HALDIMAND COUNTY

DESIGN CRITERIA

SECTION L

SUBDIVISION LOT GRADING

Revised 2015

L 1.00 GENERAL

NOTE: Please contact the Facilities and Parks Operations Department for requirements for all Parklands, Walkways, etc.

The grading of all lots and blocks in new developments must be carefully monitored by the Consulting Engineer in order to provide sites that are suitable for the erection of buildings and to ensure satisfactory drainage from all lands within the development. In this regard, the design of the grading for all developments will be of primary concern to the municipality and the following criteria shall be used in the preparation of all lot grading plans. In applying the criteria, the main objective is to ensure that the property owner (i.e. resident) will have maximum use of his/her property while still providing good drainage. Although maximum limits are specified, initial grading design shall avoid maximum grades unless there are no alternatives.

The following grading criteria is applicable to all subdivision lots with less than 25m frontage.

All lot grading design and lot grading certifications shall only be accepted from qualified consulting engineers.

Ontario Land Surveyors may collect data to prepare the base survey information for the lot grading and certify foundation location and elevations.

L 2.00 LOT GRADING PLAN

Drawing size: (594mm x 840mm) A1

Scale: 1:500 for single family or semi-detached areas and 1:200 for multi-family areas.

All lots and blocks within the subdivision are to be shown and are numbered in accordance with the proposed registered plan.

Existing contours are to be shown at maximum 0.5m intervals within the subdivision limits extending approximately 30 metres, to enable assessment of the grading between the subdivision and the adjacent areas. (The interval of those elevations shall be dependent upon the degree of development of the adjoining lands, with developed areas requiring the most information).

Proposed centreline road elevations are to be shown at 20m stations along all roads within and abutting the subdivision in accordance with

the chainage on the profile drawings. In addition, centreline road elevations shall be shown opposite all lot corners.

Proposed elevations are to be shown for all lot corners and intermediate points of grade change. On larger blocks, a proposed elevation is to be shown at 15m intervals along the frontage of the block and at reasonable intervals along the sides and rear of the block to clearly illustrate the grading in relation to the surrounding lands and house type.

The **specified lot grade** (apron elevation) shall be shown at a location 6.0mminimum from the street line. For split type drainage patterns, the specified rear house grade shall also be shown. The specified minimum basement floor elevation for each lot shall also be shown.

The specified lot grade (apron elevation) shall be a minimum of 0.3m above the lowest lot corner and in accordance with all other grading specifications in this criteria.

Surface water runoff from the rear of all lots shall be indicated by means of an arrow indicating flow direction.

All swales, other than the normal side yard swales, are to be shown along with the invert elevations at regular intervals (i.e. centreline of each lot for rear yard swales).

All rear yard catchbasins shall be shown along with the rim elevation of the grate and the invert elevation of the outlet pipe.

All above ground infrastructure, (curbs, sidewalks, catchbasins, valves, hydrants, streetlight poles, transformers, supermailbox locations, etc), shall be shown on the lot grading plans. Driveways must have a minimum 1m (?) clearance from these features.

Easements shall be shown on the lot grading plans. Minimum width for rear yard catchbasin and outlet pipe easement shall be 3.0 m. Miminum width for watermain easement shall be 6.0 m.

All 3:1 slopes (terracing) required shall be shown with the intermediate grades specified.

The Lot Grading Plan shall make note of the grading styles that are applicable to the grading of the development.

The grading along the subdivision limits shall be carefully controlled to avoid adverse impact to the adjoining areas. A 1.0 m strip shall be left undisturbed along the subdivision boundaries abutting adjacent

properties. Such strip must be indicated on the approval Lot Grading Plan.
Temporary silt fencing shall be installed (in low areas where runoff discharges onto other properties) along the inside of the 1.0 metre undisturbed barrier strip and maintained for the duration of the contract until such time as seeding or sodding takes place. This fencing shall be noted on the grading plan, or the Siltation Control plan.

Indicate all semi-detached lots with SD on all drawings.

For rural estate developments, lot grading plans shall show proposed locations for building envelopes, private sewage disposal system envelopes (plus alternate bed location) and private water supply systems.

All culverts shall be designed and shown on the lot grading plans identifying culvert diameter, gauge, minimum length and type.

L 2.01 LOT GRADING DESIGN

Lot drainage is to be self-contained within the subdivision limits. All blocks and/or industrial site drainage are to be self-contained. Drainage over lands abutting the subdivision may be permitted in exceptional cases and where appropriate easements or drainage agreements can be entered into with abutting landowners at the discretion of the Manager of Engineering.

