



Selling the System

Designing through Details

North Dakota State University
LA 572 Design Thesis
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Primary Advisor: Matthew Kirkwood
Secondary Advisor: Kathleen Pepple

*"the designer must be adept in the
landscape detail practices of construction"*
-Niall Kirkwood

*"It is by far the largest market subsector," in referring to
which aspect of residential design is often overlooked
and under appreciated (McKee, 2013). Out of 4,000
landscape architecture firms surveyed by the American
Society of Landscape Architects (ASLA, n.d.), 81percent
provide residential design services (ASLA, n.d.).*

Program

Create a book with information about details and craftsmanship in hardscape elements, and use that book to design a garden show display.

Typology

Grab potential clients attention as they are walking by, through creating a display in a garden show using details that demonstrates craftsmanship and sells the contractors ability to design and install a landscape.

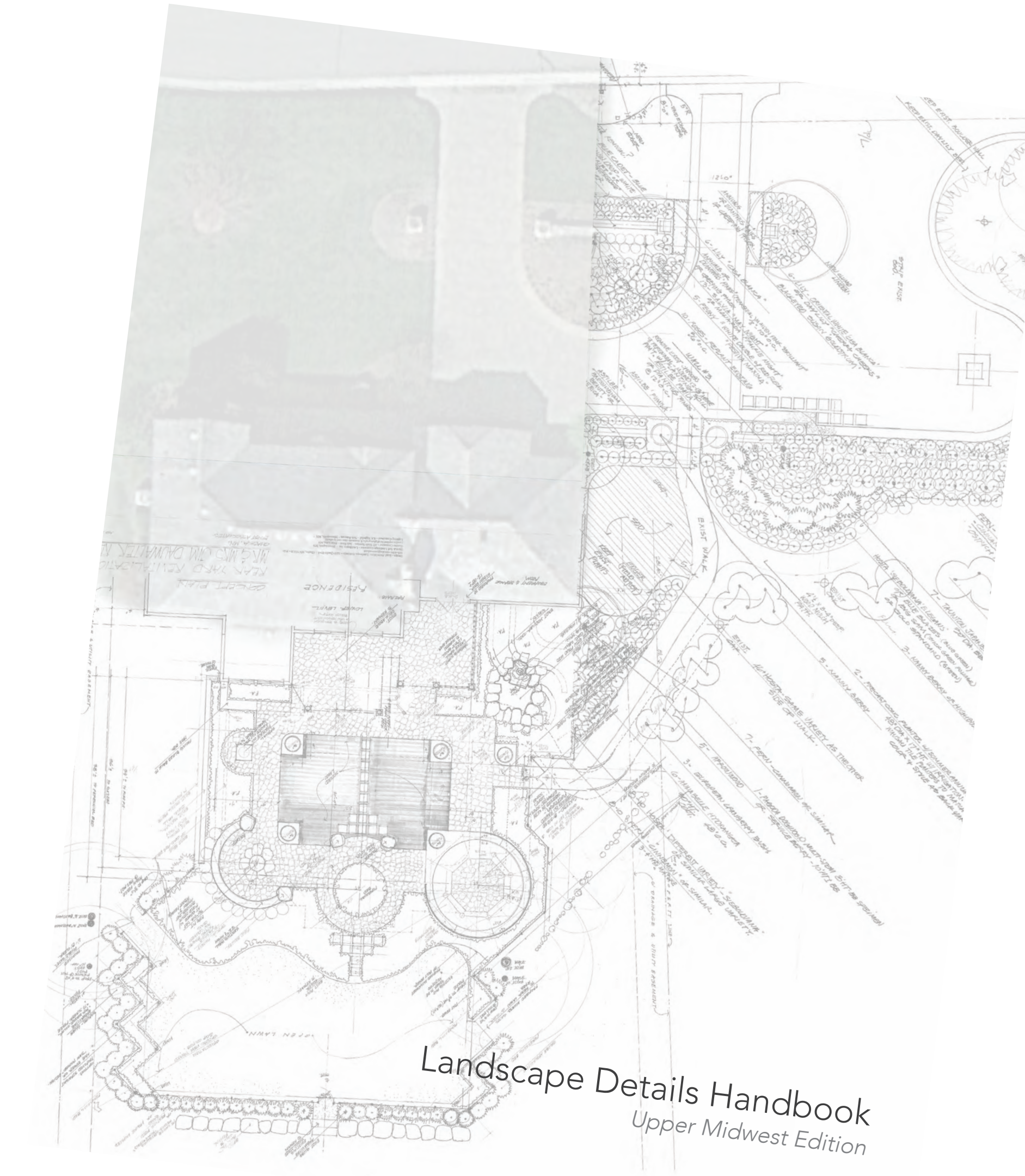
Upper Midwest

Inventory/Analysis

Landscape Details Handbook

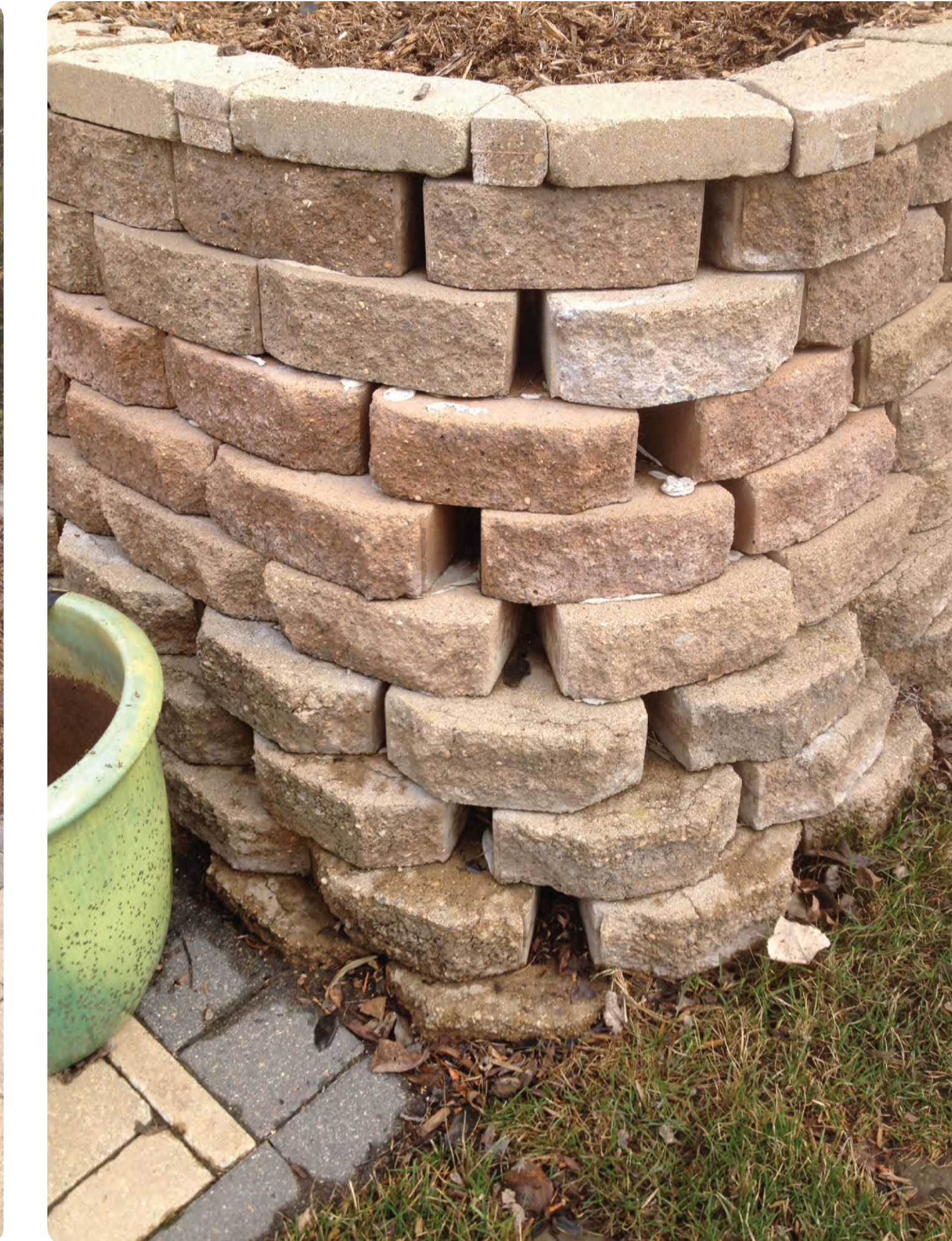
Process Work

Design



Typology

Hardscape elements anchor a landscape design and too often you see failing hardscape designs. Pavers and walls settle, columns are leaning to one side, and retaining walls blow out from too heavy of a load. The purpose of this thesis is to educate the client about proper construction techniques and to sell the client the construction system underneath the design.



Failed Hardscapes

Program

Typology

Upper Midwest

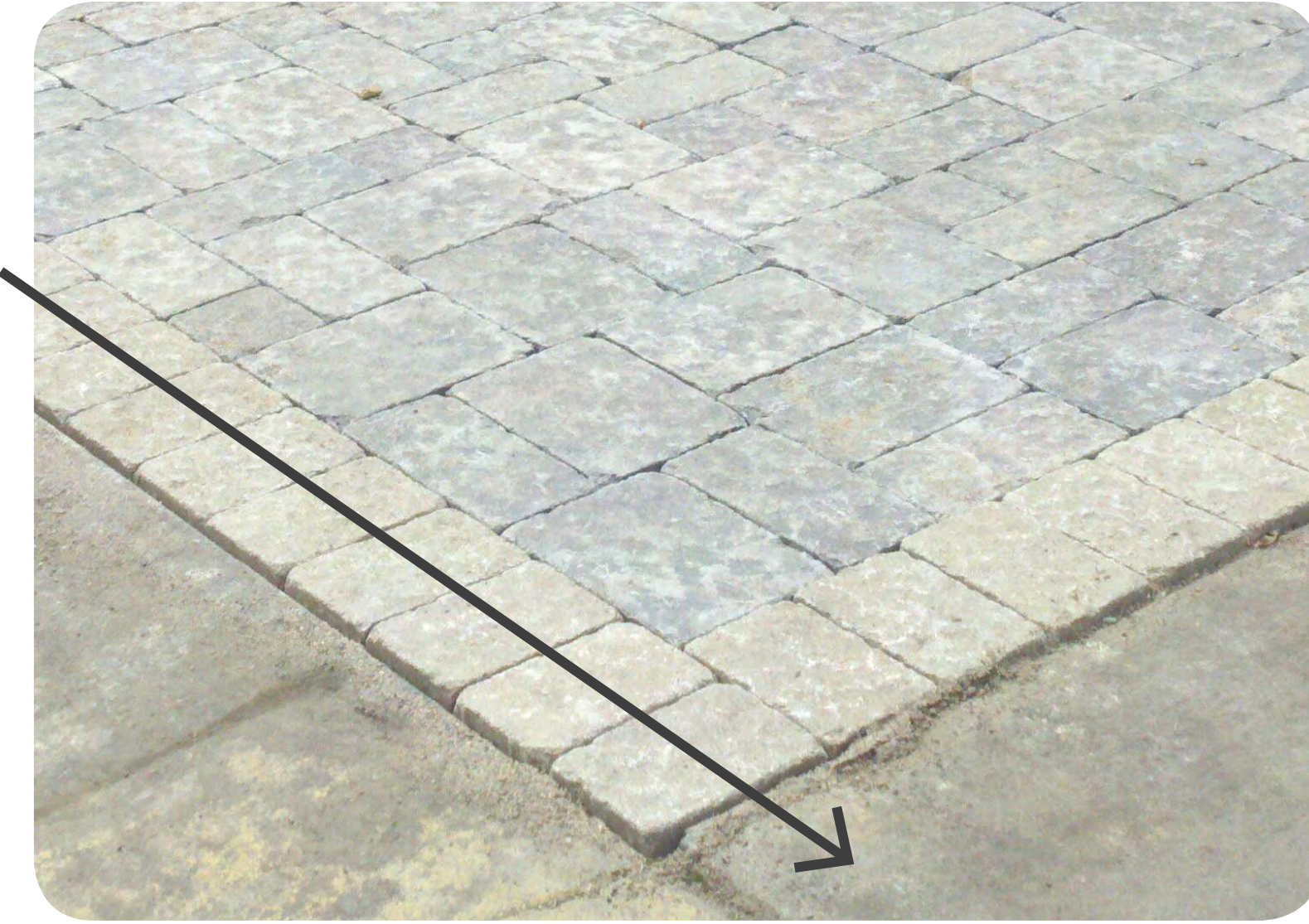
Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Detail



The user's eye follows the strong line of the soldier course.



The user's eye follows the corner.

Craftsmanship



Two examples of the same detail of a wall butting up to a boulder, one side constructed well (right), and the other constructed poorly (left). This outcome was mostly likely caused because each side was installed by a different crew member.

Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

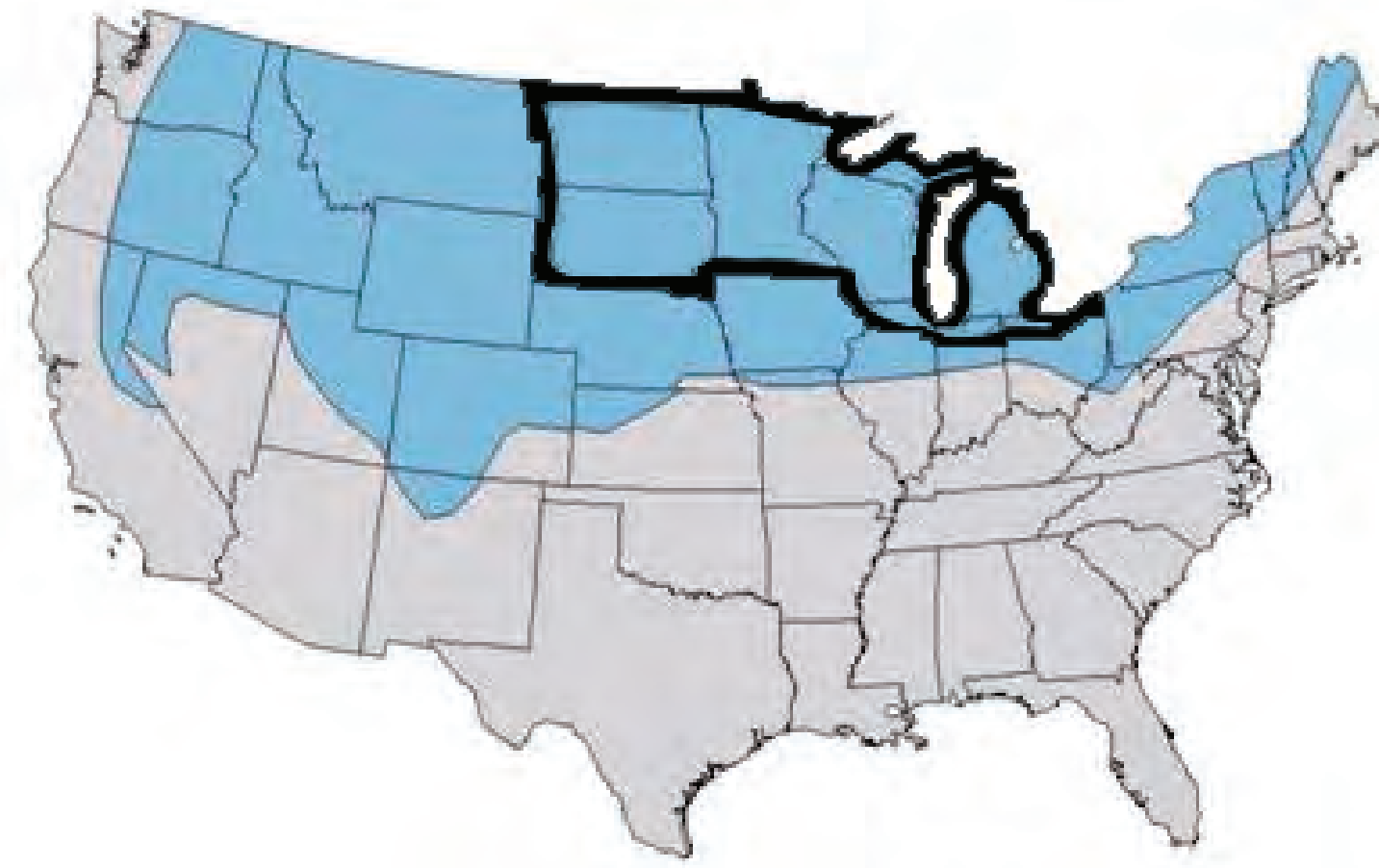
Process Work

Design

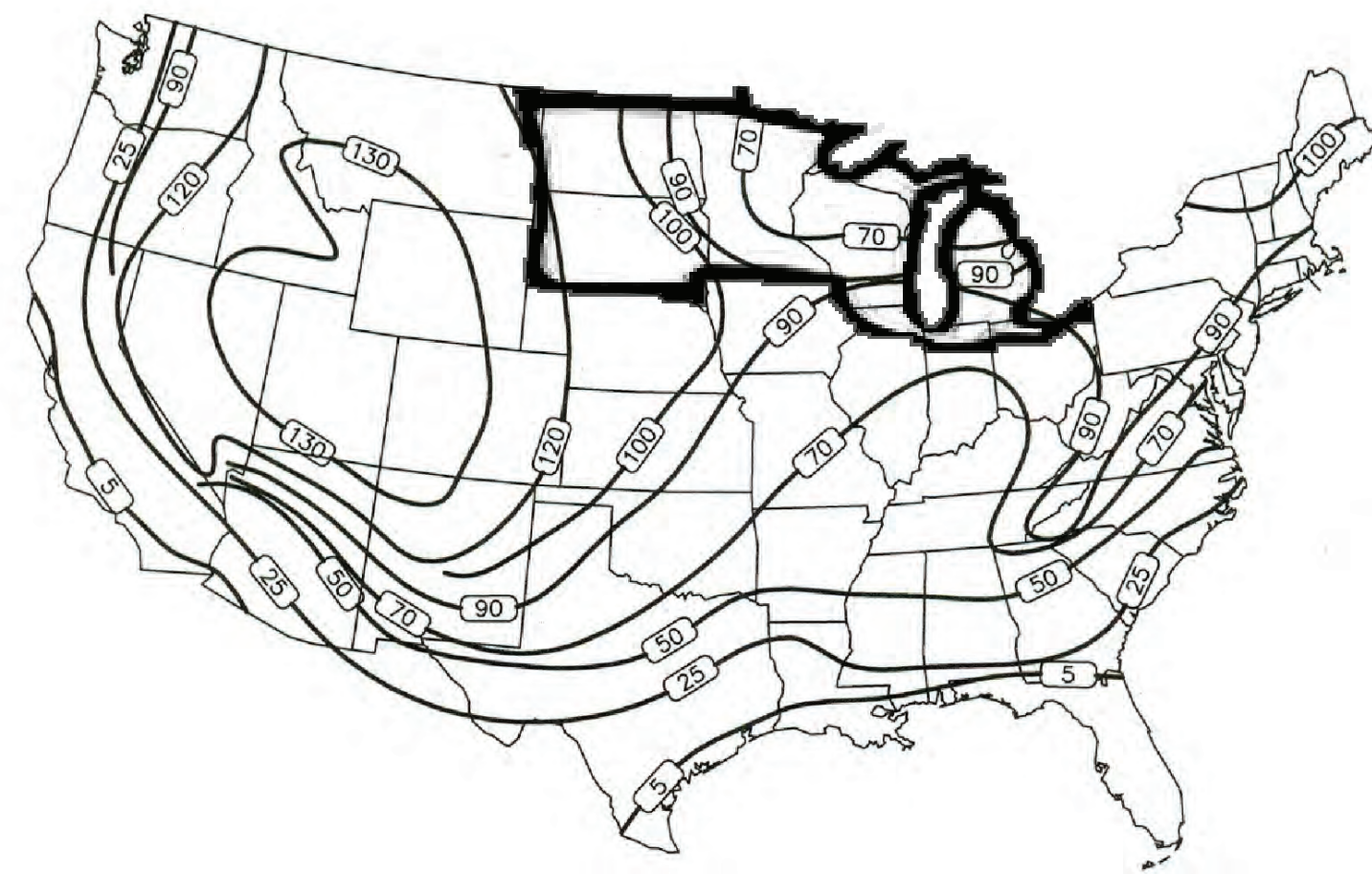
The region I am focusing on is the upper Midwest. I chose the upper Midwest for its four distinct seasons. Unlike asphalt or concrete, pavers flex and are able to move with the ground when freeze thaw cycles occur. This is a unique feature pavers have instead of cracking and breaking like asphalt or concrete traditionally would. Because of the climate in the upper Midwest, pavers are also installed differently than they are in different parts of the United States.

Even though the garden display will be in a controlled environment indoors. It will be designed in a way that it could potentially be installed anywhere in this region of the United States.

