TREE CARE INDUSTRY MAGAZINE

The Official Publication of the

Volume XXIII, Number 3 - March 2012

Getting to Know ANSI A300 Part 9: TREE RISK ASSESSMENT

BAD WEATHER AHEAD?
Time to Load Up On Loaders

www.tcia.org

Getting to Know ANSI A300 Part 9: TREE RISK ASSESSMENT

Performing a visual tree inspection. A Level Two Assessment may involve basic diagnostic tools for detection of defects in the above ground tree parts. Photo courtesy of Andrew Koeser, International Society of Arboriculture, Bugwood.org.

By Eric Wiseman, Ph.D.

While I have no data to support this, I suspect that we may start seeing more tree hazards and tree failures in the near future – I'll explain why I think this in just a moment. At the same time, I believe we are also seeing a heightened standard of care for tree risk management – and the expectation of higher quality tree care for those practicing arboriculture. Combined, an increase in tree hazards and an expectation of higher standards for tree care may very well create heightened potential liability – for property owners as well as tree care providers.

ANSI Part 9

Why do I believe we are experiencing a heightened standard of care for arboriculture generally and risk management specifically? I think it is as simple as this: organizations such as TCIA and innumerable professional arborists have done a tremendous job in recent years of making the public aware of proper arboriculture. The general public is very aware and very capable of distinguishing high quality versus low quality arboriculture. As a result, the expectation for a higher level of arboriculture practices has been raised as well.

Why do I think that we may be entering an era of more tree hazards and tree failures? There are several reasons. First is the fact that we have a lot of baby boomer trees out there. Baby boomers – the people – are now making the transition from the workforce into their retirement years. Aging along with them are the trees that were planted by their parents. These trees are getting up there in age, and as trees get older, they get larger and tend to accumulate defects. As a result, there is a greater likelihood of tree failures and, due to greater size, there are greater consequences to these failures, which we know are two key elements of the relative risk that trees pose.

The other thing that I think might contribute to more tree hazards and failures is the fact that we are planting a lot of trees, at least in some places. Probably everyone is aware of the Million Trees New York City initiative. You can name almost any city and there is probably a similar initiative. New York City this past fall surpassed the 500,000 tree mark. There are a lot of trees out there and this is creating, amongst some people, a lot of anxiety. A recent New York Times article was headlined, "As City Plants Trees, Some Say a Million Are Too Many." While most of us agree that the world could benefit from more trees, there are obviously a lot of concerns about our capacity to provide preventive maintenance for these trees. And we know that preventive maintenance is a key element in preventing tree hazards and, therefore, tree liabilities.

Another factor that might contribute to elevated tree hazards and failures in the near future is the recession of our economy, particularly when it comes to publicly owned trees. Tree maintenance has been commonly deferred over the last few years, and both municipalities and private land owners may not be providing the same level of tree care, in general, compared to pre-recession years. In some cities such as San Francisco, municipalities are actually transferring maintenance of street trees to adjacent property owners. Some people are going to take that mandate very seriously and provide an appropriate level of care because they value their trees and they understand the consequences of neglected trees. But undoubtedly there are going to be a lot of trees that do not receive preventive maintenance. As the economy recovers, tree care will surely follow suit, but what opportunities have we missed to eliminate minor defects in juvenile trees that may prove problematic in the future?


These overhead dead branches are just waiting to crash down. Photo courtesy of Andrew Koeser, International Society of Arboriculture, Bugwood.org


A visual inspection easily spots this dangerous branch that is about ready to fall on to this roof. Photo by Guy Meilleur, Better Tree Care, Bugwood.org

Compounding this factor – the lack of or deferment of tree maintenance – is that our global climate is changing and with that may come more extreme weather, which often contributes to tree failures. An article in the *Huffington Post* last fall cited a new report from the Intergovernmental Panel on Climate Change stating that the "world needs to get ready for more dangerous and 'unprecedented extreme weather.'" We have seen examples of extreme weather this year with the tornadoes in the southeast and droughts in the southwest, and, indeed, even the very unusual early season snowstorm last October in the northeast that caught the trees with their foliage still on them, causing quite a bit of damage.

So we have set up the premise here that tree hazards and tree failures may be on the upswing. As such, tree risk assessment will likely become a more important part of our

arboricultural duties. Fortunately, just in time, a new standard, ANSI A300 (Part 9)-2011 Tree Risk Assessment a. Tree Structure Assessment, was just approved last year. So, let's take a look at the Standard and talk about what's in it and why.

