

File: 2903
Date: 1987 11 03
Revision: #2

ENGINEERING REPORT

LOT GRADING AND DRAINAGE CONTROL PROCEDURES

RESIDENTIAL PLANS OF SUBDIVISION

1.0 INTRODUCTION:

On 1986 07 28, City Council adopted Motion #86-G-520, which authorized certain revisions to the Standard Form of Subdividers Agreement, thus laying the framework for upgrading the existing lot grading and drainage procedures. In that regard the Engineering Department have formulated new procedures which are felt would satisfy many of the problems and concerns currently experienced.

This report has been prepared to provide detailed information concerning those new procedures for the benefit of all affected parties.

2.0 BACKGROUND:

Not unlike many other municipalities within Southern Ontario, the City of Barrie has found that existing lot grading policies and procedures within plans of subdivision have become somewhat inadequate to meet expectations of the new homeowner. Several factors have contributed to this public demand for change, however, certain factors, such as the introduction of modern storm water management techniques, decreased lot sizing and greater involvement and expectations by the consuming people seems to be of most influence.

Generally, the new procedures as detailed in this Report were derived from information contained within a report entitled "Guidelines on Lot Grading and Drainage Control". which was produced in April, 1981 by a joint committee of the MEA/CEO, together with the City staffs' experience in investigating and developing solutions for lot grading complaints.

3.0 LOT GRADING AND DRAINAGE PROCEDURES

3.1 General Lot Grading Plan:

The Consulting Engineer, at the time of Engineering Approvals, would be required to submit a general lot grading plan which would include all areas within the plan of subdivision. Upon receipt of that plan the Engineering Department would forward copies to the Planning and Development Department, Public Works Department and Parks and Recreation Department for information and comment. Subsequently, notification of municipal approval of that plan would be issued to the Consulting Engineer. The required detail and content of the general lot grading plan has been specified in Appendix 'A'.

The approved general lot grading plan would then be the basis for development of all lots or blocks within that subdivision and would be presented for Council approval by means of a staff report.

3.2 Proposed Lot Development Plan:

After approval of the general lot grading plan and prior to the issuance of building permits, the Consulting Engineer would be required to submit to the Engineering Department for approval a proposed lot development plan for those particular lots for which a building permit is desired. That submission would be accompanied by a standard form letter (shown as Appendix 'B'), which would express the Consulting Engineer's approval. The details and content of the lot development plan and the design criteria for lot grading and drainage are appended as C, D, E, F and G respectively.

It is expected that the majority of proposed lot development plans would conform to the general lot grading plan. However, all deviations which are certified by the Consulting Engineer and subsequently approved by the Municipality would require a revision to the general lot grading plan.

3.3 Certification - Top of Foundation Wall and Footings

Subsequent to approval of the proposed lot development plan and during the construction phase, the Consulting Engineer would be responsible to certify to the Engineering Department that the as constructed elevation of the top of foundation wall and top of footing elevation is in conformance with the approved lot development plan. Such certification would be a standard form letter, an example of which is appended as H.

Deviation from the approved top of foundation wall elevation would require revision to the proposed lot development plan and subsequent approval by the municipality.

3.4 Certification - As Constructed Lot Grading

After completion of the final lot grading the Consulting Engineer would be responsible to certify that the as constructed lot grading and drainage appurtenances are in conformance with the proposed lot development plan. Such certification would be accompanied by the standard form letter shown as Appendix 'I'.

Any discrepancies would be identified on a revised lot development plan and submitted for municipal approval.

4.0 GENERAL:

1. The Engineering Department should be called for inspection after the rough grading is completed and prior to sodding.
2. All grading deviations from the approved lot development plan should be certified by the Consulting Engineer before sodding.
3. The Engineering Department should be notified by letter from the Consulting Engineer regarding the "Top of Foundation Wall Elevation" prior to commencement of the superstructure.

4.0 GENERAL: (Cont'd)

4. Prior to sodding, the ground should have a minimum of 4" of topsoil, free of stones, and it should be well raked. All swales should be well defined, located on the property line and at a minimum 2% slope.

5. After placing, sod should be rolled and watered by the builder for the first 48 hours.

6. Any source of underground drainage must be identified on the plot plan and it should be taken to an outlet to the satisfaction of the Engineering Department of the City of Barrie.

7. The procedures outlined within are in addition to any requirements of the Building Department and are not intended to restrict the generality of any special other requirements in the City of Barrie.