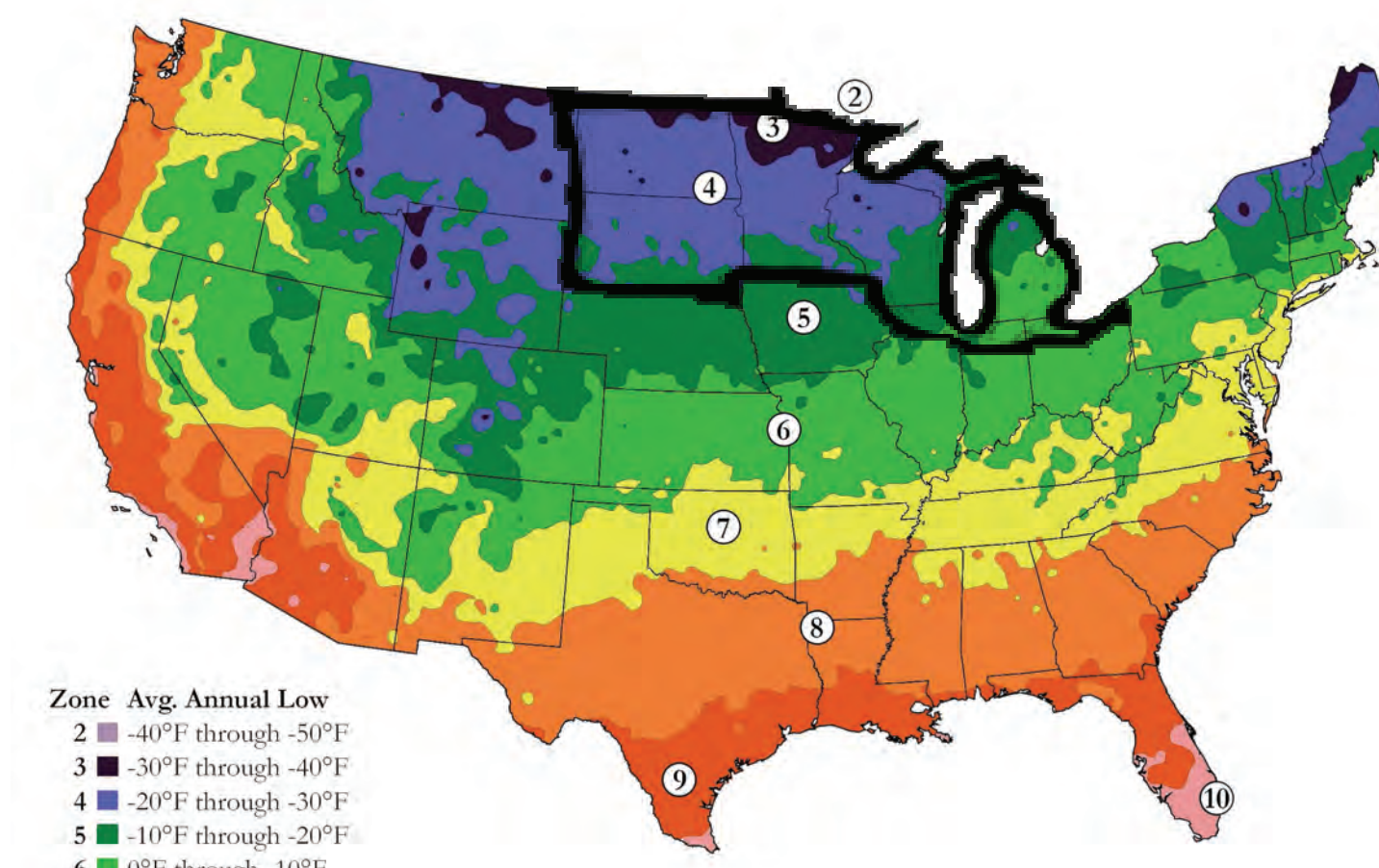
Freeze - Thaw Zone



Freeze - Thaw Cycles

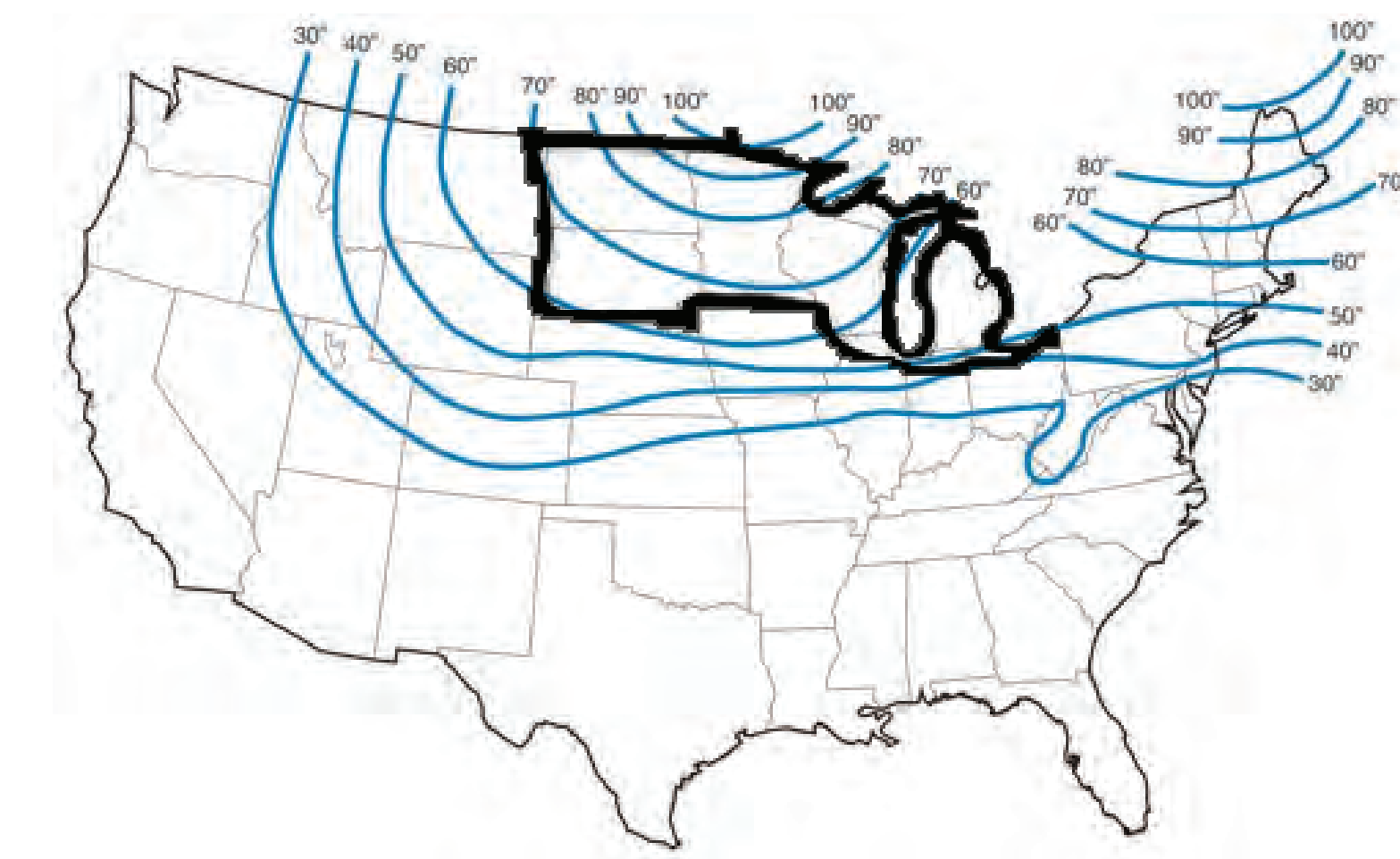


Planting Zone



- Zone Avg. Annual Low
- 2 -40°F through -50°F
- 3 -30°F through -40°F
- 4 -20°F through -30°F
- 5 -10°F through -20°F
- 6 0°F through -10°F
- 7 10°F through 0°F
- 8 20°F through 10°F
- 9 30°F through 20°F
- 10 40°F through 30°F

Frost Depth



Program

Typology

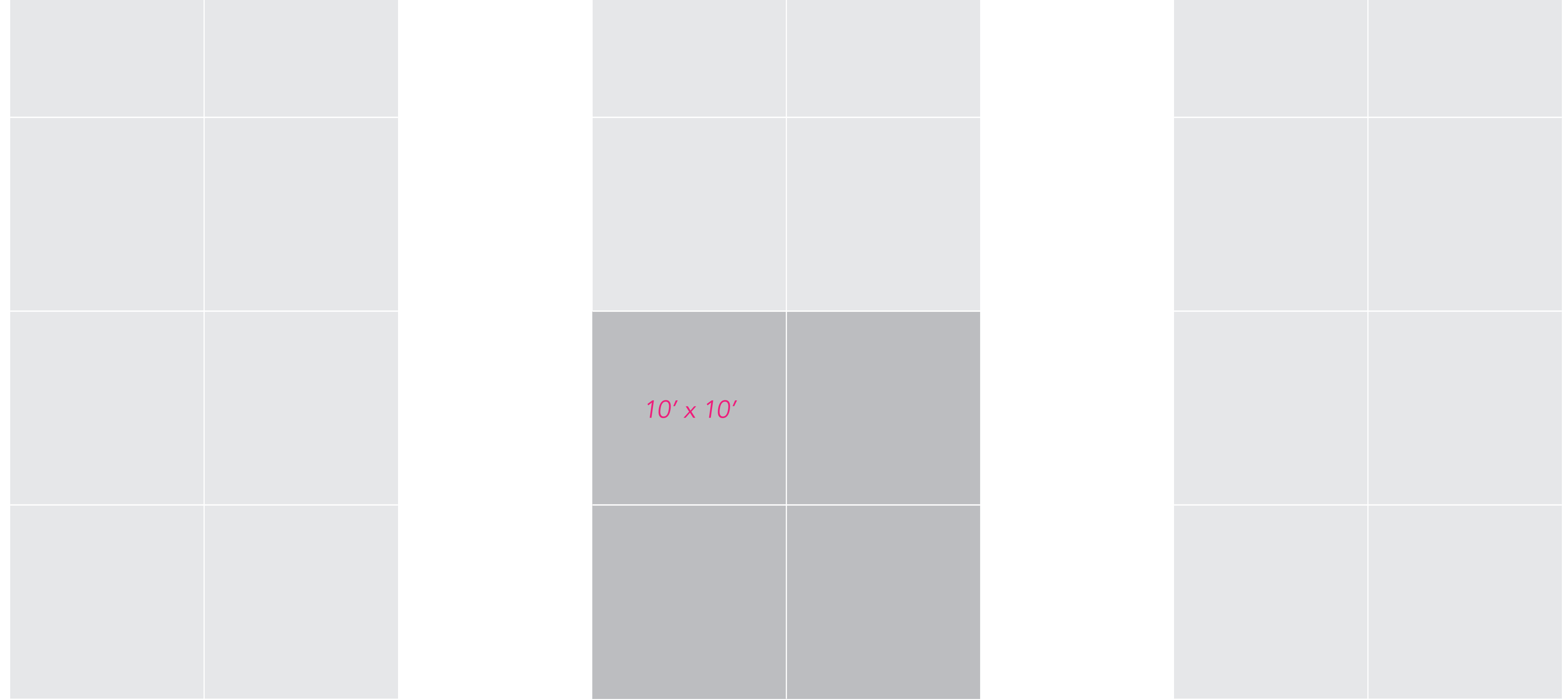
Upper Midwest

Inventory/Analysis

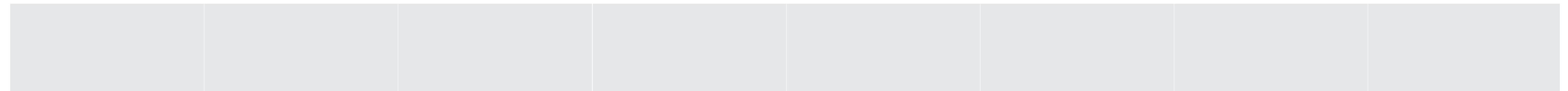
Landscape Details Handbook

Process Work

Design



Aisles are 10 feet wide



Microclimate Conditions:

- Climate controled
- No wind
- No natural light
- Level surface
- No precipitation



https://c1.staticflickr.com/1/99/271834638_0bd4c9c183_z.jpg

Program

Typology

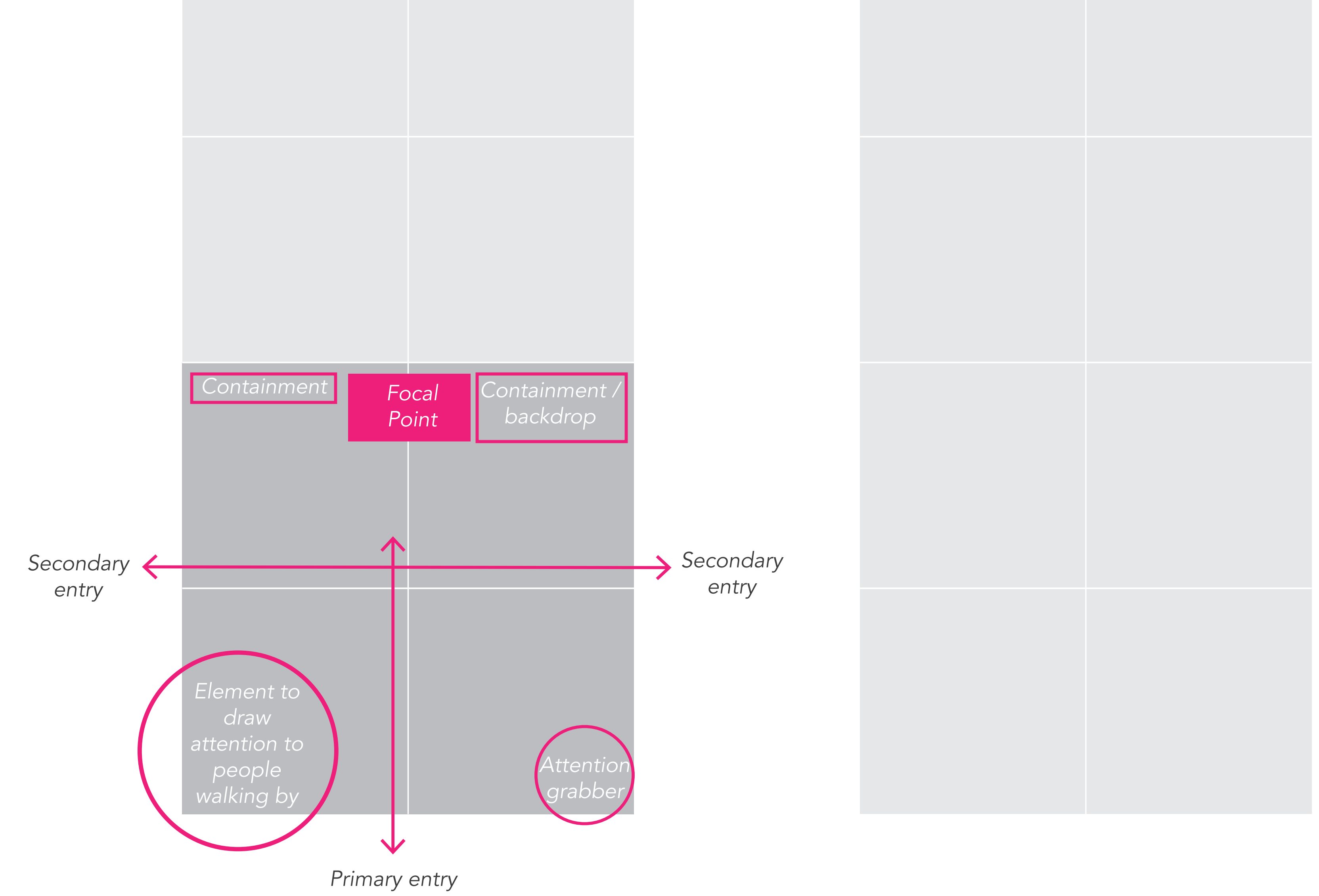
Upper Midwest

Inventory/Analysis

Landscape Details Handbook

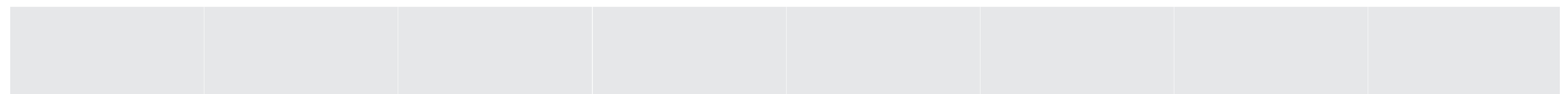
Process Work

Design



Garden show display key design points:

- Booth needs to be inviting and not constricting
- Booth needs to have a focal point that draws attention
- Booth cannot be too cluttered
- Do not guard the entry, stand back