The lot grading design shall provide for the temporary drainage of all blocks of land within the subdivision that are intended for further development under Site Plan Agreements.

The maximum lot surface grade for rear yards shall be 6%. A slope of 3:1 (3 parts horizontal to 1 part vertical) shall be used to take up any additional grade difference. Otherwise, an approved retaining wall is required. In any case, the total grade differential of rear lots is not to exceed 15% including retaining wall and 3:1 slopes. However, the rear yards are to have a minimum usable (continuous slope not exceeding 6%) depth of 6 metres from the rear of the house, irrespective of the 15%.

All slopes are to be constructed on the lower property.

All boulevard areas shall be graded with a constant slope from the curb to the street limit (minimum slope to be 2%; maximum slope to be 8% and all water boxes, manhole covers, valve boxes, etc. shall be set flush with the finished sod surface. Where sidewalks are required within

the boulevard the maximum slope from curb to property line shall be 4%.

All lot surfaces shall be constructed to a minimum grade of 2% (excluding rear yard swales).

The front yards of all residential lots shall be graded to drain towards the street.

The grade of any front walkway shall not exceed 8 %.

An 0.5m to 1.0m wide grassed path sloping at 2% away from the house shall be constructed along one side of the building (typically the garage side) to allow proper access to rear yards.

Lots under 12.2m in width may require the use of rear lot catchbasins. Rear lot catchbasins are to be used only as last resort.

Lots under 12.2m cannot use a back to front drainage pattern.

Rear yard catchbasins and outlet pipes shall be located such that the catchbasin is located entirely on one lot and the outlet pipe is located on the same lot at .35 metre offset from property line. The centre of the catchbasin should be located 1.0m from property lines. 1.5m easements are required on either side of the lot line for rear lot catchbasins leads.

The minimum grade for any driveway shall be 2%. The maximum permissible design grade for any driveway shall be **8%**. This maximum grade is not recommended and should be employed only in exceptional cases where physical conditions prohibit the use of lesser grades.

Residential Driveways with reverse slope are generally not permitted unless there are absolutely no other alternatives. These will be dealt with on a site specific basis. Water must always drain away from the building.

Industrial/Commercial loading docks may utilize an approach with reverse fall if drained by a catchbasin that is part an overall integrated storm sewer system.

In preparing grading plans for house sitings, the engineer shall establish maximum driveway grades which, allowing a 100mm construction tolerance for foundation control, will ensure the County's maximum and minimum grades will be met.

Sample lot grading plans/patterns are shown in drawings L1 to L4 at the end of this Section.

L 3.00 SWALES

All rear yard drainage shall be directed away from the houses in defined swales which outlet at the curb, sidewalk, or a catchbasin.

Driveways shall not be used as outlets for any swales.

Drainage flows from one lot shall not enter onto another lot unless confined to swales and are part of an overall subdivision grading plan or the outlet is established on title in the form of a drainage agreement or easement to the satisfaction of the Manager of Engineering.

The maximum flow allowable to any side yard swale shall be that from 4 rear yards or 0.1 hectares, whichever is less.

The maximum area contributing to a rear yard swale that may be discharged directly onto a road allowance shall be that of 4 rear yards or 0.1 hectare, whichever is less.

The maximum length of a rear yard swale between outlets shall be 90 metres.

Rear and Side yard swales shall have a minimum slope of 1.5%. Maximum depth for all swales shall be 0.5m. Maximum side slope on any swale shall be 3:1.

Slopes for rear and side yard swales for infill lots or stormwater quality swales, less than the minimum standard of 1.5%, may be deemed acceptable by the Manager of Engineering or designate, in exceptional cases only.

All drainage swales shall be located on one side of the common lot line between adjacent lots and not along the property line. The maximum distance from the centreline of a swale at any point, to the nearest property line shall not exceed 1.5m.

L 4.00 RETAINING WALLS AND FENCES

All retaining walls are to be dry-stone (interlocking, stacking type no tiebacks), or reinforced concrete when used to take up grade differentials, or adjacent to public property. Retaining walls shall be designed by a qualified structural engineer and be approved by the County.

Timber retaining walls are permitted only for internal grading of blocks or lots and between properties, and will be designed by a qualified engineer. Timber retaining walls will be constructed of dressed, pressure treated lumber only.

All retaining walls shall be constructed entirely on the higher property, adjacent to the property line, and an easement shall be established on the lower property to provide access to the wall for maintenance purposes.

