# L1 SITE ALTERATION

## L1.1 General

Prior to the commencement of any Site Alteration works, the Owner shall implement an erosion and sedimentation control as per the accepted Site Alteration Plan, to effectively reduce on-site erosion and minimize the transport and deposition of silt off-site, either overland or via the municipal storm sewer system, or into treed and/or environmentally sensitive areas within or external to the development. The plan, in addition to other requirements, shall also indicate trees to be removed and trees to be retained. It shall include provisions to minimize wind blown dust in accordance with "Dust Control Measures and Construction Practice Guidelines" included in Section L2, and to minimize and manage mud tracking onto adjacent roads.

Details of the Site Alteration Plans shall be prepared by the Consulting Engineer for the development and shall be included with the engineering submission(s) for acceptance by the Director of Engineering, and if required, for acceptance/approval by Toronto and Region Conservation Authority (TRCA), Ministry of Natural Resources (MNR) and Department of Fisheries & Oceans (DFO).

The Site Alteration Plans shall be prepared in accordance with the latest TRCA requirements as outlined in TRCA's "Erosion & Sediment Control Guidelines for Urban Construction" December 2006. The report shall also include the TRCA checklist (attached at the end of this section).

http://trca.on.ca/dotAsset/40051.pdf

Further information is contained in Section C of the "Municipal Inspection and Construction Guidelines for Subdivision and Site Plan Development".

## L1.2 Site Alteration Plans

The Site Alteration Plans shall address specific requirements for each stage of the construction as follows:

- Clearing and grubbing and topsoil stripping, including tree removal and tree preservation
- Rough grading and servicing
- Street and building construction

Other requirements may be necessary where creek or stream crossings for sewers and watermains, bridge or culvert construction across active streams, channel diversions and outfalls to active streams are encountered. Plans shall outline measures to reduce the impact on the streams including the timing of construction activities to minimize disruption as required by TRCA, MNR and DFO.

All disturbed ground left inactive shall be stabilized by seeding, sodding, mulching or covering, or by other equivalent control measures. The period of time of inactivity shall not exceed thirty (30) days, unless otherwise authorized by the Director of Engineering.

All erosion and sediment control devices shall be inspected by the Consulting Engineer a minimum of once per week and after each rainfall of one (1) cm or greater to ensure that they are in proper working condition.

### Temporary Sediment Basins

Temporary sediment basins shall be constructed on-sites having a disturbed drainage area exceeding two (2) hectares. Sediment basins may also be required in smaller areas which are sensitive, as determined by the Director of Engineering.

The sediment basin shall be designed to settle out soil particles that are 0.04 mm in diameter or larger from surface water runoff and/or storm sewer flows and shall meet the requirements of the City of

Markham Stormwater Management Guidelines and the TRCA's "Erosion & Sediment Control Guidelines for Urban Construction" December 2006.

**Catchbasin Sediment Control**

During construction, all catch basins shall be provided with sediment control, in accordance with the following requirements.

Only roadside catchbasins shall have sediment traps, in accordance with Engineering Standards.

Sediment removal is required when the sump is full and before the top of the accumulated sediment is within 300 mm of the catchbasin outlet lead.

All catchbasins shall be provided with sediment protection as per Engineering Standards and be maintained by the Owner until the adjacent tributary drainage areas have been sodded.

**Sediment Control Fence**

Sediment control fences shall be placed where runoff drains onto adjacent properties or public lands, along the edges of a drainage channel passing through the site and along the perimeter of all other areas sensitive to sediment accumulation. The sediment control fence shall be constructed in accordance with Engineering Standards.

**Tree Preservation Fence**

Tree preservation fences shall be placed in accordance with the accepted Tree Preservation Plans and the details shall be included in Site Alteration Plans.

**Topsoil Stockpile Protection**

All topsoil stockpiles containing over 100 cubic metres of material shall be located so the toe of the slope is a minimum of 10.0 m away from a roadway, drainage channel or residential lot. The maximum sideslopes for topsoil stockpiles shall be 1.5 horizontal to 1.0 vertical.

