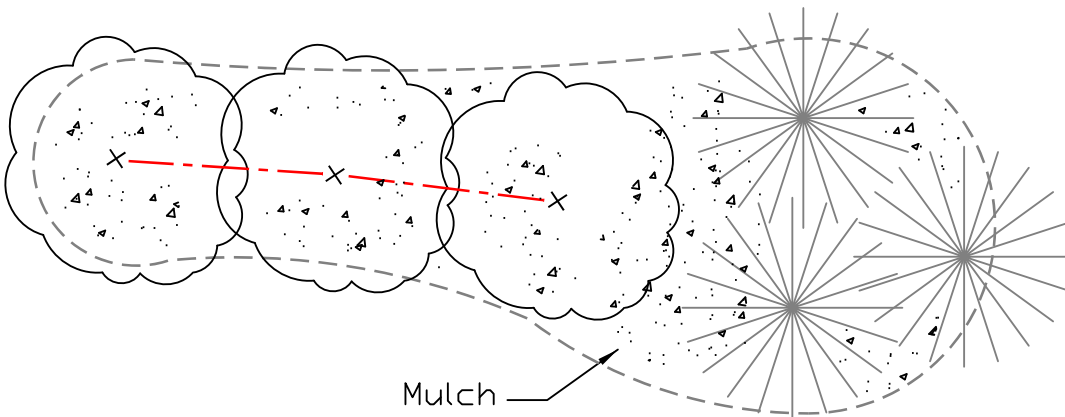
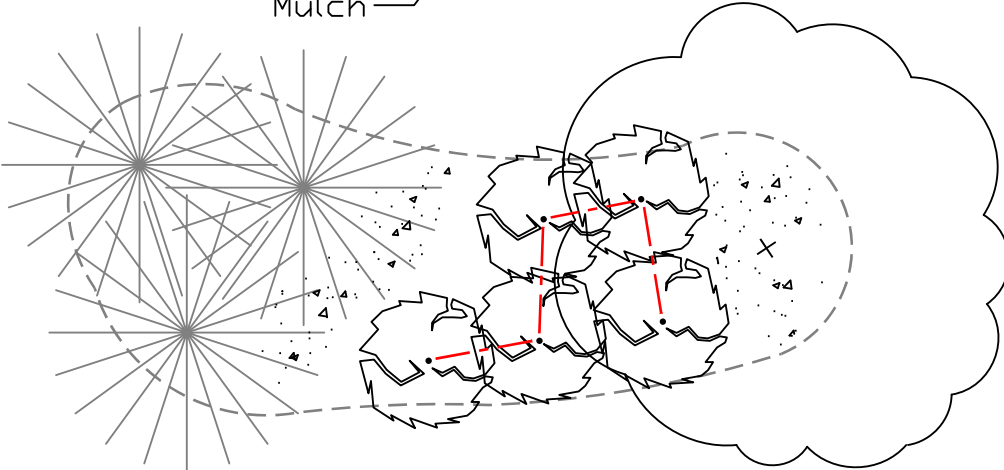
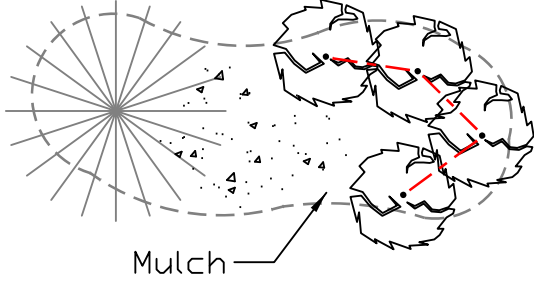


TREE/SHURB BEDS/ISLANDS

Objective: Group trees and shrubs wherever possible to enhance ease of mowing and to reduce water loss.

Mulch all tree wells and planting beds.

Consider security sitelines when locating and aligning beds.



Title:

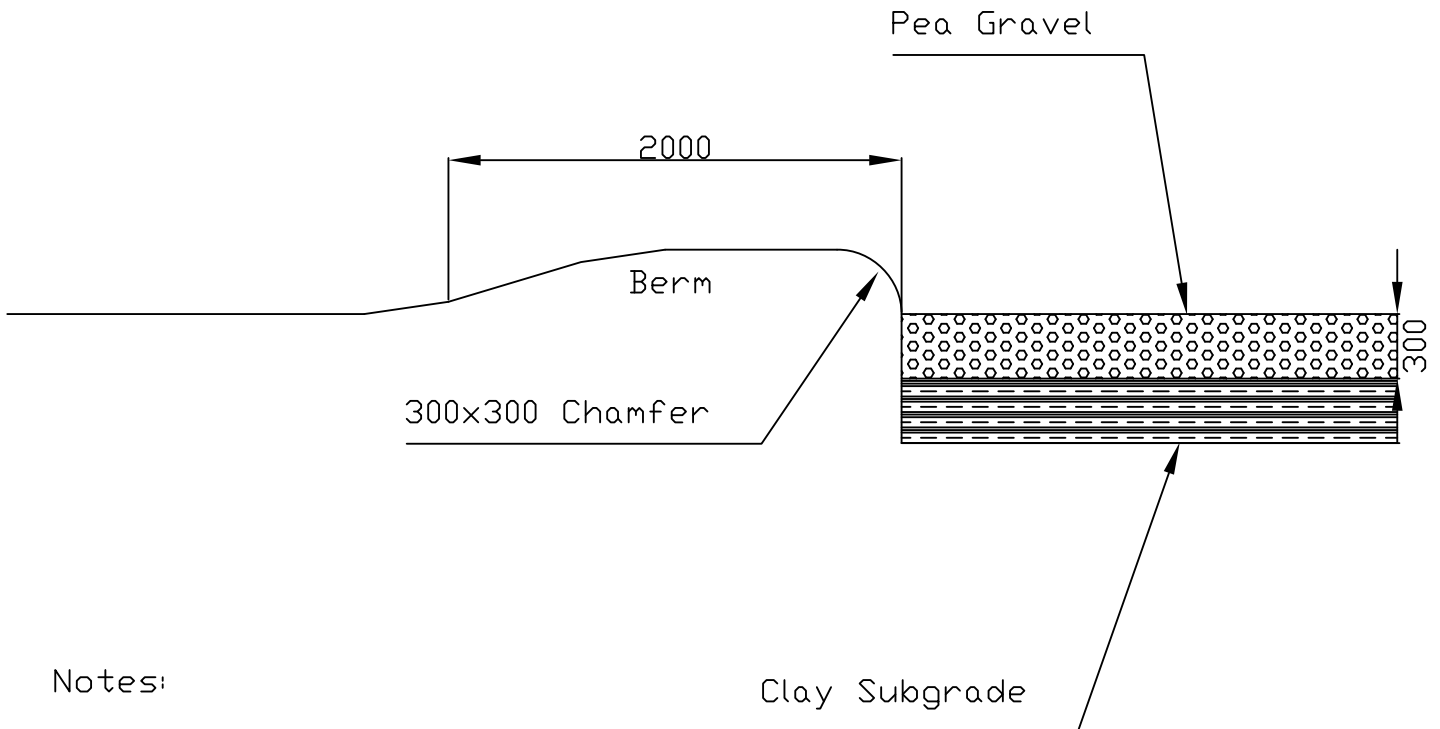
PLANTING DETAIL

Town of Okotoks - Engineering Services

Scale: NTS
Date: March 2002
Drawn: LR
Checked: MO/DF
Revision: _____

Sheet. No.

6



Notes:

- No plastic liner is to be used on top of the prepared clay sub grade,
- No filtercloth is to be used,
- Big 0 pipe or equivalent is to be installed in the pea gravel for drainage.
- All dimensions are in millimetres.

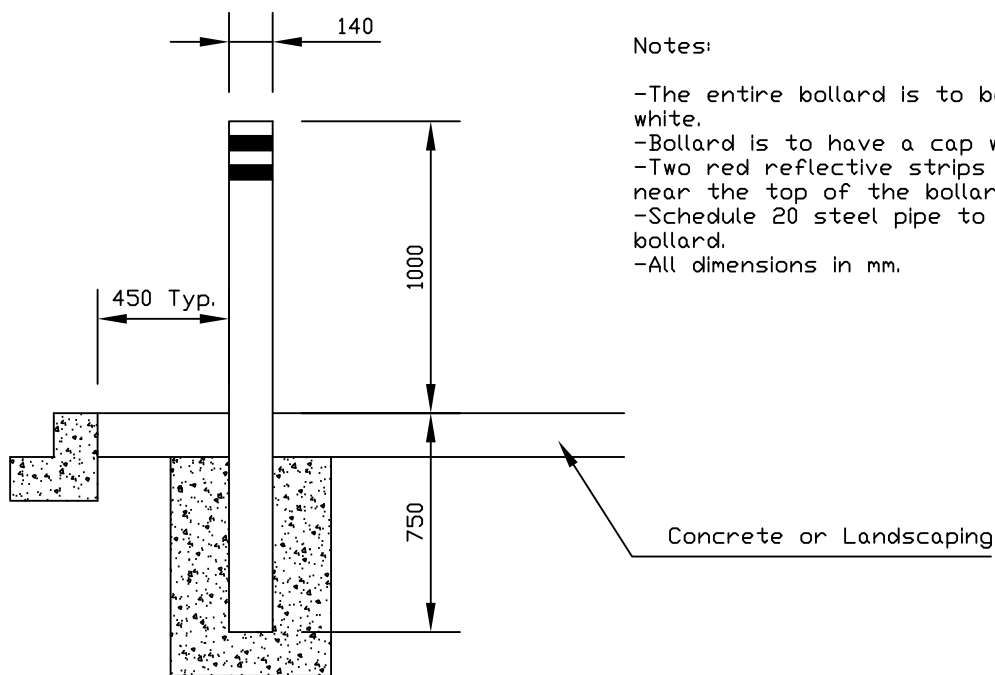


Title: **PLAYGROUND BERM
DETAIL**

Town of Okotoks - Engineering Services

Scale: NTS
 Date: March 2005
 Drawn: WRM
 Checked: JN
 Revision: _____

Sheet No. **7**



Notes:

- The entire bollard is to be powder coated white.
- Bollard is to have a cap welded onto the top.
- Two red reflective strips are to be placed near the top of the bollard.
- Schedule 20 steel pipe to be used for the bollard.
- All dimensions in mm.

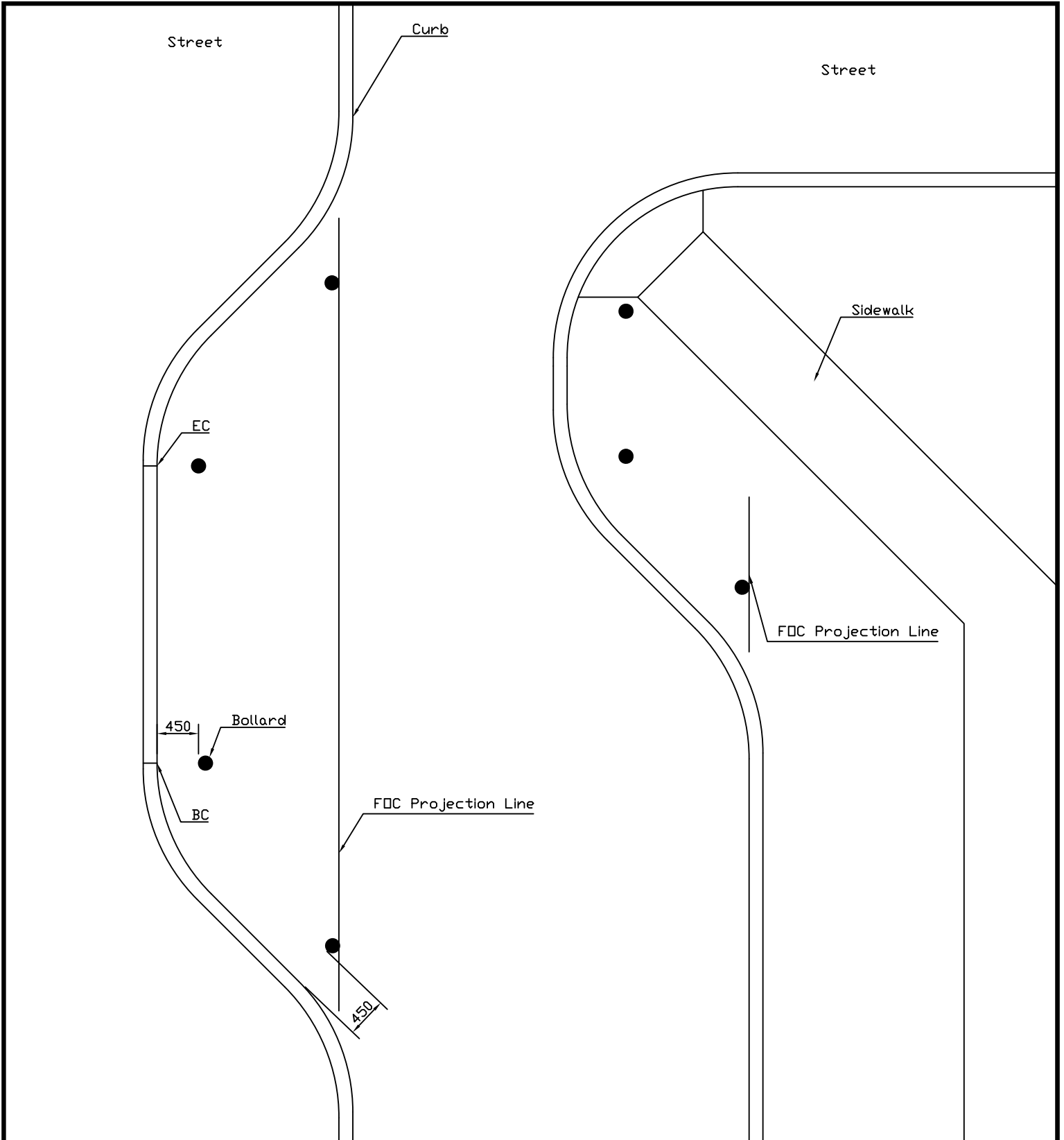


Title: **PERMANENT BOLLARD
DETAIL**

Town of Okotoks - Engineering Services

Scale: NTS
 Date: March 2005
 Drawn: WRM
 Checked: DK
 Revision: _____

Sheet No. **8**



Title:

BOLLARD PLACEMENT

Scale: NTS
 Date: March 2005
 Drawn: WRM
 Checked: DK
 Revision: _____

Town of Okotoks - Engineering Services

Sheet No.