A minimum separation of 0.5 metres shall be maintained from the tiebacks to the foundation of any structure.

All retaining walls details must be noted on the engineering drawings and approved by Manager of Engineering.

All retaining walls 0.60m or higher may require placement of fencing or a guard along the top of the wall, in accordance with the Ontario Building Code.

The Developer's engineer shall be responsible for the design, location, and inspection during construction, and certification of all retaining walls.

Any fencing that is to be installed abutting public lands (ie walkways and parklands) shall be constructed in accordance with OPSD 972.130. Bottom wire to be set 150mm above finished grade.

L 5.00 CERTIFICATION (S)

Prior to application for a building permit, individual site plans for each lot or group of lots shall be prepared and shall be submitted to the Developers Engineer for approval. These site plans shall include all of the following:

- Dimensioned property limits,
- House location, (Actual footprint of proposed house)
- Finished floor elevation,
- Basement elevation,
- Underside of footing elevations,
- Lot grades at all corners and at intermediate locations as required to define the grading of the lot,
- All yard catchbasins with rim elevations, driveway location and percent grade,
- Rear yard percent grade, all 3 to 1 slopes and retaining walls,
- Fencing, guards and all utilities.

For Rural Estate Developments the proposed location of any private sewage disposal system, any private water supply system, driveway entrance culverts (including size, length, location) and driveway grades, shall also be shown.

Individual lot grading plans are required as a condition of the issuance of a building permit for any lot within the subdivision. The Developer's Engineer shall review, approve and certify that the plan conforms to the approved subdivision grading plans and Haldimand County grading standards and criteria. (A standard form is shown at the back of this section) Following approval and certification by the Consulting Engineer, the site plans shall be forwarded to Haldimand County Building Division with a copy to the Engineering Division.

The Developer's Engineer will certify that the location and elevation of rear lot catchbasins, if installed, are according to plan, prior to issuance of Building Permits. This is also one of the criteria for the services to receive Preliminary acceptance. .

The top of the foundation wall shall be certified as being in accordance with the approved lot grading plan prior to commencement of framing. The Developer's Engineer shall provide the County with a certificate (as noted at end of section) confirming that foundations are in conformity with the footing and top of foundation wall elevations shown on the approved grading plan.

Certification of foundation elevations by the Consulting Engineer shall be taken to mean conformity with the approved grading plan with a tolerance of 100mm and will include verification of top of foundation wall, any steps in the foundation (if applicable) and the garage sill. Non-conformance of foundation elevations shall be brought to the County's attention for further direction prior to proceeding with any further construction.

The Developer's Engineer shall inspect and certify that the lots to be sodded are in conformity with the approved grading plan (within a 100mm tolerance) and are approved for sodding.

At the time of inspection, it is recommended that all foundations be marked to illustrate final grade and intermediate grade stakes shall be provided. Subject to any changes required as a result of this inspection, the Developer's Engineer shall provide the County with lot grading certificates (as noted at end of section) advising that the lot grading conforms to the approved grading plan.

Prior to the release of any lot from the conditions of the Subdivision Agreement, or final Letter of Credit reduction, the Consulting Engineer shall provide final certification to the Engineering Division, Haldimand County in the form of as-built elevations on the grading plan in hard copy and digital format.

