Planning and protection of trees with underground utilities

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Overview

• Potential underground utility conflicts

• Civil engineering plan review
  o Avoiding current impacts
  o Avoiding future impacts

• Techniques for minimizing impact
Potential underground utility conflicts

• Wet Utilities
  • Storm sewer
  • Sewer
  • Water

• Dry Utilities
  • Power (domestic and street lights)
  • Gas
  • Communication (internet, phone, fiber)
  • Undefined Pentagon lines (The black SUVs show up for this one)
Civil plan review – existing trees

Options

• Move the utility
• Alter building arrangement
• Require use of low-impact undergrounding, such as directional boring
• Finally, accept fate, and if nothing can be moved, agree to tree removal
Civil plan review – existing trees

Water line installation – moved the water line

Storm sewer
Moved the line
Directional Boring

- Ensure entry site is away from critical roots
- Coordinate with utility installers to ensure proper depth is used
- Communication and distribution lines
- It goes around corners!
Civil plan review – future trees

• Move the utility
• With street trees, move to edge of curb, or behind tree pit, if space is restricted
• Ensure depth will not conflict. Deeper utilities = bigger trench to fix issues.
• Move the proposed trees to reduce impact
• Provide space for roots to go where utilities don’t exist
Civil plan review – future trees

Gas line – Moved line

Sewer and water – moved both utilities
It’s not always underground

Street lights – moved the street lights

Stormwater facilities… Removed the trees
Utility conflict avoidance by providing good soil in other areas
Plan review and design: Institutional solutions

- Landscape and tree protection is rarely the first part of design
- Educate civil engineers: Utility designers don’t usually look at landscape plans, and vice versa
- Get involved early in design: Design Arborists and landscape architects don’t always get the chance to influence utility location.
- Educate other staff
Techniques for avoiding impact in the field

- Tree protection fencing
- Arborist oversight
- Bonding
- Root matting for equipment access
- Change of plans
- Education
Tree protection:
Clearly marked, not easily moved
Questions?

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Natural Arlington Blog:
http://environment.arlingtonva.us/category/natural-arlington/

Arlington trees page:
http://environment.arlingtonva.us/trees/

Arlington Forestry Facebook:
https://www.facebook.com/ArlingtonUrbanForestry/

Failed waterline in a new tree pit