9

- 30X45 cm
- .081 SIGN GRADE
- HI INT. REFLECTIVE

Park Name

Park Address



**PLEASE KEEP YOUR PARK
CLEAN AND SAFE**

Park Hours: 5 a.m. - Midnight

Park Maintenance: 403-938-8958

Bylaw Infractions: 403-938-8913

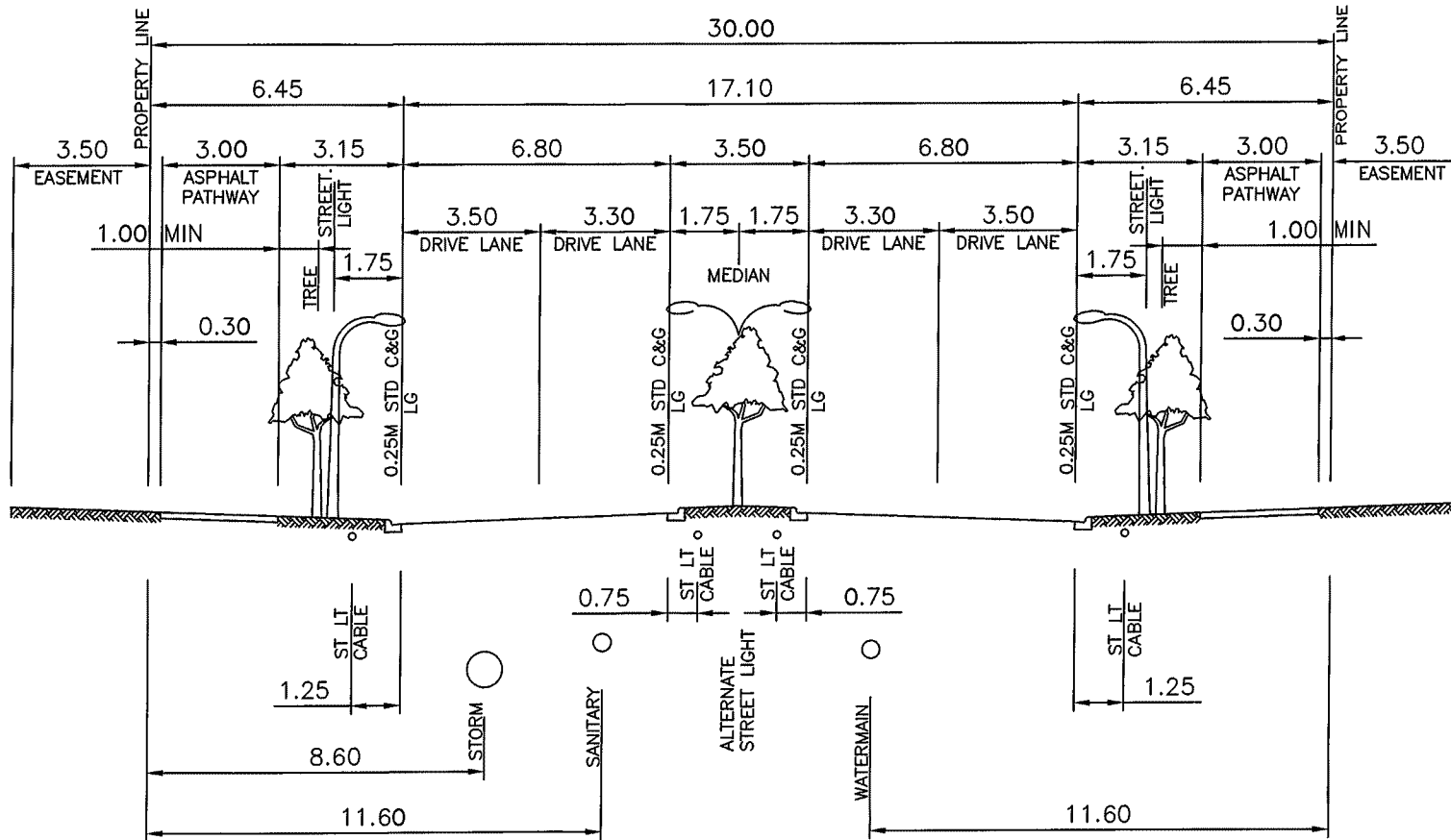
Emergency: 911



www.okotoks.ca

PRIMARY COLLECTOR 30m

TYPICAL VOLUMES: 8,000 - 15,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

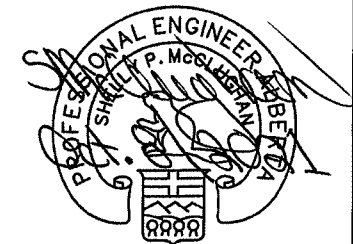
#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: **DK** DRAWN BY: **MK** CHECKED BY: **SM**

PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*
Date: **OCT 08 2021**

PERMIT NUMBER: P-08587
The Association of Professional Engineers and Geoscientists of Alberta



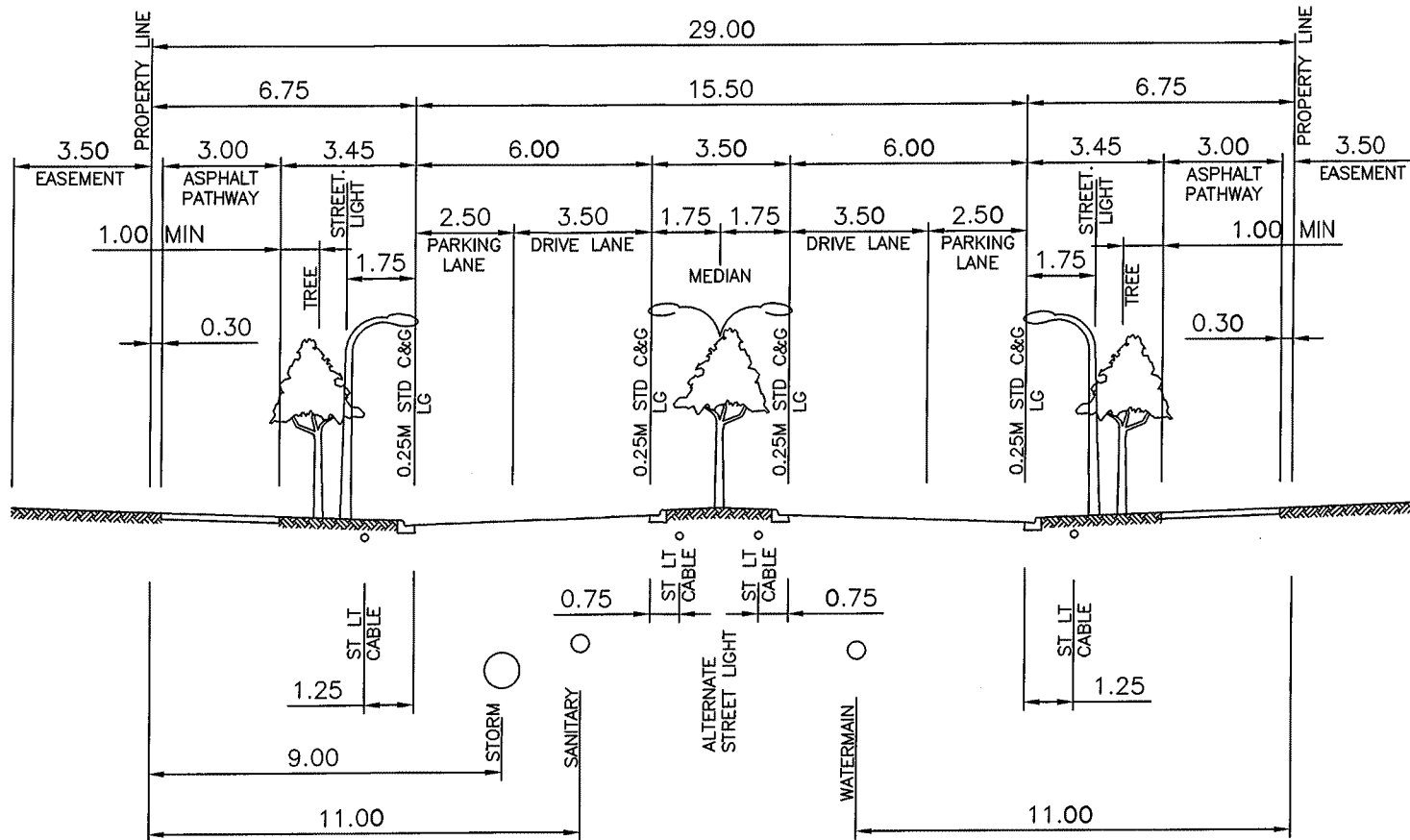
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- STANDARD CURB FOR MEDIAN AND BOULEVARD.
- FRONT RESIDENTIAL DRIVEWAY ACCESS PROHIBITED.
- HYDRANTS ON 4.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 4.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
- THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
- POSITIONING AND VISIBILITY OF REQUIRED SIGNAGE MUST BE CONSIDERED RELATIVE TO ALL SURFACE STRUCTURES AND PLANTINGS.
- THIS STANDARD IS INTENDED AS A GUIDELINE FOR NEW DEVELOPMENT, WHERE NOT APPLICABLE MAKE ADJUSTMENTS AS REQUIRED.



PRIMARY COLLECTOR 29m

TYPICAL VOLUMES: 8,000 - 10,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design
DESIGN BY: DK		DRAWN BY: MK
		CHECKED BY: SM

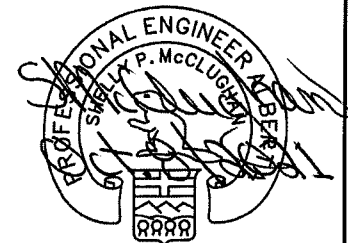
PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: OCT 08 2021

PERMIT NUMBER: P-08587

The Association of Professional Engineers and Geoscientists of Alberta



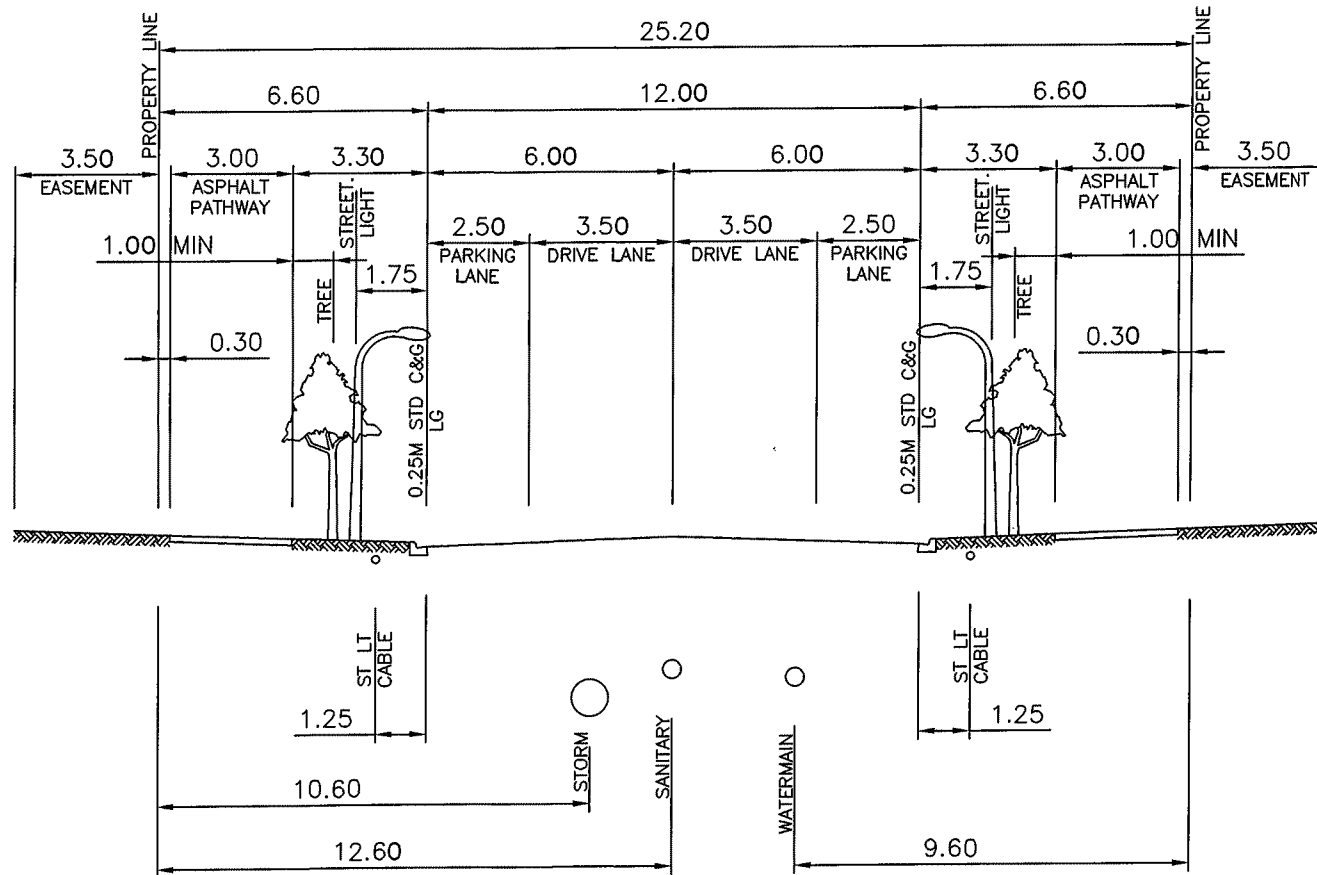
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- STANDARD CURB FOR MEDIAN AND BOULEVARD.
- FRONT RESIDENTIAL DRIVEWAY ACCESS PROHIBITED.
- HYDRANTS ON 4.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 4.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
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COLLECTOR 25.2m