L 6.00 AREA ROUGH GRADING PLAN

L 6.01 GENERAL

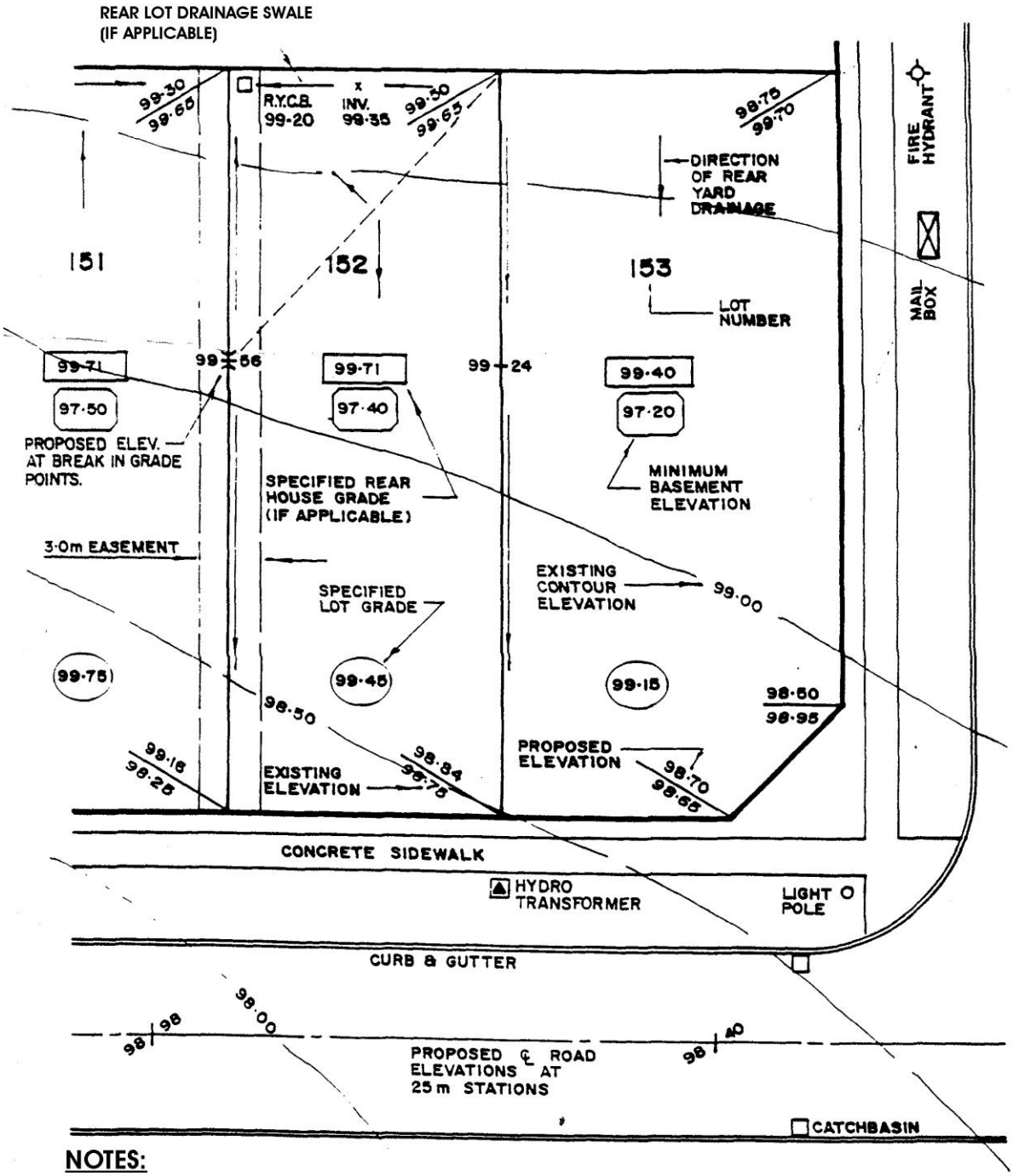
Where earth cuts and fills in excess of .5m are required, rough grading must be performed in conjunction with the road construction and prior to the placement of the base course asphalt.

The area rough grading plan must identify all areas where the depth of fill sections and cut sections are in excess of .5m.

L 6.02 CONSTRUCTION REQUIREMENTS

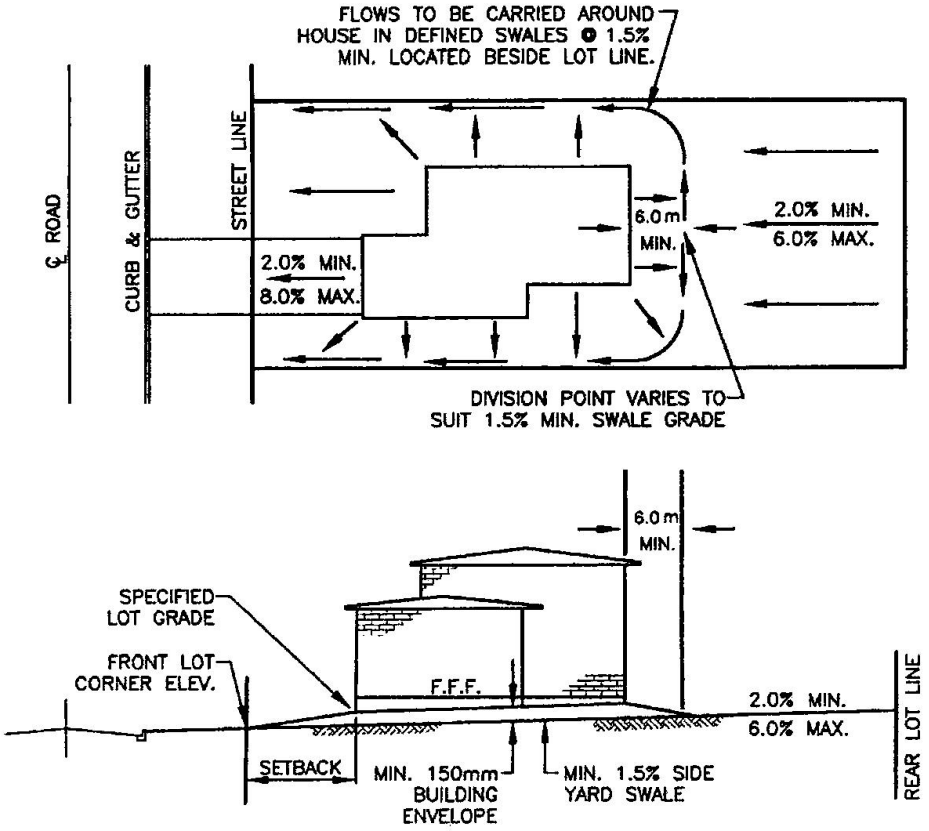
After the rough grading is completed, the Developer must immediately enforce a siltation and erosion control program to the satisfaction of the Manager of Engineering, and any other affected agency.

