Slide 1

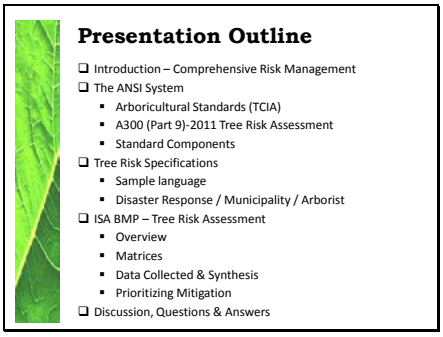
This discussion of the latest ANSI A300 standard & ISA BMP for tree risk assessment will help urban foresters & arborists (consulting, city, commercial) develop tree risk specifications for their urban tree management program or type of business...

It also briefly discusses the broader issue of a comprehensive urban tree risk management program as the "framework" for urban tree risk assessment.

Urban Forestry South is the Southern Region's urban & community forestry Technology Transfer Center which supports U&CF programs through state agencies and municipalities

Regardless of the vocabulary that I use during this presentation, no words should be construed or are implied to have any legal context; consult a lawyer for legal advice.

Slide 2



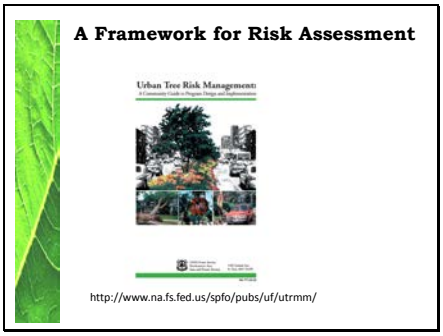
In this presentation I will define the "framework" for tree risk assessment as a comprehensive urban tree risk management program as defined by Pokorny et.al. (2003 NA-03-03).

And then I'll briefly review the ANSI system and discuss the development of a tree risk specification that meets the newest ANSI standard for tree risk.

How many of you have developed written tree care specifications based on any of the ANSI A300 standards?

Written specifications, based on an industry standard, should provide better contract compliance and reduce the chance for misinterpretation of results (i.e. the written reports).

Slide 3

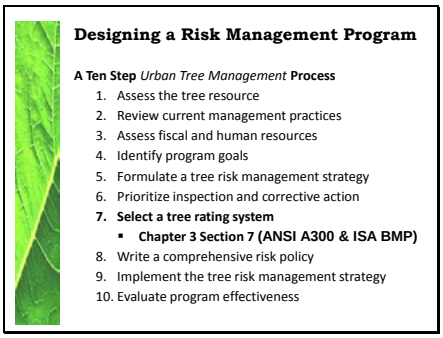


Ideally (and preferably), tree risk assessments should be a component of a more comprehensive urban tree risk management program for a municipality or larger commercial clients.

The current Best Management Practice (BMP) for such a comprehensive approach is: **Urban Tree Risk Management (A Community Guide to Program Design and Implementation)** Jill Pokorny et.al., 2003, NA-03-03

View on-line or download: http://www.na.fs.fed.us/spfo/pubs/uf/utrmm/

Slide 4



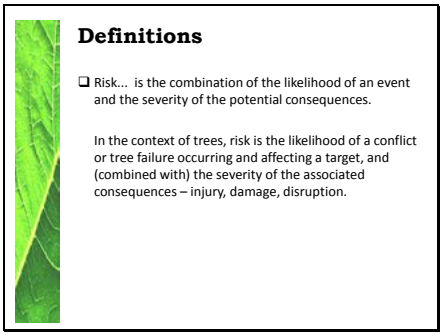
Developing a comprehensive approach to managing risk in urban areas is defined in ten steps...

Step 7 discusses various risk rating systems and is located in Chapter 3 of the Pokorny manual; the ANSI A300 Standard (for tree risk) and the ISA BMP for Tree Risk Assessment were published since this publication, but should be reviewed in this step of the program development. Unless there are some significant over-riding issues, Certified Arborists should be using the standard and the BMP for tree risk assessments.

ISA will be providing TRAQ workshops in 2013 that teach the ISA BMP approach that I will introduce later in this presentation. The PNW Chapter of ISA has provided similar training with the TRACE workshops. TRAQ is basically superseding TRACE (presenter's interpretation of the current status of these initiatives).

