TOWN OF AJAX

DESIGN CRITERIA

SECTION E

LOT GRADING

E 1.00 GENERAL

The grading of all lots and blocks in a new development must be carefully monitored by the Consulting Engineer in order to provide sites that are suitable for the erection of buildings and to provide 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 for new developments in the Town of Ajax.

In applying the criteria, while maximum limits are specified, 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. Consequently, initial grading design shall avoid maximum grades unless there are no alternatives.

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

E 2.00 LOT GRADING PLAN

E 2.01 Drawing size shall be A1 (594 mm x 841 mm).

E 2.02 The scale for drawings shall be 1:500 for single family or semi-detached areas and 1:200 for multi-family areas.

E 2.03 All lots and blocks within the subdivision shall be shown and shall be numbered in accordance with the plan proposed for registration.

E 2.04 Existing contours and elevations are to be shown at maximum 0.5 m intervals within the subdivision limits, and 30 m beyond the subdivision limits 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).

E 2.05 Proposed centre line road elevations shall be shown at 20 m stations along all roads within and abutting the subdivision. Elevations shall be shown for the 20 m stations in accordance with the chainage on the profile drawings. In addition, centre line road elevations shall be shown opposite all lot corners.

E 2.06 Proposed elevations shall be shown for all lot corners and intermediate points of grade change. On larger blocks, a proposed elevation shall be shown at 15 m intervals along the frontage of the block and at reasonable intervals along the sides and rear of the block to clearly illustrate the grading of the block in relation to the surrounding lands and house type.

E 2.07 The specified lot grade (apron elevation/earth elevation in front or rear of the house) shall be shown at a location 6.0 m minimum 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 0.3 m above the highest lot corner and in accordance with all other grading specifications in this criteria.

E 2.08 The direction of the surface water runoff from the rear of all the lots shall be indicated

by means of an arrow pointing in the direction of the runoff.

E 2.09 All swales, other than the normal side yard swales, shall be shown along with the invert elevation of the swale at regular intervals (i.e. centre line of each lot for rear yard swales).

E 2.10 All rear yard catchbasins shall be shown along with the rim elevation of the catchbasin grate and the invert elevation of the outlet pipe.

E 2.11 All above ground infrastructure, including but not limited to curbs, sidewalks, catchbasins, valves, hydrants, supermailbox locations, transformers, fencing, entry gates, plantings, blocks and easements shall be shown on the lot grading plans..

E 2.12 Driveways must have a minimum 1.0 m clearance to all utilities. Proposed driveway alignments are to be shown on a Utility Coordination Plan where possible to provide optimum streetscapes, utility coordination, street tree planting opportunities, and on street parking spaces.

E 2.13 All 3:1 slopes required (terracing) shall be shown with all elevations and the intermediate grades specified.

E 2.14 The Lot Grading Plan shall make note of the Town of Ajax Standard Drawings applicable to the grading of the development. The Town reserves the right to refuse any house design which is incompatible with the lot grading design specified for a lot.

E 2.15 The grading along the limit of the subdivision shall be carefully controlled to avoid disturbance to the adjoining areas. A 0.6 m strip shall be left undisturbed along the boundary of the subdivision, adjacent to neighbouring properties. Such strip must be indicated on the approved Lot Grading Plan

E 2.16 Temporary fencing shall be installed along the inside of the 0.6 m undisturbed barrier strip and maintained for the duration of the contract until such time as sodding takes place. This fencing shall be noted on the grading plan.

E 2.17 All semi-detached lots and townhouse lots and or blocks shall be identified on the plan/profile drawings with "SD" or “TH” respectively.

E 2.18 The lot grading plans shall show proposed locations for building envelopes, and envelopes for private sewage disposal systems and private water supply systems for rural estate developments.

E 2.19 All culverts shall be designed and shown on the lot grading plans identifying culvert diameter, gauge, minimum length, and type.

E 3.00 LOT GRADING DESIGN

E 3.01 All lots shall be sodded. The lot grading design shall accommodate a minimum combined depth of 150 mm of topsoil and sod. Clean, weed free, topsoil shall be placed on all lot areas prior to sodding. The. Number 1 nursery sod shall be used for all lot areas.

E 3.02 Lot drainage shall be self-contained within the subdivision limits. All commercial,

industrial, institutional, parkland, and high density site drainage shall be self-contained. Drainage over lands abutting the subdivision will only be permitted in exceptional cases at the discretion of the Town and with the written permission of the abutting land owners**.**

E 3.03 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.

E 3.04 **The maximum lot surface grade for rear yards, shall be 5%.** A slope of 3:1 (3 parts horizontal to 1 part vertical) shall be used to take up any additional grade difference. Otherwise, the use of an approved retaining wall is required. In any case, the total grade differential of rear lots is not to exceed 15%, including retaining walls and 3:1 slopes. However, the rear yards are to have a minimum usable (continuous slope not exceeding 5%) depth of 6 m from the rear of the house, irrespective of the 15% maximum.

E 3.05 All slopes are to be constructed on the lower property.

E 3.06 The specified lot grade shall be calculated in accordance with the Lot Grading Detail Sections included in the Town of Ajax Standard Drawings**.**

E 3.07 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 6%) and all water boxes, manhole covers, valve boxes, survey bars, 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%.

E 3.08 All lot surfaces shall be constructed to a minimum grade of 2% (including swales**).**

E 3.09 The front yards of all residential lots shall be graded to drain toward the street**.**

E 3.10 The grade of any front walkway shall not exceed 6%.

E 3.11 Driveways shall not be used as outlets for any swales.

E 3.12 The maximum flow allowable to any side yard swale shall be from 4 rear yards or 0.1 hectare, whichever is less.

E 3.13 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. At the Town's discretion rear yard catchbasins may be required where sidewalk icing may occur.