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APPENDIX "A"

DEVELOPMENT AFFAIRS

GENERAL LOT GRADING PLAN - REQUIRED DETAILS

1. Scale to be 1:500.
2. Show lots and lot numbers.
3. Show elevations at lot corners.
4. Show direction of flows on lot lines.
5. Show locations of swales.
6. Show locations of proposed retaining walls.
7. Show locations of catch basins, hydrants, street lights, transformers, telephones pedestals, sidewalks and walkways.
8. Label street(s) adjacent to lots.
9. Show proposed house style(s) best suited for the proposed grading plan, i.e. sidesplit, backsplit, walkout, etc.
10. Show existing contour elevations.
11. Show proposed elevations - proposed ground elevation at building.
12. A legend is to be included on the General Lot Grading Plan and will include all symbols and elevations shown on the plan.
13. Show centre-line elevations of the streets adjacent to the lots.
14. Show typical grading cross sections for all distinct lot drainage configurations.

RM/bb/16

APPENDIX "B"

City of Barrie
Engineering Department
57 Collier Street
P.O. Box 400
BARRIE, Ontario
L4M 4T5

Attention: Mr. D. A. Caspick, C.E.T.,
Senior Development Affairs Technologist

Dear Sir:

Re: Subdivision No: R.P.:
 Lot of Block No: Building Type:
 Certification of Proposed Lot Development
 Plan

I have evaluated the proposed lot development Plan for the above-noted lot (as shown on the attached drawing) and hereby certify that, either:

- (a) The proposed building style, lot grading and appurtenant drainage works have been designed with sound engineering principles and comply with the General Lot Grading Plan, or,
- (b) The proposed building style, lot grading and appurtenant drainage works, while not in conformance with the General Lot Grading Plan, would satisfactorily meet current City of Barrie lot grading and drainage criteria and generally satisfy the intent of the General Lot Grading Plan.

Yours very truly,

File: 2903

Date: 1986 10 30

APPENDIX "C"

DEVELOPMENT AFFAIRS

LOT(S) DEVELOPMENT PLAN - REQUIRED DETAILS

1. Indicate house type (normal, sidesplit, backsplit, etc.).
2. Show finished first floor elevation.
3. Show finished garage floor elevation.
4. Show existing and proposed elevations at lot corners.
5. Show driveway location, elevation on sidewalk and grade.
6. Show locations of entrances.
7. Show locations of municipal walkways and proposed grade.
8. Show direction of surface flow.
9. Show locations of swales.
10. Show locations of patios, decks or porches.
11. Show location of terraces.
12. Show location and elevations of retaining walls (if applicable).
13. Show centre-line elevations of roadway, adjacent to the lot(s).
14. Show locations for catch basins, hydrants, street lights, transformers, telephone pedestals and sidewalks.
15. Label street(s) adjacent to lot(s).
16. Show all proposed rear lot catch basins, and top of grate elevations.

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Development Affairs

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Lot(s) Development Plan
- Required Details

