

The City of Newburyport

Overview to the Guide for Protection of Public Trees

April 2016

The City of Newburyport, Department of Public Services and the Tree Commission have prepared this document as a helpful guide to tree protection issues associated with construction activity. The following information is intended as an aid for planning a safe construction site near trees.

See also the Guidelines Check List for private developers and private construction companies working within the City.

Prior to starting work on the site,

It is essential that the site contractors become fully briefed by the Tree Warden or the Tree Warden's designee on the actions needed to retain and protect trees.

A developer or contractor is strongly urged to follow these guidelines for the protection of all public trees. Failure to do so may result in unnecessary damage to a Tree.

Additional situation specific issues not included in the list can be introduced and addressed with the Tree Warden at the same time.

Per City of Newburyport, City Ordinance 12-178 of Chapter 12 – Article VI, a penalty or penalties may be issued by the City and / or a replacement of said damaged property may be required.

1. Creating Protection Zones - Cladding or fencing of tree trunks

Before the commencement at work site, trees in or near the construction zone that are to be retained ought to be protected by fencing or cladding. The actions listed below will protect the tree from construction related damage, equipment strikes, or material storage placed too close to trees.

Methods –

Wood Cladding - should be stout and solid vertical 8-foot 2x4's or 2x3's attached tied together around the trunk with rope, not wire. The cladding should be of a standard sufficient to withstand impacts of construction equipment.

Low Fencing – Metal, wood or plastic fencing may be erected around trees to keep away storage piles, debris, and moving equipment tracks impinging on roots and branches.

Examples:

- Around trees larger than 18-inches in diameter, measured 4-feet above ground level (DBH), an area enclosing a radius of not less than 12-feet around the tree;
- Around trees less than 18-inches in diameter, measured 4-feet above ground level, an area enclosing a radius of not less than 6-feet around the tree.
- Around an area incorporating a group of trees or shrubs, along a line approximately under the outer perimeter of the branch spread, but not less than six feet from the stem in the case of shrubs.

2. Common causes of damage to trees -

Tree roots require that both water and air have good access to the soil pore spaces. Damage to fragile root systems is to be avoided. The term “compaction” refers to the loss soil porosity due to the effects of loading.

The City of Newburyport
Overview to the Guide for Protection of Public Trees

April 2016

NOTE: *Soil compaction is a leading cause of decline and death of trees from construction activity. The damaging effects to the tree may not be evident for a year or more after the event.*

Change of finish grade (or other impacts on water and air availability to roots)

Damage can be caused by the addition or removal of surface materials and/or compaction of soil. Compacted roots can no longer “breathe”. Changing the ground level around established trees can be extremely damaging and should be avoided.

Compaction can be the result of the stockpiling of other soil, gravel, construction materials, or materials for disposal, or by the travel or parking of heavy equipment and objects, or even by frequent passage of individuals by foot, is a leading cause of decline and death of trees from construction activity, even when it only becomes apparent after the completion of construction.

NOTE: *It is common for the effects of compaction damage to be unseen until a year or more after the construction event.*

Mechanical damage to trunks and lower branches of trees not only degrades their appearance; it also may allow the introduction of disease and the current or resulting loss of structural integrity. Therefore, a sturdy fence must be erected before commencement of other construction activity, and it should be maintained throughout construction. It should be at a distance from the tree trunk agreed to with the Tree Warden or his designee.

Outside the tree’s drip line, fencing should not be required, but where tight site conditions make the drip line parameter impractical, the Warden may allow a closer placement of the fencing provided it is supplemented by cladding and/or heavy mulching.

Heavy protective mulching should consist of a 6-inch layer of coarse wood chips over all ground that is outside the fencing but inside the drip line.

NOTE: this mulch should not be within one foot of the trunk, and it should be loosened whenever it becomes compacted.

Site trailers, huts, and portable toilets should also be located outside the fence to avoid soil compaction.

Other threats, besides soil compaction, to the health of the roots include significant changes to finish grade (soil level) and installation of impervious paving.

Note: the roots may extend much farther from the tree trunk than the drip line, but protecting the roots within that critical area generally allows the tree to survive while it grows new roots to adjust to changes.

Adding or removing more than two inches of soil within the drip line, or even less within a few feet of the trunk, puts the tree at risk, and the owner is responsible for any decline or death that the Tree Warden can reasonably attribute to the construction.

