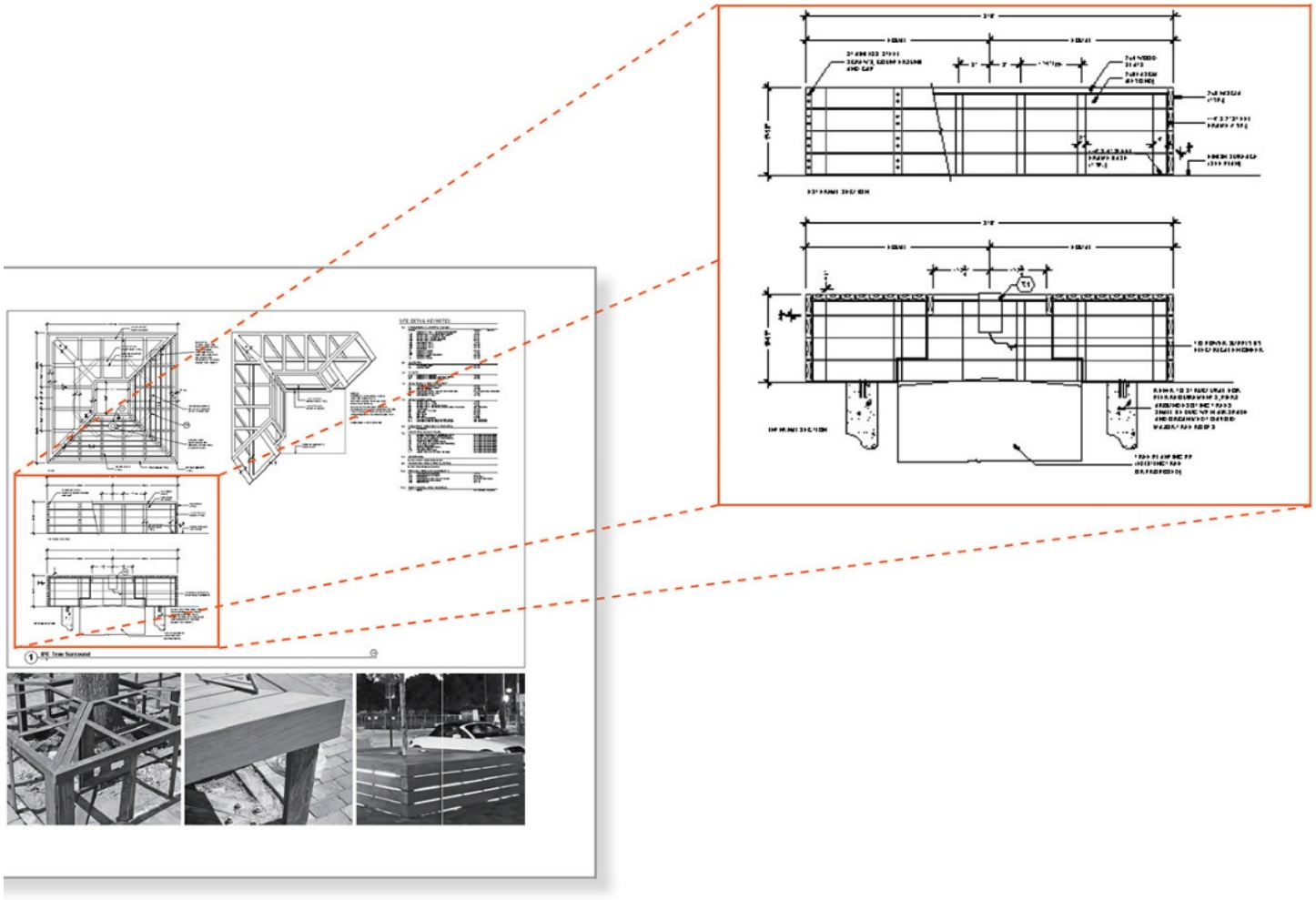

Excerpt from the book Landscape Architecture Documentation Standards: Principles, Guidelines, and Best Practices *by Design Workshop, Inc. A sample Construction Drawing for a custom bench planter utilizing three-dimensional graphics to convey design intent. In-progress and finished photographic documentation are provided to depict the final product outcome. A primary principle suggests the importance of three-dimensional design and documentation, to assure fully resolved components.*