The Pokorny manual is designed for communities, but applicable to any property owner.

Slide 5



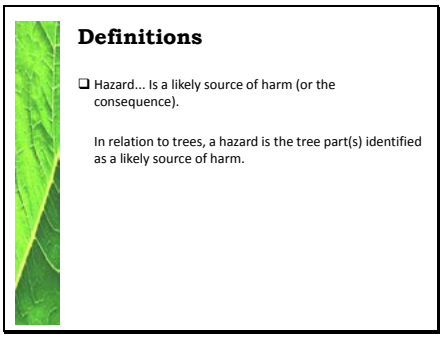
The ISA BMP (and the ANSI A300 Standard it is based on) are compliant with the ISO Risk Standard (ISO 31010) and the definitions that we use should be consistent with that international standard.

Risk (from ISA BMP: Tree Risk Assessment)…

- Probabilities involved
- An event
- Consequences (harm) with some level of severity (or concern)

Conflict… e.g. tree obstructs stop sign visibility at intersection, or tree limbs/branches touching power distribution lines

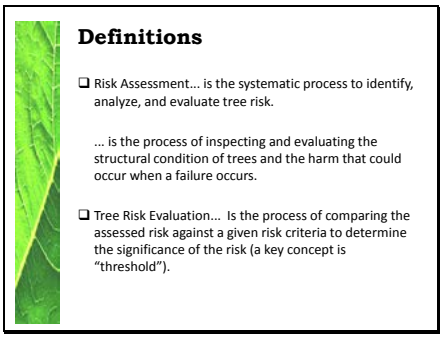
Slide 6



Hazard (from ISA BMP: Tree Risk Assessment)…

- What is the likely source (e.g. limb, branch, whole tree) of the assessed harm (i.e. consequence)

Slide 7



Risk assessment is the "next" step after the urban tree risk management framework"sets the stage"…

Assessment and evaluation (from ISA BMP: Tree Risk Assessment)…

- Systematic process
- Identify
- Analyze
- Evaluate

There are standards (i.e. ANSI A300 Part 9) that should be followed when developing this assessment process

Tree Risk Evaluation (from ISA BMP: Tree Risk Assessment)…

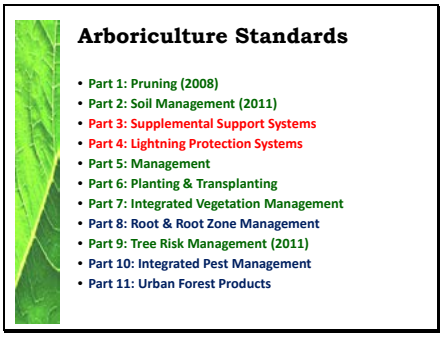
- Comparing the assessed risk to your experience and/or expectations (i.e. risk threshold; how much harm is acceptable to you)

Slide 8

ANSI (American National Standards Institute) accredits organizations to develop voluntary standards for their industry or profession.

TCIA is the accrediting organization for arboriculture and organizes the (ANSI Standards Committee) ASC A300 committee with representatives from a broad and diverse group of industrial and governmental organizations.

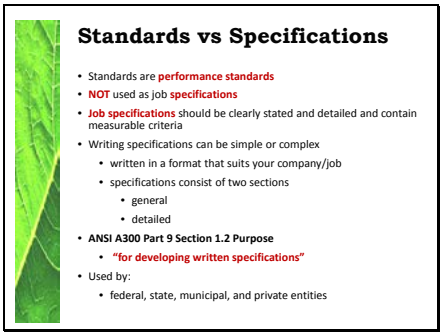
Slide 9



Developed (green), under development (blue), and being revised (red).

Visit: [http://www.tcia.org/business/ansi-a300-standards for descriptions and status](http://www.tcia.org/business/ansi-a300-standards)

Slide 10



The "standard" clearly identifies the performance standards used to develop arboricultural specifications specific to your job or contract and appropriate for all levels of ownership and consulting.

You should not say "Perform a tree risk assessment to the **ANSI A300 (Part 9)-2011 Tree Risk** standard" in an RFP, RFB, proposal, or quotation for professional services.

See Section 1.2 Purpose "for developing written specifications."

