

STANDARD TREE INSPECTION

Arborists get a lot of practice studying the crown, the upper tree. Studying the lower tree is less familiar, but the upper tree cannot stand without the lower tree, so it's worth the time to inspect it carefully. I was privileged to chair the US subgroup that wrote Part 8 of the ANSI A300 Tree Care Standard, which covers trunk, flare and root inspection. I'd like to describe it to arborists in other countries, in the hope that their standards will someday adopt and perhaps improve upon it. I'll also refer to the German ZTV standard, which inspired our work on inspection.

The first requirement is for arborists to consider the owner's goals in the light



A healthy inner crown regenerates this *Ficus microphylla*. The roots are covered by concrete, but reducing branches will sustain the protection provided to the market beneath.



The standard allows for the use of wound sealants to prevent drying and pests of the exposed wood. This application wisely avoided contact with the callus. A follow-up coating will continue to protect the wood and ease closure.

of what tree care can and cannot do, and establish the objective. The ZTV's objective, "Provide maximum vitality health and safety of trees" is a good start but there may be other objectives to add, such as increasing wildlife habitat and shade. Once the owner and arborist agree, it's time to write specifications – "a detailed, measurable plan or proposal for meeting the objective."

Specifying the method, area, depth, tools, and limitations of inspections is required, as is avoiding damage to living tissue, bark or soil. Recommendations in the US standard are stated as 'should', such as "Inspection should include:

- Conditions in the crown that may reflect root conditions
- Stem tissue connecting the crown and the roots (functional vertical segments)
- Girdling of buttress roots or stems by roots or foreign objects, and the tree's response
- Tree association with **beneficial** and harmful insects



Horizontal cuts trap moisture and spores, but sometimes cannot be avoided. When cuts are made at growth points, the tree has a fighting chance to respond before decay weakens the branch.

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- Tree association with pathogenic and **beneficial** microorganisms (e.g. mycorrhizae)
- Wounds, and **the tree's response** to wounds
- Mechanical damage to detectable roots, and **response**
- Indications of root disease and response
- Graft unions in grafted trees.”

Our goal was to encourage arborists to be objective by taking note of positive features like beneficial associates and response growth. Too often, what passes for inspection is a witch hunt for negative ‘defects’, real or imagined. So training in inspection is a vital complement to Tree Risk Assessment Qualification (TRAQ), with its focus on targets. Only after a careful inspection can a credible opinion on likelihood of failure be formed. Tree owners, and trees, deserve no less.

Inspection is also an essential first step before planning any work on a tree. According to the ZTV, “Before contracts begin, a definite diagnosis.” This step might seem like an aggravation to the arborist who just wants to get on with the job, but this process can open up new revenue streams. First, inspection by itself can be a stand-alone, independent service. As a consultant, the first service that I typically sell to new clients is a one-hour landscape inventory, based on a walk around their property with them.

Written specifications for the care of their woody assets is the primary deliverable, which they can then use to shop for contractors. If they ask me to bid, and I want the work, I go off their clock, literally change hats, and bid. Some colleagues see an inevitable conflict of interest in this, but my clients don't, and neither do I. Writing specs need not take long, using modern technology. Pictures of the trees in question can be emailed to clients, with voice dictation providing specs as captions below each one. Apps such as Skitch can add dots and lines to indicate to the client where pruning cuts would be made, or what area of soil will be modified.

As the German standard notes, “Trees in urban areas often show signs of low vitality, which depends on the aboveground and belowground parts. Each tree should be examined individually. If soil aeration, moisture, and nutrients are



Large wounds are bad for any species. Evaluating the feeble response growth in this *Eucalyptus robustus* also indicates that this species is not so ‘robust’ in Hong Kong.

not available, then improve the growing environment!” So soil modification is sold on most of my jobs. The bottom half of the tree is an increasingly profitable area, and it all starts with inspection. “Mulch, soil and other materials should be removed as needed to allow for inspection.”

The flare is defined as, “The area at the base of the plant's trunk where it broadens to form roots” We hoped to settle the confusion over ‘trunk flare’ versus ‘root flare’ by doing away with the adjective. The root collar is, “The transition zone between

the flare and the root system,” which in most trees is the area where lateral roots branch off of buttress roots. Consistency in terminology really helps, so I hope these terms make inspections easier to do and report on.

