Determining Tree Risk and Cabling & Bracing



EXAS MASTER GARDENER

PRESENTED BY STEVE HOUSER CERTIFIED/CONSULTING ARBORIST ISA CERTIFIED ARBORIST, TX 0107 CERTIFIED TEXAS MASTER GARDENER, DALLAS COUNTY

Tree Failure Potential

Tree failure potential is the likelihood that an entire tree, or parts of it, will break and fall.

An arborist's objective is to advance public safety through tree care practices that can decrease the likelihood of structural failure.



Recognizing Risk

While trees ultimately fail for a variety of reasons, not all trees that show decline are considered at risk. A consulting arborist who has experience in tree risk assessment can evaluate the condition of trees on a property, advise property owners of risk potential, and recommend an action plan that can reduce tree risk.

However, property owners should be aware that if their trees do fail, they may be held liable for any resulting injury or damage.



Recognizing Risk

What are some signs that your tree may be at risk for failure?

- Mushrooms at the base of a tree or conks (fungal brackets) growing from the trunk
- Dead and broken or hanging branches
- Cavities in the tree trunk or branches



Recognizing Risk

Evaluating trees for defects is a part of a consulting arborist's role in performing a risk assessment.

Once the level of risk is determined, the property owner must ultimately determine what he/she considers to be acceptable

The consulting arborist can make recommendations for managing trees within an acceptable level of risk.



Recognizing Risk

Trees near construction activities may incur damage to their roots or other parts during the various phases of a construction project.

These and other related stress factors may cause a tree to decline and become structurally unsound, creating a potential for failure and possible damage to adjacent properties.



Recognizing Risk

Risk potential includes the damage and/or injury that could result if a tree growing into overhead utility lines should fail.

In this case, tree failure could damage power lines and cause power outages, while also creating the possibility of dangerous, high voltage electrical exposure to people in the vicinity.



Recognizing Risk

Environmental factors can also have a high impact on tree stability. Strong winds, ice and snow events, lightning, soil conditions, slopes, and rainfall patterns all affect the structural integrity of trees.

Trees can fail during storms, and such failures are often <u>unpredictable</u>.



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Risk Assessment

Risk assessment evaluates three factors:

- 1) the potential for tree failure
- 2) characteristics of the tree's environment that may contribute to failure
- and any possible targets, such as buildings, utility lines, public sidewalks, etc.



Risk Assessment

In effectively evaluating a tree's failure potential, it is necessary to learn the history of the tree and the site, and to assess the overall health of the tree.



- □ History
- □ Site and weather
- □ Species
- Growth patterns
- Branch attachments
- Defects
- Root system

Risk Assessment - History

It is important to know about the history of the property and the trees on it when assessing risk.

The history may include grade changes, construction, trenching within the root zone, previous tree failures and/or removals, and new plantings.

We always work to perform a thorough, systematic assessment of the tree.



Risk Assessment Form

Address, date, inspector, tree species, tree diameter, specific tree location (parkway, street, private)

Adjacent property owner address and phone number:

Risk Assessment

Target: (type, value, move, danger)

Roots: Dead Wood: Branches: Cracks: Hollows: Cankers: Other:

Risk Assessment Form

Treatment Recommended

None Remove target (barriers, warning signs) Corrective treatment (describe) Removal

Priority for treatment

Risk Assessment Potential Failure Rating

After a complete inspection and review, a tree is rated for its potential to fail:

- Low: some minor defects present
- D Moderate: several moderate defects present
- High: multiple or significant defects present
- Extremely high: multiple and significant defects present



Risk Assessment Report

A report should include the results of the assessment and recommendations for mitigation or the reduction of any risk associated with the trees.

Recommendations are offered to promote the safety of a property, adjacent properties, and passers-by.



Risk Management Plan

Based on the tree risk assessment, recommendations may help prevent tree failure, and minimize the likelihood of any damage or injury.

Pruning dead or broken limbs, installing tree support systems, or even removing the tree are all possible risk mitigation strategies.



Reducing Damage Potential



Arborist Recommendations

Even when all precautions are taken, it is impossible to predict when environmental conditions or unexpected circumstances may play a role in tree failure.

The degree of acceptable risk remains the decision of the property owner or tree manager.

Once a consulting arborist has identified a tree as having an elevated potential for failure, it is the property owner's responsibility to follow risk mitigation recommendations.



Reducing Damage Potential

It is often possible to move smaller targets such as parked cars, picnic tables, play equipment, lawn furniture, and other items.

This will not only reduce the opportunity for damage if the tree should fail, but will also eliminate gathering areas where people could sustain injuries from falling trees or branches.



Tree Removal?

There are times when a consulting arborist must strongly recommend tree removal.



If a property owner wants a tree preserved, this choice comes with the property owner's acknowledgement of responsibility in the event of tree failure.

Also, it is essential to maintain a regular monitoring schedule so that any decline of the tree's condition can be identified early.

Managing Tree Risk

While natural events cannot always be predicted, putting a tree risk management plan into practice can assist in reducing the risk related to tree failure.

Understanding the degree of risk involved, the options available, and the liability associated with failure potential can help the property owner make responsible decisions that can protect the structures and people who could be affected.



Managing Tree Risk – Cabling & Bracing

Trees may need cabling and sometimes bracing due to:

- Codominant stems that have included bark
- Split or decayed branch unions
- Weak branching habit
- Multi-stem trees

The basic purpose is to reinforce weak areas to reduce the potential for mechanical failure.



Cabling & Bracing

Cabling and Bracing has limitations:

- □ Tree dynamics change
- Creates wounds



Cabling & Bracing Materials

Hardware and its installation are governed by industry standards.

	in fr	202 July Park - 204	Max Limb Diameter (at anchor attachment point) inches	Estimated Load (lbs)	Lag Hook (diameter in inches)	Eye Bolt (diameter in inches)	Amon nut/Loop nut (threaded rod diameter in inches)	Common Grade Cable (galvanized 1x7) diameter in inches	EHS Cable (1x7) diameter in inches	Aircraft Cable (galvanized 7x19) diameter in inches
they include the second s	American National Standard	Tree, Sindy, and Other Riody Plant Management - Standard Plant Corporational Support Systems	2	100	1/4	1/4	1/4	1/8	3/16	1/8
			3.5	200	5/16	1/4	1/4	3/16	3/16	1/8
			5	300	3/8	1/4	1/4	1/4	3/16	1/8
			8	600	1/2	5/16	5/16	5/16	3/16	3/16
			10	900	5/8	3/8	3/8	3/8	1/4	1/4
			15	1000	N/A	3/8	3/8	7/16	1/4	1/4
			18	1200	N/A	3/8	3/8	1/2	1/4	1/4
ald of well-state			20	1400	N/A	1/2	7/16	1/2	5/16	1/4
41			24	2200	N/A	1/2	1/2	N/A	5/16	3/8
			28	3300	N/A	5/8	5/8	N/A	7/16	1/2
			30	3700	N/A	N/A	7/8	N/A	7/16	1/2



Cabling & Bracing Installation

Cabling requires proper tension.





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Dynamic Cabling

Dynamic Cabling is used to help the tree build natural strength without wounding the tree.