TYPICAL VOLUMES: 2,000 - 8,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design
DESIGN BY:	DRAWN BY:	CHECKED BY:
DK	MK	SM

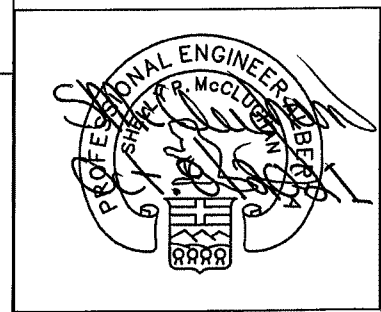
PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: **OCT 08 2021**

PERMIT NUMBER: P-08587

The Association of Professional Engineers and Geoscientists of Alberta



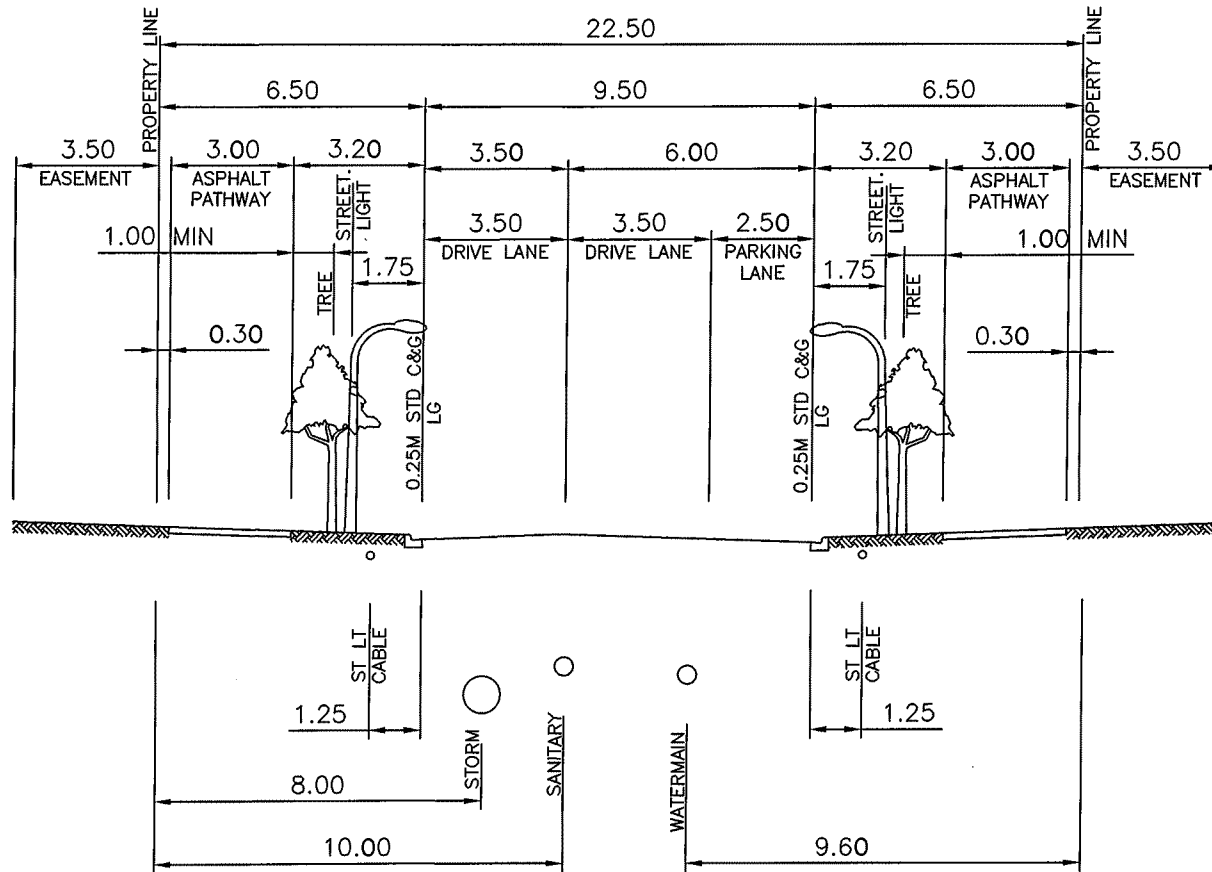
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- STANDARD CURB FOR BOULEVARD.
- FRONT RESIDENTIAL DRIVEWAY ACCESS IS GENERALLY PROHIBITED.
- HYDRANTS ON 4.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 4.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
- THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
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COLLECTOR 22.5m

TYPICAL VOLUMES: 2,000 - 8,000 VPD



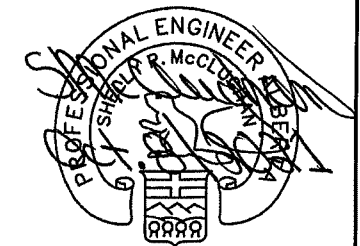
TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design
DESIGN BY: DK		DRAWN BY: MK
		CHECKED BY: SM

PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*
Date: Oct 08 2021

PERMIT NUMBER: P-08587
The Association of Professional Engineers and Geoscientists of Alberta

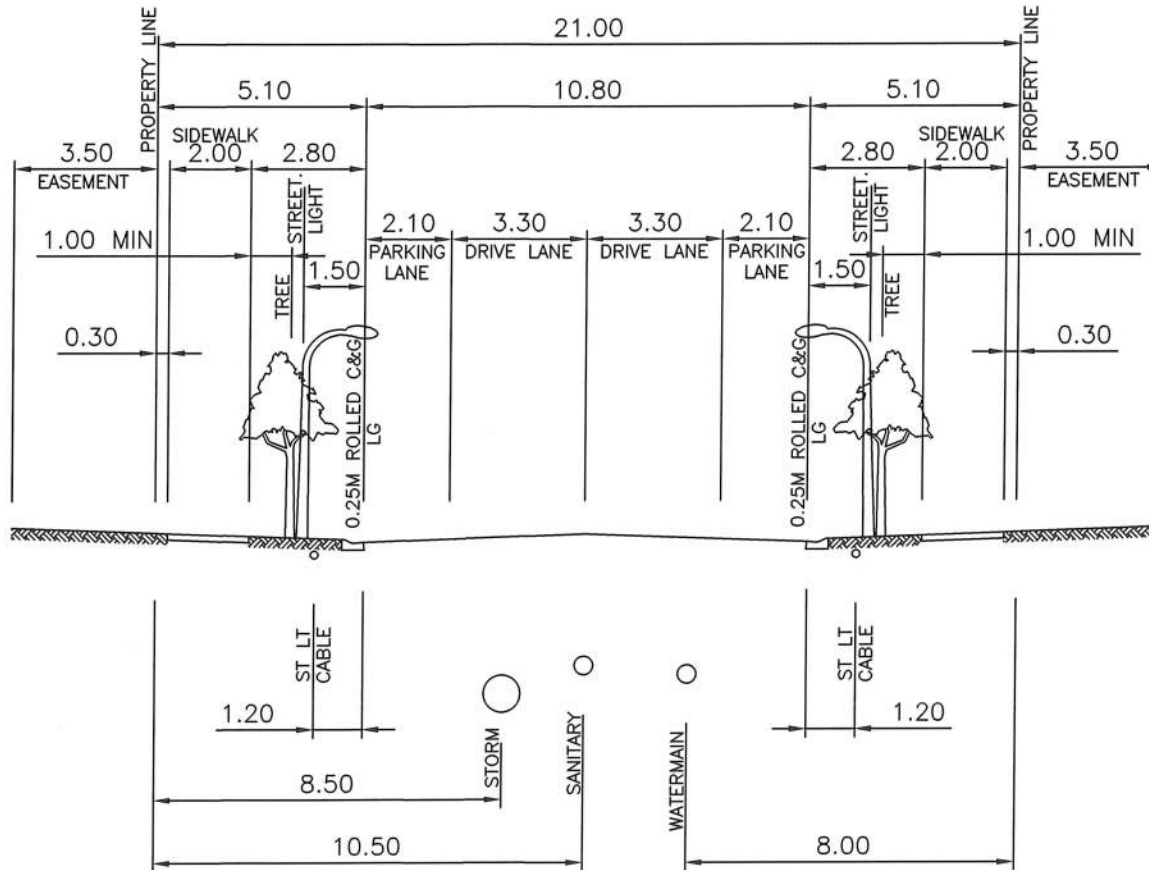


- NOTES:**
- THIS CROSS-SECTION IS GENERALLY NOT SUPPORTED, AND REQUIRES EXPLICIT CONSENT FROM OKOTOKS PRIOR TO BEING SHOWN ON ANY DESIGNS.
 - STANDARD CURB FOR BOULEVARD.
 - FRONT RESIDENTIAL DRIVEWAY ACCESS IS GENERALLY PROHIBITED.
 - HYDRANTS ON 4.00 LINE.
 - HYDRANT VALVES 1.00M FROM WATER LINE.
 - SERVICE VALVES ON 4.00 LINE.
 - TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
 - THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
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COLLECTOR 21.0m

TYPICAL VOLUMES: < 3,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
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4		
3		
2		
1	21/09/10	Initial Design
DESIGN BY: DK		CHECKED BY: SM
		DRAWN BY: MK

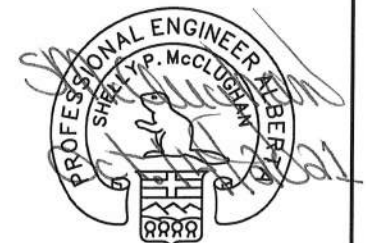
PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: OCT 14 2021

PERMIT NUMBER: P-08587

The Association of Professional Engineers and Geoscientists of Alberta



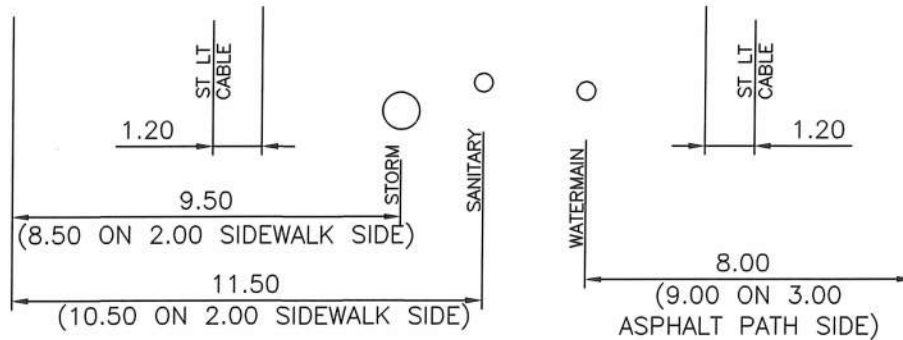
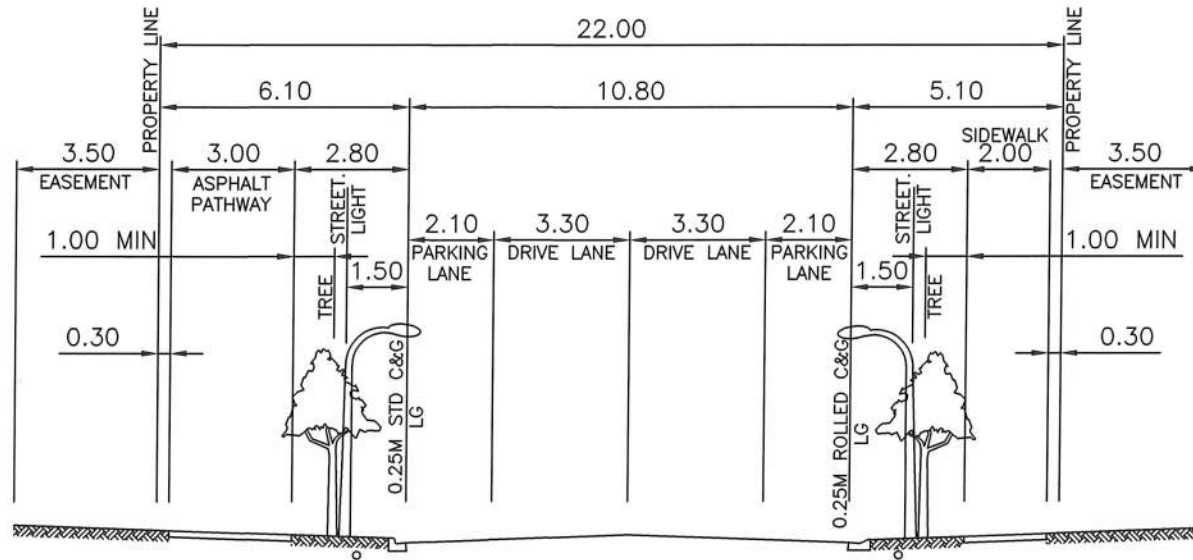
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- FRONT RESIDENTIAL DRIVEWAY ACCESS IS PERMITTED.
- HYDRANTS ON 3.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 3.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
- THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
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COLLECTOR 22.0m (3.0m PATHWAY ONE SIDE)

TYPICAL VOLUMES: < 3,000 VPD



NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- FRONT RESIDENTIAL DRIVEWAY ACCESS IS PERMITTED ON THE SIDEWALK SIDE, BUT GENERALLY PROHIBITED ON THE ASPHALT PATH SIDE.
- STANDARD CURB ON ASPHALT PATH SIDE, ROLLED CURB ON SIDEWALK SIDE.
- HYDRANTS ON 3.00 LINE, 4.00 LINE ON ASPHALT PATHWAY SIDE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 3.00 LINE, 4.00 LINE ON ASPHALT PATHWAY SIDE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
- THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
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TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: DK	DRAWN BY: MK	CHECKED BY: SM
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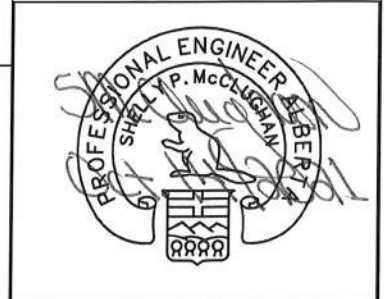
PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: OCT 14 2021