E 3.14 The maximum length of a rear yard swale between outlets shall be 90 m with a maximum of 8 rear yards contributing, whichever is the lesser.

E 3.15 All swales shall have a minimum slope of 2.0%.

E 3.16 Maximum depth for rear yard swale shall be 500 mm. Minimum depth for rear yard swale shall be 150 mm.

E 3.17 Maximum depth for a side yard swale shall be 500 mm. Minimum depth for side yard

swale shall be 150 mm.

E 3.18 Maximum side slope on any swale shall be 3:1.

E 3.19 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 centre line of a swale at any point, to the nearest property line shall not exceed 1.5 m.

E 3.20 A 0.6 m wide path sloping 2% away from the house shall be constructed along one side of the building to allow proper access to rear yards.

E 3.21 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 0.35 m offset from property line. The centre of the catchbasin should be located approximately 1.0 m from property lines (see AS-157).

E 3.22 Driveway grades shall not exceed 6% by design. This maximum grade is not recommended and should be employed only in exceptional cases. Driveways shall not slope downward from the street line to the house and shall have a minimum grade of 2% positive drainage away from the building.

In preparing grading plans for house sitings, the engineer or architect shall establish maximum driveway grades which shall allow for a 100 mm construction tolerance (deviation from the approved foundation grade as provided through municipal foundation control) and will ensure that the Town's maximum and minimum grades will be met.

E 3.23 RETAINING WALLS

The use of retaining walls is discouraged. Where possible, grading solutions will be utilized to avoid the use of retaining walls. Where retaining walls are absolutely necessary they shall meet the following minimum criteria:

All retaining walls are to be dry-stone (interlocking, stacking type), or reinforced concrete when used to take up grade differentials. Retaining walls shall be designed by a qualified structural engineer and be approved by the Town of Ajax as per the following table.

Retaining Wall Height	Requirements
0 to 0.59 m	Detail design and installation certified by a consulting engineer
0.6 m to 0.99 m	Detail design stamped by a structural engineer and installation certified by developer's consulting engineer
1.0 m and higher	Detail design stamped by a structural engineer and installation certified and stamped by a structural engineer

The Consulting Engineer shall be responsible for certifying that each retaining wall is installed in the location as approved by the Town.

All retaining walls shall be constructed on the higher property, adjacent to the property line unless

otherwise approved by the Town of Ajax.

A minimum setback of 0.5 m shall be maintained from the tiebacks to the foundation of any structure.

The location and construction details of all retaining walls must be noted on the engineering drawings and approved by the Town.

All retaining walls 0.60 m or higher require a guard. Guard specification will be dependant upon adjacent/intended usage. All retaining walls which require a fence/security barrier and/or by virtue of their location will be adjacent to a future fence line shall be designed and constructed such that the fence/barrier and/or future fence will not degrade the structural stability of the retaining wall.

E 3.24 When separation between the houses (units) is less than 1.5 metres, place 19 mm of clear stone to a depth of 100 mm in place of topsoil and sod. A positive grade away from the house (unit) at grade level is mandatory.

E 4.00 APPROVAL AND CERTIFICATION

E 4.01 Prior to application for a building permit, individual site plans for each lot or group of lots shall be prepared based on approved grading plans and shall be submitted to the Consulting Engineer for approval. These site plans shall include all of the following:

- lot and plan identification including dimensioned property limits
- house location including setbacks to all property lines
- finished first floor, top of foundation wall, and underside of footing elevations and driveway sill grades
- lot grades at all corners and at intermediate locations as required to define the grading of the lot
- location and elevation of all drainage swales
- all exterior entrances, decks, and risers including the proposed grades at same
- all yard catchbasins with rim elevations
- driveway location, and grade (expressed as a percentage)
- rear yard grade (expressed as a percentage)
- all 3 to 1 slopes
- existing and or proposed major plantings (i.e. trees to be retained) and lot grades at same
- retaining walls, fencing, and all above ground utilities
- easements

The lot site plans shall also show for Rural Estate Developments the proposed location of any private sewage disposal system, any private water supply system, and driveway entrance culverts including size, length, location, and driveway grades.

The Consulting Engineer shall be responsible for reviewing the site plan for each lot and certifying that the plan conforms to the approved grading plans and Town of Ajax Grading Standards and Criteria. After approval and certification by the Consulting Engineer, the site plans shall be forwarded to the Engineering Section of the Planning and Development Department of the Town of Ajax.

Before permits are issued, the Consulting Engineer will have an Ontario Land Surveyor certify rear lot catchbasins are installed according to plan to ensure that the placement

is on the correct lot and within the easement provided.

E 4.02 Before house construction proceeds beyond the basement level, an Ontario Land Surveyor shall provide the Town with a certificate (see AS-502a) confirming that foundations are:

(a) in conformity with the footing and top of foundation wall elevations shown on the approved grading plan.

(b) sited entirely on the correct lot and conforms to the applicable Zoning By-law. Siting surveys are to be attached to the certificate.

Certification of foundation elevations by the Ontario Land Surveyor shall be taken to mean conformity with the approved grading plan with a tolerance of 100 mm and will include verification of top of foundation wall, any steps in the foundation (if applicable), and the garage sill.

Non-conformance to either siting or foundation elevations shall be brought to the Town's attention for further direction prior to proceeding with any further construction.

E 4.03 Prior to the receiving preliminary acceptance, the Consulting Engineer shall provide the Town with lot grading certificates certifying that the lot grading conforms to the approved grading plan (See AS-503a).

E 4.04 Prior to the releasing of any lot from the conditions of the Subdivision Agreement, the Consulting Engineer shall provide the Town of Ajax Planning and Development Department final certification and as-built elevations on the grading plan(s).