Date: 1986 10 30

- 2 -

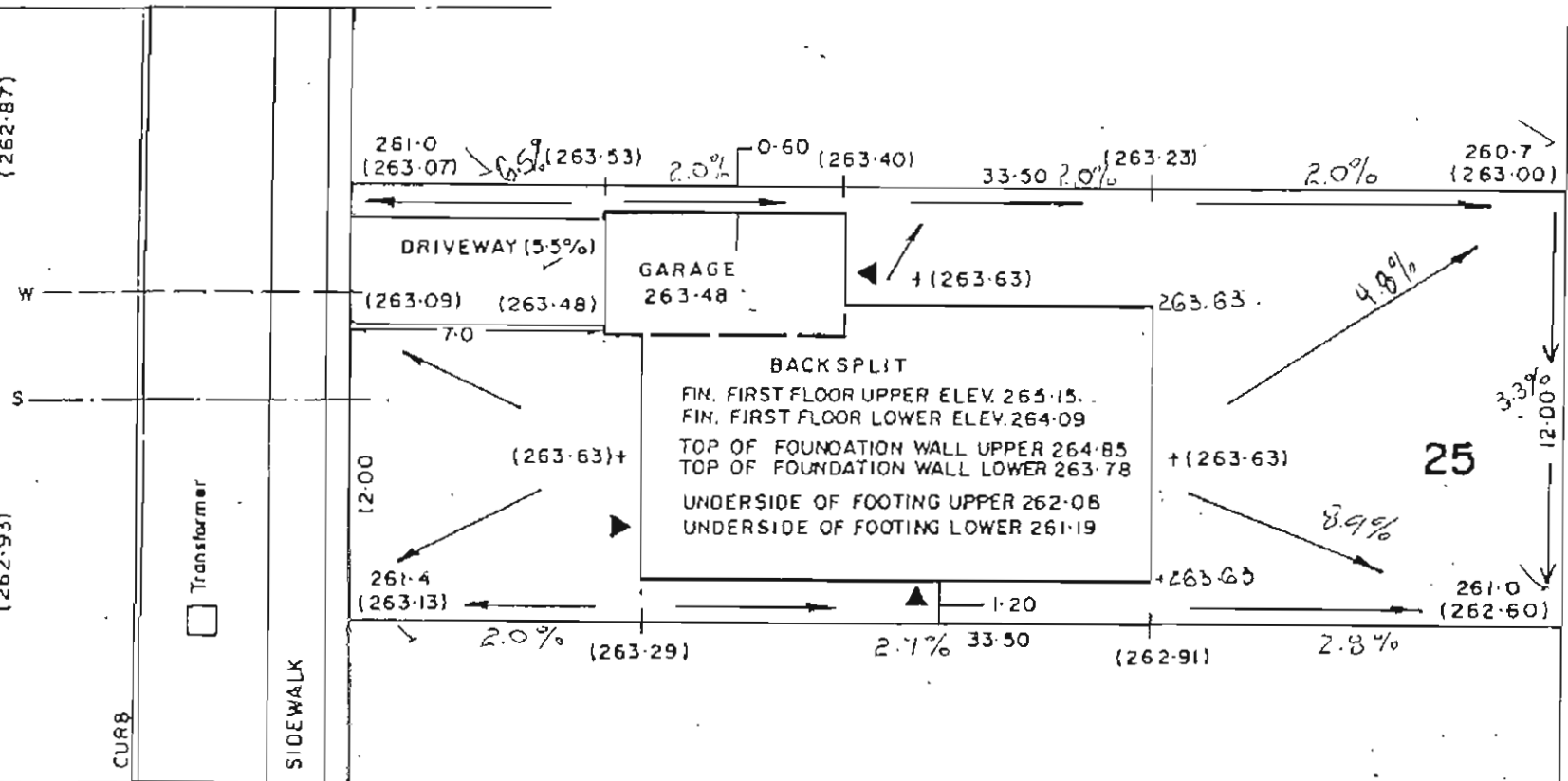
17. Scale to be 1:200 or 1:250 for a single lot.
18. Show top of footing elevations.
19. Show proposed minimum top of foundation wall elevation.
20. Show municipal address for each lot.
21. Show (%) percent grades on driveways (2% min., 7% max.)
22. Show proposed ground elevations adjacent to the buildings and at the house corners. These elevations should be minimum .15 m lower than top of foundation wall elevation.
23. Show proposed elevations on the swales where the grade changes and elevations adjacent to the building corners.

RM/bb/16

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BUCHANAN ROAD

(262.87)
(262.93)



REVISIONS

| DATE | No. | DETAILS |
|------|-----|---------|
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GENERAL NOTES

1. (260.00) - PROPOSED ELEV.
2. 261.11 - EXISTING ELEV.
3. ALL MEASUREMENTS ARE IN METRES

MUNICIPAL ADDRESS

BENCH MARK

DRAWING No.

PROJECT No. 468

REG. PLAN No. 112 LOT 20 B 23

LOT No. 25

BLOCK No.

SCALE 1:200

DRAWN BY. YORK ENGINEERING CONSULTANTS

APPROVED BY.