PERMIT NUMBER: P-08587

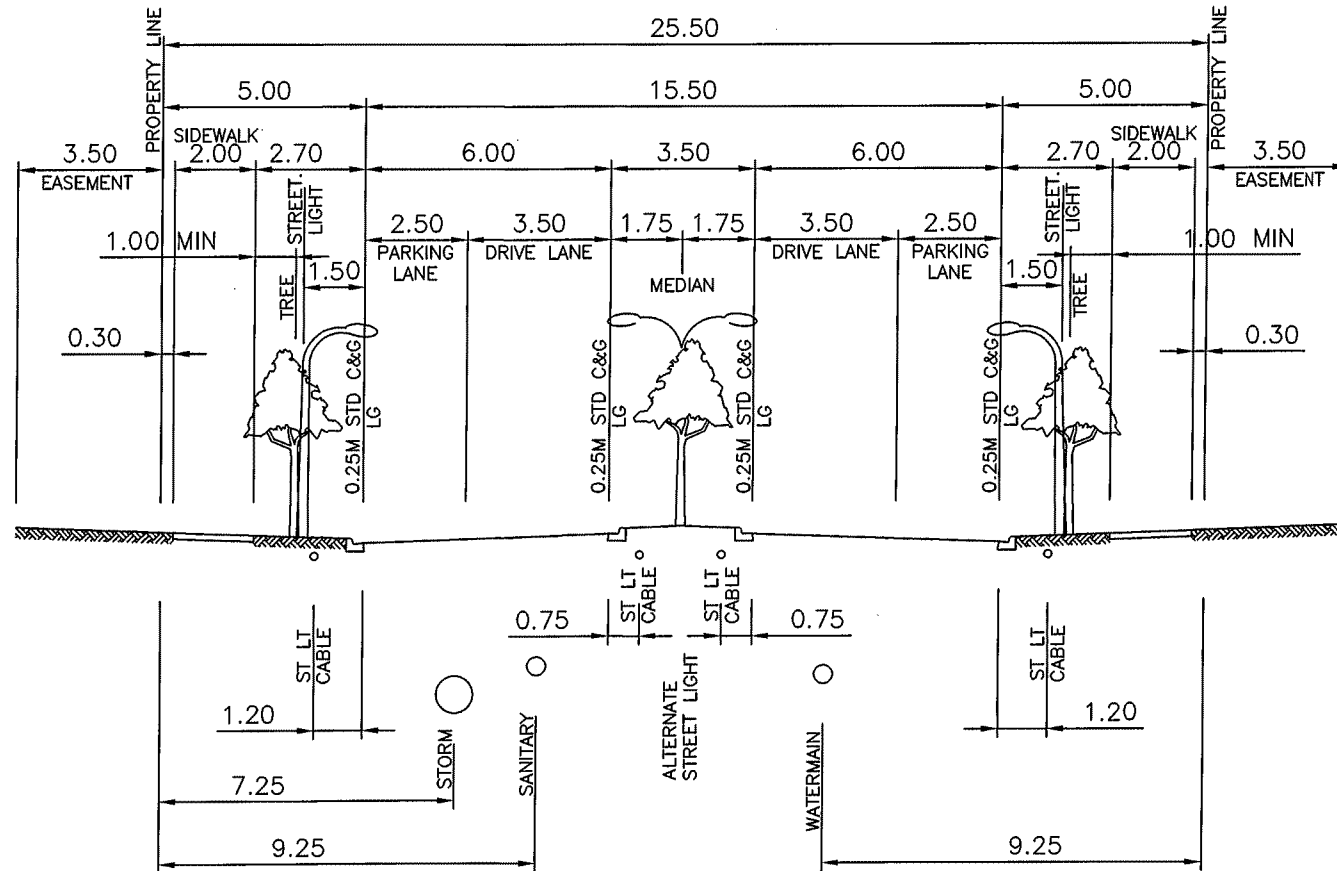
The Association of Professional Engineers and Geoscientists of Alberta



RESIDENTIAL ENTRANCE STREET 25.5m

TYPICAL VOLUMES: < 2,000 VPD

TOWN OF OKOTOKS ROAD STANDARDS



#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: DK	DRAWN BY: MK	CHECKED BY: SM
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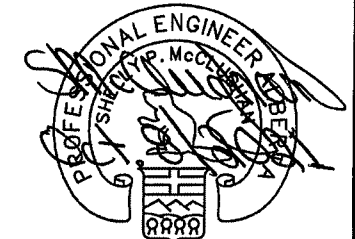
PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: OCT 08 2021

PERMIT NUMBER: P-08587

The Association of Professional Engineers and Geoscientists of Alberta



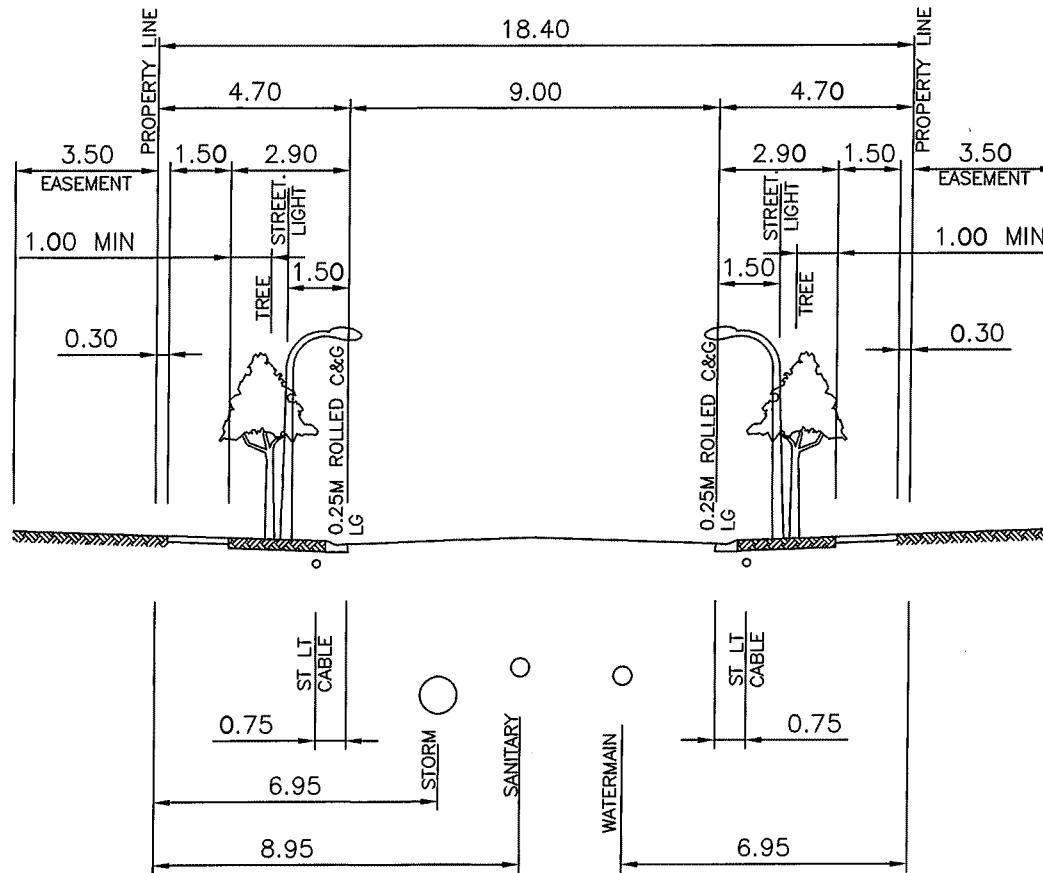
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- ALTERNATIVELY USE COLLECTOR STREET STANDARD.
- ADD 1m FOR 3m MULTI USE PATHWAY WHERE PART OF REGIONAL PATHWAY NETWORK
- STANDARD CURB FOR MEDIAN AND BOULEVARD.
- HYDRANTS ON 3.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 3.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
- THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
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RESIDENTIAL STREET 18.4m

TYPICAL VOLUMES: < 2,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

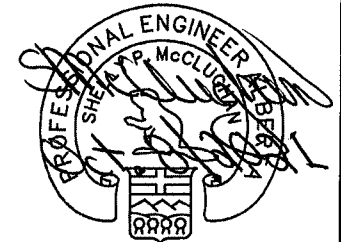
#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: DK DRAWN BY: MK CHECKED BY: SM

PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*
Date: OCT 08 2021

PERMIT NUMBER: P-08587
The Association of Professional Engineers and Geoscientists of Alberta



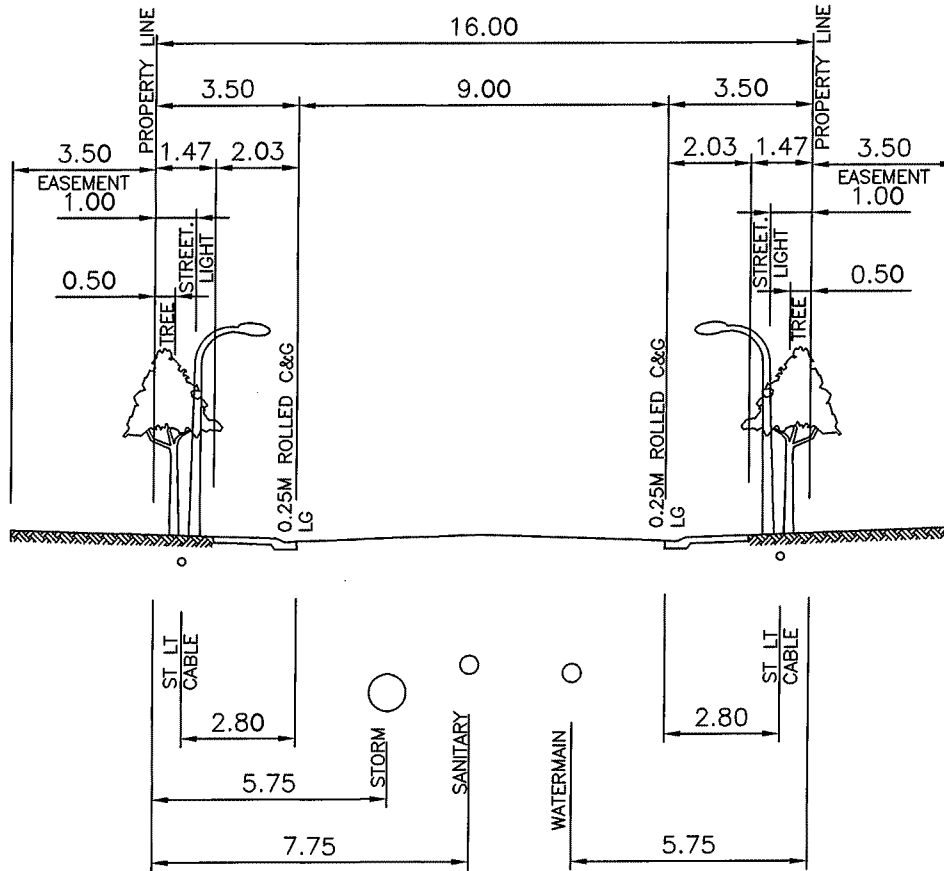
NOTES:

- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
- ROLLED CURB FOR BOULEVARD.
- SHALLOW UTILITIES TO BE LOCATED IN REAR LANES WHERE APPLICABLE.
- HYDRANTS ON 3.00 LINE.
- HYDRANT VALVES 1.00M FROM WATER LINE.
- SERVICE VALVES ON 3.00 LINE.
- TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
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RESIDENTIAL STREET 16m

TYPICAL VOLUMES: < 2,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: DK DRAWN BY: MK CHECKED BY: SM

PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: **OCT 08 2021**

PERMIT NUMBER: P-08587

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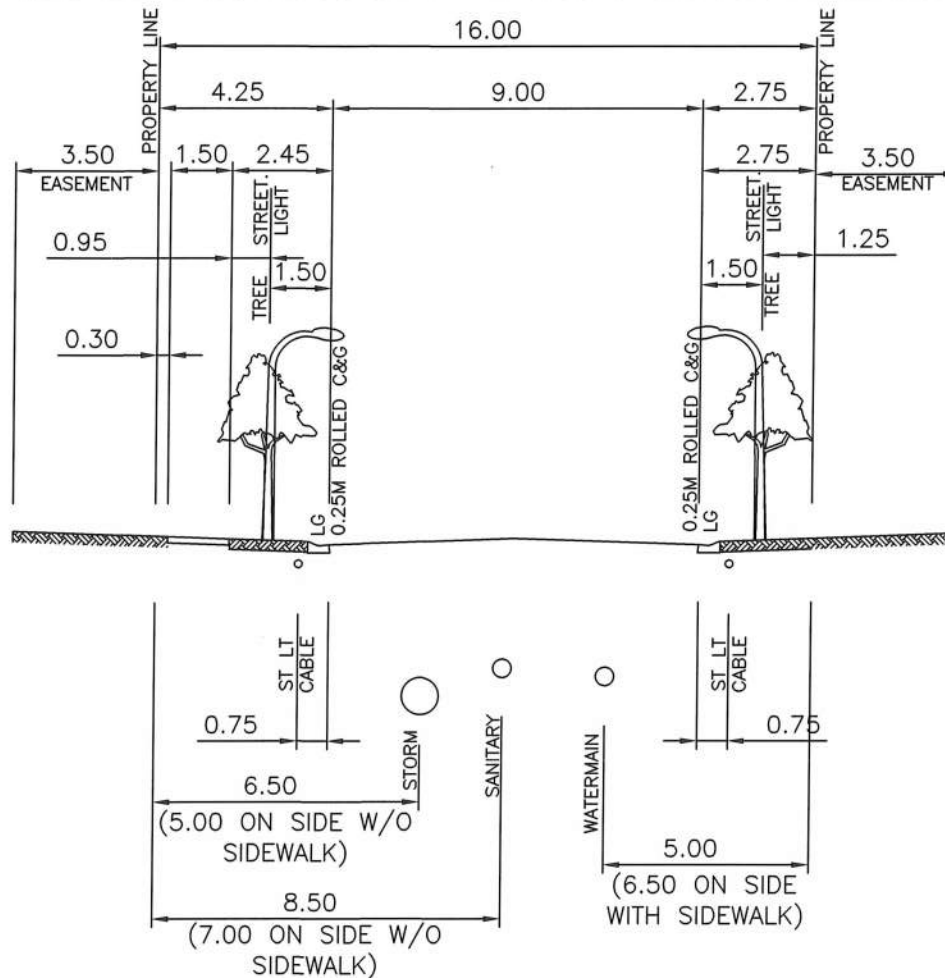
PROFESSIONAL ENGINEER
ALBERTA
P. McCLURE
OCT 08 2021



- NOTES:**
- OKOTOKS HAS SOLE DISCRETION WHERE (LOCATION, EXTENT, ETC.) THIS CROSS-SECTION IS USED.
 - ROLLED CURB FOR BOULEVARD.
 - SHALLOW UTILITIES TO BE LOCATED IN REAR LANES WHERE APPLICABLE.
 - HYDRANTS ON 1.00 LINE.
 - HYDRANT VALVES 1.00M FROM WATER LINE.
 - SERVICE VALVES ON 1.00 LINE.
 - TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
 - THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
 - POSITIONING AND VISIBILITY OF REQUIRED SIGNAGE MUST BE CONSIDERED RELATIVE TO ALL SURFACE STRUCTURES AND PLANTINGS.
 - THIS STANDARD IS INTENDED AS A GUIDELINE FOR NEW DEVELOPMENT, WHERE NOT APPLICABLE MAKE ADJUSTMENTS AS REQUIRED.

