MARKETING STATEMENT

Today project success depends on performance as much as appearance. This panel proposes a new model for assessing metrics and optimizing performance during construction, at Substantial Completion, and beyond based on the established field of building commissioning. Using case studies, we will outline practical approaches for projects of all scales. Our case studies include a small urban park within Boston’s Rose Fitzgerald Kennedy Greenway, the ongoing work at Governor’s Island in New York, and the expansion of the Clark Art Institute in Williamstown, Mass. Each project illustrates a different approach to integrating commissioning — explained in practical terms by those who are in the trenches on a day to day basis.

LEARNING OBJECTIVES

1. To understand how the well-established process of building commissioning can be applied to landscapes

2. To learn how to refocus construction observation around performance verification, to document performance metrics upon substantial completion, and to ensure long term sustainability and vigor in complex projects

3. To see strategies for implementing landscape commissioning at all project scales through real case studies

4. To develop talking points to convince owners, design team, and contractors of the value of commissioning
Eric Kramer, ASLA
Principal — Reed Hilderbrand

a principal with Reed Hilderbrand, in Watertown, MA, has overseen the design and implementation of significant projects that utilize rigorous technical and horticultural systems to accommodate intensive programmatic requirements. Recent projects include the Clark Art Institute, Williamstown, MA; Central Wharf Plaza, Boston, MA; Kauffman Center for the Performing Arts, Kansas City, MO; and the Harbor Park Pavilion, Boston, MA. He currently teaches at Rhode Island School of Design.

James Sottilo
Principle — Ecological Landscape Management

James founded and is the principle owner of Ecological Landscape Management. Ecological landscape management means much more to James than ‘organic gardening’ and being 100% chemical free; it embodies his commitment to taking a holistic and scientific approach to creating healthier, more beautiful landscapes. James’s expertise includes new landscape establishment along with carbon and water reducing practices that yield exquisite, quantifiable results. James is a Certified Soil Foodweb Advisor and an ISA Certified Arborist. He has lectured at the Harvard GSD and is past president of the Long Island Arboricultural Association.

Tim Sullivan, PE, CEM, LEED® AP
Commissioning Manager — ARAMARK

Tim is responsible for providing technical services to their clients in New York and New England, specializing in complex HVAC, electrical and plumbing systems as well as LEED certified projects. Recently, Mr. Sullivan and his team have been involved with The Clark Art Institute, Williams College Stetson Hall, Harvard Business School Tata Hall, and the Albert Einstein College of Medicine Price Center.

Kelly F. Duke
Vice-President of Pre-Construction Services — ValleyCrest Landscape Development

Kelly is a degreed horticulturalist with over four decades of experience in landscape installation and maintenance. Mr. Duke’s personal areas of interest are in the advancement of sustainable landscape design, construction, and maintenance practices. In his role as Vice-President of Pre-Construction Services for ValleyCrest Landscape Development, Kelly is actively engaged with Owners and their design teams in finding the most cost-effective means to construct projects while simultaneously assessing long-term issues such as water use, energy use, waste stream reduction, and life-cycle costs.
1 Introduction: “Why Commissioning?” Understanding the Commissioning Model (Eric Kramer, ReedHilderbrand)

A Why we need a new model for construction administration, project turnover, long-term management, and performance assessment
   I Recognizing that landscapes increasingly function as complex systems
   II Lessons from recent projects

B The well-established practice of building commissioning
   I The players
   II The process (design, construction, and occupation phase)
   III The benefits (for owner, contractor, and design team)

C An introduction to the Three Case Studies

2 Small: Teaming the Landscape Architect and Landscape Contractor Case Study: Carousel Grove, Rose Fitzgerald Kennedy Greenway, Boston, Massachusetts (Kelly Duke, Valley Crest Landscape Development)

A Strategies for commissioning when you can’t hire an outside commissioning agent
   I Begin with the end in mind
      1 Reconcile near-term and long-term aesthetic and performance goals
         a Determine influencing factors and the best means of measurement
         b Construct specifications that define a contractor's and vendor's responsibilities
         c Develop specifications addressing what cannot be engineered or reliably predicted
            i Natural Systems
               1 Soils / Rhizosphere performance over time
               2 Climate / Weather performance over time
            ii The Human-Project Interface
               1 Levels of expertise / interest (pre-qualification of vendors / contractors)
               2 Establish realistic landscape management budget projections over time
      2 Incorporate appropriate performance influencing systems into the design
         a Levels of compaction for hardscape vs landscape areas
         b Sub-drains / surface drains
         c Structural soils, planting soils, aggregate materials
         d Amendments, fertilizers, biologicals, and blending methodology
         e Root zone aeration systems
Near-term and long-term irrigation system strategies