LARC 230: Site Systems I – Materiality in Landscape Architecture
Class: Tu / Th, 12:30 – 2:20, Architecture Hall 305, 3 Credits
Instructor: Catherine De Almeida, Assistant Professor
Contact: cdealmeida2@unl.edu; 2-4900
Semester: Fall 2017

Phase 2: Materials, Lifecycles, and Assemblies – Performance + Applications

Project Description:

Phase 2 of the course will expose students to materials used in constructed landscapes, and how assembled materials perform as systems. This phase will emphasize material lifecycles and their landscape impacts in the context of designing sustainable landscapes, This ranges from extraction / sourcing and manufacture, to their performance and landscape applications, to their end-of-life fates. Students will develop an understanding of the wide range of conventional materials and techniques used to construct landscapes, paired with innovations and technologies associated with those materials and assemblies. Emphasis will continue to be placed on highlighting the material components that make up detailed assemblages, and their ecological and performative conditions within a designed landscape.

One main objective of this phase is to continue building an understanding of the graphic representation of technical details as a form of communicating design intent, including their material components and assemblages, and applications in the constructed landscape. Students will continue to explore materials and their assemblies in landscapes while developing methods for translating observation and research into technical forms of representation through interpreting and graphically synthesizing complex layers of site design.

In each Subphase, students will select and draw details of conventional assemblies paired with an innovative counterpart selected from a case study in LAF's Landscape Performance Series. Students will use landscape performance metrics to evaluate and compare the innovative detail's benefits to those of its conventional counterpart.

The components developed in Phase 1, particularly the AutoCAD file and work flow created in Phase 1B, will be used throughout Phase 2 and 3 for students to develop their individual material assemblies and detail libraries. Red lines of the drawings will be given to students vie Canvas after each Subphase submission for revisions in preparation for the final submission for Phase 2.

Project Format and Structure:

Phase 2 is divided into 4 parts, each building on the last:

Phase 2A: Aggregate + Asphalt + Poured-in-Place Concrete – Foundations + Street Assemblies

Students will be exposed to how aggregate, asphalt, and poured-in-place concrete are sourced, processed, and used as components to form the ground plane and foundations. Material connections and details encompassing these 3 different materials will be examined. Students will analyze and draw 3 different material assemblies using these materials, in conditions such as streetscapes (sidewalks, roads, and curbs) and foundations, referencing constructed landscape precedents. Additionally, students will find one alternative innovation in a material and/or condition as a counterpoint to one conventional detail that is explored. This will be diagrammed to illustrate the performative aspects to the detail.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to ensure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section with dimensions and labels using AutoCAD, scaled with a title block in Paper space (as was done in Phase 1B) are the required format for material and detailed assemblies. Conditions should be chosen based on a performative theme of the students' choice. Details are to be scaled at 1/2"=1'-0" to 3"=1'-0" scale (depending on the type of detail) on 1 sheet at 18"x24", landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counter point to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, September 21st. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

Phase 2B: Precast Concrete + Brick + Stone – Pathways / Paving Patterns + Walls and Stairs

Students will be exposed to how precast concrete, brick, and stone are sourced, processed, and used as components to form ground plane pathways and paving patterns, and walls and stairs. Material connections and details encompassing these 3 different materials (as well as previous materials studied) will be examined. Students will analyze and draw 3 different material assemblies using these materials, in conditions such as plazas, paths, retaining walls, and stairs, referencing constructed landscape precedents. Additionally, students will find one alternative innovation in a material and/or condition as a counterpoint to one conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts

such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students' choice. Details are to be scaled at 1/2"=1'-0" to 3"=1'-0" scale (depending on the type of detail) on 1 sheet at 18"x24", landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counter point to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, October 10th. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

Phase 2C: Metal + Wood – Tensile Forces / Spans / Structures + Seating / Fences / Rails

Students will be exposed to how metal and wood are sourced, processed, and used as components to form spans and structures, and seating, fences, and rails. Material connections and details encompassing these 2 different materials (as well as previous materials studied) will be examined. This Subphase consists of two submissions.

The first will be a group project in which students construct 36" spans using 1/8" basswood square strips and wood glue. The spans must have a flat area along the top (either part way or across the full span) to accommodate and hold a minimum of 1 brick. A group will receive extra credit if their span is able to hold 3 or more bricks. This project will require students to use their understanding of tensile and compressive forces, and how assembled structures can resist these forces. Spans are due Thursday, October 19th. Students must submit professional quality photos of their spans (no iPhone photos) BEFORE the span testing into the Box folder by 11:00 AM. Spans must be in Room 305 by 12:25 PM to begin the span testing on time.