ENGINEERING DEPT.
APPROVED
DATE *June 12/87*
M. Coenke

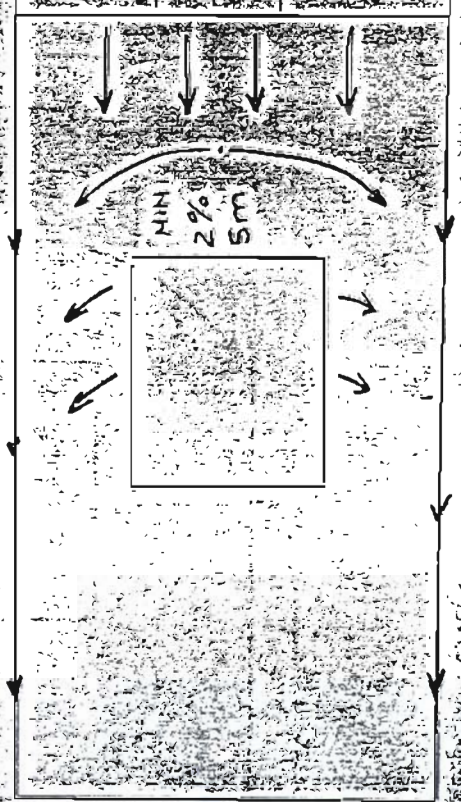
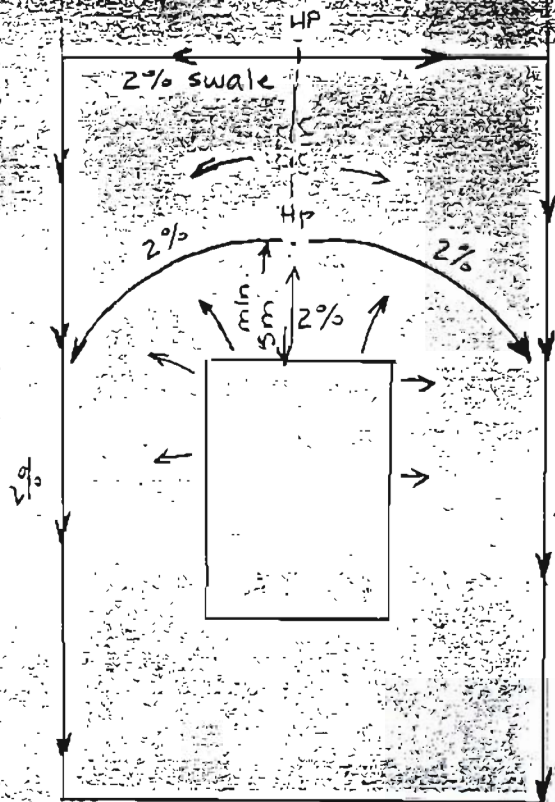
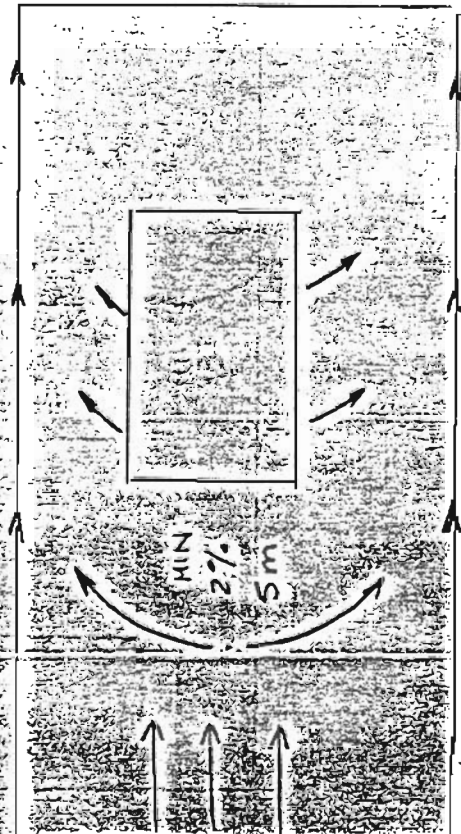
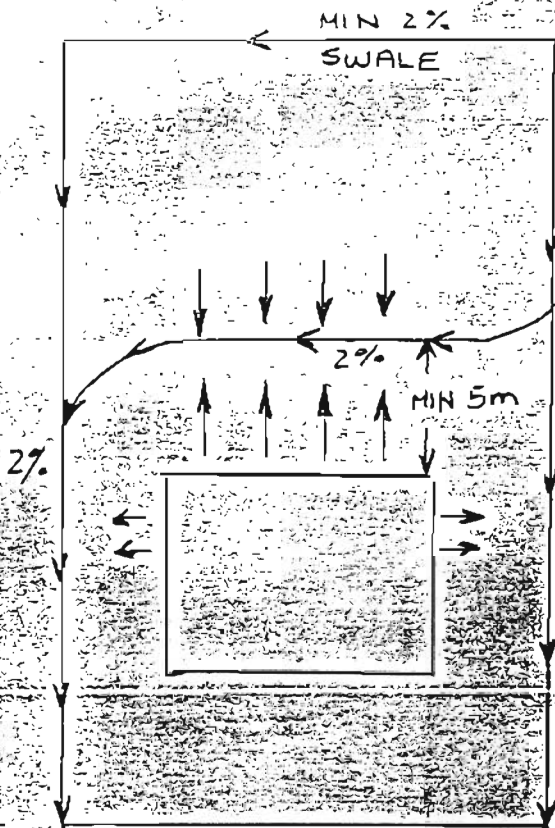