RESIDENTIAL STREET - SEPARATE ONE SIDE 16m

TYPICAL VOLUMES: < 2,000 VPD



TOWN OF OKOTOKS ROAD STANDARDS

#	Date	Revision
5		
4		
3		
2		
1	21/09/10	Initial Design

DESIGN BY: DK	DRAWN BY: MK	CHECKED BY: SM
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PERMIT TO PRACTICE
TOWN OF OKOTOKS

Signature: *[Signature]*

Date: OCT 14 2021

PERMIT NUMBER: P-08587

The Association of Professional Engineers and Geoscientists of Alberta

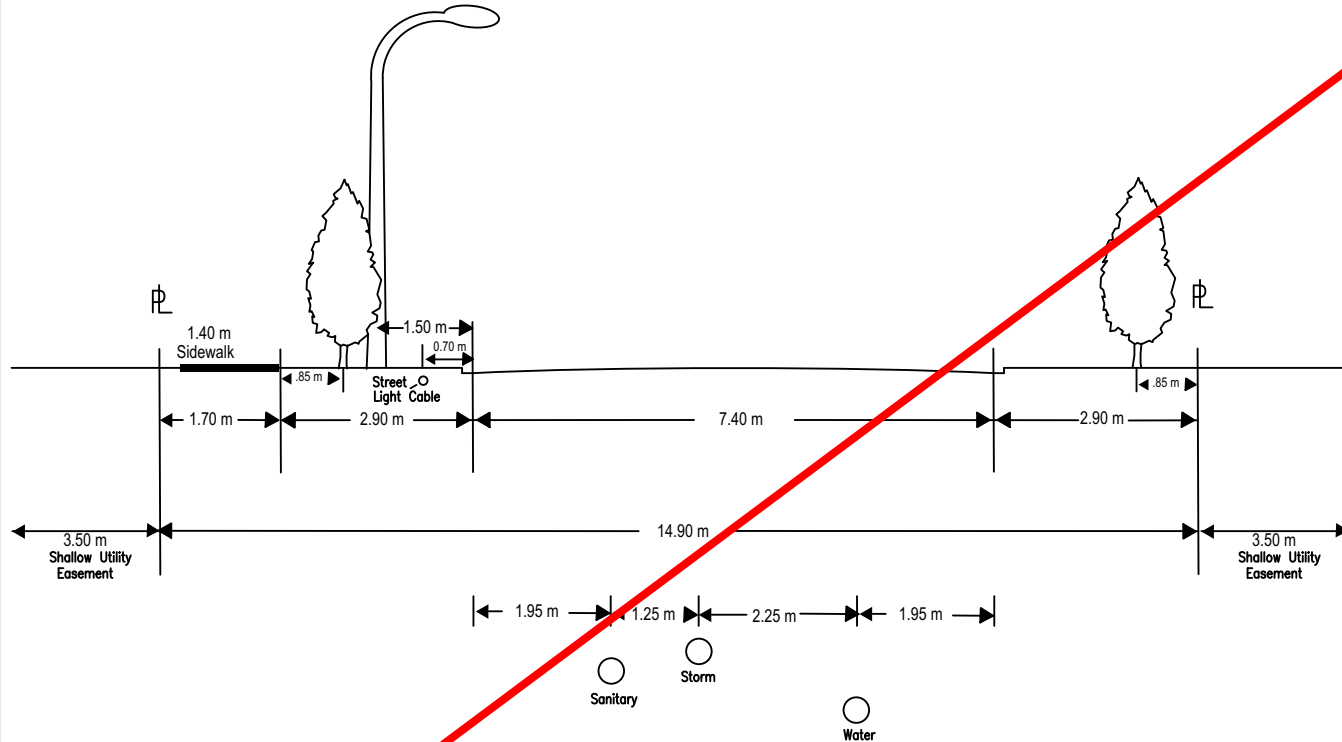


- NOTES:
- THIS CROSS-SECTION IS GENERALLY NOT SUPPORTED, AND REQUIRES EXPLICIT CONSENT FROM OKOTOKS PRIOR TO BEING SHOWN ON ANY DESIGNS.
 - ROLLED CURB FOR BOULEVARD.
 - SHALLOW UTILITIES TO BE LOCATED IN REAR LANES WHERE APPLICABLE.
 - HYDRANTS ON 1.00 LINE, ON 2.50 LINE ON SEPARATE SIDEWALK SIDE.
 - HYDRANT VALVES 1.00M FROM WATER LINE.
 - SERVICE VALVES ON 1.00 LINE, ON 2.50 LINE ON SEPARATE SIDEWALK SIDE.
 - TYPICAL 2% GRADE FOR ROAD CROSS-SLOPE AND BOULEVARD.
 - THE AVERAGE VEHICULAR WHEEL PATHS ARE BETWEEN 1.05m (PASSENGER VEHICLES) AND 1.30m (BUSES/TRUCKS) FROM CENTERLINE OF DRIVING LANES, MANHOLES IN ROADWAY SHOULD BE INSTALLED OUTSIDE OF VEHICULAR WHEEL PATHS AND BIKE LANES
 - POSITIONING AND VISIBILITY OF REQUIRED SIGNAGE MUST BE CONSIDERED RELATIVE TO ALL SURFACE STRUCTURES AND PLANTINGS.
 - THIS STANDARD IS INTENDED AS A GUIDELINE FOR NEW DEVELOPMENT, WHERE NOT APPLICABLE MAKE ADJUSTMENTS AS REQUIRED.

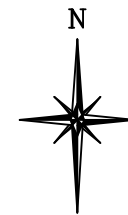
Industrial Local

Town of Okotoks

Industrial Road Standards



#	Date	Revision
5		
4		
3		
2		
1	May 2008	Initial Design



- Notes:
- **Two Travel Lanes** (3.7m each)
 - **Separated sidewalk** (1.4 m) on one side to provide for pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for pedestrian comfort and safety
 - **Boulevards** (2.9m min.) on both sides to provide space for landscaping
 - **Appropriate apron widths** to accommodate truck traffic
 - **Compound radii at intersections** to accommodate truck traffic
 - **Vertical face curb**
 - Used where traffic volumes range from 0 to 3000 vtpd
 - 2% Crossfall and Max 8% Grade
 - Centreline and shoulder (to delimit bike lane) are to be painted on
 - No parking signs are required and a bike symbol is to be painted in the bike lane every 100 m



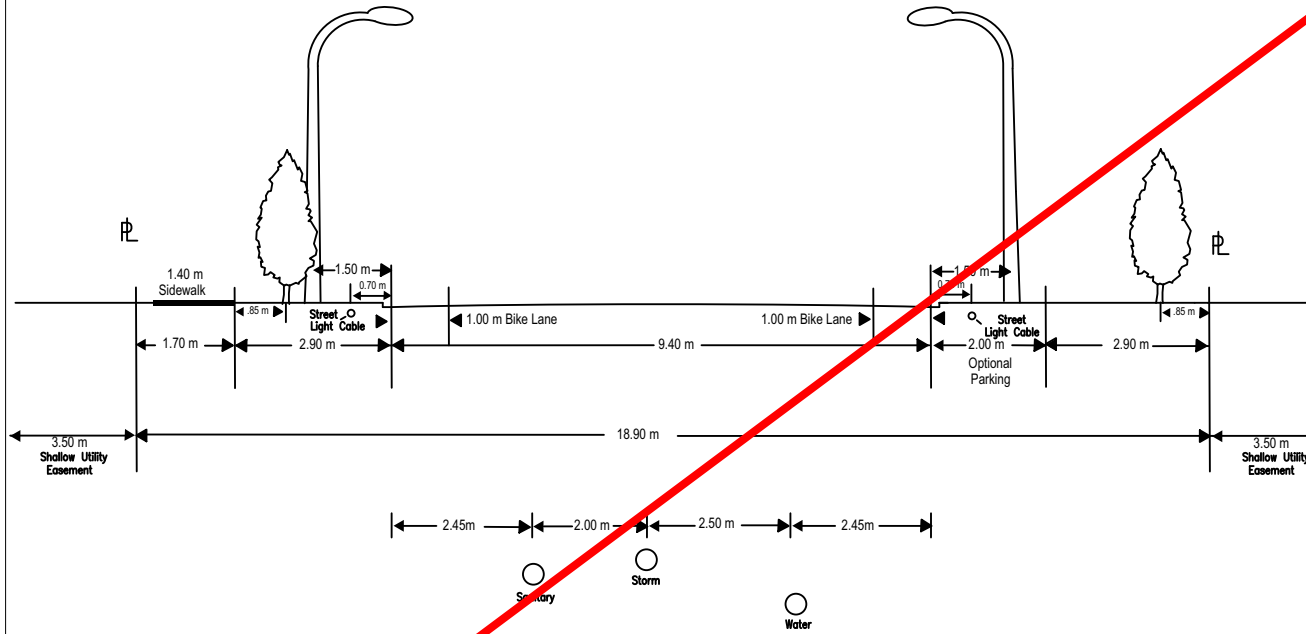
Sheet 11

**Use City of Calgary Industrial Street - No Parking - 19m ROW
File Number 454.1008.067**

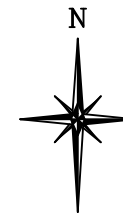
Industrial Collector(2 lane)

Town of Okotoks

Industrial Road Standards



#	Date	Revision
5		
4		
3		
2		
1	May 2008	Initial Design



- Notes:
- Two Travel Lanes (3.7m each)
 - **Optional Parking** on one side only where deemed appropriate by the municipality
 - **Separated sidewalk** (1.4 m) on one side to provide for pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for pedestrian comfort and safety
 - **On-street bike lanes** (2x3.7m) to accommodate bike circulation throughout industrial areas
 - **Boulevards** (2.9m min.) on both sides to provide space for landscaping
 - **Appropriate apron widths** to accommodate truck traffic
 - **Compound radii at intersections** to accommodate truck traffic
 - **Vertical face curb**
 - Used where traffic volumes range from 3000 to 6000 vtpd
 - 2% Crossfall and Max 8% Grade
 - Centreline and shoulder (to delimit bike lane) are to be painted on
 - No parking signs are required and a bike symbol is to be painted in the bike lane every 100 m



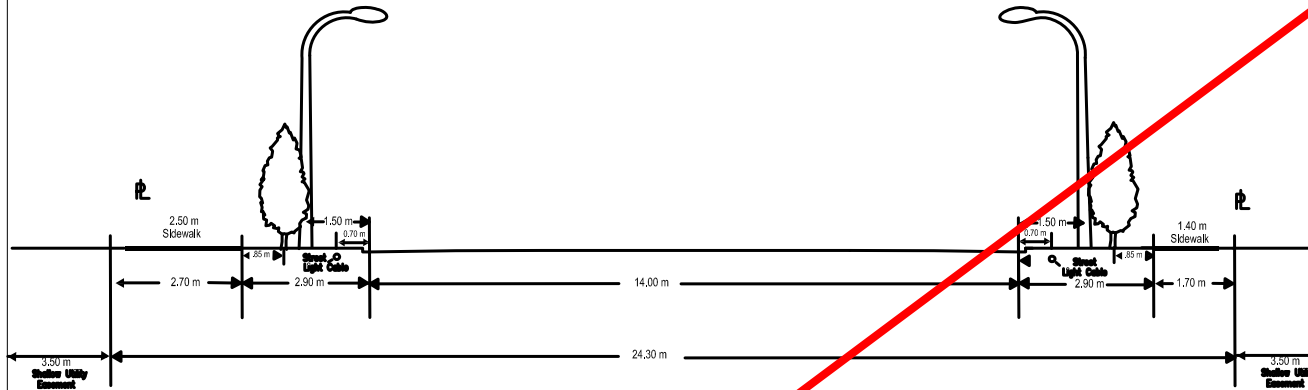
Sheet 12

Use City of Calgary Industrial Street - No Parking - 19m ROW
File Number 454.1008.067

Industrial Collector(4 Lane)

**Town
of
Okotoks**

**Industrial
Road
Standards**



#	Date	Revision
5		
4		
3		
2		
1	May 2008	Initial Design



- Notes:
- **Four Travel Lanes** (3.5 m each)
 - **Separated sidewalk** (1.4 m) on two sides to provide for pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for pedestrian comfort and safety
 - **Concrete separated sidewalk pathway** (2.5 m) on one side to provide for bike and pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for bicyclist and pedestrian comfort and safety (signed as Bike Path)
 - **Boulevards** (2.9 m min.) on both sides to provide space for landscaping
 - **Appropriate apron widths** to accommodate truck traffic
 - **Comps and radii at intersections** to accommodate truck traffic
 - **Vertical face curb**
Used where traffic volumes range from 5000 to 12000 vtpd
 - 2% Crossfall and Max 8% Grade
 - Centreline and shoulder (to delimit bike lane) are to be painted on
 - No parking signs are required and a bike symbol is to be painted in the bike lane every 100 m



