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Dimensional Natural Stone Production and Products

By Daniel G. Wood
Lurvey Supply, Stone and Material Consultant
2017 MIA+BSI Executive Board Co-President

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Dimensional Stone quarrying and production: Carrara Italy, Marble Quarry



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Granite Quarry: Cold Spring Granite

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Rock of Ages Granite Quarry, Vermont

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Bluestone Quarry: Firenzuola, Italy

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Porphyry Quarry: Albiano, Italy

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Slate Quarry, Vermont



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Limestone Quarry: Fond Du Lac, Wi.



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Natural Cleft Bluestone Quarry

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Cutting lines are snapped on the shelf.

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Then they use concrete saws with diamond blades to cut the cubes.

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Extracting & Cutting Natural Cleft Cubes

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Notice the seams or reeds. This
where they will split the stone which
will create the natural cleft surface.



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Freestone

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Cubes staged for curing

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Cubes lined up for splitting in Winter



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Hand Splitting Natural Cleft



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Natural cleft surface texture: Full Range



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Blue, Natural Cleft



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Lilac, Natural Cleft



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Removing Heavy Clefing: hand chiseling leaves chisel marks



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Air hammer removing the heavy clefting, also leaves chisel marks





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Thermalling off the chisel marks





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Broken or cracked pieces get sent to the re-cut saw for resizing



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New method to create the tight tolerance Full Dimension, Natural Cleft material. The cubes are cut oversize and then all four sides of the pavers are trimmed.



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Saw Rock for thermal material Quarry & Crushing Operation

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Crusher and extracted blocks in the background

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Crushing operation=sustainable use of all materials that come from the quarry



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Try to partner with companies who operate sustainably. Here we see a quarry hillside that is being mitigated after use.



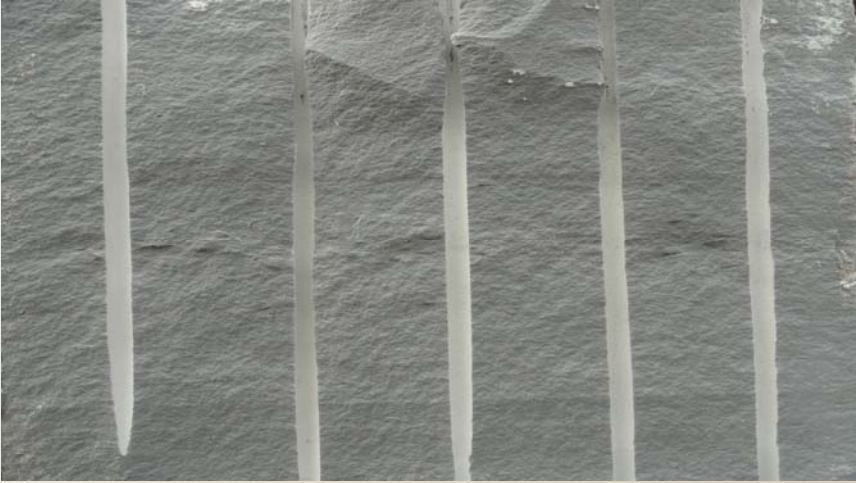
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For Thermal Bluestone they want stone with no reeds or seams.



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Drilling the shelf to extract block for thermal production



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Diamond wire sawing the shelf





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Block Inventory





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The old method of Thermal production: Sawing block into slabs using large saws

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Large saw cutting block into slabs

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Old style of cutting treads



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Treads ready to have the top thermalled and be cut to length.



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Manually thermalling the tops of the treads



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Manually thermalling the slabs



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Cut off saw line for trimming the treads and patterned material to size.



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Manually cutting thermal patterned material to size



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Manually cutting treads to size



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Automated production lines



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Blocks in production

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Block Trimming

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Trimmed Block

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Block with impurities

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Modern Method of thermal production: Loading blocks onto carts to start the automated production process



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Wire sawing blocks into slabs



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Block trolley for the Gang Saws

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Loading blocks into the Gang saw

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Cutting slabs with a Gang Saw



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Block that has been slabbed



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Blocks and slabs



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Automated slab loading



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Thermalling the slabs

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Marking of impurities or imperfections on the slab

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A wax crayon is used that the sensor can see to designate what is to be avoided



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Cut to dimension



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Packaging finished material



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Packaged material ready for shipment



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Thermal colors: Left is Italian Light Blue, Center (standard medium blue), right (dark blue)



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Italian Bluestone-Thermal



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Various surface textures are available



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Many of which are done by hand




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Thermal Lilac



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Thermal Lilac

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Vertical seams where the full color thermal material comes from.