Runoff from all topsoil stockpiles shall be controlled by a sediment control fence or other accepted devices. If remaining for more than thirty (30) days, topsoil stockpiles shall be stabilized by vegetative cover, or by other acceptable means.

The maximum stockpile height shall be 3.0 m or as accepted by the Director of Engineering in consideration of the surrounding land uses and the duration the stockpile shall be in place.

**Construction Access Mud Mats**

In order to reduce the tracking of mud onto a paved street, a pad of 50 mm clear stone shall be constructed at the site entrance and exit leading onto any existing road. The stone pad shall be a minimum of 300 mm thick, 60.0 m long and 10.0 m wide as per the City's Standard Drawing.

**Check Dams**

Where runoff drains to adjacent properties or public lands, check dams shall be installed in ditches/cut-off swales/swales in accordance with the Engineering Standards and TRCA's "Erosion & Sediment Control Guidelines for Urban Construction" December 2006.

## L2 DUST CONTROL MEASURES AND CONSTRUCTION PRACTICE GUIDELINES

The Owner shall submit, as a condition of the subdivision and/or site plan engineering acceptance and prior to commencement of construction, a written Dust Control Plan describing the proposed dust control and mitigative measures to be implemented for the project.

**A Dust Control Plan shall include, but not limited to:**

- Identification of all potential dust sources
- A description of the dust control method(s) to be used for each source
- A schedule, rate of application, calculations or some other means of identifying how often, how much or when the control method shall be used
- Provisions for monitoring and record-keeping
- A backup/contingency plan in case the first control plan does not work or is insufficient
- The name and phone number of the person responsible for making sure the plan is implemented and who can be contacted in the event of a dust complaint

A combination of the following dust control measures and construction practices shall be included in the Dust Control Plan to control dust emissions from the site and site activities

**Pre-grading Planning**

Tree removal, topsoil stripping and earthworks to be timed to coincide with each municipal servicing and/or construction phase; or

Strip topsoil and grade entire project and apply vegetation ground cover to graded or topsoil stripped areas where construction phase begins more than ninety (90) days after grading or topsoil stripping operations end.

**Post-grading Watering**

Within active topsoil stripping, earth moving or underground/aboveground municipal servicing areas, water to be applied at sufficient frequency and quantity to prevent visible emissions from extending over 30 metres from the point of origin.

Apply water to haul roads and stockpile by way of water truck.

**Topsoil Stockpiles**

Confine load in/load out procedures to leeward (downwind) side of the material. Topsoil piles to be located down wind of existing residential areas.

Grade and vegetate topsoil stockpile to prevent future wind erosion.

**Wind Fencing**

Install 1.0 m to 1.5 m high barriers with 50 % or less porosity located adjacent to roadways or urban areas to reduce the amount of windblown material leaving the site.

**Reduce Vehicle Speed**

Limit vehicle speed to 25 km/hr maximum. May need to be used in conjunction with watering to prevent visible dust emissions.

**Minimize Disrupted Surface Areas**

Disturb only those areas absolutely required. Vegetation left in place during site work reduces the area subject to wind erosion.

**Restrict Activities during High Wind Periods**

Reschedule work around windy days. The high visibility of certain works and the close proximity and population impacted should be taken into consideration when scheduling dust-producing work.

**Road Cleaning**

Spillage, erosion or materials "tracked out" on a road to be cleaned using mechanical street sweepers or flusher truck by at least the end of the work day and immediately if it extends over 15 m along a paved public roadway.

**Dust on Trees**

Dust on trees and vegetation to be minimised. Water shall be sprayed to remove excessive dust built up in dry periods.

## L3 SITE ALTERATION PERMIT PROCESSES

### L3.1 There is no Site Plan or Subdivision Application

As per the Site Alteration By-law 2011-232, if a site plan or subdivision application has not been submitted by the Owner, and is not imminent in the next six months, a Site Alteration Permit is required to carry out any Site Alteration activities such as the removal of topsoil from land, the placement or dumping of fill on land, the alteration of the grade of land or excavation by any means including the removal of vegetative cover, the compaction of soil or the creation of impervious surfaces, or any combination of these activities that would change the landform and natural vegetative characteristics of the land.