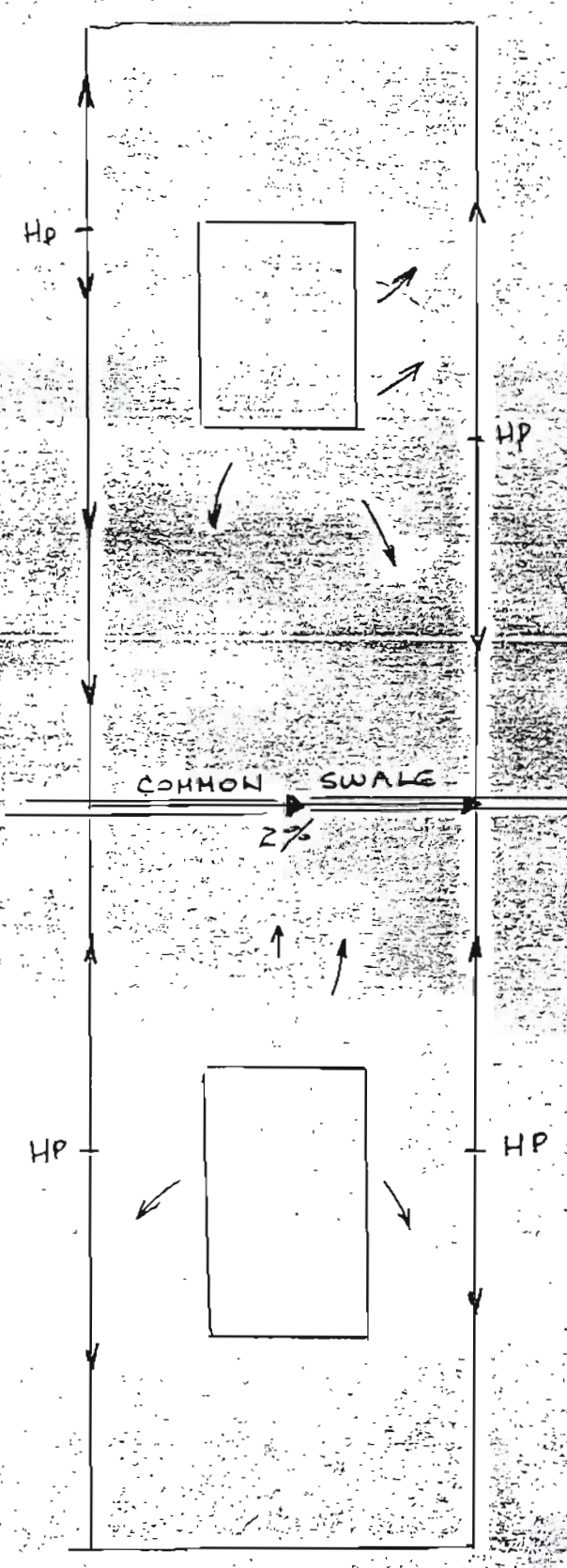
MAY 26/87
DATE

RAR
SIGN

WOODINGTON PARK ESTATES
MORRIELLO CONSTRUCTION LTD.

YORK ENGINEERING CONSULTANTS LIMITED
RICHMOND HILL, ONTARIO. 883-4425





File: 2903

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APPENDIX "E"

DEVELOPMENT AFFAIRS

LOT GRADING - DESIGN CRITERIA

1. Grass surfaces shall have a minimum slope of 2%.
2. Grading around houses and buildings shall direct the water away from the structure.
3. Drainage flows which are adjacent to houses are to be in defined swales located as far from the house as possible.
4. Swale grades shall be at least 2% for side lot swales and 2.0% for rear lot swales.
5. The proposed driveway location should not be in conflict with existing or proposed utility services.
6. The minimum "Flat" area (i.e. at not less than 2% slope) immediately adjacent to a building shall be 0.6 metres at the sides and 5 metres at the back, with the slope directing drainage away from the building.
7. Where drainage is from the rear to the front of the lot the grade at the back of the building shall be at least 0.65 metres above the grade at the high front lot corner; and
8. Where drainage is split, the grade at the front of the building shall be at least 0.3 metres above the grade at the front lot line. The recommended minimum slope of swales along the rear lot lines is 2.0%.
9. Grassed swales will have a maximum side slope of 3:1, and a minimum depth of 0.15 metres.
10. Maximum flow allowable in a side yard swale shall be that from 3 backyards. Individual lot drainage is preferred.
11. The maximum length of a rear yard swale without an outlet shall be 60 metres.
12. The maximum flow in rear yard swales which may be discharged onto the road allowance is from 3 backyards.