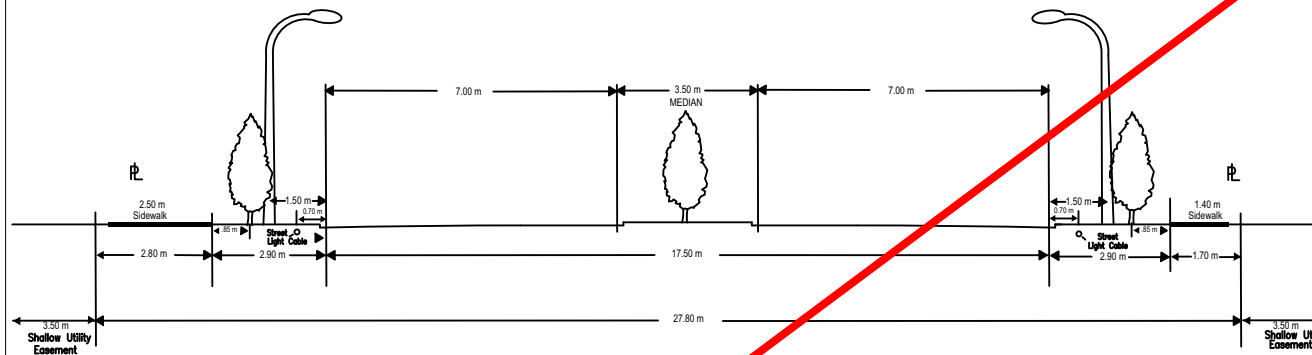
Sheet 13

**Use City of Calgary Industrial Street - No Parking - 19m ROW
File Number 454.1008.067**

Primary Industrial Collector(4 Lane)

**Town
of
Okotoks**

**Industrial
Road
Standards**



#	Date	Revision
5		
4		
3		
2		
1	May 2008	Initial Design

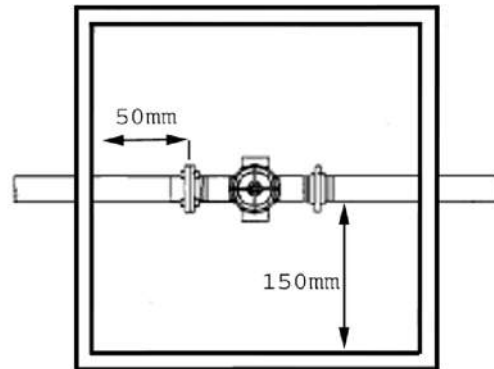
- Notes:
- Four Travel Lanes (3.5 m each)
 - No Parking
 - Separated sidewalk (1.5 m) on one side to provide for pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for pedestrian comfort and safety
 - Concrete seperated sidewalk/pathway (2.5 m) on one side to provide for bike and pedestrian circulation throughout industrial areas buffered by landscaping from travel lanes for bicyclist and pedestrian comfort and safety(signed as Bike Path)
 - Boulevards (2.9m min.) on both sides to provide space for landscaping
 - Landscaped median (3.5 m min.)
 - Appropriate apron widths to accomodate truck traffic (develop spec.)
 - Compound radii at intersections to accomodate truck traffic
 - Vertical face curb
 - Used where traffic volumes range from 10000 to 15000 vtpd
 - 2% Crossfall and Max 8% Grade



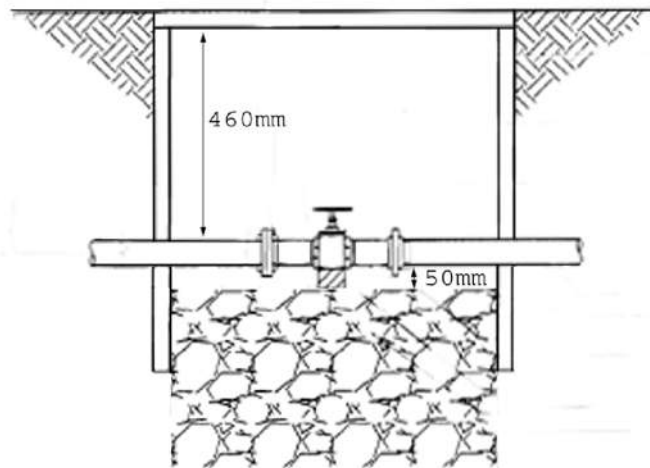
Sheet 14

**Use City of Calgary Industrial Arterial Street - 30m ROW
File Number 454.1008.059**

Plan



Elevation



Town of Okotoks

Irrigation Box Maintenance Standards

#	Date	Revision
5		
4		
3		
2		
1	March 2009	Initial Design

Notes

Irrigation Inspection Checklist

Site: _____ Municipal Address: _____ Legal Address: _____

Open Trench Inspection

Date: _____

Inspected By: _____

Pipe:		Connections: <input type="checkbox"/> Gasket Joint <input type="checkbox"/> Solvent Weld <input type="checkbox"/> Insert (poly) (Check all that apply)	
Size: _____	Lateral Type _____	Glued Joints: <input type="checkbox"/> Clean <input type="checkbox"/> Messy	
Type _____	Depth _____	Note any lines running under obstructions: _____	
Trench Clear: <input type="checkbox"/> Yes <input type="checkbox"/> No	Backfill Clean: <input type="checkbox"/> Yes <input type="checkbox"/> No	Conduits: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Proper Size: <input type="checkbox"/> Yes <input type="checkbox"/> No (Conduit twice size of pipe going thru)	
Valves:			
Isolation Valves: <input type="checkbox"/> Yes <input type="checkbox"/> No	Zone Valves: <input type="checkbox"/> Yes <input type="checkbox"/> No	Valve Boxes:	
Number: _____	Number: _____	Make _____	Model _____
Model _____	Model: _____	Size _____	Number _____
Size: _____	Size: _____	Drains: Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Wash Rock <input type="checkbox"/> Yes <input type="checkbox"/> No
Location: _____		Adequate Space: <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth (6") _____
Notes: <input type="checkbox"/> Follow-up <input type="checkbox"/> Re-inspect		Condition of box: <input type="checkbox"/> Good <input type="checkbox"/> Poor	Thrust Blocks: Present: <input type="checkbox"/> Yes <input type="checkbox"/> No
			Proper Position: <input type="checkbox"/> Yes <input type="checkbox"/> No

CCC/FAC

CCC

Date: _____

Inspected By: _____

FAC

Date: _____

Inspected By: _____

System: Automatic Manual Pop-up Manual

Heads:

Spacing: Deviations from drawing: Yes No Note: _____

Random Check: 1 _____ 2 _____ 3 _____

Spacing on as-built: Yes No

Model: Head models & nozzles: H _____ H _____ H _____
N _____ N _____ N _____

Misc. Models & nozzles on as-built: Yes No

Level with grade: Yes No

Spray: Over H to H Under

Number of heads: _____

Valves:

Level with grade: Yes No

Leakage: Yes No

Adequate Space: Yes No

Condition of box: Good Poor

Water Service:

Size: _____

Depth: _____

Type: Stop & Drain Service
 Service Valve & Service Drain
 Other

Winterization:

Gravity drain

Compression

Drain main/blow laterals

Field Drains:

Total No.: _____

Location: D.C.V. Main Line Lateral

Type: _____ (i.e. gate valve)

Water Meter:

	Make	Model	Serial No.	Size	Date Installed	Initial Reading
1	_____	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____	_____

Double Check Valve:

	Make	Model	Serial No.	Size	Date Installed
1	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____

Notes: _____

Preferred Species

Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies balsamea</i> *	Balsam Fir	L	long
<i>Abies concolor</i>	White Fir	L	long
<i>Abies lasiocarpa</i> *	Alpine Fir	L	long
<i>Acer x 'Durone'</i>	Ventura Hybrid Maple	S	average
<i>Acer ginnala</i>	Amur Maple	S	average
<i>Acer negundo 'Baron'</i>	Baron Manitoba Maple	L	average
<i>Acer saccharinum 'Silver Cloud'</i>	Silver Cloud Maple	L	long
<i>Acer tataricum</i>	Tatarian Maple	S	short to average
<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
<i>Alnus sp.*</i>	Alder sp.	S	short to average
<i>Betula fontinalis (occidentalis)*</i>	Fountain or Water Birch	S	average
<i>Betula papyrifera 'Chikadee'</i>	Chickadee Birch	L	average
<i>Betula papyrifera*</i>	Paper Birch	L	average
<i>Betula pendula (verrucosa)</i>	European Weeping Birch	L	average
<i>Betula pendula 'Gracilis'</i>	Cutleaf Weeping Birch	L	average
<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
<i>Fraxinus americana 'Durkar'</i>	Tuxedo White Ash	L	long
<i>Fraxinus pennsylvanica lanceolata</i>	Green Ash	L	long
<i>Fraxinus pennsylvanica 'Heuver'</i>	Foothills Green Ash	L	long
<i>Fraxinus pennsylvanica 'Patmore'</i>	Patmore Green Ash	L	long
<i>Fraxinus pennsylvanica 'Rugby'</i>	Prairie Spire Green Ash	L	long
<i>Juniperus scopulorum cvs.*</i>	Rocky Mountain Juniper	S	long
<i>Larix decidua</i>	European Larch	L	average to long
<i>Larix laricina*</i>	Tamarack	M	long
<i>Larix lyallii*</i>	Alpine Larch	M	long
<i>Larix sibirica</i>	Siberian Larch	L	long
<i>Picea abies</i>	Norway Spruce	various	long
<i>Picea engelmannii*</i>	Engelmann Spruce	L	long
<i>Picea glauca 'Densata'</i>	Black Hills Spruce	L	long
<i>Picea glauca*</i>	White Spruce	L	long
<i>Picea mariana*</i>	Black Spruce	L	long
<i>Picea omorika</i>	Serbian Spruce	L	long
<i>Picea pungens</i>	Colorado Spruce	L	long
<i>Pinus albicaulis*</i>	Whitebark Pine	M	long
<i>Pinus aristata</i>	Bristlecone Pine	M	long
<i>Pinus banksiana*</i>	Jack Pine	M	long
<i>Pinus cembra</i>	Swiss Stone Pine	M	long
<i>Pinus contorta latifolia*</i>	Lodgepole Pine	L	long
<i>Pinus flexilis*</i>	Limber Pine	M	long

Preferred Species continued

Botanical Name	Common Name	Mature Size	Lifespan
<i>Pinus nigra</i>	Austrian Pine	L	long
<i>Pinus ponderosa</i>	Ponderosa Pine	L	long
<i>Pinus uncinata</i>	Mountain Pine	M	average
<i>Pinus sylvestris</i>	Scots Pine	L	long
<i>Populus angustifolia</i>	Narrowleaf Cottonwood	M	average
<i>Populus x acuminata</i>	Lanceleaf Cottonwood	M	average

<i>Populus balsamifera Paskapoo*</i>	Paskapoo Poplar	S	average
<i>Populus deltoides (sargentii)*</i>	Plains Cottonwood	L	short
<i>Populus jackii 'Northwest'</i>	Northwest Poplar	L	average
<i>Populus tremula 'Erecta'</i>	Swedish Columnar Aspen	M	average
<i>Populus tremuloides*</i>	Trembling Aspen	M	average
<i>Populus X 'Assiniboine'</i>	Assiniboine Poplar	L	short
<i>Populus X 'Brooks #6'</i>	Brooks #6 Poplar	L	short
<i>Populus X 'Byland Green'</i>	Byland Green Poplar	L	short
<i>Populus X 'Prairie Sky'</i>	Prairie Sky Poplar	L	short
<i>Populus X 'Tristis'</i>	Tristis Poplar	L	short
<i>Populus X canescens 'Tower'</i>	Tower Poplar	L	short
<i>Pseudotsuga menziesii glauca*</i>	Rocky Mountain Douglas Fir	L	long
<i>Pyrus ussuriensis</i>	Ussurian Pear	M	average
<i>Quercus macrocarpa</i>	Bur Oak	L	long
<i>Syringa pekinensis</i>	Peking Tree Lilac	S	long
<i>Syringa reticulata</i>	Japanese Tree Lilac	M-S	long
<i>Tilia americana</i>	American Linden	L	long
<i>Tilia cordata 'Greenspire'</i>	Littleleaf Linden	L	long
<i>Tilia flavescens 'Dropmore'</i>	Dropmore Linden	L	long
<i>Tilia mongolica</i>	Mongolian Linden	M	long
<i>Ulmus americana</i>	American Elm	L	long
<i>Ulmus pumila</i>	Siberian/Manchurian Elm	L	long

* Species Native to Alberta

Trial Species

Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies sibirica</i>	Siberian Fir	L	long
<i>Acer rubrum</i>	Red Maple	L	average to long
<i>Acer platanoides 'Deborah'</i>	Deborah Norway Maple	L	average to long
<i>Acer saccharum</i>	Sugar Maple	L	long
<i>Acer fremanii 'Jeffersred'</i>	Autumn Blaze	L	average to long
<i>Aesculus hippocatanum</i>	Horse Chestnut	L	long
<i>Betula davurica</i>	Dahurian Birch	L	average
<i>Betula neoalaskana*</i>	Alaska Birch	M	average
<i>Celtis occidentalis</i>	Common Hackberry	L-M	long

* Species Native to Alberta

Trial Species continued			
<i>Juglans nigra</i>	Black Walnut	L	long
<i>Gleditsia triacanthos</i>	Honey Locust	L	long
<i>Phellodendron amurense</i>	Amur Corktree	M	average to long
<i>Larix gmelinii (dahurica)</i>	Dahurian Larch	L	long
<i>Maackia amurensis</i>	Amur Maackia	M	short
<i>Pinus resinosa</i>	Red Pine	L	long
<i>Pinus strobiformis</i>	Southwestern White Pine	L	long
<i>Pinus strobus</i>	Eastern White Pine	L	long
<i>Quercus alba</i>	White Oak	L	long
<i>Quercus borealis</i>	Northern Red Oak	L	long
<i>Quercus ellipsoidalis</i>	Northern Pin Oak	L	long
<i>Quercus mongolica</i>	Mongolian Oak	L	long
<i>Quercus robur</i>	English Oak & fastigiata	L	long
<i>Quercus rubra</i>	Red Oak	L	long

