Best Practices Identified at the UAA Indiana Safety Summit July 20th & 21st 2021

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Chipper Safety Demo & Discussion: Greg Moseman; Lewis Tree Service

Learning from Close Call Mining

- Story Telling
- Rope shear on feed wheels
- Video of guy pulled in chipper / up on to feed tray
- Follow up videos on chipper incident stories of live events
  - These would be videos of “where are they now” after the incident they experienced

Learning from Incidents & Close Calls

- Diameter, shape and Length of brush
- Vines
- More emphasis on training
- Strength and / or speed of feed wheels

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Chipper Safety Demo & Discussion: Gary Plotner; Lewis Tree Service

Best Practices

- Chipping on the right side allows ease of access to engine control
  - Keeps us away from traffic
  - Keeps us away from brush shifting to the left
- GF presents tailgates / interaction
- Chipper friendly trimming
- Chip Zone / Area free of debris
- Never chip alone
  - Chipper Rescue

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Live Line Demo: Dan Mekkes; Townsend

- The starting & stopping of electron flow through the length of a conductive path is virtually instantaneous (speed of light - 186, 000 mps) from one end of a conductor to the other.
  - Critters
- Direct/Indirect contact- Both are likely fatal
- Entry wound/exit wound- Extreme injuries; pictures
- Step Potential; Concentric rings radiating from point of contact with earth. Can extend in excess of 60 feet.

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Live Line Demo: Dan Mekkes; Townsend

- Conducive tools/Non-conductive tools; clean dry?
- MAD; Qualified Line clearance/Must be working under contract with utility./If not, trained personnel are incidental.
- Back feed; Incorrect generator connection; voltage feeds back through transformer to primary voltage.
- Always maintain MAD

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Live Line Demo: Dan Mekkes; Townsend

- Treat all wires as energized
- If you can't do the job safely, **don't risk it**.
- **Remember**, when electricity is involved, your life is on the line!
- **Who do you do Safety for?**

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Tree Felling, Roping & Rigging; Don Watson; Wright Tree Service

Take Away / Best Practices:

Tree Felling Goals:

- Eliminate Hazards
- Danger zone clear
- Saw operator use escape route
- Control Tree to the ground
- Tree assessment
- Setting line in top 2/3 of tree
- Employee buy in

Common Errors:

- Not verifying the plan
- creating short cuts
- Maintenance of chainsaw
- Inexperience saw operator
- not using saw sights
- gut decisions/ no parameters
- Employee's experience felling

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Self Made Hazards:

- Lining up back cut
- inconsistent hinge
- lodging tree into tree/ creating hangars
- Tension/ pre-load rope pull

Work Practices:

- Introduction to bore cut w/ trigger
- scoring behind hinge plan
- Hinge is control
- Foundational training (saw maintenance & forces)
- Adding tools/ 5 to 1 & wedges
- Setting parameters instead of gut feelings
- Communication

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Work Zones; John Stout, NIPSCO & INDOT

Work Zone Incursions= one of most reported incidents/near miss scenarios

A permit is required for work along any INDOT roadway, shoulder, or ROW. Work with your leaders/ traffic control contractors to ensure the safest set-ups.

MUCTD is the national minimum guideline re: worksite setups. States MAY exceed MUCTD rules. Be sure to check the state requirements where you're working

Have common work site setups available in your trucks (Laminated Copies/Door Stickers)

Work Site Set-up and Tear Down is the MOST dangerous time for your crews

Set Up- with flow of traffic

Tear Down- remove TCD from rear of worksite towards start

Be aware of outriggers/boom reach extending into a traffic area and adjust setups to cover

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Work Zones; John Stout, NIPSCO & INDOT

Many times, the standard number of cones on a truck is not sufficient for the job. Pre-planning is CRUCIAL

Your flagger is the MOST IMPORTANT person on the work crew

Consider setting up additional cones/awareness for your flaggers to draw attention

Utility tree work most often falls into first 2/5 categories of setups: Short Duration and Short Term Stationary

Skips on State Roads= 40’ from start to start

Truck Mounted Attenuator(TMA)= additional level of safety on roadways. Also consider buffer/shadow trucks

Arrow boards are NOT to be used as Attenuators

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Tree Risk Assessment, Lindsey Purcell; Purdue University

Best Practices & Take Away:

- Approx. 35,000 arborists hold the TRAQ certification internationally.
- Utilities assess tree risk in multiple ways including dead, dying, diseased, and leaning toward the line.
- Proper Tree Risk assessments improve public safety and power reliability
- John Goodfellow with PG&E recently wrote the Utility BMP (Best Management Practice) for TRAQ. There are 9 BMPs in total.
- Trees are assessed to anticipate and to predict when a tree failure may occur.
- Level 1 Assessment is an aerial/drive-by/visual inspection.
- Level 2 Assessment is an in-depth 360-degree inspection and using TRAQ principles while assessing (Basic Tree Risk Assessment Form).
- Utilities should avoid the historical terms of Danger/Hazard Tree terminology but use “Risk Tree” instead.