The Owner submits a Site Alteration Permit application and the City issues a Permit as per the By-law on submission of required engineering fees, letter of credit, insurance and accepted plans.

The following documents are required in order to initiate any Site Alteration activities at the site:

- If removal of trees is required, this must be accepted by Urban Design Department and incorporated in the Site Alteration Plans
- The City accepting the Site Alteration Plans
- The City issuing a Permit and the Owner acknowledges and signs a copy of the Permit
- All required documents: engineering fees (per By-law), letter of credit and insurance are submitted as required by the By-law

### L3.2 There is a Site Plan or Subdivision Application

As per the Site Alteration By-law 2011-232, if a site plan or subdivision application has been submitted by the Owner, or is imminent in the next six months, a Site Alteration Permit is not required to carry out any Site Alteration. There are two cases:

a) Draft Plan has been Approved
The following documents are required in order to initiate any Site Alteration activities at the site:

- Environmental Site Assessment (ESA) clearance

- Tree Inventory and Preservation Plan has been accepted by Urban Design Department and incorporated in the Site Alteration Plans
- The City accepting the Site Alteration Plans
- Pre-servicing Agreement (for Site Alteration) is signed by the Owner
- All required documents: letter of credit and insurance are submitted as required by the Agreement
- Engineering fees: 40% of the 5.5% of total estimated cost of works, with first engineering submission, as per the Fee-By-law

b) Draft Plan has not been Approved, but Site Plan/Subdivision Application has been submitted and Draft Plan Approval is imminent in the next six months

The following documents are required in order to initiate any Site Alteration activities at the site:

- Environmental Site Assessment (ESA) clearance
- Tree Inventory and Preservation Plan has been accepted by Urban Design Department and incorporated in the Site Alteration Plans
- The City accepting the Site Alteration Plans
- The Owner submits a Letter of Undertaking for Site Alteration as a Pre-servicing Agreement cannot be signed before draft plan approval
- All required documents: letter of credit and insurance are submitted as required by the Letter of Undertaking
- Engineering fees: 40% of the 5.5% of total estimated cost of works, with first engineering submission, as per the Fee-By-law

## L4 TRCA Checklist for Submission of Erosion Control Plans (Site Alteration Plans)

**(1) Design Brief/Report**

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| **1** | **Project Descriptions:**<br>Brief description of the nature and purpose of the land disturbing activity. Also include the legal description of the property and a reference to adjacent properties and landmarks. | ☐ |
| **2** | **Condition of Existing Site:**<br>Description of the land use, site topography, vegetation and drainage of the site under existing conditions. . | ☐ |
| **3** | **Condition of Existing Receiving Water:**<br>Description of local receiving waters such as watercourses and lakes (e.g. warm water fisheries, cold water fisheries; aquatic habitat use, confined or unconfined valley). | ☐ |
| **4** | **Adjacent Areas and Features:**<br>Description of neighboring areas, such as residential and commercial areas, reserves, natural areas, parks, storm sewers and roads that might be affected by the land disturbance. | ☐ |
| **5** | **Soils:**<br>A description of soils on the site, including erodibility and grain size analysis. This description should include a summary of the soils/geotechnical report for the site. | ☐ |
| **6** | **Critical Areas:**<br>Description of areas within the development site that have potential for serious erosion or sediment problems and measures to be applied to address such areas. | ☐ |
| **7** | **Permanent Stabilization:**<br>Description of how the site will be stabilized after construction is completed. This will require a phasing plan (to be provided on the ESC Plan drawing) of the stripped area to be reseeded and the expected time of stabilization. | ☐ |
| **8** | **Design Details of Erosion and Sediment Control Measures:**<br>The supporting calculations and design details of the sediment control measures. Specifically for ESC ponds – calculations and details include permanent pool and extended detention volumes, pond sizing volume and calculations for the pond outlet and emergency overflow outlet. Provide a plan for monitoring and maintenance outlining who is responsible for this activity on the site | ☐ |
| **9** | **Record Keeping Procedure:**<br>Include sample inspection and maintenance forms. Maintenance Record keeping procedure including name/designate of the personal who will keep the inspection and maintenance record. | ☐ |
| **10** | **Stockpile Details:**<br>Stockpile details to include the height and volume at each proposed location. | ☐ |
| **11** | **Emergency Contact:**<br>Provide a list of emergency and non-emergency contacts (e.g. owner, site supervisor). | ☐ |
| **12** | **Stamped and Signed:**<br>ESC document/report must be stamped and signed by a professional engineer. | ☐ |