* Species Native to Alberta

Species Native to Alberta			
Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies balsamea</i>	Balsam Fir	L	long
<i>Abies lasiocarpa</i>	Alpine Fir	L	long
<i>Alnus sp.</i>	Alder sp.	S	short to average
<i>Betula fontinalis (occidentalis)</i>	Fountain or Water Birch	S	average
<i>Betula neoalaskana</i>	Alaska Birch	M	average
<i>Betula papyrifera</i>	Paper Birch	L	long
<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
<i>Juniperus scopulorum cvs.</i>	Rocky Mountain Juniper	S	long
<i>Larix laricina</i>	Tamarack	L	long
<i>Larix lyallii</i>	Alpine Larch	M	long
<i>Picea engelmannii</i>	Engelmann Spruce	L	long
<i>Picea glauca</i>	White Spruce	L	long
<i>Picea mariana</i>	Black Spruce	L	long
<i>Pinus albicaulis</i>	Whitebark Pine	M	long
<i>Pinus banksiana</i>	Jack Pine	M	long
<i>Pinus contorta latifolia</i>	Lodgepole Pine	L	long
<i>Pinus flexilis</i>	Limber Pine	M	long
<i>Populus balsamifera</i>	Balsam Poplar	L	short
<i>Populus deltoides (sargentii)</i>	Plains Cottonwood	L	short
<i>Populus tremuloides</i>	Trembling Aspen	M	average
<i>Prunus pensylvanica</i>	Pincherry	S	short
<i>Prunus virginiana melanocarpa</i>	Western Chokecherry	S	short
<i>Pseudotsuga menziesii</i>	Douglas Fir	L	long
<i>Salix discolor</i>	Pussy Willow	S	short to average
<i>Sorbus scopulina</i>	Greene's Mountain Ash	S	short to average

* Species Native to Alberta

Species Permitted on Boulevards and Medians				
Limited Preferred Trial	Botanical Name	Common Name	Mature Size	Lifespan
P	<i>Acer x 'Durone'</i>	Ventura Hybrid Maple	S-M	average
P	<i>Acer ginnala</i>	Amur Maple	S-M	average
T	<i>Acer freemanii 'Jeffersred'</i>	Autumn Blaze Maple	L	long
P	<i>Acer negundo 'Baron'***</i>	Baron Manitoba Maple	L	average
P	<i>Acer tartaricum</i>	Tartaria Maple	S-M	average
P	<i>Acer Saccharinum 'Silver Cloud Maple'</i>	Silver Cloud Maple	S-M	average
P	<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
L	<i>Caragana arborescens 'Sutherland'</i>	Sutherland Caragana	S	Short
T	<i>Celtis occidentalis</i>	Common Hackberry	L-M	long
P	<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
P	<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
P	<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
P	<i>Fraxinus Americana 'Durkar'</i>	Tuxedo White Ash	L	long
L	<i>Fraxinus Americana 'Durgar'</i>	Calypso White Ash	L	long
P	<i>Fraxinus pennsylvanica 'Heuver'</i>	Foothills Green Ash	L	long
P	<i>Fraxinus pennsylvanica lanceolata</i>	Green Ash	L	long
P	<i>Fraxinus pennsylvanica 'Patmore'</i>	Patmore Green Ash	L	long
P	<i>Fraxinus pennsylvanica 'Rugby'</i>	Prairie Spire Green Ash	L	long
T	<i>Phellodendron amurense</i>	Amur Corktree	M	average to long
P	<i>Populus tremula 'Erecta'</i>	Swedish Aspen	M	average
T	<i>Quercus alba</i>	White Oak	L	long
T	<i>Quercus borealis</i>	Northern Red Oak	L	long
T	<i>Quercus ellipsoidalis</i>	Northern Pin Oak	L	long
P	<i>Quercus macrocarpa</i>	Bur Oak	L	long
T	<i>Quercus mongolica</i>	Mongolian Oak	L	long
T	<i>Quercus rubra</i>	Red Oak	L	long
P	<i>Syringa pekinensis</i>	Peking Lilac	M-S	long
P	<i>Syringa reticulata</i>	Japanese Tree Lilac	M-S	long
P	<i>Ulmus americana and cultivars</i>	American Elm	L	long
P	<i>Ulmus pumila</i>	Siberian/Manchurian Elm	L	long

* Species Native to Alberta

** Prone to aphid and is only to be used on Boulevards where parking is not permitted

Species permitted within 8m of a power line				
Limited Preferred Trial NA only	Botanical Name	Common Name	Mature Size	Lifespan
P	<i>Acer</i> x 'Durone'	Ventura Hybrid Maple	S	average
P	<i>Acer ginnala</i>	Amur Maple	S	average
P	<i>Acer tataricum</i>	Tartarian Maple	S	average
P	<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
P	<i>Alnus</i> sp.*	Alder sp.	S	short to average
P	<i>Betula fontinalis (occidentalis)*</i>	Fountain or Water Birch	S	average
L	<i>Caragana arborescens 'Sutherland'</i>	Sutherland Caragana	S	average
P	<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
P	<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
P	<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
P	<i>Juniperus scopulorum</i> cvs.*	Rocky Mountain Juniper	S	long
P	<i>Pinus uncinata</i>	Mountain Pine	M	average
P	<i>Pinus mugo</i>	Mugo Pine	S	average
P	<i>Pinus aristata</i>	Bristlecone Pine	M	long
P	<i>Populus tremula 'Erecta'</i>	Swedish Columnar Aspen	S	average
L	<i>Prunus pensylvanica</i> *	Pincherry	S	short
L	<i>Prunus virginiana 'Schubert'</i>	Schubert Chokecherry	S	short
L	<i>Prunus virginiana melanocarpa</i>	Western Chokecherry	S	short
L	<i>Salix discolor</i> *	Pussy Willow	S	short to average
L	<i>Sorbus scopulina</i> *	Greene's Mountain Ash	S	short to average
P	<i>Syringa pekinensis</i>	Peking Tree Lilac	S	long
P	<i>Syringa reticulata</i>	Japanese Tree Lilac	S	Short to average

* Species Native to Alberta

Species for Limited Use				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Acer negundo</i>	Manitoba Maple	L	average to long	Pest susceptibility/ Invasive Tendencies
<i>Caragana arborescens</i>	Common Caragana	S	average	Invasive Tendencies
<i>Caragana arborescens</i> 'Sutherland'	Sutherland Caragana	S	average	Invasive Tendencies
<i>Cotoneaster acutifolia</i>	Cotoneaster Hedge	S	short	Disease Susceptibility/ Invasive Tendencies
<i>Fraxinus Americana</i> 'Durgar'	Calypso White Ash	L	long	Hardiness
<i>Fraxinus mandschurica</i>	Manchurian Ash	M	long	High Frequency / Pest susceptibility
<i>Fraxinus nigra and cultivars</i>	Black Ash	L	long	High Frequency / Pest susceptibility
<i>Malus spp.</i>	Crabapple cvs.	M	average to long	High frequency / Disease susceptibility
<i>Populus X 'Griffin'</i>	Griffin Poplar	L	short	Poor branch structure
<i>Populus X 'Thevestina'</i>	Theves Poplar	L	short	Poor branch structure
<i>Populus X 'Walker'</i>	Walker Poplar	L	short	Poor branch structure
<i>Prunus maackii</i>	Amur Cherry	M	short	Disease susceptible
<i>Prunus mandshurica</i>	Apricot	M	short	Disease susceptible
<i>Prunus nigra (americana)</i>	Canada Plum	M	average to long	Disease susceptible
<i>Prunus padus commutata</i>	Mayday	M	short	Disease susceptible
<i>Prunus virginiana 'Schubert'</i>	Schubert Chokecherry	S	short	Disease susceptible
<i>Prunus virginiana melanocarpa</i> *	Western Chokecherry	S	short	Disease susceptible
<i>Salix acutifolia</i>	Sharp Leaf Willow	M	short to average	Disease susceptible
<i>Salix alba varieties</i>	White Willow varieties	M	short to average	Disease susceptible
<i>Salix discolor</i> *	Pussy Willow	S	short to average	Disease susceptible
<i>Salix pentandra</i>	Laurel Leaf Willow	L	short to average	Disease susceptible
<i>Sorbus spp.</i>	Mountain Ash	M	short to average	Disease susceptible

* Species Native to Alberta

Prohibited Species				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Berberis vulgaris</i> *	Common Barberry	S	average to long	Prohibited Noxious Weed in Alberta
<i>Elaeagnus angustifolia</i>	Russian Olive	M	short to average	Invasive Tendencies
<i>Elaeagnus umbellata</i> *	Autumn Olive	M	average to long	Prohibited Noxious Weed in Alberta
<i>Hippophae rhamnoides</i>	Sea Buckthorn	S	short to average	Invasive Tendencies
<i>Rhamnus cathartica</i> *	Common Buckthorn	M	average to long	Prohibited Noxious Weed in Alberta
<i>Tamarix ramosissima</i> *	Saltcedar	M	average to long	Prohibited Noxious Weed in Alberta

*Prohibited Noxious Woody Shrubs from 2010 Alberta Weed Act

Native Species with Invasive Tendencies (Suitable for Natural Areas or ERs only)				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Elaeagnus comuttata</i>	Wolf Willow	Shrub	average to long	Invasive Tendencies
<i>Populus balsamifera</i> *	Balsam Poplar	L	short	Seed production
<i>Prunus pensylvanica</i>	Pin cherry	S	short	Invasive Tendencies
<i>Prunus virginiana melanocarpa</i> *	Western Chokecherry	S	short	Disease susceptible
<i>Ribes oxycanthoides</i>	Northern Gooseberry	Shrub	average to long	Invasive Tendencies
<i>Rosa acicularis</i>	Prickly Rose	Shrub	average to long	Invasive Tendencies
<i>Rosa woodsii</i>	Wild Rose	Shrub	average to long	Invasive Tendencies
<i>Salix bebbiana</i>	Bebbs Willow	Shrub	average to long	Invasive Tendencies
<i>Salix exigua</i> or (<i>interior</i>)	Coyote or (Sandbar) Willow	Shrub	average to long	Invasive Tendencies
<i>Symphoricarpos occidentalis</i>	Buckbrush	Shrub	short	Invasive Tendencies

* No species with invasive tendencies are to be planted adjacent private property *

Preferred Species			
Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies balsamea</i> *	Balsam Fir	L	long
<i>Abies concolor</i>	White Fir	L	long
<i>Abies lasiocarpa</i> *	Alpine Fir	L	long
<i>Acer x 'Durone'</i>	Ventura Hybrid Maple	S	average
<i>Acer ginnala</i>	Amur Maple	S	average
<i>Acer negundo 'Baron'</i>	Baron Manitoba Maple	L	average
<i>Acer saccharinum 'Silver Cloud'</i>	Silver Cloud Maple	L	long
<i>Acer tataricum</i>	Tatarian Maple	S	short to average
<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
<i>Alnus sp.*</i>	Alder sp.	S	short to average
<i>Betula fontinalis (occidentalis)*</i>	Fountain or Water Birch	S	average
<i>Betula papyrifera 'Chikadee'</i>	Chickadee Birch	L	average
<i>Betula papyrifera*</i>	Paper Birch	L	average
<i>Betula pendula (verrucosa)</i>	European Weeping Birch	L	average
<i>Betula pendula 'Gracilis'</i>	Cutleaf Weeping Birch	L	average
<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
<i>Fraxinus americana 'Durkar'</i>	Tuxedo White Ash	L	long
<i>Fraxinus pennsylvanica lanceolata</i>	Green Ash	L	long
<i>Fraxinus pennsylvanica 'Heuver'</i>	Foothills Green Ash	L	long
<i>Fraxinus pennsylvanica 'Patmore'</i>	Patmore Green Ash	L	long
<i>Fraxinus pennsylvanica 'Rugby'</i>	Prairie Spire Green Ash	L	long
<i>Juniperus scopulorum cvs.*</i>	Rocky Mountain Juniper	S	long
<i>Larix decidua</i>	European Larch	L	average to long
<i>Larix laricina*</i>	Tamarack	M	long
<i>Larix lyallii*</i>	Alpine Larch	M	long
<i>Larix sibirica</i>	Siberian Larch	L	long
<i>Picea abies</i>	Norway Spruce	various	long
<i>Picea engelmannii*</i>	Engelmann Spruce	L	long
<i>Picea glauca 'Densata'</i>	Black Hills Spruce	L	long
<i>Picea glauca*</i>	White Spruce	L	long
<i>Picea mariana*</i>	Black Spruce	L	long
<i>Picea omorika</i>	Serbian Spruce	L	long
<i>Picea pungens</i>	Colorado Spruce	L	long
<i>Pinus albicaulis*</i>	Whitebark Pine	M	long
<i>Pinus aristata</i>	Bristlecone Pine	M	long
<i>Pinus banksiana*</i>	Jack Pine	M	long
<i>Pinus cembra</i>	Swiss Stone Pine	M	long
<i>Pinus contorta latifolia*</i>	Lodgepole Pine	L	long
<i>Pinus flexilis*</i>	Limber Pine	M	long

Preferred Species continued

Botanical Name	Common Name	Mature Size	Lifespan
<i>Pinus nigra</i>	Austrian Pine	L	long
<i>Pinus ponderosa</i>	Ponderosa Pine	L	long
<i>Pinus uncinata</i>	Mountain Pine	M	average
<i>Pinus sylvestris</i>	Scots Pine	L	long
<i>Populus angustifolia</i>	Narrowleaf Cottonwood	M	average
<i>Populus x acuminata</i>	Lanceleaf Cottonwood	M	average