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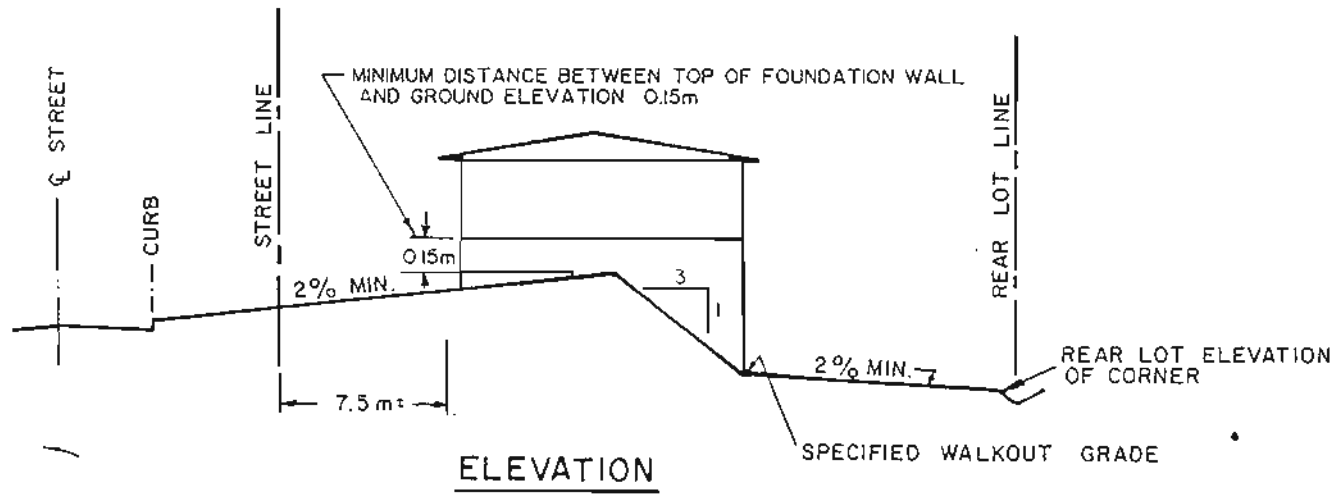
Lot Grading - Design Criteria

Date: 1986 10 30

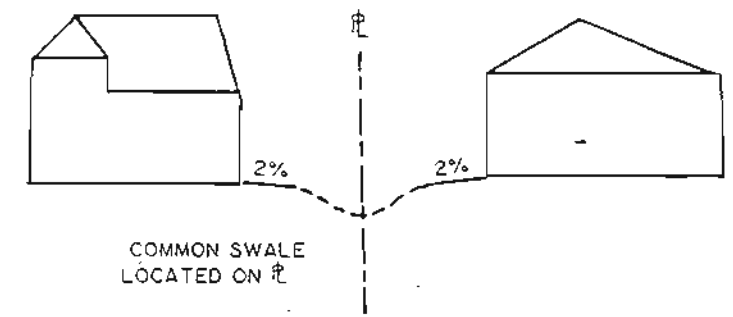
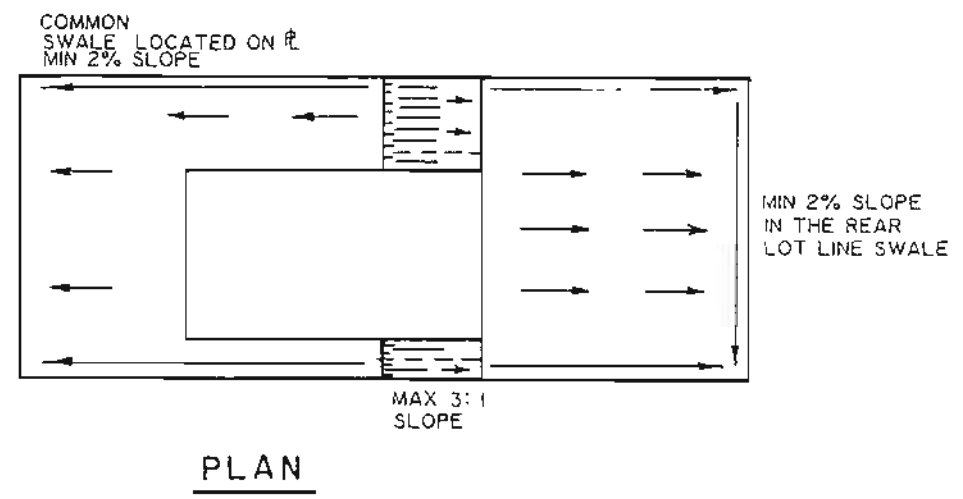
- 2 -