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Lindsey Purcell

Urban Forestry Specialist

Risky Trees… utility vegetation management considerations

BOARD CERTIFIED MASTER ARBORIST ISA

ISA QUALIFICATIONS Tree Risk Assessment ™

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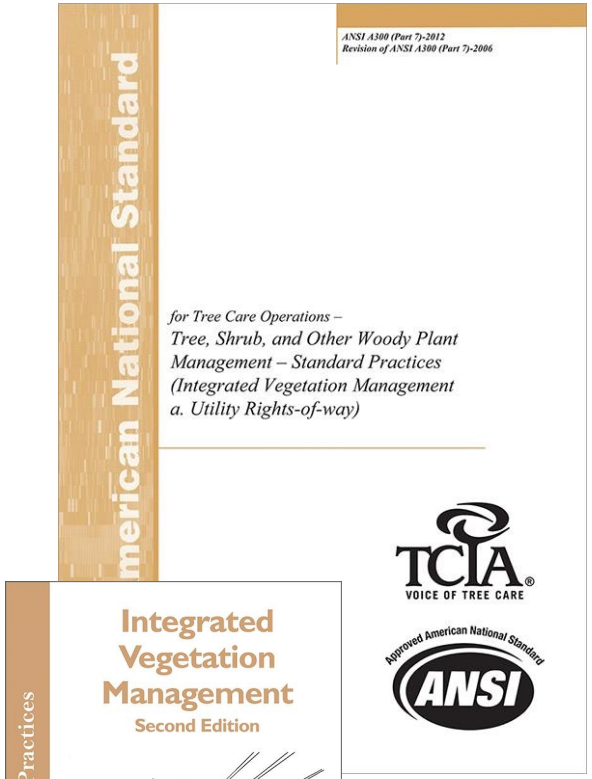
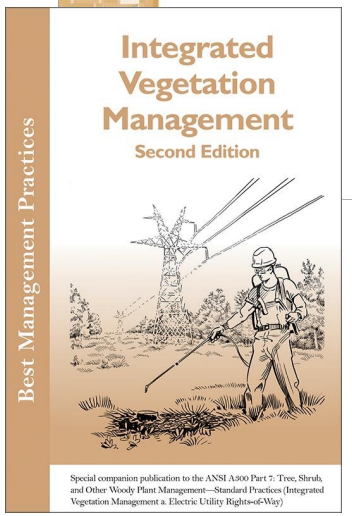
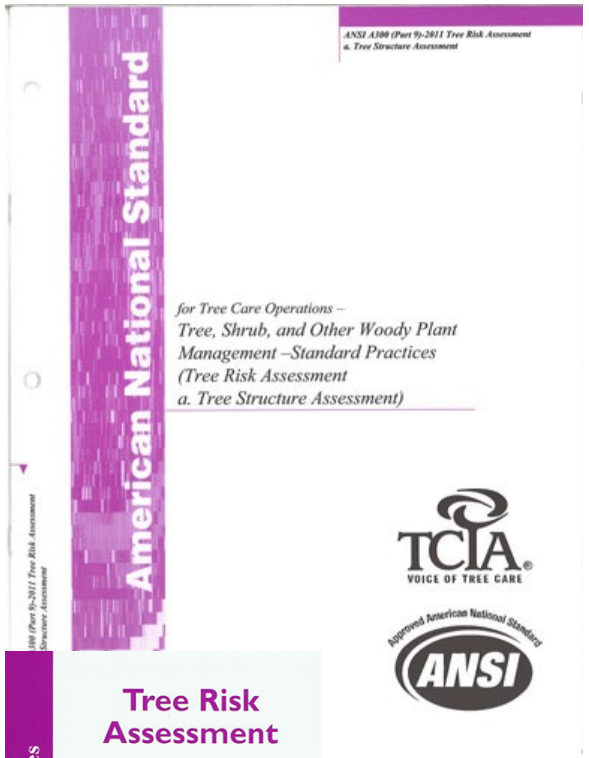
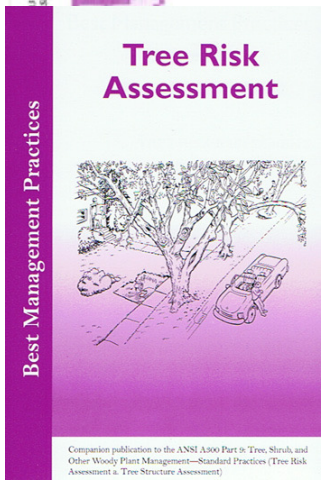
Guiding documents and BMP's









Utility Vegetation Management

- Safety and Reliability
- Survey protocol based on:
    - Pruning cycle
    - Species growth
    - Seasonal variations
    - Environmental fluctuations.
- System Hardening

Why do we assess trees for risk?