Impervious paving, such as concrete or bituminous concrete, and even compacted gravel, stone dust, or unit pavers with mortar in the setting bed, should be kept as far from the trunk of public trees as practical, and should not cover more than one third of drip line area previously covered by lawn or planting beds, to avoid the presumption of cause of any decline or death.

Exceptions should be discussed with the Warden in advance. Concrete, asphalt, and other cement waste (spoil) should be kept outside the drip line for the same reason, and should be

The City of Newburyport
Overview to the Guide for Protection of Public Trees

April 2016

dumped or accumulated (tipped) only in areas to be paved, or removed from the site.

3. Underground Services

Whenever possible, all underground services should be located outside the drip line of existing public trees and at least 10 feet from the trunk of the tree (to protect small newly planted trees from future work).

The owner and contractor would do well to provide similar protection to private trees, since loss of large structural roots can result in trees blowing over in heavy winds, especially coupled with heavy rains, and this can cause enormous damage to structures and possible loss of life.

Since most tree roots in normal soils are in the top 2 or 3 feet of soil, tunneling at a depth of about 4 feet has been used to successfully avoid the damage of trenching. Placing all services in a common trench and sleeving for future services are also good practices.

4. Liquids, Weed Killers, and Other Lawn Chemicals

Liquids such as paint, oil, fuel, acids and cleaning fluids should not be allowed to spill near trees. Their containers should not be discharged beneath trees as this may kill surface roots and cause fire risks or danger to children at a later date.

NOTE: Most people don't understand that many types of bacteria and fungi are not harmful, but rather are helpful and almost essential. They also don't understand the importance of reducing compaction.

Remember that the trees' roots extend well beyond the drip line and are not much deeper than the grass and weeds.

Toxic chemical substances can kill tree roots and tiny organisms (such as the mycorrhiza fungi that greatly improve root hair function) that are important to the healthy function of roots.

Areas of ungraded weedy ground may look untidy and it may be necessary to remove weeds before handing the development over to the occupiers. It may be tempting to simply apply herbicides.

Some, such as sodium chlorate are highly toxic and mobile in the soil and can kill or severely damage trees as well as weeds.

Fortunately, several types of herbicide can be used which are unlikely to affect any trees present.

Judicious use of a weed killing compound similar to and including Roundup (a brand name) is acceptable.

NOTE: *total weed killers such as sodium chlorate are very mobile in the soil and must be avoided because they may kill even large trees as well as the weeds.*

If you feel you must use an herbicide, consult with the Tree Warden on which ones may be safe to use and follow directions carefully.

However, you may get even better results if you destroy the weeds by a shouldow scraping and tilling followed by a top-dressing of an inch or two of good loam. This will provide a well-aerated soil for turf grass, whether hydro seeded, hand- broadcast seed, or sod.

You can also send a soil sample for testing and add any lime or fertilizers that will almost always result in a better lawn.

The City of Newburyport
Overview to the Guide for Protection of Public Trees

April 2016

5. Fences and walls

At least 2 feet (two feet) should be left between new fences and walls and any trees to allow for basal swelling growth of the tree.

6. Trees in Parking Lots

The city will require a developer / builder to provide a Tree Planting Plan for all parking lots which are reviewed by the Zoning Board of Appeals. The Tree Commission may review and approve the Tree Planting Plan, which must provide adequate ratio of trees to parking spaces. The effect on trees of the plowing and piling of snow should be factored into the design.

7. Mulch - in moderation

A tree's roots need access to air and water. Excess mulching can damage a tree. More than 2 to 4 inches of mulch can damage tree bark and the root system.

An area of at least 6" of soil should be left between the trunk of a tree and the location of mulch. This area can be dish shaped to gather rain water. Wood chip mulch is recommended, rather than bark mulch.

NOTE: In particular, it is important to avoid **"tree volcanoes"** which involve piling large amounts of mulch in a dome-like formation against a tree trunk.

8. Clean up of brush and wood. Stump clearance.

All wood disposal is the responsibility of the utility or the contractor, except when specific direction is given by the Department of Public Works or the Conservation Commission to deliver to an in-town location. See also Newburyport Tree Ord. Sec. 12-193 Removal of tree stumps.