As with the previous 2 Subphases, for the second submission, students will analyze and draw 3 different material assemblies using metal and wood as the main materials, in conditions such as pergolas, canopies, seating, fences, and rails, referencing constructed landscape precedents. 1 of the 3 details will consist of alternative innovations in a material and/or condition as a counterpoint to a conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students' choice. Details are to be scaled at 1/2"=1'-0" to 3"=1'-0" scale (depending on the type of detail) on 1 sheet at 18"x24", landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counter point to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, October 31st. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

Phase 2D: Soil + Plantings + Earthworks – Streets + Plazas + Parks
Students will be exposed to how soil and plant materials are sourced, manipulated, processed, and used as components to form streets, plazas, and parks. Material connections and details encompassing these 2 different materials (as well as previous materials studied) will be examined.

Students will analyze and draw 3 different material assemblies using soil and plant material as the main materials, in conditions such as planting beds, sidewalk tree pits, and larger open greenspaces. Additionally,

students will find 1 alternative innovations in a material and/or condition as a counterpoint to a conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students' choice. Details are to be scaled at 1/2"=1'-0" to 3"=1'-0" scale (depending on the type of detail) on 1 sheet at 18"x24", landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counter point to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, November 9th. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

Project Schedule:

9/7	Phase 2 Format, Description, Schedule; Phase 2A Project Description, Aggregate + Asphalt + Poured-in-Place Concrete Materials / Compressive forces + Foundations lecture Required Reading with Quotes and Discussion
9/12	Phase 2A: *Cathy away for conference* Required Reading; Eric Casper (Associate Principal at Clark Enersen Partners) Lecture and Tour of P Street Project – Street Assemblies
9/14	Phase 2A: Working Session / Desk Crits – Drawing Development and Preliminary Layout Field Trip to Concrete Plant
9/19	LAF Webinar #2 Phase 2A: Working Session / Desk Crits – Drawing Development and Final Layout

9/21 Phase 2A: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.

9/26 Phase 2B: Required Reading with Quotes and Discussion, Precast Concrete + Brick + Stone / Pathways + Paving Patterns lecture
Nebraska Masonry Alliance Lecture

9/28 Phase 2B: Field Trip to Brick Plant

10/3 Phase 2B: Required Readings with Quotes and Discussion, Walls and Stairs lecture
Detail Selection / Desk Crits – Working Session

10/5 Phase 2B: Working Session / Desk Crits – Drawing Development and Preliminary Layout

10/10 Phase 2B: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.
Phase 2C: Group Selections

10/12 Phase 2C: Required Reading with Quotes and Discussion, Metal + Wood Materials lecture; Tensile Forces + Spans + Structures lecture
Sketches / Study models of spans

10/17 *FALL BREAK*

10/19 Phase 2C: Span Project – Final Models Due - Testing of Spans

10/24 Phase 2C: Required Readings with Quotes and Discussion, Seating + Fences + Rails lecture
Working Session / Desk Crits – Drawing Development and Preliminary Layout

10/26 Phase 2C: General Discussion
Working Session / Desk Crits – Drawing Development and Final Layout

10/31 Phase 2C: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.

11/2 Phase 2D: Required Reading with Quotes and Discussion,
Soil + Plantings + Earthworks Materials Lecture
Working Session / Desk Crits – Drawing Development and Preliminary Layout

11/7 Phase 2D: General Discussion
Working Session / Desk Crits – Drawing Development and Final Layout

11/9 Phase 2D: All Phase 2 Final Drawings and Presentations – 18x24 plots pinned up in Room 305.
Phase 3 Description and Presentation

Final Requirements:

Phase 2A

Boards:	1 18”x24” plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 9/21
Scale:	Sections at 1/2”=1’-0” to 3”=1’-0” scale
Description:	Performance-based title
Presentation:	Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.

Phase 2B

Boards:	1 18”x24” plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 10/10
Scale:	Sections (and Plans if applicable) at 1/2”=1’-0” to 3”=1’-0” scale
Description:	Performance-based title
Presentation:	Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.