13. All back lot catch basin leads to be located a minimum of 0.8 metres from the lot line.
14. Consideration should be given to the City of Barrie Drainage and Storm Sewage Policies and Criteria.
15. The maximum vertical distance between the first floor elevation and ground elevation at an opening to be 0.6 metres.

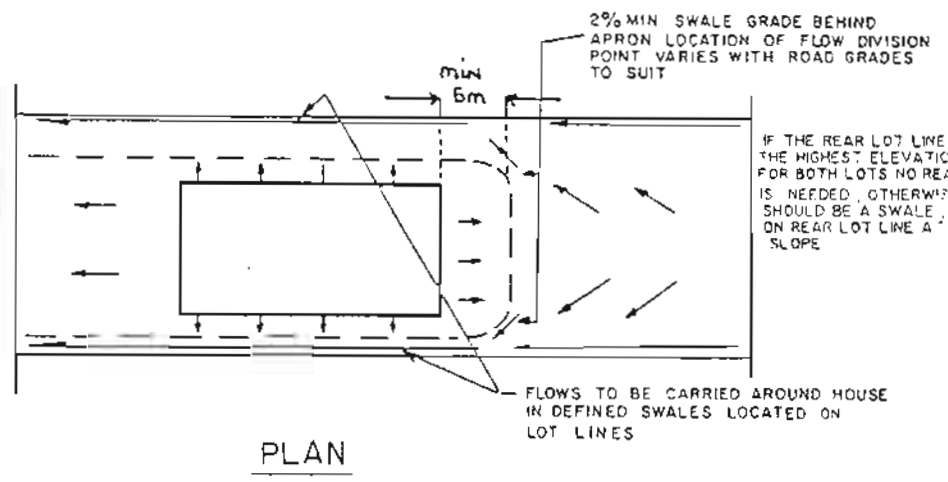
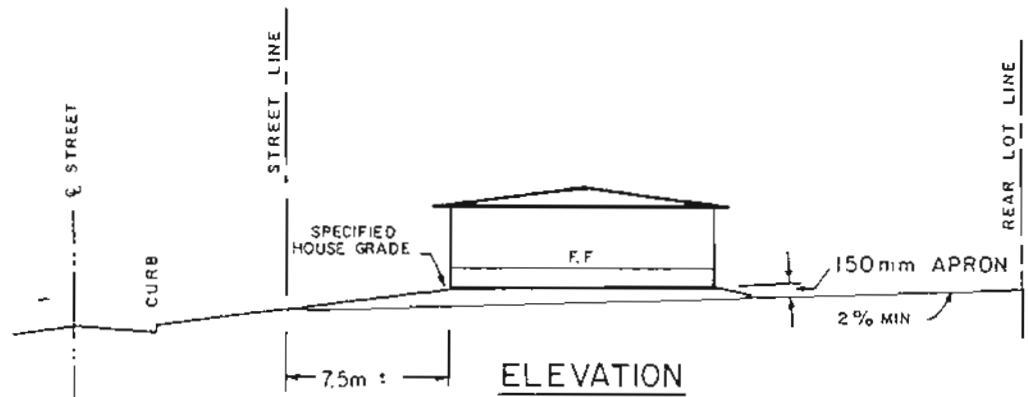
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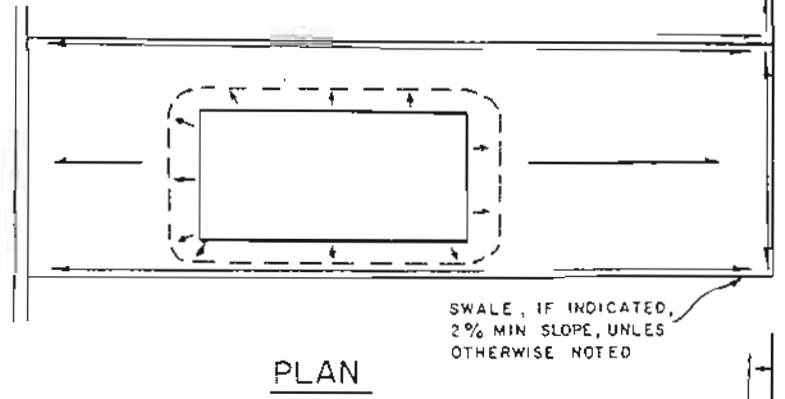
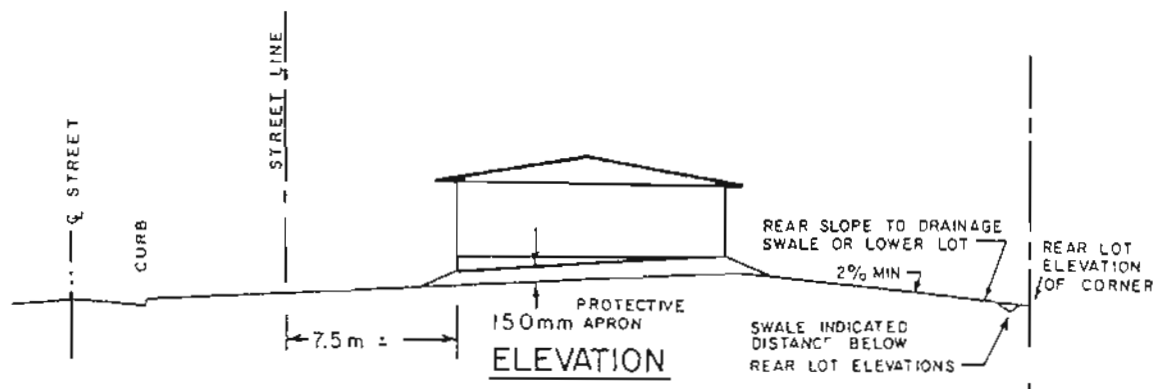
**TYPICAL REAR LOT DRAINAGE
WALKOUT OR BACKSPLIT HOUSE TYPE**