The German and UK standards are more user-friendly because they embed informational text right in the document. The US standard does not, so it takes careful reading to suss out the meaning. For instance, “Bark tracing of wounds shall remove only dead, loose, foreign and



Fungal conks can be alarming, but inspecting the trunk for columns of tissue connecting roots to crown puts them in perspective. Decay happens, but response matters most.

damaged tissue,” means that living tissue shall not be damaged, i.e. the wound shall be made no larger. “Monitoring for callus and woundwood growth and for decay shall be considered,” is weaker language; the arborist has to think about monitoring, but is not required to actually do it.

In contrast, the German ZTV gives helpful information that is easy to follow: “*Cost-benefit analysis considers ornamental, ecological, cultural, and functional significance of the tree. Consider supporting instead of pruning, predict the tree's reaction to the work...ability to compartmentalize...*” We are guided to look beyond the present moment to the assets in the tree, and its ability to sustain them. “*Coordinate any works on roots, stem and crown with each other*” makes the arborist responsible for the whole tree, instead of entrusting the care of the lower tree to the owner or their landscapers. We've all seen how well that plan works!

The hardest part of managing a tree can be managing the tree's owner, and ▶

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the company's staff. Setting a clear objective sets the expectations for staff and client alike. It's easier when you ask them to tell you what they want, and listen closely. Quiz clients on site history, past management, and disturbance. Study aerial maps, the ecosystem, your own experience and that of others, and the scientific literature. Then put their perceptions and their problems in the perspective of positive responses that the tree makes. The more we're able to inspect, the better we can do our jobs.

"To assess the effect of different interactions on the vitality of trees requires special knowledge and long-term observation, including the soil and growing environment." Here the ZTV raises a key point: We must think in 'tree time'! As Alex Shigo reminded us long ago, trees adapt well, but not as immediately as we may want them to. To make quick assessments and snap judgments may fit other subjects, but it's more reasonable to mitigate tree conditions that we observe, then wait for them to respond before pronouncing any final judgments.