Part 9 comprises five clauses: the first clause reiterates the scope, purpose and application of ANSI A300 standards collectively. The subsequent four clauses (numbered 90-93) pertain specifically to assessment standards, normative references, definitions and assessment practices. Let's take a closer look at the key content of these four clauses.

Clause 90 identifies the purpose and reason for the Standard, the qualifications for implementation of the Standard, and the safety mandates of the Standard. The purpose of Part 9 is to provide guidelines for the practice of tree risk assessment and to provide standards for writing specifications. It is the first national standard to address risk management of trees and takes precedent over any previous tree care management standards and guidelines with respect to risk assessment.

Clause 91 has the normative references to ANSI Z133 and 29 CFR 1010, which is a common element of the A300 standards. Clause 92 provides definitions of risk assessment terms. Terminology is incredibly important in all of the A300 standards, particularly Part 9. It includes some key definitions, perhaps even some underlying concepts, that many arborists are not familiar with or are not consistently applying.

First of all is simply understanding what ANSI A300 defines as a tree risk assessment: "A systematic process used to identify, analyze, and evaluate risk."

"Mitigation" is a term that I see commonly used inappropriately. In the Standard, it is very clearly defined as the process of diminishing risk. We do not eliminate risk in trees when we perform some form of mitigation practice. We are minimizing the risk to some acceptable level, which should always be a determination by the tree owner, not the arborist. Be very careful how you use that term mitigation when you are writing a specification or a subsequent recommendation.

Neglected decaying and covered in fungi, this tree is an accident just waiting to happen. Photo courtesy of USDA Forest Service - Northeastern Area Archive, USDA Forest Service, Bugwood.org

Another important related concept is that of "residual risk." It is incredibly important that we communicate to clients and tree owners that when we perform some type of risk mitigation, there is going to be a residual risk. That is, there is going to be risk remaining after mitigation. We have not nullified the risk; what we have done is, hopefully, reduced it to an acceptable, reasonable level.

Clause 93 is where we find standards about risk assessment practices. It is broken into six main sub-clauses: assessment objectives, qualifications, scope of work, levels of assessment, target identification, and risk analysis and reporting practices. When you look closely at the standards for assessment practices, you will see that the process of assessment – how we go about doing it – varies depending on the context and the objective of the assessment. The idea of risk analysis being the systematic use of information to identify and estimate risk is very important for understanding the intent of this enterprise.

Objectives are one of the key principles of all A300 standards – having a clear

This decaying silver maple could collapse at any moment. Photo by Joseph O'Brien, USDA Forest Service, Bugwood.org

defensible objective for the specification that we are writing. The objective of the assessment, as stated in the Standard, shall be based on three things: the context in which we find the tree, the intended use of the site on which the tree resides, and the scope of our assignment.

The scope of the assignment is another important aspect of writing a clear specification. The Standard specifies that the arborist should perform tree structure assessments on only those trees specifically identified in the scope of work. I think this is commonly where arborists have found themselves between a rock and a hard place in the past because either they didn't clearly identify the scope of the work or the scope was erroneously inferred, causing problems for the parties involved. The Standard recommends that the scope of work include things such as the location and manner of selecting trees for inclusion in the assessment, the level of the risk assessment, the type of report that will be provided, the time frame for reporting, the audience of the report, and whether or not any mitigation recommendations will be made based on the assessment.

Clause 93 also defines the levels of tree risk assessment, which has always been a point of confusion and inconsistency in risk assessment practices. The Standard identifies three assessment levels of increasing spatial and technical intensity, which are dictated by the scope and objective of the assessment assignment.

Level One is the most basic inspection level, a limited visual assessment of an individual tree or a population of trees near specified targets. This is what we call the classic "windshield survey." Level one may be appropriate in the municipal context or for a homeowners association where there are relatively large populations of trees under moderate management intensity. We might choose to drive along a route and make limited visual assessments of the trees in relation to specified targets. This Level One assessment, according to the Standard, shall be from a specified perspective, so when you are writing the specification, indicate whether it will be on foot, by vehicle or even perhaps by aerial patrol, which might be for very large-scale projects.