Program

Typology

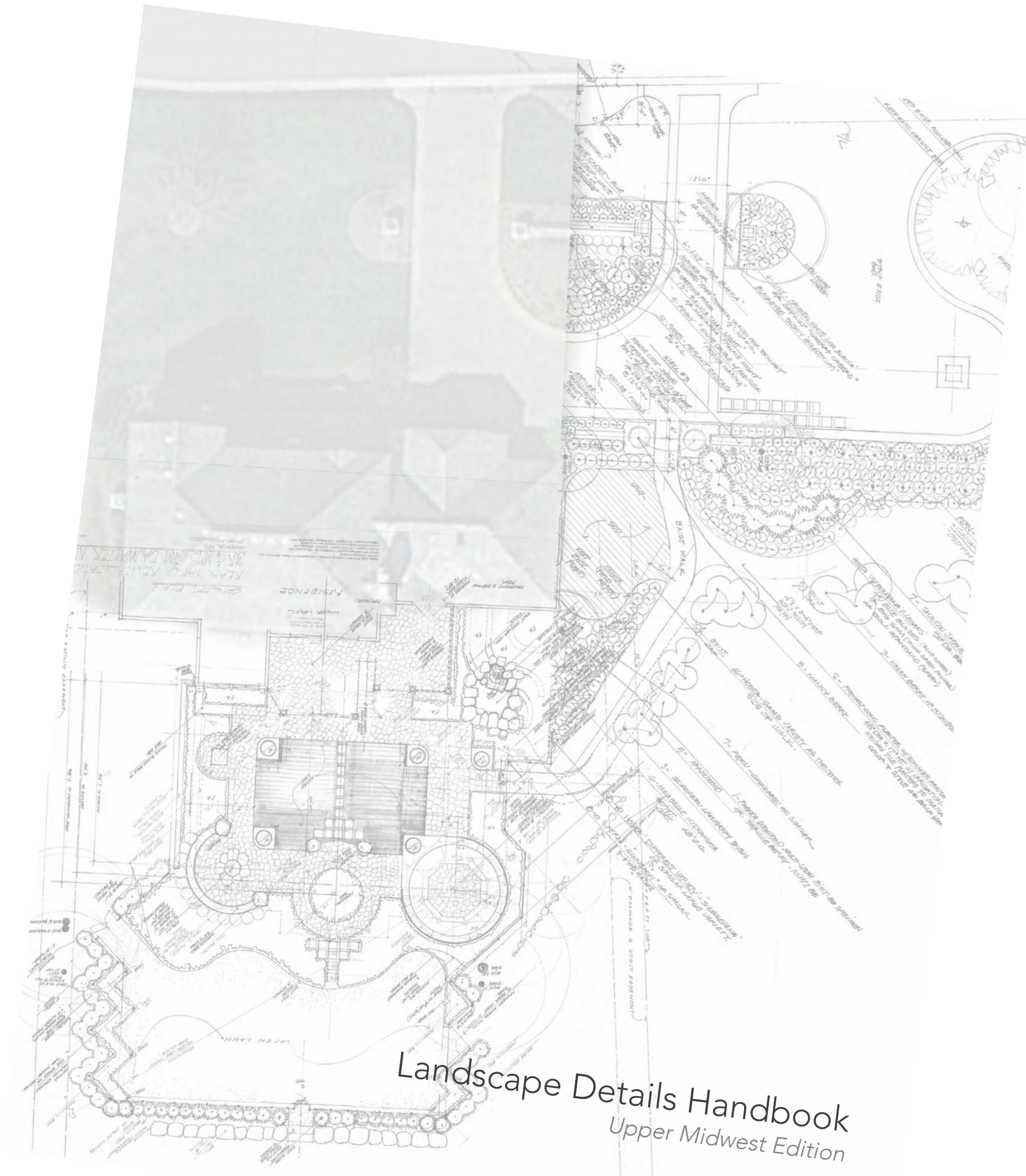
Upper Midwest

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Process Work

Design



Alone	With pavers on one side	With pavers on both sides	Gravity	Veneered CMU's	Cantilever
			<p>Locate utilities before any digging occurs.</p> <p>If the wall will be on a hill or slope, the placement of the wall will determine how much soil will need to be brought in or removed.</p> <p>Paint a line where the wall will be located.</p> <p>The footing for the wall needs to be 4 feet under the ground level; the slope and placement of the wall will determine how deep you have to dig. The trench should 3 feet wide to give you room for movement in the trench.</p> <p>Set up a form for the concrete footing in the trench, the footing should be 8 inches thick and 2 feet wide.</p> <p>Lay 3 rows of number 4 rebar in the trench and stub up rebar for the concrete block every 4 feet.</p> <p>Pour concrete in the form and let it dry completely before removing the forms.</p> <p>Per manufacturers directions, use mortar to adhere the concrete blocks to the footing, with the stubbed up rebar going through the hole of the block.</p> <p>Continue to stack concrete block using 3/8" mortar joints between blocks. Stagger the block so two joints do not over lap.</p> <p>When the final height of the wall is reached, let the mortar set up completely before continuing.</p> <p>Cut number 4 rebar 2-3 inches shorter than the height of the wall and place the rebar into every other hole in the wall. Core fill every hole with concrete and vibrate the concrete down all the way to the bottom of the hole.</p>	<p>Drain tile is required if the wall is over 4 feet tall or if there is poor drainage on the site. Place the drain tile at the lowest possible point and directly behind the first course of block. Vent the drain tile to daylight every 50 feet. Make sure the drain tile is sloped so water runs towards the daylight.</p> <p>Lay geotextile fabric along the dirt on the backside of the trench. Back fill the backside of the trench with clear rock (angular rock with no fines) while keeping the fabric between the clear rock and the soil so they do not contaminate. Continue backfilling with clear rock until you are about one course away from the top of the wall. Fold over the geotextile separation fabric on top of the clear rock.</p> <p>Using type S mortar per manufacturers directions and veneer the natural stone to the concrete block, start 1 foot below grade and work your way toward the top of the wall.</p> <p>Let the veneer dry completely before backfilling the front side of the wall with soil.</p> <p>To complete the wall, lay a cap stone on top of the final course, the cap will be glued with concrete adhesive but it is best to lay the pieces out first and dry fit the cap stone before any adhesive is applied.</p> <p>If you have a curved wall, the cap may have to be cut with masonry saw. Once all the pieces are dry fit, you can apply the concrete adhesive to each piece so it is firmly secured to the top course.</p> <p>Seed or sod the bottom and top of the wall as needed.</p>	