<i>Populus balsamifera Paskapoo*</i>	Paskapoo Poplar	S	average
<i>Populus deltoides (sargentii)*</i>	Plains Cottonwood	L	short
<i>Populus jackii 'Northwest'</i>	Northwest Poplar	L	average
<i>Populus tremula 'Erecta'</i>	Swedish Columnar Aspen	M	average
<i>Populus tremuloides*</i>	Trembling Aspen	M	average
<i>Populus X 'Assiniboine'</i>	Assiniboine Poplar	L	short
<i>Populus X 'Brooks #6'</i>	Brooks #6 Poplar	L	short
<i>Populus X 'Byland Green'</i>	Byland Green Poplar	L	short
<i>Populus X 'Prairie Sky'</i>	Prairie Sky Poplar	L	short
<i>Populus X 'Tristis'</i>	Tristis Poplar	L	short
<i>Populus X canescens 'Tower'</i>	Tower Poplar	L	short
<i>Pseudotsuga menziesii glauca*</i>	Rocky Mountain Douglas Fir	L	long
<i>Pyrus ussuriensis</i>	Ussurian Pear	M	average
<i>Quercus macrocarpa</i>	Bur Oak	L	long
<i>Syringa pekinensis</i>	Peking Tree Lilac	S	long
<i>Syringa reticulata</i>	Japanese Tree Lilac	M-S	long
<i>Tilia americana</i>	American Linden	L	long
<i>Tilia cordata 'Greenspire'</i>	Littleleaf Linden	L	long
<i>Tilia flavescens 'Dropmore'</i>	Dropmore Linden	L	long
<i>Tilia mongolica</i>	Mongolian Linden	M	long
<i>Ulmus americana</i>	American Elm	L	long
<i>Ulmus pumila</i>	Siberian/Manchurian Elm	L	long

* Species Native to Alberta

Trial Species

Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies sibirica</i>	Siberian Fir	L	long
<i>Acer rubrum</i>	Red Maple	L	average to long
<i>Acer platanoides 'Deborah'</i>	Deborah Norway Maple	L	average to long
<i>Acer saccharum</i>	Sugar Maple	L	long
<i>Acer fremanii 'Jeffersred'</i>	Autumn Blaze	L	average to long
<i>Aesculus hippocatanum</i>	Horse Chestnut	L	long
<i>Betula davurica</i>	Dahurian Birch	L	average
<i>Betula neoalaskana*</i>	Alaska Birch	M	average
<i>Celtis occidentalis</i>	Common Hackberry	L-M	long

* Species Native to Alberta

Trial Species continued			
<i>Juglans nigra</i>	Black Walnut	L	long
<i>Gleditsia triacanthos</i>	Honey Locust	L	long
<i>Phellodendron amurense</i>	Amur Corktree	M	average to long
<i>Larix gmelinii (dahurica)</i>	Dahurian Larch	L	long
<i>Maackia amurensis</i>	Amur Maackia	M	short
<i>Pinus resinosa</i>	Red Pine	L	long
<i>Pinus strobiformis</i>	Southwestern White Pine	L	long
<i>Pinus strobus</i>	Eastern White Pine	L	long
<i>Quercus alba</i>	White Oak	L	long
<i>Quercus borealis</i>	Northern Red Oak	L	long
<i>Quercus ellipsoidalis</i>	Northern Pin Oak	L	long
<i>Quercus mongolica</i>	Mongolian Oak	L	long
<i>Quercus robur</i>	English Oak & fastigiata	L	long
<i>Quercus rubra</i>	Red Oak	L	long

* Species Native to Alberta

Species Native to Alberta			
Botanical Name	Common Name	Mature Size	Lifespan
<i>Abies balsamea</i>	Balsam Fir	L	long
<i>Abies lasiocarpa</i>	Alpine Fir	L	long
<i>Alnus sp.</i>	Alder sp.	S	short to average
<i>Betula fontinalis (occidentalis)</i>	Fountain or Water Birch	S	average
<i>Betula neoalaskana</i>	Alaska Birch	M	average
<i>Betula papyrifera</i>	Paper Birch	L	long
<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
<i>Juniperus scopulorum cvs.</i>	Rocky Mountain Juniper	S	long
<i>Larix laricina</i>	Tamarack	L	long
<i>Larix lyallii</i>	Alpine Larch	M	long
<i>Picea engelmannii</i>	Engelmann Spruce	L	long
<i>Picea glauca</i>	White Spruce	L	long
<i>Picea mariana</i>	Black Spruce	L	long
<i>Pinus albicaulis</i>	Whitebark Pine	M	long
<i>Pinus banksiana</i>	Jack Pine	M	long
<i>Pinus contorta latifolia</i>	Lodgepole Pine	L	long
<i>Pinus flexilis</i>	Limber Pine	M	long
<i>Populus balsamifera</i>	Balsam Poplar	L	short
<i>Populus deltoides (sargentii)</i>	Plains Cottonwood	L	short
<i>Populus tremuloides</i>	Trembling Aspen	M	average
<i>Prunus pensylvanica</i>	Pincherry	S	short
<i>Prunus virginiana melanocarpa</i>	Western Chokecherry	S	short
<i>Pseudotsuga menziesii</i>	Douglas Fir	L	long
<i>Salix discolor</i>	Pussy Willow	S	short to average
<i>Sorbus scopulina</i>	Greene's Mountain Ash	S	short to average

* Species Native to Alberta

Species Permitted on Boulevards and Medians				
Limited Preferred Trial	Botanical Name	Common Name	Mature Size	Lifespan
P	<i>Acer x 'Durone'</i>	Ventura Hybrid Maple	S-M	average
P	<i>Acer ginnala</i>	Amur Maple	S-M	average
T	<i>Acer freemanii 'Jeffersred'</i>	Autumn Blaze Maple	L	long
P	<i>Acer negundo 'Baron'***</i>	Baron Manitoba Maple	L	average
P	<i>Acer tartaricum</i>	Tartaria Maple	S-M	average
P	<i>Acer Saccharinum 'Silver Cloud Maple'</i>	Silver Cloud Maple	S-M	average
P	<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
L	<i>Caragana arborescens 'Sutherland'</i>	Sutherland Caragana	S	Short
T	<i>Celtis occidentalis</i>	Common Hackberry	L-M	long
P	<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
P	<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
P	<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
P	<i>Fraxinus Americana 'Durkar'</i>	Tuxedo White Ash	L	long
L	<i>Fraxinus Americana 'Durgar'</i>	Calypso White Ash	L	long
P	<i>Fraxinus pennsylvanica 'Heuver'</i>	Foothills Green Ash	L	long
P	<i>Fraxinus pennsylvanica lanceolata</i>	Green Ash	L	long
P	<i>Fraxinus pennsylvanica 'Patmore'</i>	Patmore Green Ash	L	long
P	<i>Fraxinus pennsylvanica 'Rugby'</i>	Prairie Spire Green Ash	L	long
T	<i>Phellodendron amurense</i>	Amur Corktree	M	average to long
P	<i>Populus tremula 'Erecta'</i>	Swedish Aspen	M	average
T	<i>Quercus alba</i>	White Oak	L	long
T	<i>Quercus borealis</i>	Northern Red Oak	L	long
T	<i>Quercus ellipsoidalis</i>	Northern Pin Oak	L	long
P	<i>Quercus macrocarpa</i>	Bur Oak	L	long
T	<i>Quercus mongolica</i>	Mongolian Oak	L	long
T	<i>Quercus rubra</i>	Red Oak	L	long
P	<i>Syringa pekinensis</i>	Peking Lilac	M-S	long
P	<i>Syringa reticulata</i>	Japanese Tree Lilac	M-S	long
P	<i>Ulmus americana and cultivars</i>	American Elm	L	long
P	<i>Ulmus pumila</i>	Siberian/Manchurian Elm	L	long

* Species Native to Alberta

** Prone to aphid and is only to be used on Boulevards where parking is not permitted

Species permitted within 8m of a power line				
Limited Preferred Trial NA only	Botanical Name	Common Name	Mature Size	Lifespan
P	<i>Acer</i> x 'Durone'	Ventura Hybrid Maple	S	average
P	<i>Acer ginnala</i>	Amur Maple	S	average
P	<i>Acer tataricum</i>	Tartarian Maple	S	average
P	<i>Aesculus glabra</i>	Ohio Buckeye	L-M	long
P	<i>Alnus</i> sp.*	Alder sp.	S	short to average
P	<i>Betula fontinalis (occidentalis)*</i>	Fountain or Water Birch	S	average
L	<i>Caragana arborescens 'Sutherland'</i>	Sutherland Caragana	S	average
P	<i>Crataegus arnoldiana</i>	Arnold's Hawthorn	S	short
P	<i>Crataegus cerronis</i>	Chocolate Hawthorn	S	short
P	<i>Crataegus chlorosarca</i>	Black Hawthorn	S	short
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Snowbird'</i>	Snowbird Hawthorn	S	short
P	<i>Crataegus X mordenensis 'Toba'</i>	Toba Hawthorn	S	short
P	<i>Juniperus scopulorum</i> cvs.*	Rocky Mountain Juniper	S	long
P	<i>Pinus uncinata</i>	Mountain Pine	M	average
P	<i>Pinus mugo</i>	Mugo Pine	S	average
P	<i>Pinus aristata</i>	Bristlecone Pine	M	long
P	<i>Populus tremula 'Erecta'</i>	Swedish Columnar Aspen	S	average
L	<i>Prunus pensylvanica</i> *	Pincherry	S	short
L	<i>Prunus virginiana 'Schubert'</i>	Schubert Chokecherry	S	short
L	<i>Prunus virginiana melanocarpa</i>	Western Chokecherry	S	short
L	<i>Salix discolor</i> *	Pussy Willow	S	short to average
L	<i>Sorbus scopulina</i> *	Greene's Mountain Ash	S	short to average
P	<i>Syringa pekinensis</i>	Peking Tree Lilac	S	long
P	<i>Syringa reticulata</i>	Japanese Tree Lilac	S	Short to average

* Species Native to Alberta

Species for Limited Use				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Acer negundo</i>	Manitoba Maple	L	average to long	Pest susceptibility/ Invasive Tendencies
<i>Caragana arborescens</i>	Common Caragana	S	average	Invasive Tendencies
<i>Caragana arborescens</i> 'Sutherland'	Sutherland Caragana	S	average	Invasive Tendencies
<i>Cotoneaster acutifolia</i>	Cotoneaster Hedge	S	short	Disease Susceptibility/ Invasive Tendencies
<i>Fraxinus Americana</i> 'Durgar'	Calypso White Ash	L	long	Hardiness
<i>Fraxinus mandschurica</i>	Manchurian Ash	M	long	High Frequency / Pest susceptibility
<i>Fraxinus nigra and cultivars</i>	Black Ash	L	long	High Frequency / Pest susceptibility
<i>Malus spp.</i>	Crabapple cvs.	M	average to long	High frequency / Disease susceptibility
<i>Populus X 'Griffin'</i>	Griffin Poplar	L	short	Poor branch structure
<i>Populus X 'Thevestina'</i>	Theves Poplar	L	short	Poor branch structure
<i>Populus X 'Walker'</i>	Walker Poplar	L	short	Poor branch structure
<i>Prunus maackii</i>	Amur Cherry	M	short	Disease susceptible
<i>Prunus mandshurica</i>	Apricot	M	short	Disease susceptible
<i>Prunus nigra (americana)</i>	Canada Plum	M	average to long	Disease susceptible
<i>Prunus padus commutata</i>	Mayday	M	short	Disease susceptible
<i>Prunus virginiana 'Schubert'</i>	Schubert Chokecherry	S	short	Disease susceptible
<i>Prunus virginiana melanocarpa</i> *	Western Chokecherry	S	short	Disease susceptible
<i>Salix acutifolia</i>	Sharp Leaf Willow	M	short to average	Disease susceptible
<i>Salix alba varieties</i>	White Willow varieties	M	short to average	Disease susceptible
<i>Salix discolor</i> *	Pussy Willow	S	short to average	Disease susceptible
<i>Salix pentandra</i>	Laurel Leaf Willow	L	short to average	Disease susceptible
<i>Sorbus spp.</i>	Mountain Ash	M	short to average	Disease susceptible

* Species Native to Alberta

Prohibited Species				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Berberis vulgaris</i> *	Common Barberry	S	average to long	Prohibited Noxious Weed in Alberta
<i>Elaeagnus angustifolia</i>	Russian Olive	M	short to average	Invasive Tendencies
<i>Elaeagnus umbellata</i> *	Autumn Olive	M	average to long	Prohibited Noxious Weed in Alberta
<i>Hippophae rhamnoides</i>	Sea Buckthorn	S	short to average	Invasive Tendencies
<i>Rhamnus cathartica</i> *	Common Buckthorn	M	average to long	Prohibited Noxious Weed in Alberta
<i>Tamarix ramosissima</i> *	Saltcedar	M	average to long	Prohibited Noxious Weed in Alberta

*Prohibited Noxious Woody Shrubs from 2010 Alberta Weed Act

Native Species with Invasive Tendencies (Suitable for Natural Areas or ERs only)				
Botanical Name	Common Name	Mature Size	Lifespan	Reason for Limitation
<i>Elaeagnus comuttata</i>	Wolf Willow	Shrub	average to long	Invasive Tendencies
<i>Populus balsamifera</i> *	Balsam Poplar	L	short	Seed production
<i>Prunus pensylvanica</i>	Pin cherry	S	short	Invasive Tendencies
<i>Prunus virginiana melanocarpa</i> *	Western Chokecherry	S	short	Disease susceptible
<i>Ribes oxycanthoides</i>	Northern Gooseberry	Shrub	average to long	Invasive Tendencies
<i>Rosa acicularis</i>	Prickly Rose	Shrub	average to long	Invasive Tendencies
<i>Rosa woodsii</i>	Wild Rose	Shrub	average to long	Invasive Tendencies
<i>Salix bebbiana</i>	Bebbs Willow	Shrub	average to long	Invasive Tendencies
<i>Salix exigua</i> or (<i>interior</i>)	Coyote or (Sandbar) Willow	Shrub	average to long	Invasive Tendencies
<i>Symphoricarpos occidentalis</i>	Buckbrush	Shrub	short	Invasive Tendencies

* No species with invasive tendencies are to be planted adjacent private property *