Reduce risk of injury, property damage, or disruption of activities.

Anticipate problems and prevent injury or damage before failure occurs.

UTRA

- Large population of trees in proximity to power lines.
- Developed and rural forested areas on trees not owned or controlled by the USP
- Owner of the tree is not asking for the assessment
- Owner of tree may not be a willing participant or may be hostile to the tree assessor being on their property.
- Assessment may be done from a limited vantage point (not able to complete Level 2 assessment)
- Consequences: directly to infrastructure and indirectly with damage to delivery system.

- **Risk** is the combination of the likelihood of an event and the severity of the potential consequences.
- **Tree Risk Assessment** is the systematic process used to identify, analyze, and evaluate tree risk.
- **Targets** are people, property, or activities that could be injured, damaged, or disrupted by a **tree failure.**

- A hazard tree was defined as a structurally unsound danger tree that could strike a target when it fails.

Terms, they are a changing…

Hazard and Danger Trees?!

- These are legacy terms still common in the industry and may be codified in state and local government agreements between utilities or within easements.
- **Note: state and local laws are not updated as frequently as OSHA/ANSI. Sometimes they are decades out of date.**
- “Hazard tree” is a tree identified as a likely source of harm by ISA.
- No definition for “danger tree” by ISA.
- In 2012 ANSI A300 still had hazard tree and danger tree definitions in the appendices, not in the standard.
- “Hazard tree” was defined as a structurally unsound tree that could strike electric supply lines.
- “Danger trees” were defined as any tree on or off ROW that could contact electric supply lines.
- Risk assessment verbiage is now the standard terminology within the broader arboriculture industry.

Levels of Assessment

- Level of TRA should be specified with client in the scope of work.
    - Level 1 – Limited Visual
    - Level 2 – Basic
    - Level 3 – Advanced
- Understand the details of what each level includes in the assessment, including costs, expectations and regulations.

Level 1 Limited Visual Assessment

PROS

- Good at finding obvious defects
- Targets imminent or probable failures
- Efficiently assess large populations of trees
- Can be done by foot, vehicle, aircraft, or with remote sensing
- Very cost effective
- Takes less skill to complete (in terms of tree knowledge)

CONS

- Many defects not detectable from limited visual inspection

Level 2 Basic Assessment

Pros

- 360-degree assessment of all parts of the tree
- Better at detecting decay and other defects not always detectable with Level 1
- Ground-based, non-invasive

Cons

- May not be able to do full 360-degree inspection due to site constraints
- Can be expensive
- Need skilled workforce
- Can still miss internal defects or defects in the crown

Level 3 Advanced Assessment

Pros

- Detailed information about specific tree parts, defects, targets and conditions.
- Specialized equipment and procedures.
  - Aerial inspection
  - Point testing
  - Root excavation

Cons

- Expensive
- Requires additional expertise and equipment

Failure Analysis in Trees

- Biomechanical explanation.
  - Pests.
  - External loading.
  - Uneven distribution of loads.
  - Structural faults.
  - Physical Damage.
- Combination of factors.
- Trees always fail at their weakest point.
- You can’t always get ‘em all!

Trees do not fail at random.

Identifying Conditions of Concern

Poor health and structure

Defective limbs and branches, consider size and reasonable.

Leaning trees

Cracks and Splits and Hollows, Decay

Decay and biotic issues

Root Decay

Construction damage and disturbance

What is TRAQ?

- Training in the fundamentals of tree risk assessment.
- Qualification provides a standardized and systematic process for assessing tree risk.
- Course includes 8 modules on various aspects relative to TRA.
- 2-day course with 1/2 day of assessment with written and field component.
- Qualification period is 5 years.
- Fees, depends on membership and location.
- More info... ISA website for handbook.

What are the qualifications?

To be eligible to register for the course and take the exam, you must have earned one of the following credentials:

- ISA Certified Arborist or ISA Board Certified Master Arborist
- SAF Certified Forester
- An arboriculture or urban forestry degree that is part of a national qualifications framework or is from a college or university that is accredited or recognized under a system that is substantially similar to accreditation.

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