Phase 2C

Model:	36” (3’) long span capable of holding at least 1 brick
Photos:	A minimum of 3 professional quality photos of span before testing
Presentation:	Each span must be ready for testing by 12:25 in Room 305 on 10/19
Boards:	1 18”x24” plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 10/31
Scale:	Sections (and Plans if applicable) at 1/2”=1’-0” to 3”=1’-0” scale
Description:	Performance-based title
Presentation:	Each project has 10 minutes total; ~6 minutes for presentation, and ~4 minutes for discussion.

Phase 2D

Boards:	1 18”x24” plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 11/9
Scale:	Sections (and Plans if applicable) at 1/2”=1’-0” to 3”=1’-0” scale
Description:	Performance-based title
Presentation:	Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.

Project Evaluation:

Phase 2 is worth 45% of your overall grade for the course (each Subphase is worth 10%, and the span project in Phase 2C is 5%). Grading will place emphasis on graphic development and clarity, research synthesis and precision, quality of visual description, and final presentation.

Phase 2 Readings:

Week	References
3	Required (Phase 2A) Sovinski, Rob W., “Chapters 1, 2, and 4” in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 5-12; 13-24; 57-76.

Zimmermann, Astrid (ed.), "Foundations", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 159-169.

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Zimmermann, Astrid (ed.), "Paths and Squares", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Hutton, Jane, "Reciprocal Landscapes: Material Portraits in NYC and Elsewhere," *Journal of Landscape Architecture* 8(1), 2013: 40-7.

Yglesias, Caren, "Concrete," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 5-21.

Supplemental

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

Harris, Charles W. and Dines, Nicholas T., "Asphalt; Concrete; and Paving, Paving Joints, Edges, Dividers, and Curbs Details and Devices" *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 820-1 - 820-23; 830-1 - 830-21; Sections 910-914.

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

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Required (Phase 2B)

Zimmermann, Astrid (ed.), "Cut Stone; Brick and Clinker; and Concrete", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 67-102.

Yglesias, Caren, "Brick," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 49-62.

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Zimmermann, Astrid (ed.), "Steps; and Walls", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 243-263; 295-323.

Supplemental

Sovinski, Rob W., "Chapters 3, 5, and 7" in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 25-55; 79-89; 111-133.

Yglesias, Caren, "Stone," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 101-114.

Zimmermann, Astrid (ed.), "Paths and Squares", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Harris, Charles W. and Dines, Nicholas T., "Retaining Walls and Devices; Surfacing and Paving; Masonry; and Steps", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 410-1 - 410-10; 440-1 -440-7; 840-1 - 840-34; Section 920.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 62-65; 76-79; 96-99; 156-159; 172-175.

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Required (Phase 2C)

Zimmermann, Astrid (ed.), "Wood; and Metals", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 53-63; 105-119.

Zimmermann, Astrid (ed.), "Load-bearing Structures", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 137-157 (173-195).

Yglesias, Caren, "Wood; and Metals," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 115-129; 34-48.

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Zimmermann, Astrid (ed.), "Railings and Fences", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 267-291.

Supplemental

Sovinski, Rob W., "Chapters 6, and 8" in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 91-109; 135-150.

Zimmermann, Astrid (ed.), "Small Bridges; and Seating Elements", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 347-354; 490-500.

Harris, Charles W. and Dines, Nicholas T., "Fences, Screens, and Walls; Wood; Metals; and Seatwalls", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 450-1 - 450-14; 850-1 - 850-32; 860-1 - 860-32 Section 931.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 38-41; 54-57; 68-71; 72-75; 130-133; 140-143; 160-163.

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Required (Phase 2D)

Zimmermann, Astrid (ed.), "Planting Technique and Care of Vegetation Surface; Lawns and Meadows", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 369-396.

Yglesias, Caren, "Earth," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 130-142.

Supplemental

Zimmermann, Astrid (ed.), "Soil; Plants; Lawns and Other Seeded Areas", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 15-50.

Harris, Charles W. and Dines, Nicholas T., "Plants and Planting; Soils and Aggregates; Planting", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 550-1 - 550-8; 810-1 810-14; Section 950.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 18-21; 22-25; 26-29; 46-49; 58-61; 76-79; 134-137; 140-141; 172-175.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 42-43; 44-47; 64-67; 96-99; 150-158; 161-162; 168-170.