Sustainable

Edging

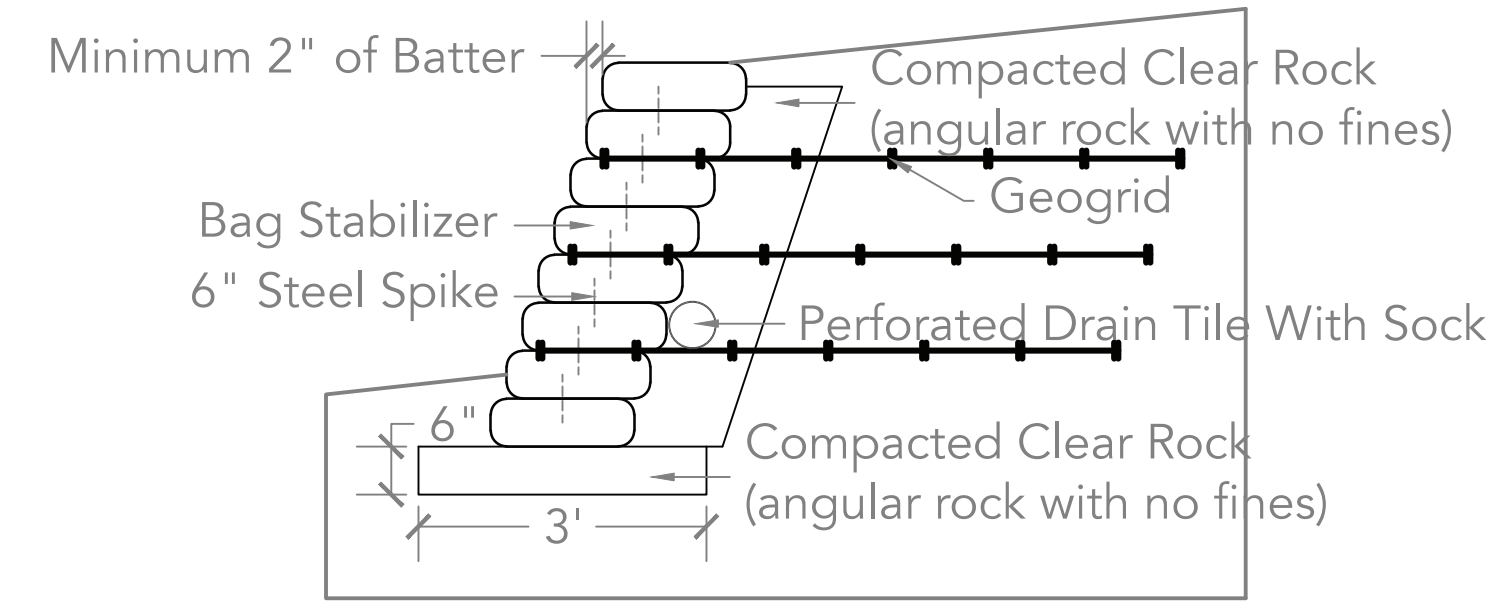
Stairs

Columns

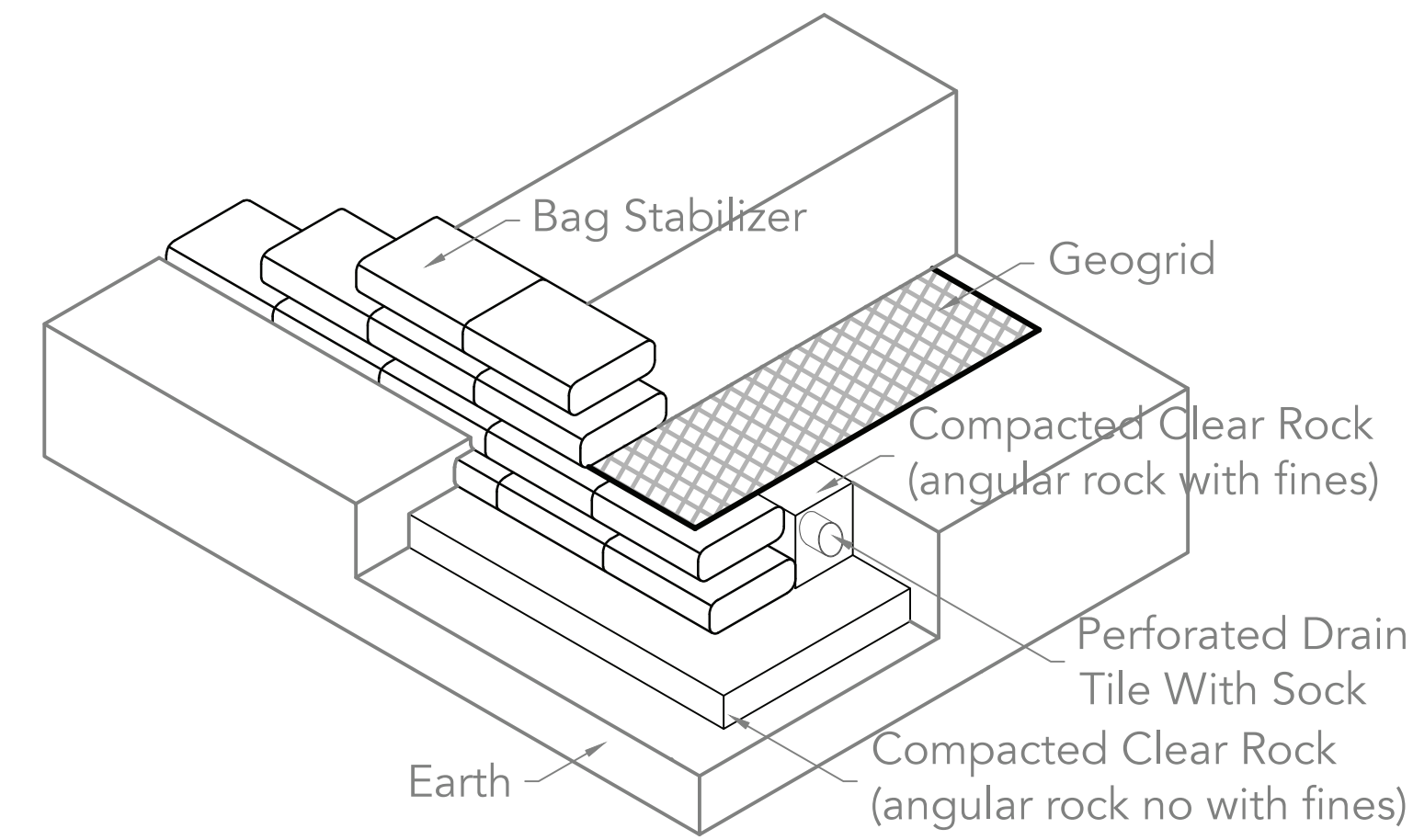
Walls

Pavement

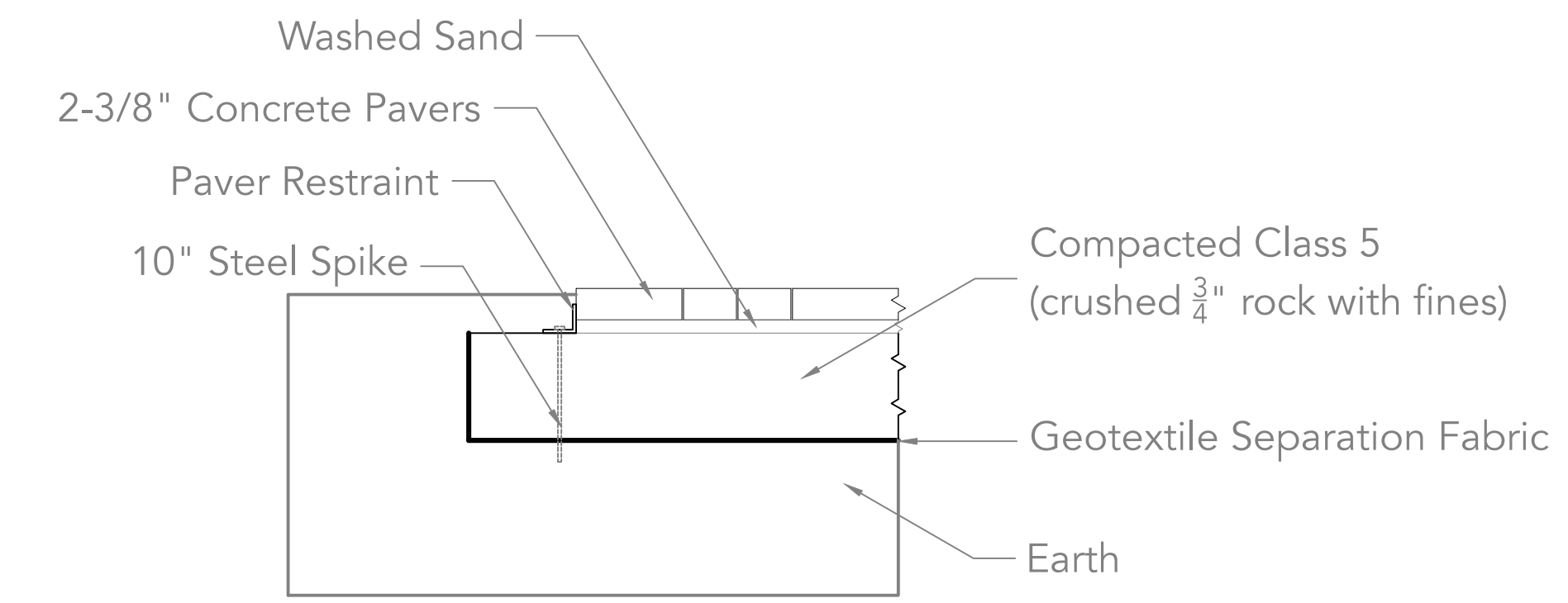
Landscape Details Handbook



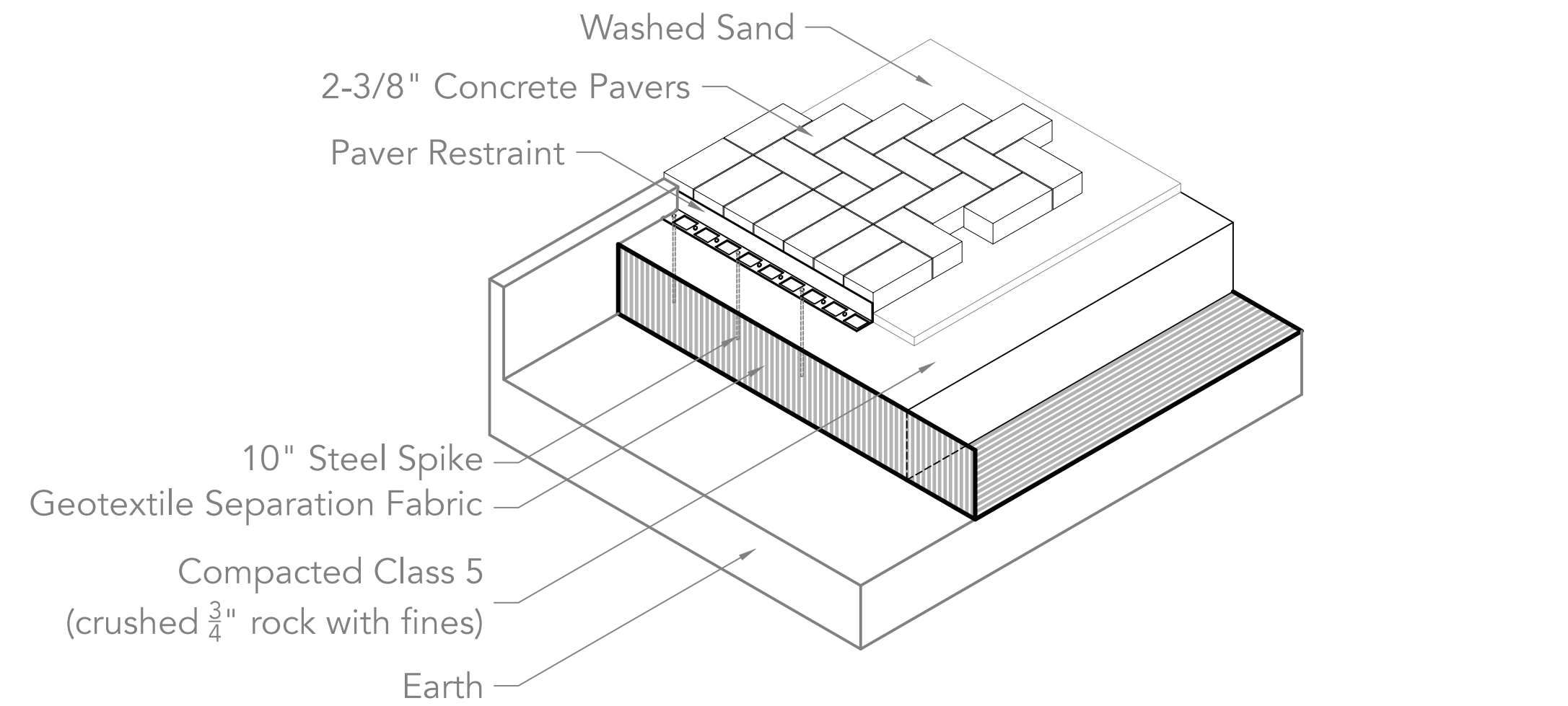
1 Vegetation Wall Section
 Page 92 Bag stabilized vegetation retaining wall Scale 1/2"=1'



2 Vegetation Wall Detail
 Page 90 Bag stabilized vegetation retaining wall Scale 3/8"=1'



3 Paver Section
 Page 7 Sand set concrete pavers Scale 1"=1'



4 Paver Detail
 Page 6 Sand set concrete pavers Scale 3/4"=1'

Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

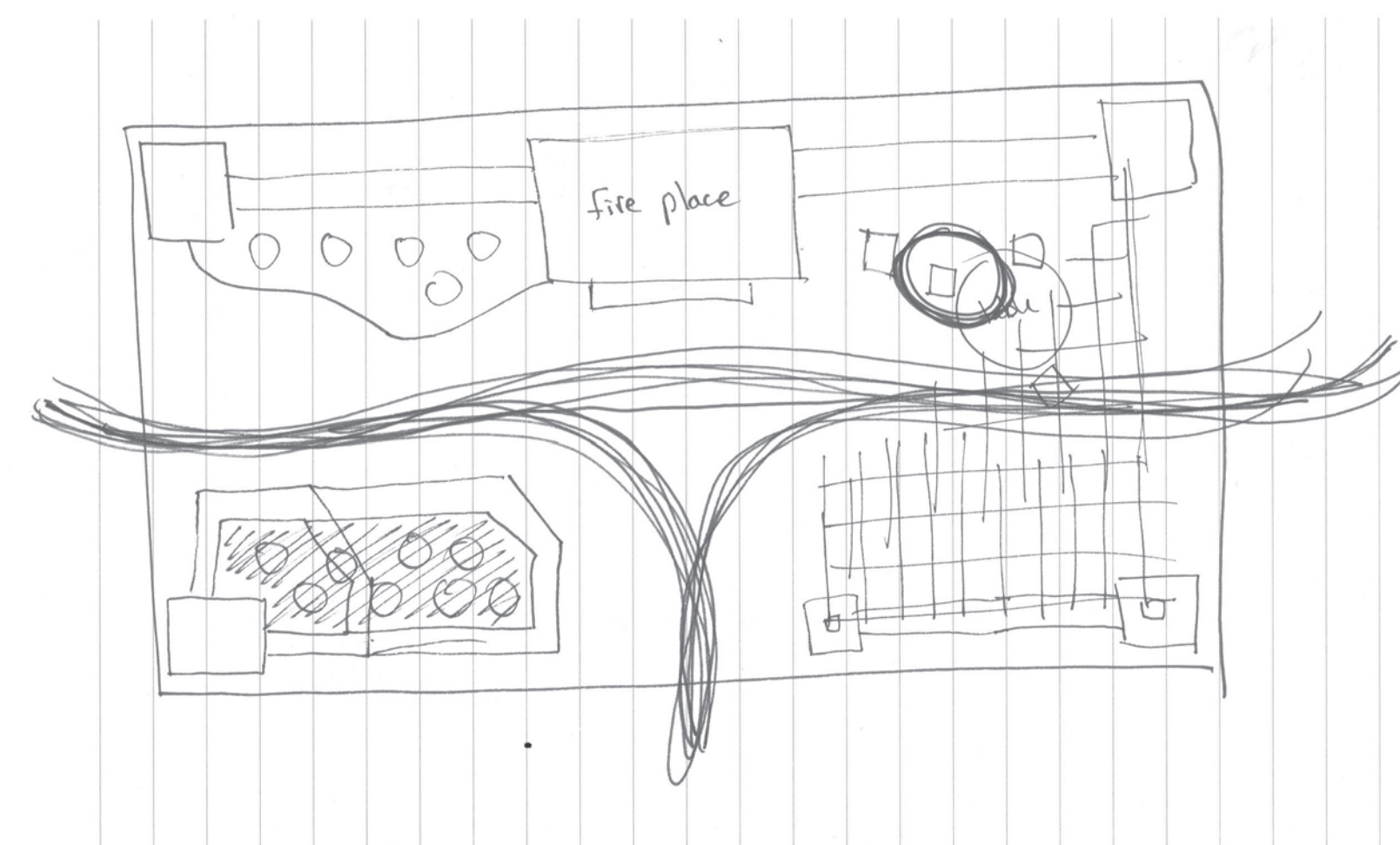
Process Work

Design

Garden show display key design points:

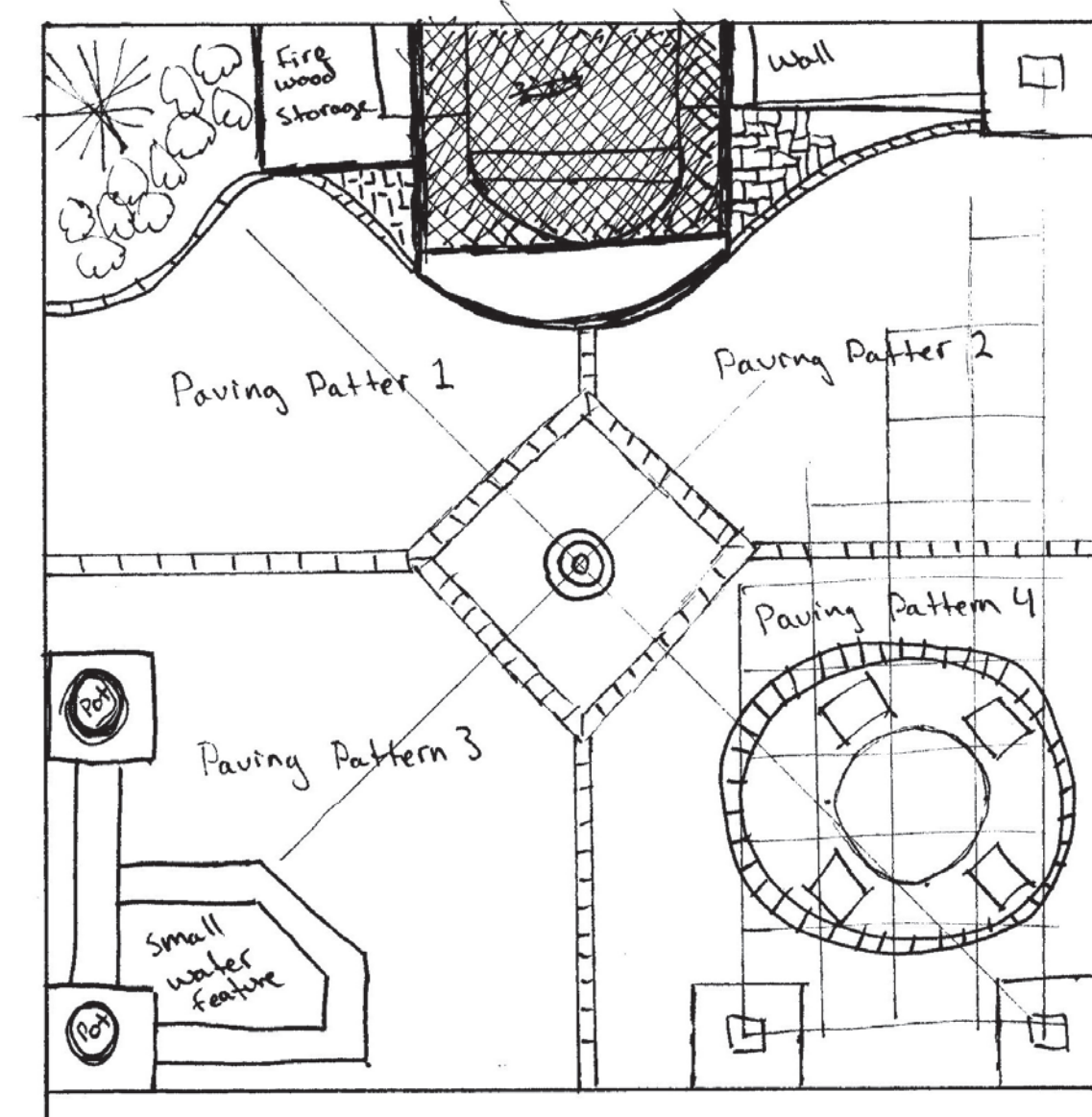
- Booth needs to be inviting and not constricting
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- Do not guard the entry, stand back