Prior to placement of imported fill material on registered lots where private sewage disposal systems are required, the Consulting Engineer must certify in writing, to the Chief Building Official and the Manager of Engineering, that the imported fill material placed on Registered lots meets or exceed the original ground's capability to support a private sewage disposal system.



NOTES:

1. BACKSPLITS, FRONTSPLITS & WALKOUT HOMES TO BE DESIGNATED (B/S, F/S, OR W/O)
2. ALL CATCHBASIN LOCATIONS & GRATE ELEVATIONS TO BE SHOWN ON GRADING PLAN.
3. ALL EASEMENTS TO BE SHOWN ON GRADING PLAN.
4. ALL EXISTING AND PROPOSED STREET HARDWARE IE. HYDRANTS 7 LIGHTPOLES TO BE SHOWN.
5. THE ABOVE LEGEND TO BE SHOWN ON EACH GRADING PLAN



FRONT LOT DRAINAGE

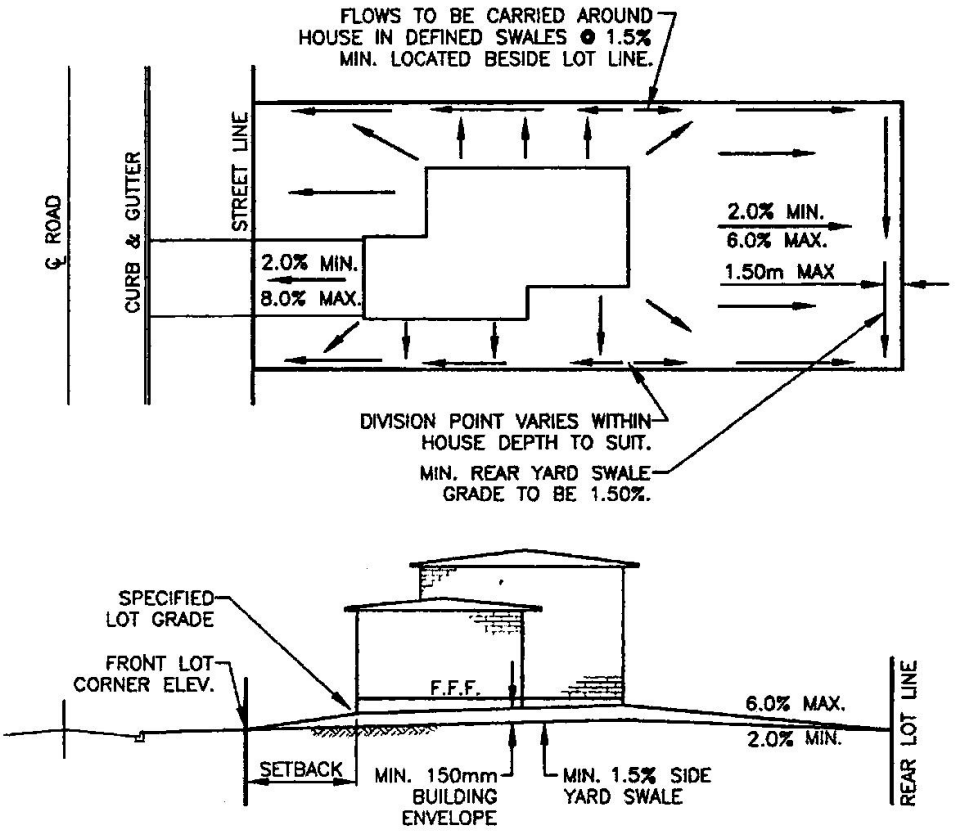
Drawing Number

L2

HALDIMAND COUNTY

Scale: N.T.S.