Sample Specifications Root Collar Examinations Using Hand Tools

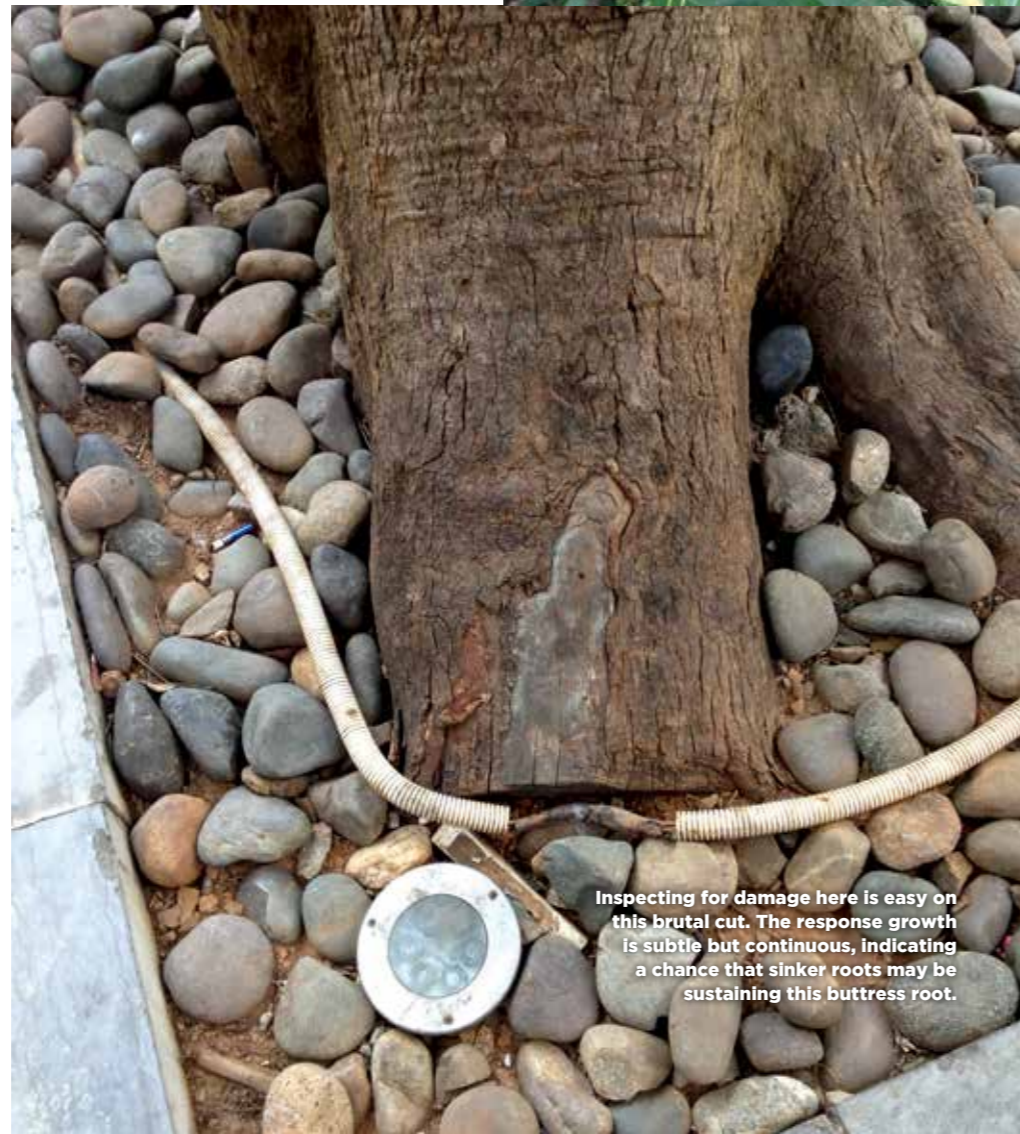
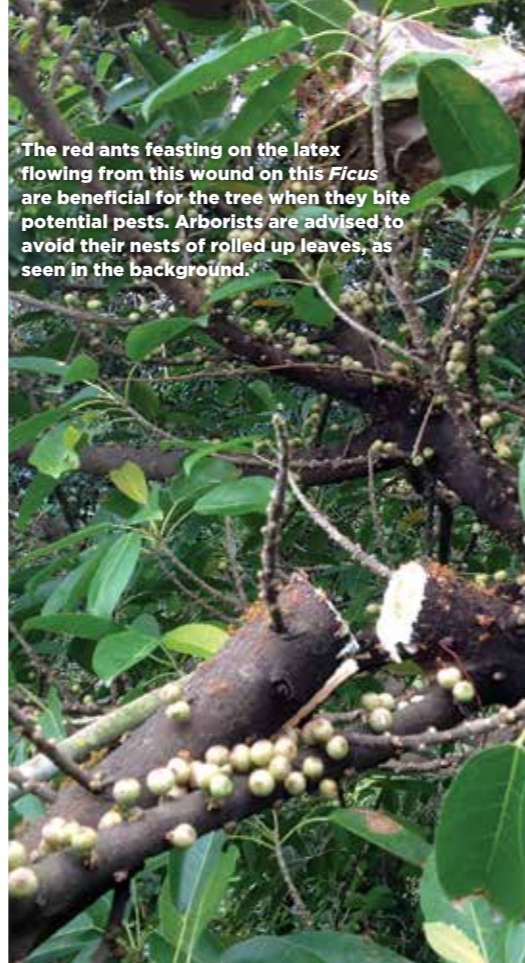
Scope: Trees with fill contacting the trunk.
Objective: Avoid damage to the tree from the effects of fill on the trunk. Lessen risk and maintenance needs. Improve health. *Provide maximum vitality health and safety.*

Specifications:

1. Rake any coarse woody debris or fresh mulch away from the root collar area
2. Press the blade of a shovel or a trowel against the trunk. Slide it carefully downward until resistance is met
3. Push the handle toward the trunk, moving the blade away from the trunk
4. Remove individual adventitious roots <1cm and stem-girdling roots <1/10 trunk diameter. Manage larger roots per A300 (Part 8), 83.4 and 84.4. Avoid contact between the trunk and any remaining adventitious, girdling, and circling roots
5. Lift the fertile material away from the trunk and set aside
6. Separate and dispose of any infertile soil and debris. Retain the fertile soil, fine roots, mycorrhizae, and

7. Repeat until trunk and flare are clear, down to the root collar, where buttress roots divide. Use hand tools, or compressed water or air, to clear the root collar
8. Consider replanting the tree, if the flare is over 2 inches below grade and the tree has been in the ground for less than five years
9. Consider installing a device to control erosion, or remove soil and fine roots outside of the root collar to make a gradual slope
10. Apply 2-4 inches of mulch over the root collar. Avoid mulch contact with the flare
11. Incorporate the fertile material into the rootzone where practical near the dripline.
12. Specify that future management will keep the flare visible
13. Establish specifications for monitoring and maintaining tree health and stability AA

The red ants feasting on the latex flowing from this wound on this *Ficus* are beneficial for the tree when they bite potential pests. Arborists are advised to avoid their nests of rolled up leaves, as seen in the background.



Inspecting for damage here is easy on this brutal cut. The response growth is subtle but continuous, indicating a chance that sinker roots may be sustaining this buttress root.