Developing and consistently using a risk specification the ANSI A300 Standard will:

- reduce misunderstandings related to the scope of the risk evaluation for a tree owner
- clearly define the qualifications of the arborists
- clearly define the assessment techniques to be used
- provide better contract compliance
- reduce the chance for misinterpretation of results (i.e. the written reports)
- help arborists become more consistent with their risk assessments and with colleagues assessments over time

Slide 11

Standard Components - Risk

- ANSI A300
  - Scope
  - Purpose
  - Application
- Part 9 – Tree Risk
  - Purpose
  - Reason
  - Implementation
- Safety
- Normative References (e.g. Z133 Safety)
- Definitions

The "standard" reviews the ANSI system and introduces the tree risk standard (Part 9).

Safety, other standards that apply, and definitions are presented.

Slide 12

ANSI A300 Tree Risk
&
Urban Tree Risk Management
An Introduction

Questions or Comments!

Any questions or comments from this quick introduction to Urban Tree Risk Management or ANSI?

Slide 13

Part 9 Risk Assessment Specification Components

1. Tree Structure Assessment Practices
2. Levels of Assessment
3. Target Identification
4. Analysis & Reporting
5. Owner Determination

The "standard" defines the written tree risk specification requirements.

The basic outline (requirements) of a properly constructed specification based on the Standard.

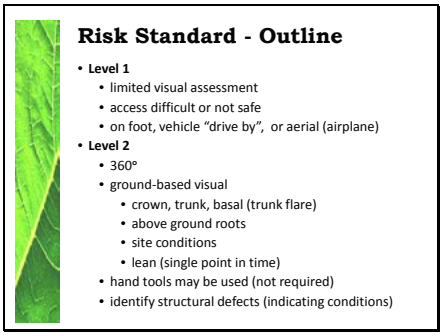
Slide 14

Risk Standard - Outline

- Tree Structure Assessment Practices
  - Objective (of specifications)
    - context
    - intended use
    - scope of work
  - General (indicates who is qualified)
  - Scope of Work
    - tree location or selection criteria
    - level and details of the risk assessment
    - type of report
    - timeframe for reporting (when)
    - report presentation (who, where)
    - mitigation

The "standard" then outlines the specific requirements for the risk assessment specification.

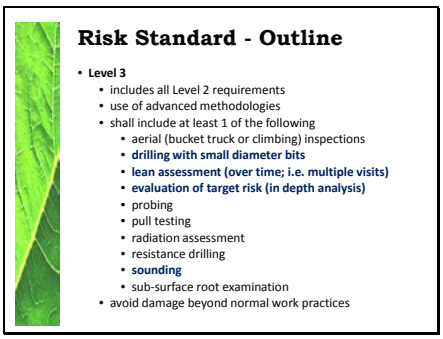
Slide 15



The standard defines three distinct levels of assessment that may be used by a qualified arborist.

The increasing levels (1 to 3) require closer and more detailed assessments.

Slide 16



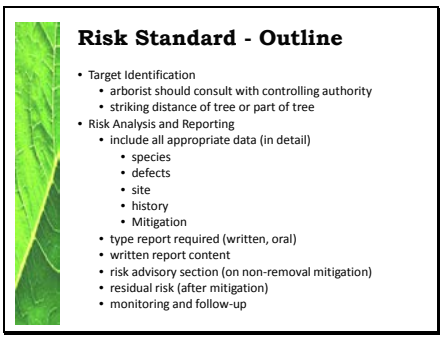
Level 3 requires the most advanced techniques (possibly multiple) and should result in the most accurate of assessments (i.e. lower chance of missing significant defects and their associated risk).

I think **"lean assessment" and "evaluation of target"** are components of Level 1 and 2 (i.e. not unique here at Level 3) but for Level 3 may imply monitoring lean change over an extended timeframe.

Sounding and drilling (i.e. small diameter bits) may also be common techniques for Level 2 for many arborists.

Remember, Level 2 does not preclude use of any of these techniques.

Slide 17



The standard outline includes the method for determining the target and details on data analysis and reporting. In the ISA BMP the concept of "target zone" is used to help determine the role targets play in the final risk rating.

This includes a requirement "risk advisory" when mitigation does NOT call for removal, and "residual risk" for all mitigation recommendations.