Revision: 1	*Drawn by: D.R.*	*Date: June, 2005*



SPLIT LOT DRAINAGE

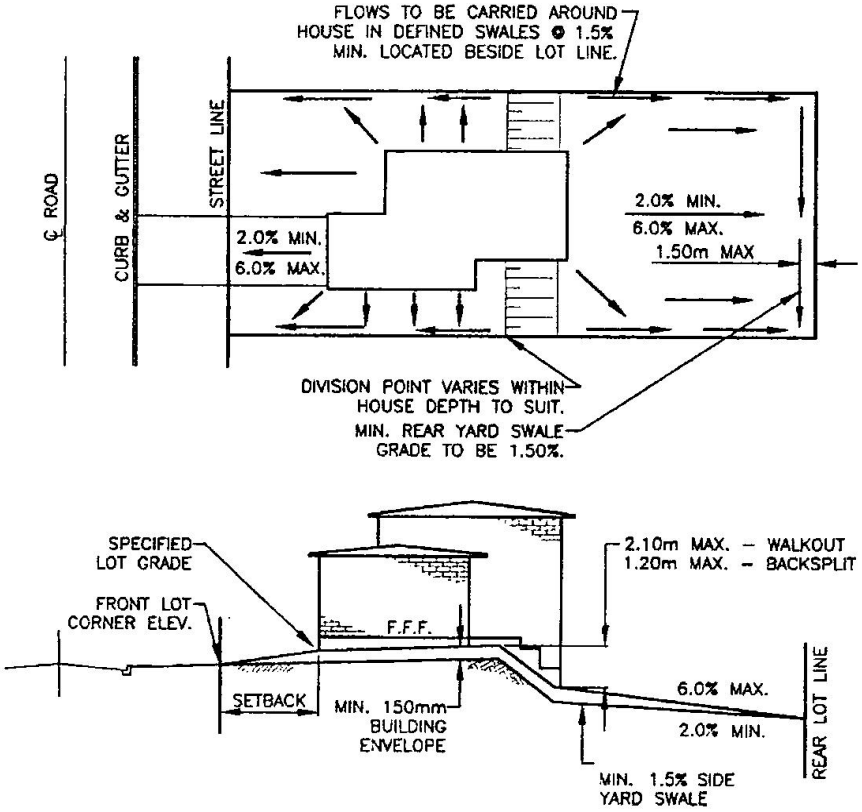
Drawing Number

L3

HALDIMAND COUNTY

Scale: N.T.S.

Revision: 1	*Drawn by: D.R.*	*Date: June, 2005*



SPLIT LOT DRAINAGE

WALKOUT OR BACKSPLIT HOUSE

Drawing Number

L4

HALDIMAND COUNTY

Scale: N.T.S.

Revision: 1	*Drawn by: D.R.*	*Date: June, 2005*

Consulting Engineer's Logo

Here

FINAL LOT GRADING CERTIFICATE

Lot: _____

Concession: _____

Former Township: _____

Registered Plan: _____

Date: _____

To the Manager, Engineering and Infrastructure

This letter will certify that the lot grading has been checked by the undersigned and found to be in conformity with the approved grading plan within the specified 100mm tolerance. A copy of the as-constructed plan showing both proposed and as-constructed elevations is attached.

Yours truly,

_____

Signature of Engineer or Ontario Land Surveyor

_____

Name of Firm

c: Building Department

Consultant's Engineer's Logo

Here

FOUNDATION CONTROL CERTIFICATE

Lot: _____

Concession: _____

Former Township: _____

Registered Plan: _____

Date: _____

To the Manager, Engineering and Infrastructure

This letter will certify that the underside of footing, top of foundation wall, any steps in the foundation and the garage sill have been checked by the undersigned firm and found to be in conformity with the approved grading plan within the 100mm tolerance.

This letter will further confirm that the setbacks, on all sides of the house, have/have not been checked and are in compliance with the applicable zoning by-laws.

Yours truly,

_____

Signature of Engineer or Ontario Land Surveyor

_____

Name of Firm

c: Building Department