Initial Sketch

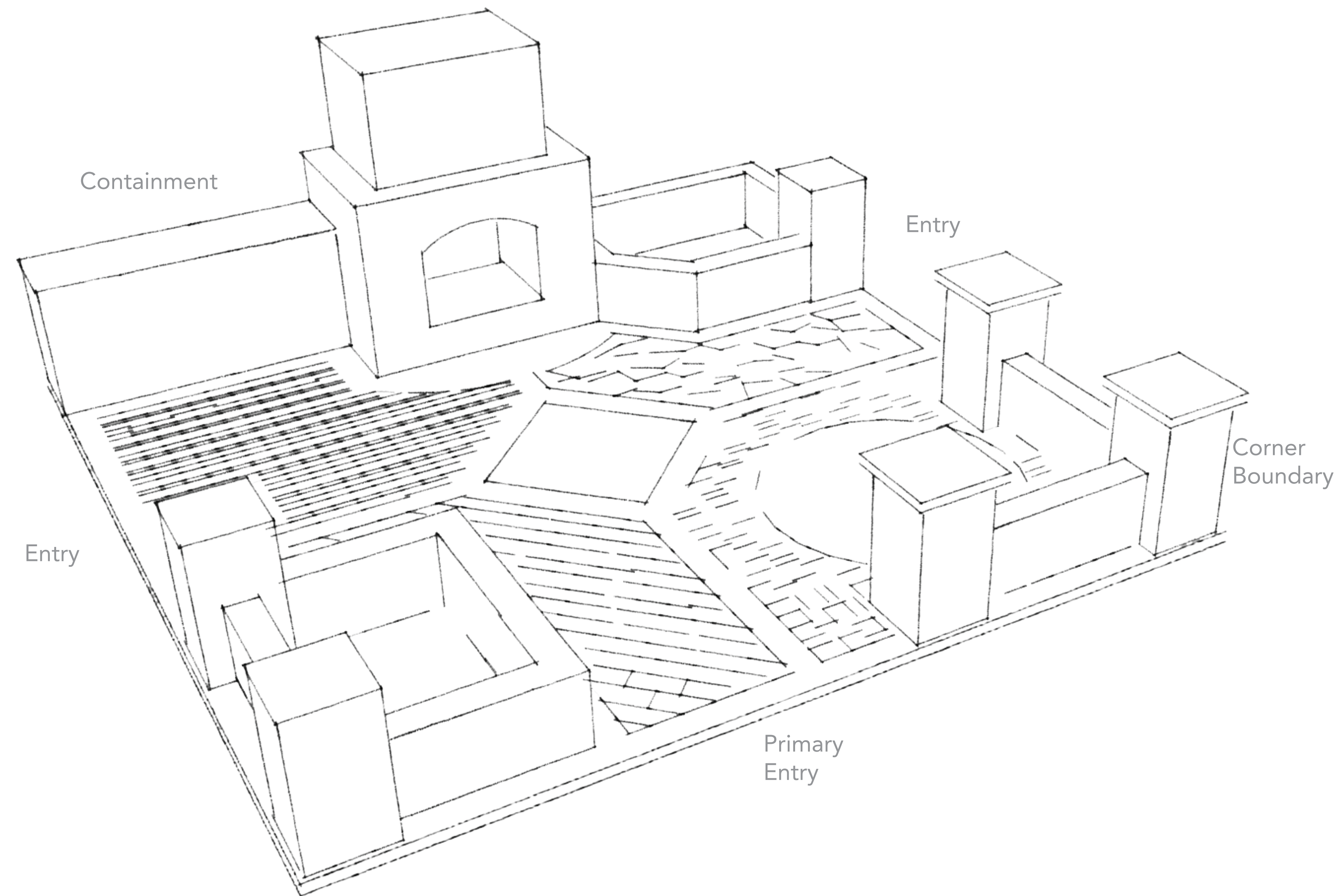


Incorporating the details from the book into the design

Scaled



3D Software



Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

Process Work

Design



Program

Typology

Upper Midwest

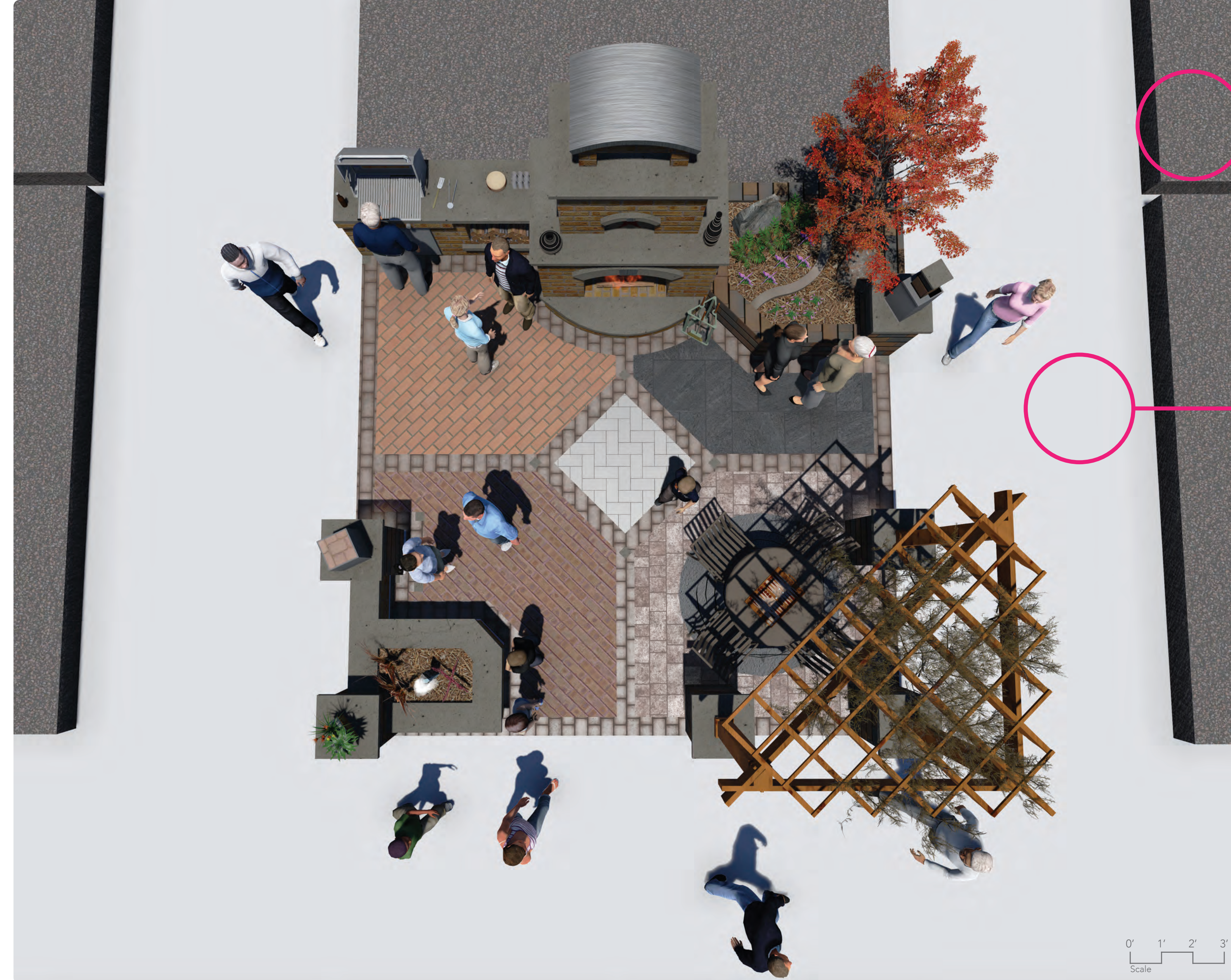
Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Masterplan Orientation



Other Exhibitors
 10'x10' and 20'x20' booths make up the layout of the convention center.



Aisle
 The aisle between exhibitor booths is 10 feet wide to accommodate the heavy traffic flows.