Slide 18

Risk Standard - Outline

- Owner Determination (i.e. responsibilities)
  - repeat or make advanced assessments
  - determine actions (i.e. schedule)
  - implement
    - follow-up recommendations
    - monitoring
    - mitigation
      - prune
      - remove
      - move target

The final element of the standard is the statement of owner responsibilities (i.e. determination).

Slide 19

Part 9 Risk Assessment

1. Tree Structure Assessment Practices
2. Levels of Assessment
3. Target Identification
4. Analysis & Reporting
5. Owner Determination

The basic outline (requirements) of a properly constructed specification based on the Standard for final review.

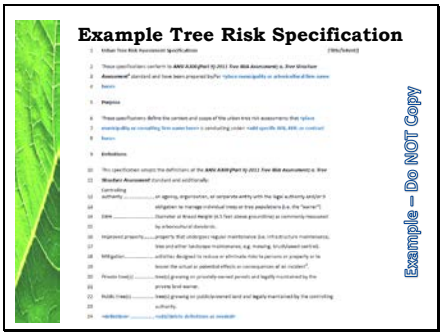
Slide 20

ANSI A300 Tree Risk
&
Urban Tree Risk Management
An Introduction

Questions or Comments!

Any questions or comments from this quick introduction to arboricultural standards?

Slide 21



A "generic" tree risk assessment specification (NOT to be copied) for municipalities that are requesting bids and/or contracting for tree risk assessments, or for consulting arborists that are providing this professional service for clients.

Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

Do NOT copy this example risk specification verbatim.

General section with:

- Title (line 1)
- Statement of applicability (lines 2-5)
- Purpose (lines 5-8)
- Definitions (lines 9-24) – add definitions as needed for your RFB or contract.

Slide 22

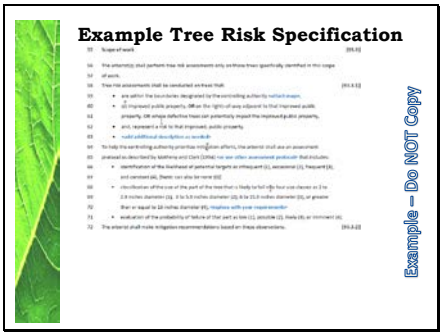
A "generic" tree risk assessment specification (NOT to be copied) for municipalities that are requesting bids and/or contracting for tree risk assessments, or for consulting arborists that are providing this professional service for clients.

Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

General section (continued) with:

- Organizational context (who is involved and under what circumstances) (lines 25-34)
- Tree risk assessment objectives (lines 35-40)
- Professional credentials of the arborists (lines 43-54)

Slide 23



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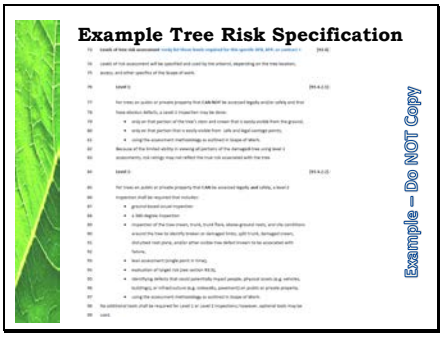
Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

Scope of work: (starting line 55)

- Identified trees (lines 58-63)
- Boundaries and conditions (lines 59-61)
- Assessment protocol (lines 64-71)
- Mitigation recommendations are required (line 72)

Slide 24



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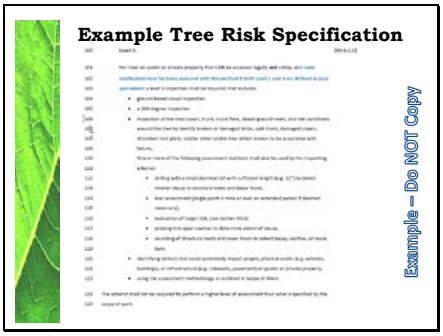
Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

Levels of assessment: (starting line 73)

- Statement of applicability (line 74-75)
- Level 1 (lines 76-83)
- Level 2 (lines 84-97)
- Tools required/permitted (lines 98-99)

Slide 25



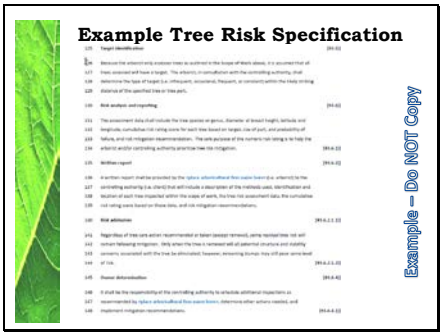
A "generic" tree risk assessment specification (NOT to be copied) for municipalities that are requesting bids and/or contracting for tree risk assessments, or for consulting arborists that are providing this professional service for clients.

Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

Levels of assessment: (starting line 73)

- Level 3 (lines 100-122)
- Disclaimer for all levels included (lines 123-124)

Slide 26



A "generic" tree risk assessment specification (NOT to be copied) for municipalities that are requesting bids and/or contracting for tree risk assessments, or for consulting arborists that are providing this professional service for clients.

Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

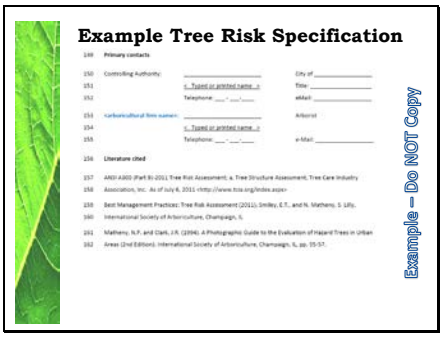
Standard components:

- Target identification (lines 125-129)
- Analysis & reporting (lines 130-134)
- Written report (lines 135-139)

Closing statements:

- Risk advisories (lines 140-144)
- Owner determination (lines 145-148)

Slide 27



A "generic" tree risk assessment specification (NOT to be copied) for municipalities that are requesting bids and/or contracting for tree risk assessments, or for consulting arborists that are providing this professional service for clients.

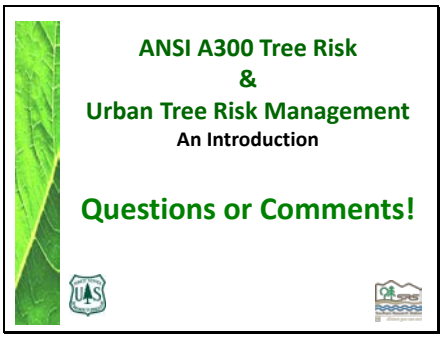
Consult the ANSI A300 (Part 9)-2011 Tree Risk Assessment standard and your legal counsel when developing risk specifications.

Closing statements:

- Primary contacts w/signatures (lines 149-155) [Note: Not required by Standard & legal counsel may object; ask your lawyer!]
- Literature cited (lines 156-162) [Note: Not required by Standard]

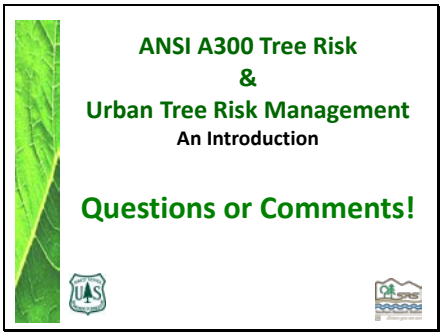
Also reference any applicable contracts, RFPs, RFBs, or required report templates.

Slide 28



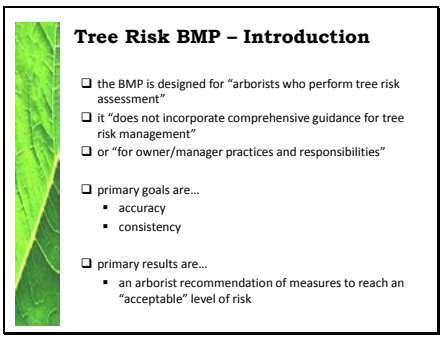
Any questions or comments about the example risk specification?

Slide 29



Any questions or comments from this quick introduction to ANSI, arboricultural standards, tree risk, tree defects, and rating systems?