**(2) Drawings**

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| **13** | **General Items:**<br>□ Site address including application number (e.g. SP or T number)<br>□ Key map including site boundary limits<br>□ A legend identifying ESC measures<br>□ Drawing scale<br>□ North arrow<br>□ Location of any existing or proposed building(s) or structure(s) on the site | ☐ |
| **14** | **Existing Contours:**<br>Existing elevation of the site at 0.5-1.0 m intervals to determine drainage patterns. Spot elevations may also be required. Extend existing contours to beyond property limit by a minimum of 30 meters. | ☐ |
| **15** | **Existing Vegetation:**<br>Location of any trees, shrubs, grasses and unique vegetation to be preserved or removed. Tree hoarding area(s) to be clearly shown. | ☐ |
| **16** | **Water Resources Location(s):**<br>Location of any water body such as wetlands, lakes, rivers, streams, or drainage course on or adjacent to the site. | ☐ |
| **17** | **Regional Storm Flood Plain and Regulated Areas:**<br>Regional flood line level, Regulation Limit and reference to relevant hydraulic model cross-section where applicable. | ☐ |
| **18** | **Critical Areas:**<br>Area within or near the proposed development with potential for serious erosion or sediment problems. | ☐ |
| **19** | **Proposed Contours/Elevation:**<br>Proposed changes in existing elevation contours for each stage of grading. A cut/fill plan showing existing and proposed contours. Spot elevation for proposed conditions should also be illustrated. | ☐ |
| **20** | **Site Boundary Limits and Limits of Clearing and Grading:**<br>Site boundary limits and the limits of all proposed land disturbing activities. □ | ☐ |
| **21** | **Existing and Proposed Drainage Systems:**<br>Location and direction of any existing/proposed storm drainage system (e.g. storm sewers, swales, ditches, etc.) and overland flow drainage patterns within and adjacent to the site. | ☐ |
| **22** | **Limits of Clearing and Grading:**<br>A line defining the boundary of the area to be disturbed. | ☐ |
| **23** | **Stockpile and Berm Data:**<br>Stockpile and/or berm locations, size and the diversion route of the runoff. Consideration will include proximity to existing homes | ☐ |

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| **24** | **Erosion and Sediment Control Measures Locations and Details:**<br>Location and details for all ESC measures proposed with notes provided to direct their<br>timing/phasing such that there is an appropriate level of protection provided during all stages of construction (e.g. Sediment fence should be installed prior to any land disturbing activities). | ☐ |
| **25** | **Stormwater Management Systems:**<br>Plan and cross-section profiles of ESC ponds/SWM ponds and location(s) to be shown. Also include the storm inlet, outlet, emergency outlet and other permanent and temporary drainage facilities (swale, waterways and channels). Volume, depth and inflow and outflow rates should be provided. ESC pond maintenance target volumes and drainage areas to the pond to be specified. | ☐ |
| **26** | **Stormwater Discharge Locations:**<br>All stormwater discharge locations are to be identified and detailed. | ☐ |
| **27** | **Access Road:**<br>A description of the site's access and measures to be taken to prevent the transfer of sediment off-site via construction vehicles. | ☐ |
| **28** | **Internal Haul Road:**<br>The information about the internal haul road that will be used during construction and its maintenance schedule. | ☐ |
| **29** | **Construction Phasing and Scheduling:**<br>Details of phasing of the construction project and the scheduling of the proposed construction works. | ☐ |
| **30** | **Inspection and Maintenance:**<br>A schedule of regular inspections and repairs to erosion and sediment control practices that are provided in the ESC Plan. Monitoring and maintenance plan for sediment accumulation within the pond. | ☐ |
| **31** | **Stamped and Signed:**<br>All drawings must be stamped and signed as approved by a professional engineer. | ☐ |

NOTE: The Consulting Engineer shall check for the latest updated version of the TRCA checklist.