

FRI-D05 Preconstruction Management of Valuable Tree and Soil Resources

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Session Overview

This session will identify methodologies to reduce impacts on trees scheduled to remain on a project. The session starts with the historical context of Enota Park inclusive of implementing SITES for the first time on a BeltLine park followed by a SITES v2 discussion on tree/soils management, and finishing with a discussion of organic amendments used to facilitate the objectives.

Learning Objectives

1. Understand the importance of engaging an ISA Certified Arborist in the initial site evaluation of a proposed project
2. Gain a comprehension of how the complexities of tree conservation on construction sites can be mitigated via utilization of SITE v2
3. Learn a variety of methodologies utilized to protect valuable tree resources for long-term survivability
4. Learn that successful tree conservation begins at the design phase of the project

Session Outline

- I. Decision to Utilize SITES for ALL Atlanta BeltLine Parks
 - a. An integrated design team just flat out makes sense
 - i. Individual team members involved at all stages
 - ii. Arborist involvement up front was critical for design decisions and maintaining mature canopy to greatest degree possible
 - b. Donors
 - i. We're aiming for gold certification and that will be really sexy for donors of future parks
 - ii. When donors are funding most of our construction at this point, this is a big deal
- II. Enota Park
 - a. Existing 1/3 acre City of Atlanta Parks Department play space
 - b. Nearest parks
 - c. Master Plan generated in 2008
 - i. Site elements
 - ii. Active and passive areas
 - iii. Passive area designated to maintain the overstory trees where viable
 - d. Land purchases over last 4 years increased size to ~ 7 acres
 - e. Adjacent to Westside Trail
 - i. Connection points

- III. Schematic Design
 - a. Verify applicability of original Master Plan with Community
 - i. SITES Section 2 Pre-Design Assessment & Planning
 - ii. C2.4, Engage users and stakeholders
 - b. Are all elements from the Master Plan still viable?
 - c. Revisions
- IV. Existing Conditions
 - a. Engage entire design team in site visit/review
 - i. Identify trees that need to be removed
 - ii. Layout site elements based on results
 - b. SITES Section 1 Site Context
 - i. C1.6- Locate projects within developed areas
 - c. SITES Section 2 Pre-Design Assessment and Planning
 - i. P2.1, Use and integrative design process
 - ii. P2.2, Conduct a pre-design site assessment
 - iii. P2.3 Designate and communicate vegetation and soil protection zones
- V. Design Development
 - a. SITES Section 4 Soil & Vegetation
 - i. P4.4, Create and communicate a soils management plan
 - ii. P4.2, Control and manage invasive plants
 - iii. C4.4, Conserve healthy soils and appropriate vegetation
 - iv. C4.6, Conserve and use native plants
 - v. C4.7, Conserve and restore native plant communities
 - b. Refine locations of elements within scope of maintaining tree canopy
 - c. Determine methodologies needed to mitigate impacts to tree Critical Root Zone's (CRZ's)
 - i. CRZ map and plan
 - d. Mitigating potential impacts of Sun Scald when tree masses are removed exposing trunks of remnant trees
- VI. Specifications
 - a. SITES Section 7 Construction
 - i. P7.1, Communicate and verify sustainable construction practices
 - ii. P7.2, Control and retain construction pollutants
 - iii. C7.6, Divert reusable vegetation, rocks and soil from disposal
 - iv. C7.7 Protect air quality during construction
 - b. Earthwork
 - i. Working within tree CRZ's
 - c. Site Grading
 - i. Stockpiling good soils
 - d. Soils
 - i. Amending with organic materials
 - 1. Potential for harvesting mycorrhizal colony from tree roots
 - 2. Reusing to enhance soil pile that will be part of re-planting
 - e. Planting
 - i. Handling stockpiled soils to minimize impacts to ecological constituents
 - f. Concrete
 - i. Root bridges

- VII. Defining to GC expectations of the above and establishing metrics to monitor compliance.
 - a. SITES Section 4 Soil & Vegetation
 - i. C4.5- Protection of trees during construction
 - b. SITES Section 8 Operations & Maintenance
 - i. P8.1- Plan for sustainable maintenance
 - ii. P 8.2- Plan for collection and storage of recyclables
 - iii. C 8.3- Recycle organic matter
 - iv. C 8.5- Reduce outdoor energy consumption
- VIII. The importance of a pre-design tree survey
 - a. SITES Section 2 Pre-Design Assessment + Planning
 - i. P2.2 Conduct a pre-design site assessment
 - ii. P2.3 Designate and communicate soil and vegetation protection zones
 - b. Determine the overall vitality and structural integrity of trees on the project site
 - c. Determine the tree resources worthy of designing around
 - d. Delineate which trees may be declared dead, dying, or hazardous
- IX. The role of the project arborist
 - a. SITES Section 2 Pre-Design Assessment + Planning
 - i. P2.1 Use an integrative design process
 - b. Provide third party review of Architectural, Civil, and Landscape Architecture plans
 - c. Interface with local municipality and project design team
 - d. Provide a comprehensive written tree protection plan
 - e. Schematic design plan review
 - f. Design plan review thru 100% Construction Documents
 - g. Construction Oversight and Contract Administration
 - h. SITES Section 9 Education + Performance Monitoring
 - i. C9.1 Promote sustainability awareness and education to inform the community of how the tree protection program insures the trees contribution to Green Infrastructure
- X. Various techniques employed to minimize Critical Root Zone impacts
 - a. SITES Section 4 Soils & Vegetation
 - i. C4.4 Conserve healthy soils and vegetation
 - ii. C4.5 Conserve special status vegetation
 - b. SITES Section 7 Construction
 - i. P7.1 Communicate and verify sustainable construction practices
 - c. Root bridging
 - d. Soil Nailing
 - e. H-Pile shoring walls
 - f. The usage of helical piers
 - g. Root pruning
 - h. Protecting tree stems
- XI. Remediating impacted trees
 - a. SITES Section 8 Operations & Maintenance
 - i. P8.1 Plan for sustainable site maintenance
 - ii. C8.3 Recycle organic matter
 - b. Soil fracturing
 - c. Irrigation strategies
 - d. Organic soil therapy
 - e. Importance of wood boring insect control

- f. Topical applications of composted wood mulch to relieve soil compaction
- XII. Biochar and how it relates to compost and wood chip mulch
 - a. Chemical composition of biochar
 - i. Manufacturing biochar from wood waste
 - ii. How biochar is similar and different to compost and wood chip mulch
- XIII. Application techniques for applying organic amendments
 - a. Topdressing
 - b. Air tools
 - c. Liquid injection
 - d. Vertical mulching
 - e. Backfill mixing
- XIV. Prescribing organic treatments based on soil conditions
 - a. SITES Section 7 Construction
 - i. P7.3, Restore soils disturbed during construction
 - ii. C7.4, Restore soils disturbed by previous development
 - b. Testing organic matter content
 - c. Testing bulk density
 - d. Testing aggregation
 - e. Testing soil drainage
 - f. Matching the treatment to the test results
- XV. Beneficial effects of organic amendments on soil functioning
 - a. Improved drainage and aeration
 - b. Improved water and nutrient holding
 - c. Reduced soil water evaporation and soil temperature variability
 - d. Feeding the soil microbial food web
- XVI. Large-scale operations recycling wood waste as composted wood chips.
 - a. SITES Section 8 Operations & Maintenance
 - i. C8.3 Recycle organic matter
 - b. Chicago, Illinois
 - c. Chantilly, Virginia
 - d. Boston, Massachusetts
- XVII. Q&A