Slide 30

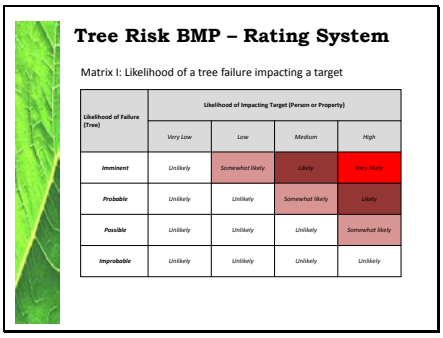


From Best Management Practices: Tree Risk Assessment – ISA – T. Smiley, N. Matheny, S. Lilly – 2012

The BMP is designed and intended for arborists that do tree risk assessments, not tree owners or managers. It does NOT address comprehensive tree risk management.

Arborists should **READ** the ISA BMP **<u>Preface</u>; DON'T** skip it!

Slide 31



Likelihood of Failure (Tree)	Likelihood of Impacting Target (Person or Property)			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

From Best Management Practices: Tree Risk Assessment – ISA – T. Smiley, N. Matheny, S. Lilly – 2012

This system uses two inter-related matrices to define and arrive at a "risk rating".

In the first matrix, failure potential (the rows: improbable to imminent) are intersected with probability of target impact (the columns: very low to high). This matrix rating is then transferred to Matrix II (the "Risk Matrix").

Slide 32

Tree Risk BMP – Rating System

Matrix II: Likelihood of a tree falling & impacting with consequences

Likelihood of Failure & Impact	Consequences (to Target)			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

From *Best Management Practices: Tree Risk Assessment* – ISA – T. Smiley, N. Matheny, S. Lilly – 2012

Matrix I values are rows (combination of failure potential & impact onto a target) that are intersected with expected consequences to the target (the columns: negligible to severe).

The intersection represents the "assessed risk" based on the three components:

- likelihood of failure (i.e. failure potential)
- likelihood of impacting (affecting) a target
- consequences of that impact

and, is used to develop mitigation recommendations.

Slide 33

Tree Risk BMP – Rating System

Defect

Part
- Branches
- Scaffold
- Trunk
- Root Plate

Severity
- Severe
- Moderate
- Minor

Type
- Decay
- Cracks
- Lean
- Structural Characteristics

Tree defect observations and data are collected to "synthesize" into the rows & columns of ISA BMP matrices.

Slide 34

Tree Risk BMP – Rating System

Load

Crown Area & Characteristics
- Shape
- Density (Transparency)

Exposure
- Adjacent Landcover
- Topography
- Urban "canyons"

Cultural Treatment
- Lions' Tailing
- Heading cuts
- Reduction cuts
- Thinning

Species
- Sstrength characteristics

Tree defect observations and data are collected to "synthesize" into the rows & columns of ISA BMP matrices.

Slide 35

Matheny & Clark – Rating System

- ❑ Target Rating (0, 1-4)
- ❑ Size of defective part (1-4)
- ❑ Failure potential (1-4)

You may recall this…

A previous/recent arboricultural "standard or BMP" for tree risk assessment was: *A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas* (2nd Edition) – ISA – N. Matheny, J. Clark – 1994

Three similar components:

- likelihood of impacting (affecting) a target [target rating incorporates "value" & presence]
- consequences of that impact [size of part affects consequences along with "value" in the first component]
- likelihood of failure (i.e. failure potential)

By definition, there is always SOME part that WILL fail; but, there may NOT be any target in the area of the failing tree (part).

Slide 36

Using the Rating System

- ❑ decision-making
- ❑ prioritize maintenance
- ❑ the risk assessment (i.e. the final risk rating of low, moderate, high or extreme) is provided to assist the controlling authority with recommended mitigation and can serve as a prioritization index

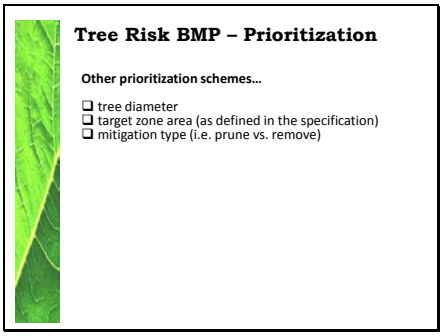
Rating systems help decision-makers determine mitigation actions to take and the order in which tree risk should be addressed.

Like "specifications", rating systems are consistent "yard sticks" that can help arborists become more consistent with their risk assessments and with colleagues assessments over time.