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Notice the change in color on the block face showing the full color vs. blue




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Thermal full color normally has a distinct transition from one tone to the next.



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2" Bluestone, Thermal, Full Range, small pattern 6x9, 9x9 & 9x12



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Bush Hammered Pavers

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Bush Hammered Surface Texture

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Natural Cleft Planking



Natural
Cleft
Planking

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Natural Cleft, Full Color, Planking



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Tumbled 2" thick Pavers (stock)



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Tumbled 2" pavers



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Tumbled paver installation



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Quarried Block for Cut Stone: Valders Limestone

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Niagara Escarpment: shown in red

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Blocks are Harvested from the quarry

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It takes large equipment to move the blocks

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Each color has a tonal range.
Projects can be produced from a small range (more costly, longer lead time) or full range (normal pricing)



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The blocks are then brought in for processing for each custom project



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The slabs then get whatever surface treatment is specified: Thermal, Sandblast, Bushhammered, Brushed, Honed, Polished, etc..



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Then slab is laid out so they can see how to best optimize utilization of the slab



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Then the slabs move along the conveyor to be sawn



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Finished Tiles/Pavers



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Material handling with a vacuum lift



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Waterjet cutting of material



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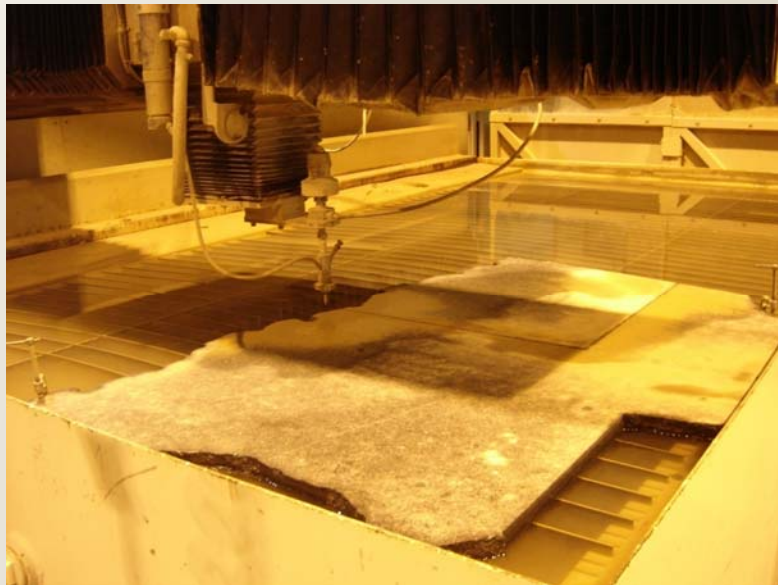
This is how you could get a piece
to look like the State of Wisconsin



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Water Jet creating a surface
texture



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Granites with different surface textures created with the water jet



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Valders Dove White Sandblast Pavers



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Valders Buff Sandblast Planking

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Valders Planking Installation

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Valders Gray Thermal Pavers

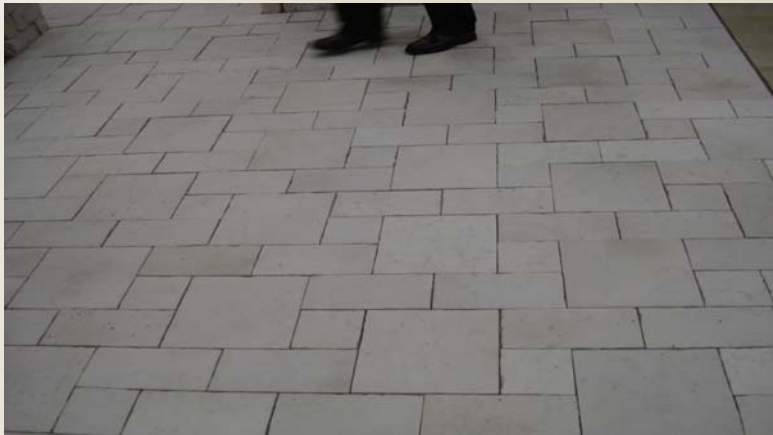


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1 5/8" Valders Limestone Rustic Paving: snapped & sawn edges, sandblast surface, random sizes from 6x6 up to 18x18