Not even a reconstructed curb can keep this live oak's enormous root system contained. Photo by William Fountain, University of Kentucky, Bugwood.org

The Level Two assessment is intermediate in inspection intensity. This is a 360-degree, ground-based visual inspection of above ground tree parts that includes observations on the targets and related site conditions. A Level Two specification may specify mallet sounding or use of basic diagnostic tools for detection of defects in the above ground tree parts, and there is an imperative that this Level Two assessment shall include identification of any defect indicators. This does not mean that you have to evaluate those defect indicators. It is simply saying that you shall make note of those and report their presence to the owner or the client.

Level Three is the highest intensity assessment. It includes all of the Level Two requirements and should be undertaken when the extent and severity of defects identified at Level Two cannot be determined with Level Two methods. Level Three assessment shall include one or more advanced assessment methods, but avoid harming the tree unnecessarily in the use of those methods. There is a whole listing of these methods in the Standard that I won't enumerate here, but I will note that they include methods for evaluating both aboveground and belowground tree parts.

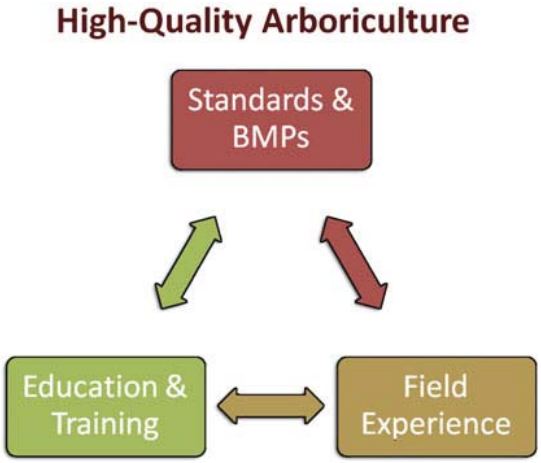
Clause 93 also addresses target identification as well as risk analysis and reporting. We all know that target identification is an important aspect of risk assessment, but a key point made in the Standard is the need to consult with the tree owner to identify known and foreseeable targets that may not be apparent to an arborist unfamiliar with a particular landscape. As for risk analysis and reporting, field data analysis should consider one or more of the following tree condi-

tions that have bearing on the degree of failure risk: the type of tree; the condition of the tree; the type, severity, and location of defects; whether or not the tree has experienced any compensatory growth, and any crown architecture considerations. Also to be considered are site conditions, maintenance history and past failure patterns that may contribute to future failure risk. And, finally, what are our options for risk mitigation.

Providing a written report may or may not be within the scope of our risk assessment assignment. Our charge may simply be to provide a verbal report on the risk analysis. When a written report is dictated by the specification and scope of work, then it should include these elements: identification and location of the tree or trees; a description of the methods used in observing and measuring the tree; a listing of the assessment data; the recommendations we are making for risk mitigation or additional assessments.

Another element of risk reporting is declaring some of the very important caveats that come along with risk assessment and management. One of these important caveats is that arboricultural treatments cannot eliminate all potential tree structure and stability concerns. We have to understand and communicate the fact that trees are living organisms and that there is considerable uncertainty about their anatomy and their response to the unknowns of weather and site activity. Also, we have to communicate the extent of residual risk, which is a term that we defined earlier. The fact that upon performing some sort of mitigation procedure there is still a non-zero probability that that tree may fail in the future is an important point to communicate.

Finally, there are some directives in the Standard about owner determination. Who takes responsibility for this tree? The Standard states that the tree owner or controlling authority retains responsibility for scheduling repeat or advanced assessments, for determining appropriate actions as a result of the assessment, and then for finally implementing those actions. It is the arborist's responsibility to communicate this to the tree custodian in his or her assessment report.



My take-home messages for this article are, first of all, that standards and best practices are just one key pillar of high quality arboriculture that go along with formal education and training and practical field experience. Second, A300 establishes consensus performance standards for arboriculture and provides guidelines for writing work specifications. Third, A300 Part 9 is the first national standard to address tree risk assessment focusing on practices, analysis and reporting, which should move us closer to having a clear standard of care for tree risk assessment and, therefore, a better understanding of our duty to our clients and their trees.

Eric Wiseman is associate professor of urban forestry and arboriculture in the Department of Forest Resources and Environmental Conservation at Virginia Tech in Blacksburg, Va., and a TCIA Accreditation Council member. This article was based on his presentation on the same subject at TCI EXPO 2011 in Hartford, Connecticut, last November. To listen to the audio recording of his presentation, visit www.tcia.org and click on podcasts on the homepage; or, in the digital version of TCI Magazine *online, click here.*