| | | | | |
|-------------------|-------------------|---|------------------------------------|--|
| DESIGN | DATE NOV. 1987 | LOT GRADING (WALKOUT OR BACKSPLIT) | CITY OF BARRIE STANDARD | DRAWING N ^o 73-25 |
| DRAWN Z. M. S. | SCALE N. T. S. | | | REVISED NOV 1987 |



TYPICAL FRONT LOT DRAINAGE



TYPICAL REAR LOT DRAINAGE

NOTE
 IF ATTACHED GARAGE CONSTRUCTED, THEN REAR YARD SLOPE MAY COMMENCE AT REAR GARAGE WALL.

| | | | | |
|-------------------|-------------------|--|----------------------------|-------------------|
| DESIGN | DATE NOV. 1987 | LOT GRADING FRONT REAR LOT DRAINAGE | CITY OF BARRIE STANDARD | DRAWING NO |
| DRAWN Z. M. S. | SCALE N.T.S. | | | 73-26 |
| | | | | REVISED JAN. 1980 |

APPENDIX "H"

City of Barrie
Engineering Department
57 Collier Street
P.O. Box 400
BARRIE, Ontario
L4M 4T5

Attention: Mr. D. A. Caspick, C.E.T.,
Senior Development Affairs Technologist

Dear Sir:

Re: Subdivision No: R.P.:
 Lot or Block No: Building Type:
 Top of Foundation Wall Elevation:
 Certification - Top of Foundation Wall
 and Top of Footing Elevation

This is to certify that the as-constructed elevation of the top of the foundation wall and top of footing is in conformity with the approved lot development plan.

Yours very truly,

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APPENDIX "I"

City of Barrie
Engineering Department
57 Collier Street
P.O. Box 400
BARRIE, Ontario
L4M 4T5

Attention: Mr. D. A. Caspick, C.E.T.,
Senior Development Affairs Technologist

Dear Sir:

Re: Subdivision No: R.P.:
 Lot or Block No: Building Type:
 Certification - As-constructed Lot Grading

I have determined the field elevations for the above-noted lot (as shown on the attached drawing) and hereby certify that either:

- (a) The as-constructed lot grading complies with the approved lot development plan, or,
- (b) The as-constructed lot grading, while not in conformance with the lot development plan, would satisfactorily meet current City of Barrie lot grading and drainage criteria and generally satisfy the intent of the General Lot Grading Plan.

Yours very truly,