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Limestone Quarry

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Here we see a blasted ledge and the holes for the next blast to the right

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Harvesting material in the Quarry



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Harvesting Flagstone in the Quarry



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Making Flagstone in the quarry

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Making and grading flagstone

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Dimensional Flagstone paver production

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Dimensional Flagstone paver production

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Finished natural bedface pavers, available in nominal or full dimension sizes



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Eden Dimensional Pavers



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Eden Dimensional Planking

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Some Limestone fades

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Thicker material is available for vehicular applications



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Oakfield Dimensional Flagstone



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Thermal Pewter Lannon

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Some Limestone can fade over time so new will not match old on a replacement or addition.

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Quartzite Sandstone: Sandy Creek Dimensional





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Fossil Creek Dimensional

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Quartzite Sandstone, Fossil Creek: Tumbled

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Thermal Aqua Grantique: Dry set vs. Mortar set

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Aqua Grantique Pavers Shot Blast Surface

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Cleveland Quarries: Sandstone shown is a blend of the Buff & Gray pavers)

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Amherst Grey: Great alternative to Indiana Limestone

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Birmingham Buff

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Birmingham Buff: Pavers and Treads

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Variegated Indiana Limestone Pavers

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Variegated material when its wet

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Cold Spring Granite, Thermal Surface, Charcoal Black

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Tonal variation and inclusions

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Many types of Granite



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Mackinaw Dimensional stone



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Porphyry



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Honed Jerusalem Limestone Slabs



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This material has wonderful fossils in it.



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Radius Treads & Custom Fire Pit

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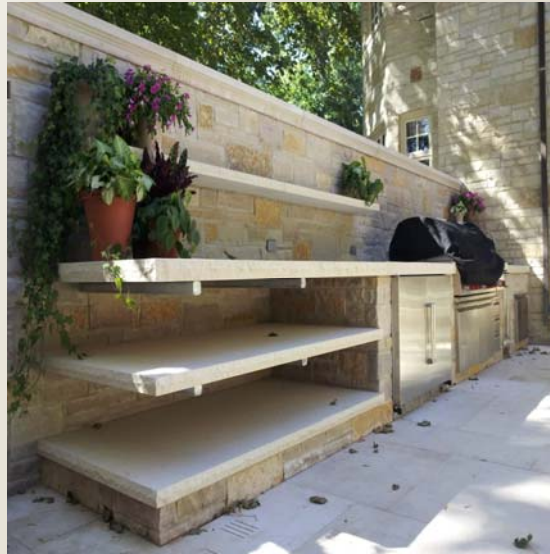
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Custom Fire Pit

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Outdoor Kitchens



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Have a clearly defined bid sheet that references plan details.