0' 1' 2' 3'
 Scale

Program

Typology

Upper Midwest

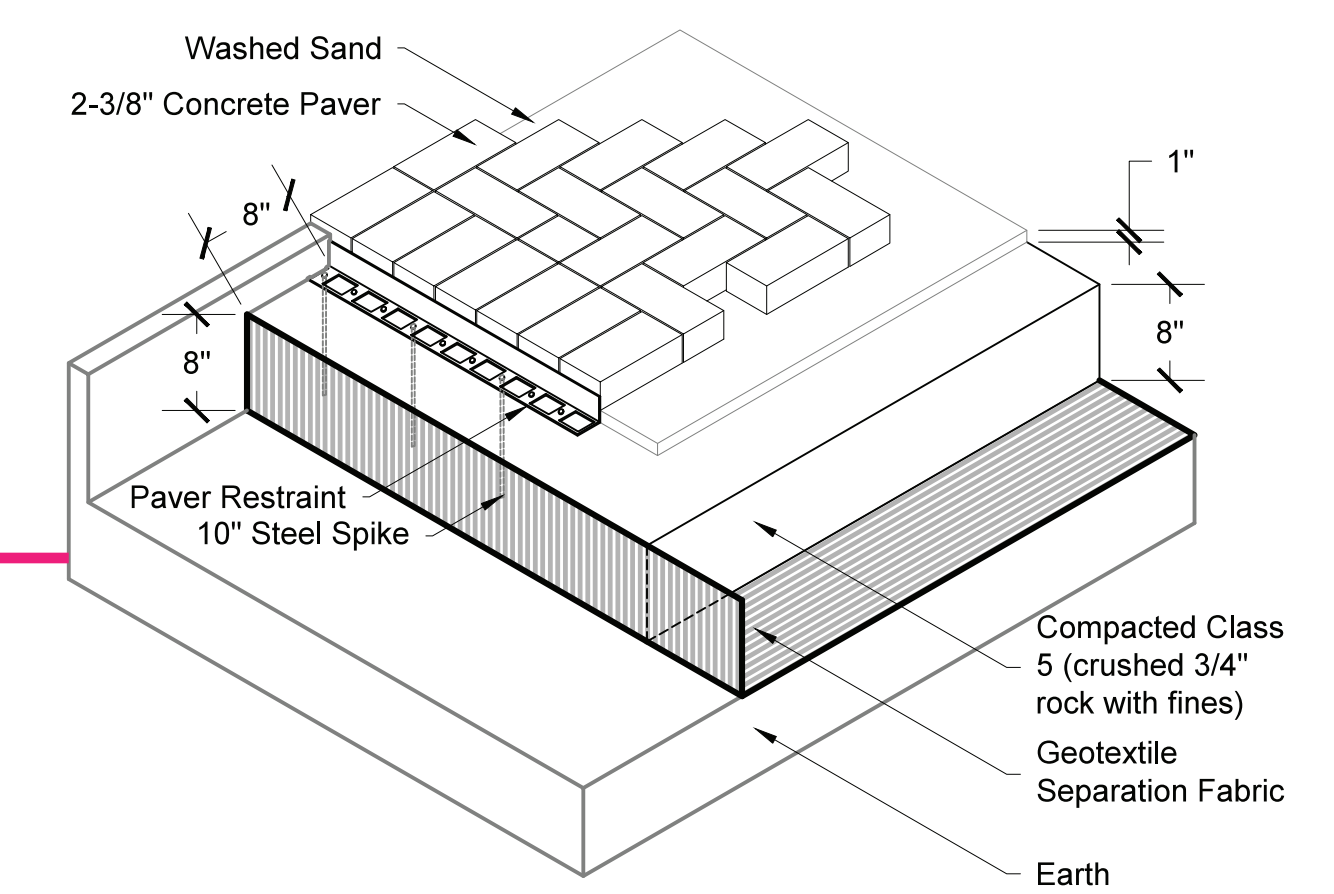
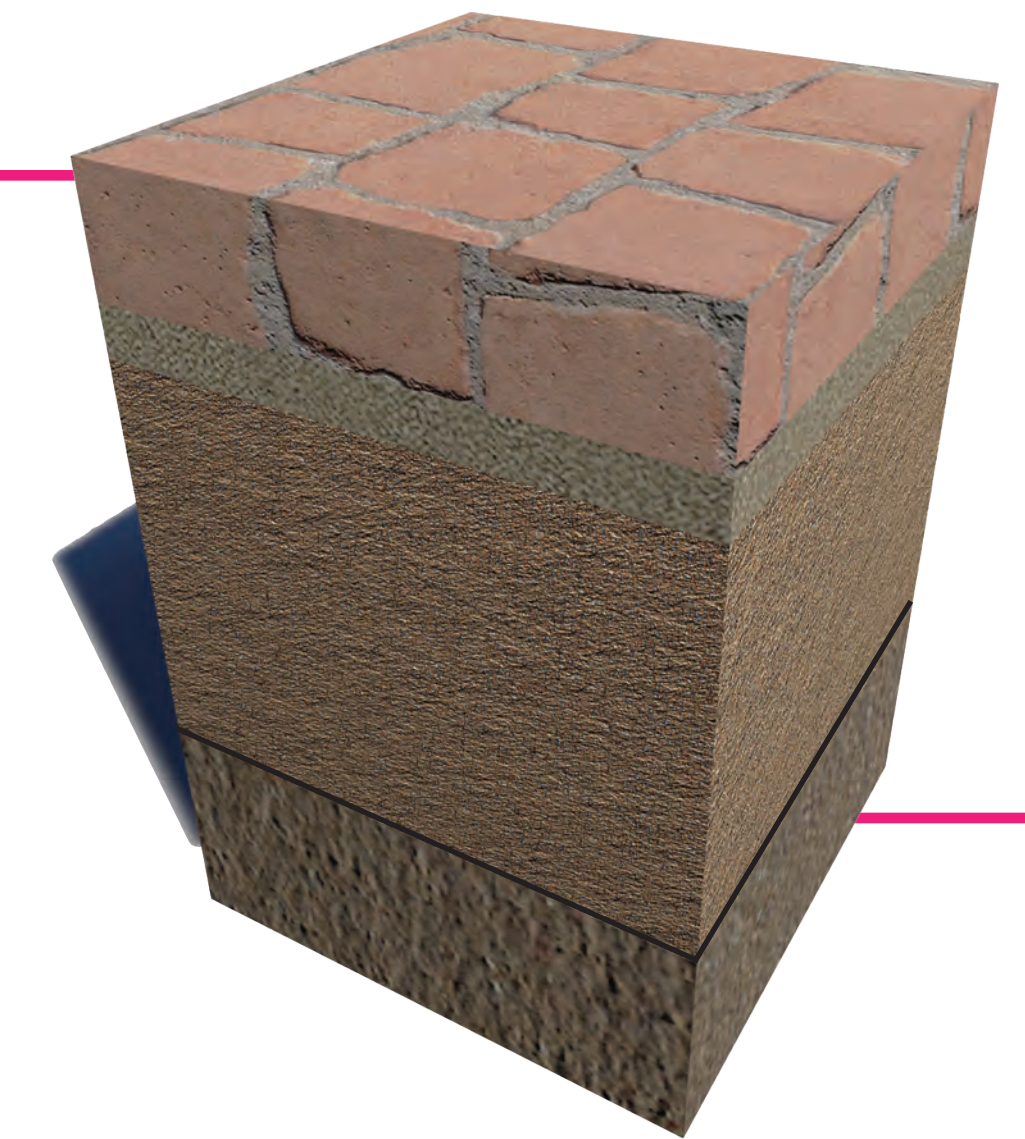
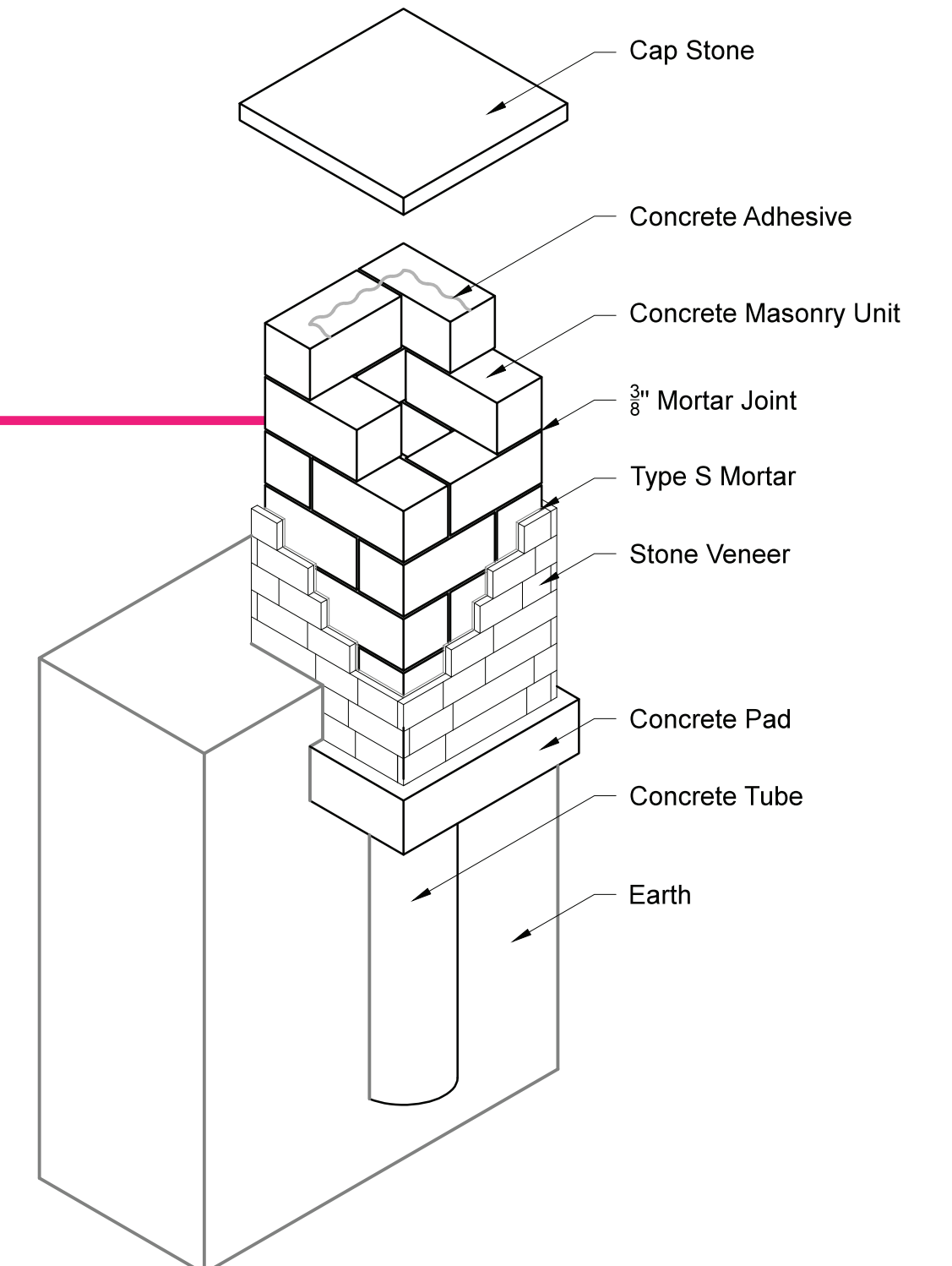
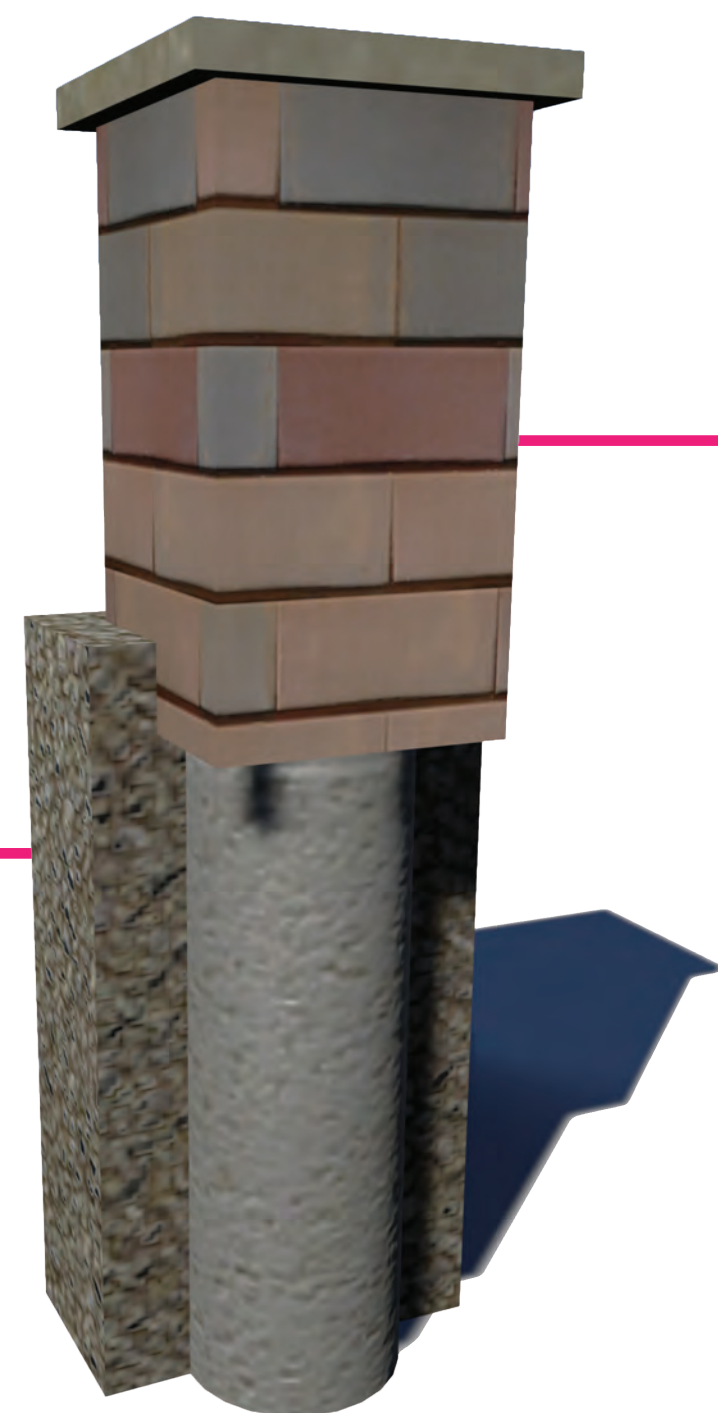
Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Masterplan Education Element