Developing and consistently using a tree risk specification the ANSI A300 Standard will:

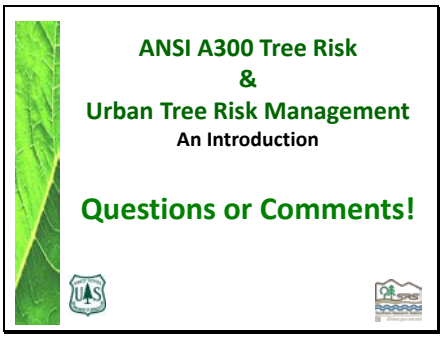
- reduce misunderstandings related to the scope of the risk evaluation for a tree owner
- clearly define the qualifications of the arborists
- clearly define the assessment techniques to be used
- provide better contract compliance
- reduce the chance for misinterpretation of results (i.e. the written reports)
- help arborists become more consistent with their risk assessments and with colleagues assessments over time

Slide 37



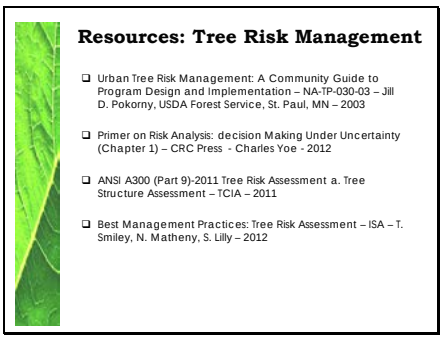
With a risk rating in four classes, low, moderate, high, and extreme it can be difficult to get much significant prioritization (i.e. if you have 1 extreme and 30 highs the arborist needs some additional data to prioritize the 30!).

Slide 38



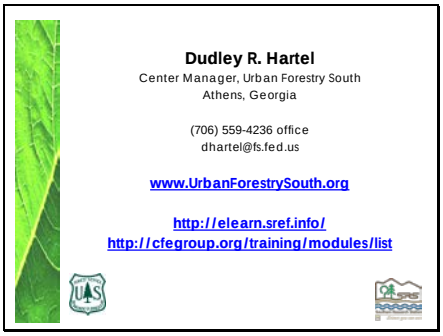
Any final questions or comments?

Slide 39



Use current arboricultural standards when developing your urban tree risk management plan…

Slide 40



The eLearn Urban Forestry website(s) http://elearn.sref.info/ offers Module 6 training. Also available at CFE Group for ISA credits (http://cfegroup.org/training/modules/list).

Level I and Level II interactive training tools currently under development. Check www.UrbanForestrySouth.org for availability.

A PDF of this presentation will be at www.UrbanForestrySouth.org and also on the IAA website.

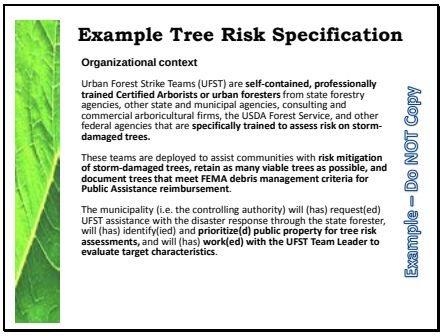
"Quick Search" with 'IAA ANSI Risk' (no quotes).

Slide 41

Specific language from other tree risk specifications…

- Urban Forest Strike Team (www.UFST.org) – specific language for the risk assessment task/project/contract that is specific to natural disasters and coordination with FEMA.

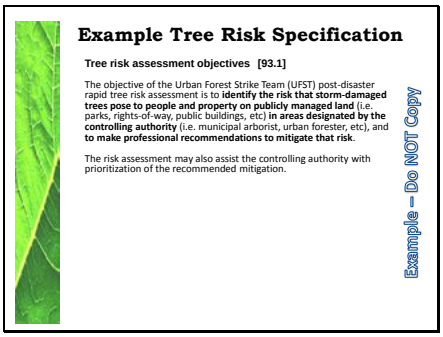
Slide 42



Specific language from other tree risk specifications…

- Urban Forest Strike Team (www.UFST.org) – specific language for the risk assessment task/project/contract that is specific to natural disasters and coordination with FEMA.

Slide 43



Specific language from other tree risk specifications…

- Urban Forest Strike Team (www.UFST.org) – specific language for the risk assessment task/project/contract that is specific to natural disasters and coordination with FEMA.