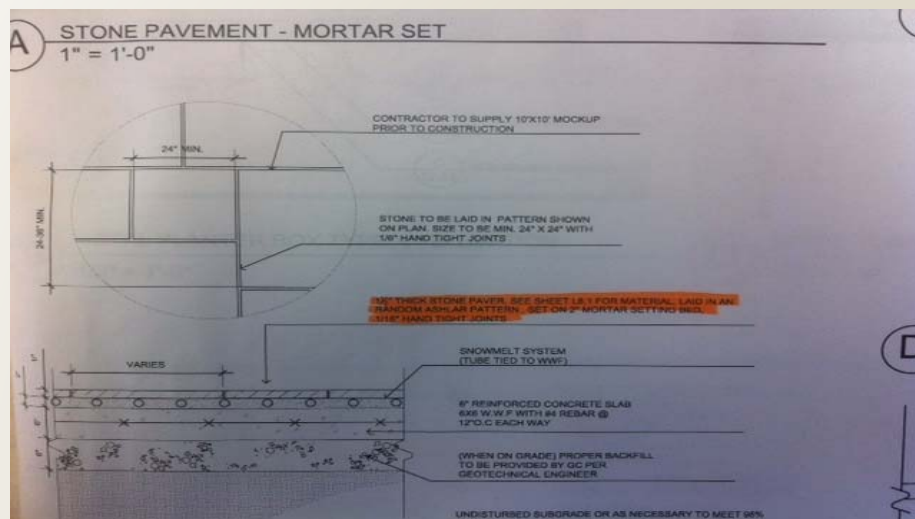


H-5 MU	Indiana Limestone Paving - Install 2" min. mortar setting bed over concrete slab, set 1.5" min thick Indiana limestone paving with hand tight joints (max 1/8"). Stone size to be 15"x40" min and 48"x48" max. Contractor to provide 10' x 10' mock-up in L12.15	SF	1300
	Lower Level Masonry Flatwork	SF	575
H-6 MU	Dimensional Bluestone paving - Install 2" min. mortar setting bed over concrete slab, 1.5" min thick dimensional cut bluestone to be set in a random ashlar pattern with 1/16" hand tight joints. Pattern size to be a minimum of 24" x 24". Bluestone color to be Blue/Blue. Contractor to provide 10' x 10' mock-up in conjunction with banding mockup, prior to construction. See detail A and B, Sheet L12.15	SF	1370
ALT H-6 MU	Dimensional Valders - River Bluff alternate to bluestone - Install 2" min. mortar setting bed over concrete slab, 1.5" min thick dimensional cut bluestone to be set in a random ashlar pattern with 1/16" hand tight joints. Pattern size to be a minimum of 12" x 18". Contractor to provide 10' x 10' mock-up in conjunction with banding mockup, prior to construction. See detail A and B, Sheet L12.15	SF	1370
H-7 MU	Indiana Limestone Paving - Install 2" min. mortar setting bed over concrete slab, set 1.5" min thick Indiana limestone paving with hand tight joints (max 1/8"). Stone size to be 15"x40" min and 48"x48" max. Contractor to provide 10' x 10' mock-up in conjunction with infill mockup, prior to construction. See detail A and B, Sheet L12.15	SF	670
H-8 MU	Dimensional Indiana Limestone steppers. - Install 1" min. sand setting bed over 6" aggregate subbase, 2" min thick dimensional cut bluestone to be set with 2-3" joints to allowing for planting to grow between. Pattern size to be a minimum of 24" x 24", 48"x48 max. See detail F, Sheet L12.15	SF	75
Total of			
H HARDSCAPE WORK			

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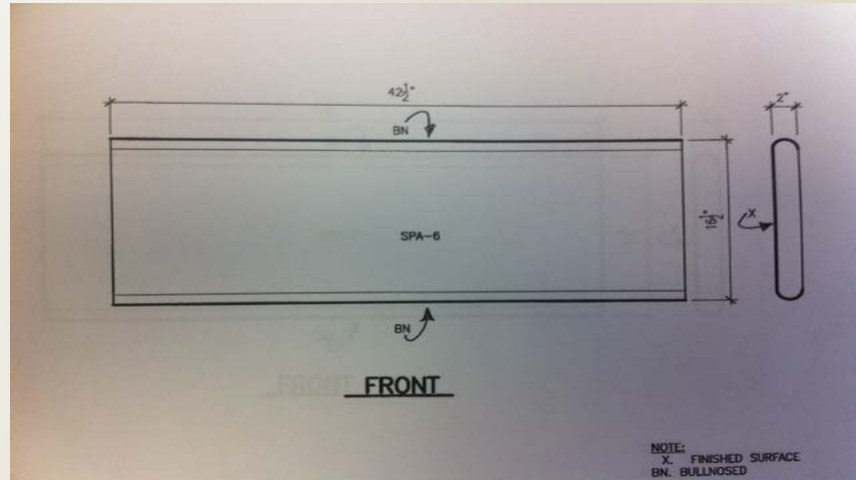
Plan Detail



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Shop Drawing which clearly defines all of the details.



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ILLINOIS LANDSCAPE
CONTRACTORS ASSOCIATION

Daniel Wood, Natural Stone and Material Consultant,
Lurvey Landscape Supply

2017 MIA+BSI Executive Board Co-President

(262) 749-8369, dwood@lurveys.com



MIA+BSI Certified Speaker
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