Program

Typology

Upper Midwest

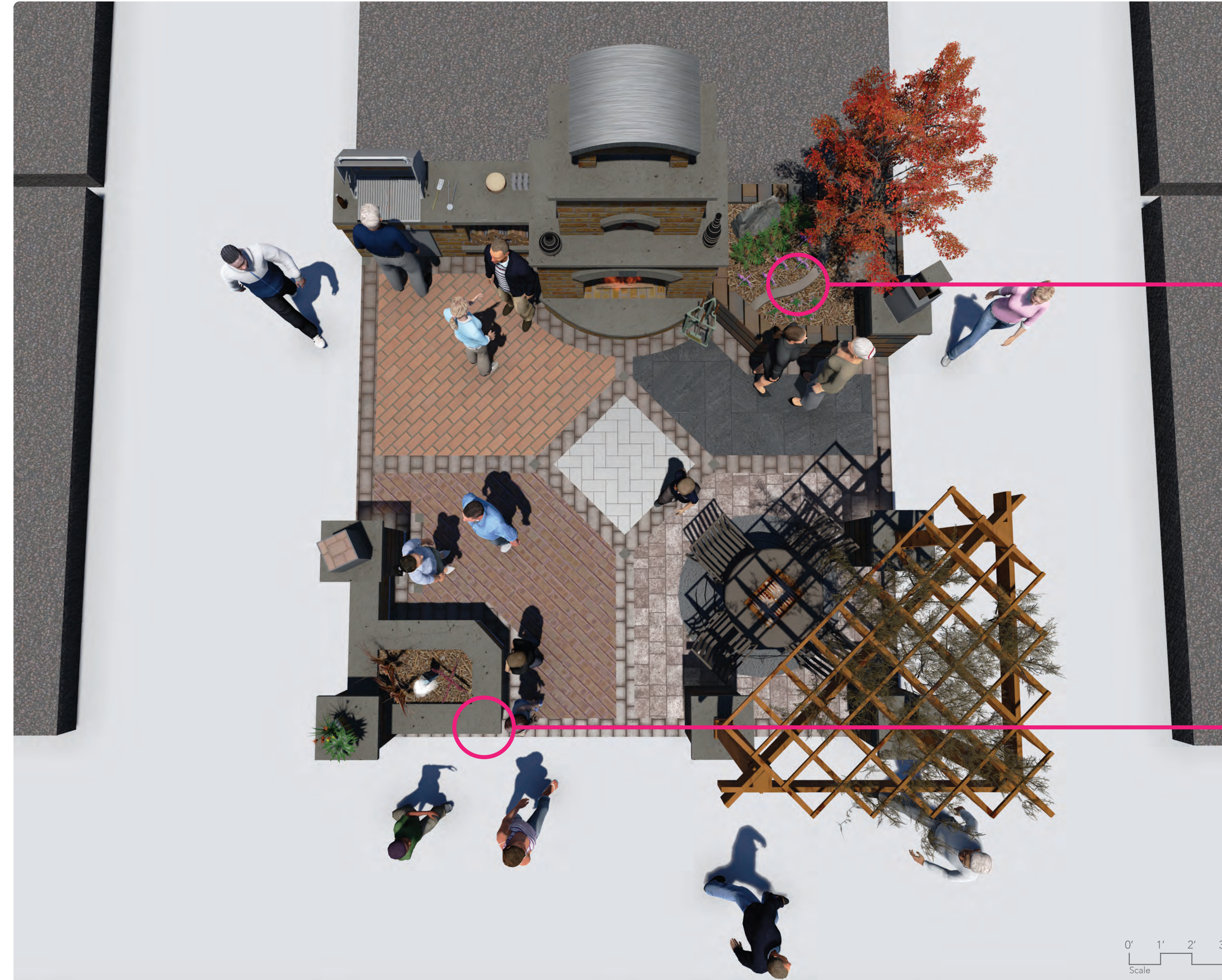
Inventory/Analysis

Landscape Details Handbook

Process Work

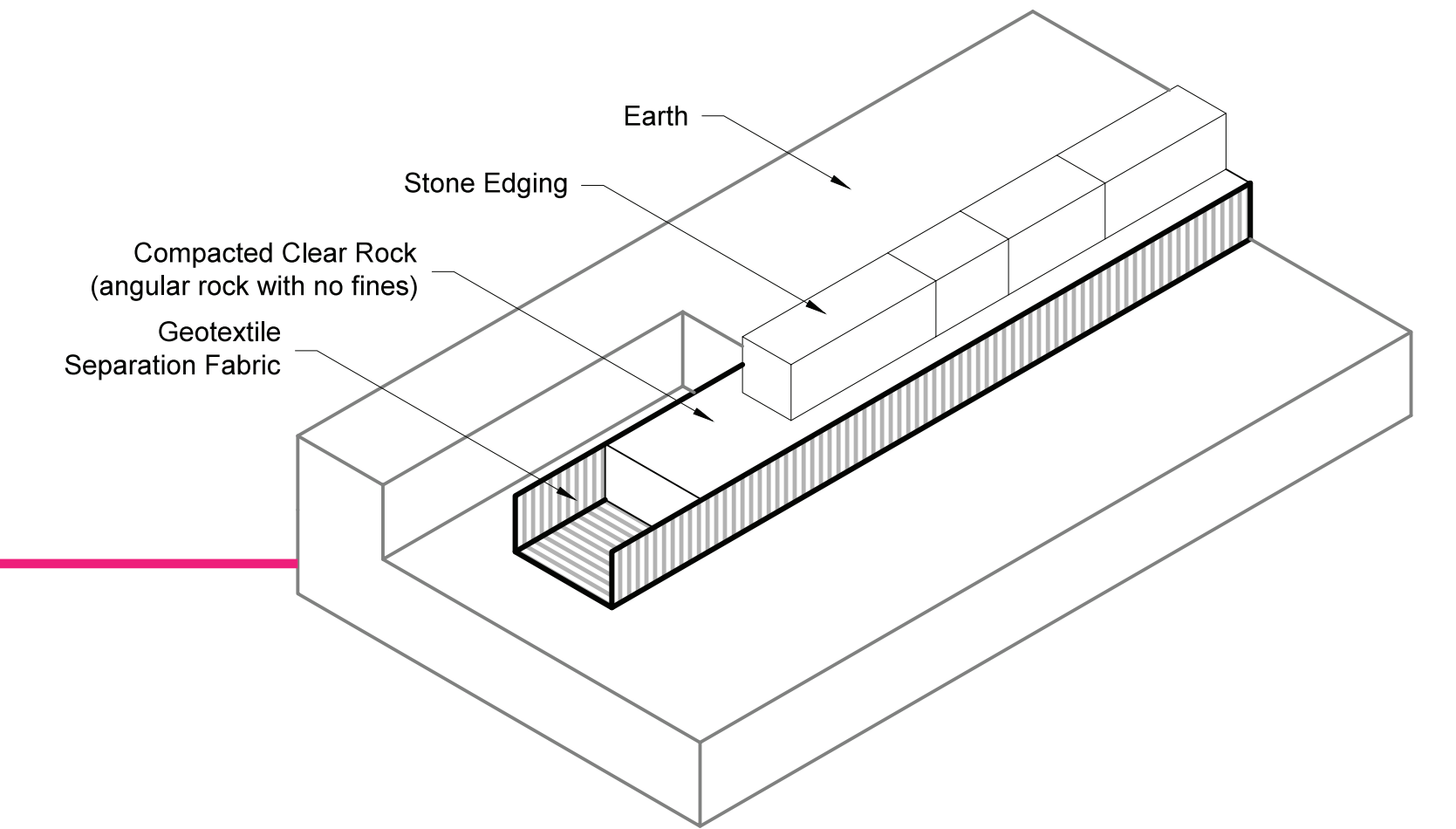
Design

Masterplan Details



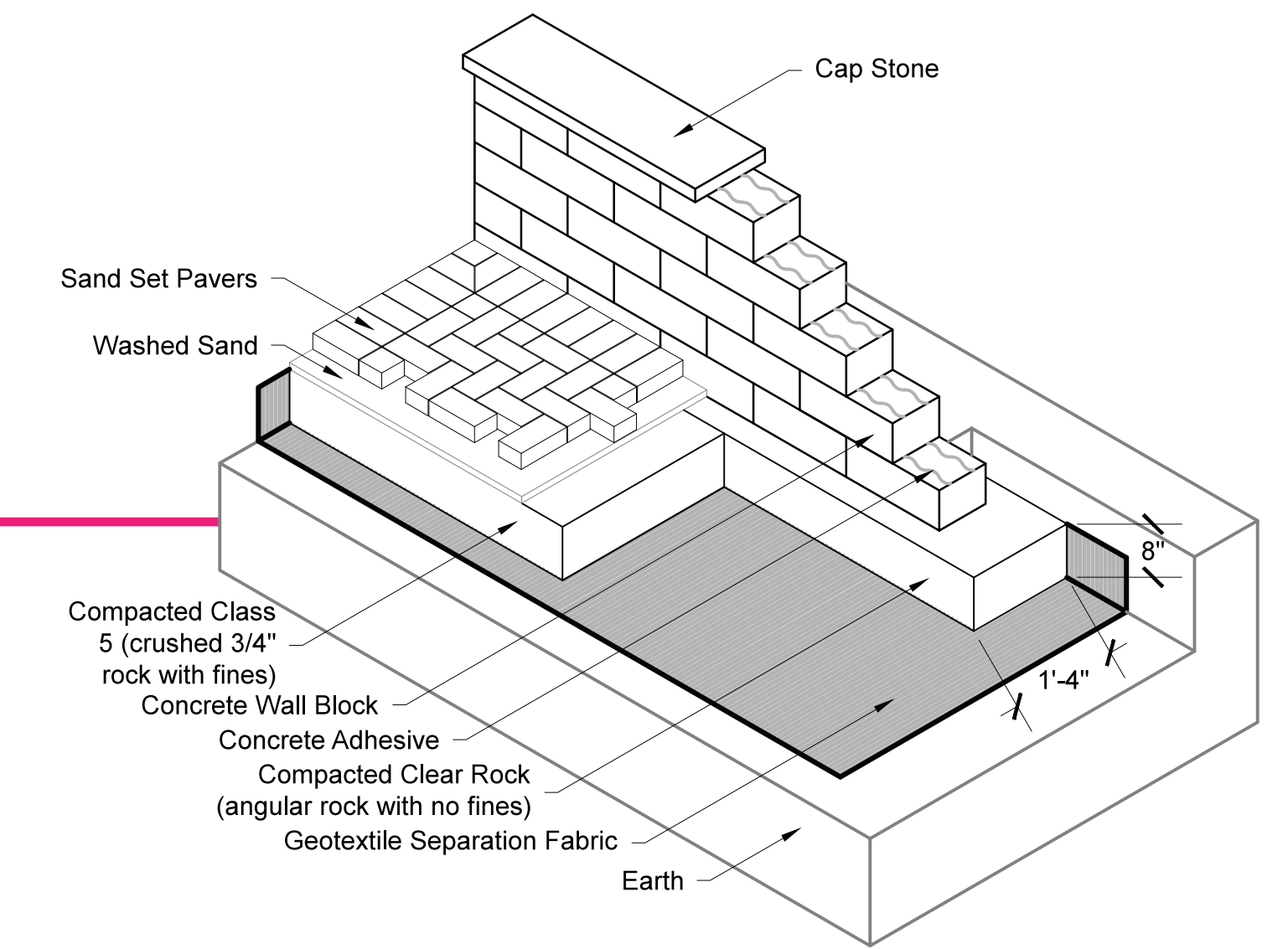
Natural Stone Edging

Desert bronze sandstone edging with split faces and cut at random lengths.



Freestanding Wall

Freestanding wall with a raised planter build out of rock faced concrete blocks, the cap is polished concrete.



Program

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Process Work

Design

Masterplan Details

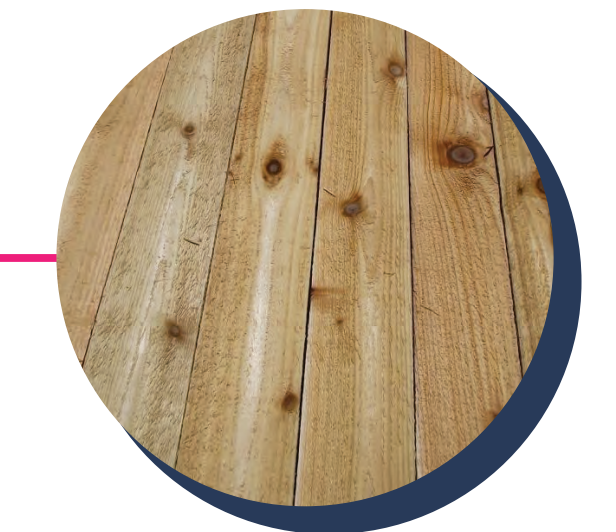


Plant List

Scientific Name	Common Name
Acer palmatum	Japanese Maple
Forsythia × intermedia	Forsythia
Galanthus nivalis	Common Snowdrop
Hyacinth 'Blue Jacket'	Hyacinthus Blue Jacket
Tulipa 'Prinses Irene'	Tulip 'Prinses Irene'

Cedar Pergola

Cedar wood with stainless steel hardware and fasteners.



Dried Grape Vines

Decorative dried grape vines woven onto the trellis.



Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Masterplan Details



Fireplace

Outdoor wood burning fireplace with a polished concrete mantle and brushed stainless steel top.

Self Contained Water Feature

Low maintenance water feature that is self contained into a single easy to use unit.



Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Highlighted Component



Each exhibit has a component that draws potential clients into the exhibit. In this exhibit the fireplace is that.

Program

Typology

Upper Midwest

Inventory/Analysis

Landscape Details Handbook

Process Work

Design

Lighting Demonstration at Exhibit



Various lighting elements are incorporated in the design to light the entrances, fireplace, and vegetation.



Selling the System
Designing through Details

Program

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Landscape Details Handbook

Process Work

Design



Concrete Pavers

Sand set concrete pavers.

Washed Sand

ASTM C 33 sand. Washed and screened with a particle size less than 3/8".

Class 5 Gravel

Compacted gravel: crushed 3/4" rock with fines.

Geotextile Separation Fabric

Fabric helps contain the gravel, separate the gravel from the soil, and helps transfer the load weight from above.

Concrete Footing

Concrete filled tube with two pieces of number four rebar inside connecting to the middle of the column.

Program

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Design