II Design appropriate testing strategies and protocols

1 Incorporate testing as specific tasks and durations into the project schedule
   a Source / vendor testing and / or certification
   b Pre-construction testing of materials and site conditions
   c In-situ conformance testing of work in progress
   d Operational testing of irrigation, drainage, lighting, and other systems

2 Clearly define testing and inspection protocols
   a Tests / inspections to be performed (ASTM or other standard)
   b Identify applicable testing / inspection standards and allowable tolerances
   c Establish qualifications of independent third party testing lab
   d Establish sampling, testing, and observation protocols
   e Timing of tests or observations relative to project stage
   f Frequency of tests / observations (source, initial site, follow-up tests)
   g Specific number of tests or ratio of tests per material type, SF, Ton, or CY
   h Record site conditions at time of testing (time, temperature, wind, etc.)

III Managing responsibilities and liabilities among Landscape Architect / Contractor / Vendor

1 Specify types of tests and responsible party for type and stage when testing is done
   a Laboratory: Samples: size, depth, stratified or blended strata sample, etc.
   b Field: In-situ testing, percolation, compaction
   c Observation / verification of sample collection process (Owner or L. A.)
   d Review protocol and establish approval / rejection authority

B Gathering metrics, managing establishment, and transitioning to maintenance practices

I Clear and consistent submittal process and documentation for tracking over time

II Accessibility of archival test results and observation reports (a “cloud” application?)

C Ensure continuity of design intent and the performance values for the future

I Prescriptive specifications
   1 Holds majority of risk with specification author
   2 Requires complete knowledge of subject matter to predict / direct outcomes
   3 Generally reserved for items pertaining to controllable aesthetic issues

II Performance specifications
   1 Specifications shift risk to contractor to prove desired performance results
   2 Allows for adaptation to meet site-specific conditions or environmental constraints
   3 Allows for innovation from contractor’s or vendor’s side
D Cost implications
   I Baseline testing costs for this project
   II Enhanced testing costs for this project
   III Testing costs as a percentage of overall project budget
   IV Likely cost factors for projects of different scale or scope

3 Medium: Working with a local landscape professional —
CaseStudy: Governor’s Island Planting, New York, New York (James Sottilo, Ecological Landscape Management)

A Why a commissioning agent?
   I Project planting strategy was based on bare root trees
   II Due to delays in soil mixing trees arrived and could not be planted in place
   III Response was to develop a temporary nursery
   IV Problem: Nursery management was scope and knowledge gap among general contractor, landscape contractor, landscape architect, and owner
   V Solution: retain a specialist to oversee scope and assess tree nursery health and performance

B Commissioning Scope: Working with contractor and the resident engineering team
   I Nursery setup and initiation
      1 Develop soil profiles for potting mixes
      2 Establish nursery guidelines for to respond to potential plant issues
      3 Create an organic system of nutrient management
   II Nursery Maintenance
      1 Scout for insects and disease
      2 Measure root development
      3 Monitor moisture of pots
      4 Restructure plant placement in nursery based on mycorrhizal type
   III Final results and ecological observations
      1 Tree failure analysis and recommendations for tree replacements
      2 Assessment of different pot systems, soils, and watering regimes
      3 Developing better systems for future
   IV Commissioning expansion opportunities
      1 Assessing plant health in the nursery
      2 Assessing plant health and performance between nursery and site
      3 Improving transplantation success rates
      4 Opening new planting strategies to respond to specific project types
4 Large: Building upon the services of a professional Commissioning Agent — Case Study: The Clark Art Institute, Williamstown, MA (Timothy J. Sullivan, Aramark)

A What the Commissioning Authority (CxA) does for building systems

B Who does the CxA work for?

C When does the Commissioning process start?

D Involving the construction team in the commissioning process
   I Incorporating commissioning specifications into the job documents

E How a Commissioning Agent can take on landscape systems and scope
   I Storm water management
   II Gray water systems and irrigation
   III Water feature pumping systems
   IV Water feature water treatment systems
   V Automatic controls

F Integrating testing protocols and procedures using the Commissioning Process
   I The Commissioning Plan
   II Clear communication with the design and construction teams
   III Navigating responsibility between design team and contractors for meeting the Owners Project Requirements (OPR)
   IV Implementation of the Plan: Verify, Witness, Test

G Managing substantial completion and performance confirmation

H Training owners and documenting operations and maintenance practices

I Re-commissioning and performance management

5 Conclusion (Eric Kramer, Reed Hilderbrand)

B Making the case for landscape commissioning to owners, design team, and contractors

6 Discussion and Questions