



ROOF PAVERS - BALLIST TILE/MAT/BLOCK

FOURTEEN (14) PART SPECIFICATIONS:

1.) PRODUCT:

Self-Interlocking (with “Button-Lock™ Technology), resilient, unitary, rubberized safety surfacing flooring and paver products in the tile/mat/block form.

Related sections:

Division 7

Sub: 07700 Roof Specialties and Accessories

Specifically: 07500 – Membrane Roofing

07720 – Roof Accessories

07760 – Roof Pavers

07700 – Roof Specialties / Green Roofs

Division 2

Sub: 02700 Bases, Ballasts, Pavements and Appurtenances

Specifically: 02780 Unit Paver.

2.) SALES & MARKETING DEPT:

Unity Surfacing Systems
56 Bloomingdale Rd.
Hicksville, NY. 11801
T: (516) 933-3407
F: (516) 933-3239
E-mail: productinfo@surfacingystems.com
Internet: www.surfacingystems.com

MANUFACTURING PLANT:

Unity Creations. Ltd.
3997 RT 9W (PO Box 9)
Saugerties, NY. 12477
T: (845) 246-2700
F: (845) 246-1700
E: techinfo@surfacingystems.com
Internet: www.surfacingystems.com

3.) DESCRIPTION:

A.) Self-Interlocking Tile/Mat/Block/Paver size: 22” X 44” = 6.72 sq. ft. per unit.

B.) Transitional Ramp Edge size: 22” X 44” (slope can be found in the 22”).

Please note: Allow a +/- 1/4” tolerance due to temp. related expansion and contraction or our recycled rubber products.

C.) Basic Use:

1.) Designed for rooftops, patios, decks, green roofs, terraces, plaza's, roof gardens, etc. It is installed over standard roofing membrane. The product line features an extensive range of standard ballast tile/mat/block/paver designs and accessory pieces.

D.) Composition and Materials:

1.) The Unity, self-interlocking, resilient, rubberized safety surfacing flooring and paver products in the tile/mat/block form offers shock resistance and comes in seven (7) standard thicknesses and can be produced from 3/4" to 4" (4.0") in thickness. It consists of 2 product families: pigmented and TPV/EPDM. Pigmented tiles are 100% post-consumer recycled SBR (Styrene Butadiene Rubber), available only in black, and pigmented polyurethane. The material is manufactured in-house. The TPV/EPDM top tiles/mats/blocks/pavers are recycled postindustrial TPV/EPDM (Ethylene Propylene Diene Monomer) rubber, available in a variety of colors and color combinations, and polyurethane.

2.) Unity's offers dual density construction with bottom designs consisting of solid cones (feet and/or legs) for maximum surface contact and solid interlocks. This allows maximum contact between the tile/mat/block/paver bottom and base as well as between adjacent products.

3.) The type of playground equipment and/or roof specifications determines the required tile/mat/block/paver thickness. Depending on ASTM F1292-04 requirements for critical fall height from 0' to 12' (feet), select tile thickness from optional thicknesses 1 3/4" (1.75") thick "Pave-Land" series for a five (5') foot fall rating, 2 1/2" (2.50") thick "Play-Land" series for a seven (7') foot fall rating, 3" thick "Soft-Land" series for an eight (8') foot fall rating, 3 1/2" (3.5") thick "Soft-Land" series for a ten (10') foot fall rating, and the 4" thick "Soft-Land" series currently testing to achieve a twelve (12') foot fall rating respectively. Specify project requirements above and coordinate with working drawings. Accessories include:

- a.) Unity's Chemrex 948 Urethane Adhesive.
- b.) Unity's Transitional Ramp, Standard Beveled Edge.
- c.) Unity's Geotextile Fabric, Landscaping Mesh.

E.) Thickness and Weights:

3/4" &/or 1" thick is	~ 30 lbs. each or ~ 4.0 lbs per sq. ft.
1 3/4" (1.75") thick.....	~ 37 lbs. each or ~ 5.5 lbs per sq. ft.
2 1/2" (2.50") thick.....	~ 40 lbs. each or ~ 6.0 lbs per sq. ft.
3" thick.....	~ 44 lbs. each or ~ 6.5 lbs per sq. ft.
3 1/2" (3.5") thick.....	~ 47 lbs. each or ~ 7.0 lbs per sq. ft.
4" thick.....	~ 50 lbs. each or ~ 7.5 lbs per sq. ft.

Note: Adjustments can me made with reference to weight for each unit

F.) Color:

1.) Pigmented Color:

Black, Splash (Black tile/mat/block with 10% to 50% TPV/EPDM granules on top), Steel Gray, Red (Terra Cotta), Green, Blue, Tan, White, Purple, Teal, Brown.

Note: Other custom colors are available upon request. Made with Aromatic Binder.

2.) TPV/EPDM Colors:

Red (Terra Cotta), Brt. Red, Green, Brt. Green, Drk Green, Blue, Lt. Blue, Azure Blue (Teal), Purple, Lt. Purple, Turquoise, Beige, Eggshell (Cream), Brown, Dark Brown, Mustard Yellow, Brt Yellow, Orange, Drk. Gray, Mid-Gray, Lt. Gray, Virgin Black.

Note: TPV/EPDM colors exhibit superior UV and abrasion resistance. Made with Aliphatic Binder.

G.) Limitations:

1.) The following chemicals may cause damage to the rubberized safety surfacing, flooring and paver products, and should be avoided:

a.) disinfectants, concentrated chlorine bleach, gasoline, diesel fuel, hydraulic and lubricating oils, acids and organic solvents.

2.) In water play areas, pool surrounds and similar applications; dissolved minerals and other chemicals (hydrochlorides) may cause surface discoloration over time. This condition, should it occur, is not considered to be a product failure.

3.) Due to the elastic characteristics of recycled rubber, some variation in tile/mat/block dimensions may be expected. This amount is approximately +/- One (1) mm in thickness and +/- one-quarter (1/4") inch (6.35 mm) in length and in width.

4.) TECHNICAL DATA INFORMATION:

A.) Applicable Standards:

American Standard for Testing Materials (ASTM)
Consumer Product Safety Commission (CPSC)
American National Standards Institute (ANSI)
Factory Mutual (FM)

1.) ASTM F1292-04:

Standard Test Method for Impact Attenuation of Surface Systems Under and Around Playground Equipment.

2.) ASTM F355-95:

Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials.

3.) ASTM C67:

Standard Test Method for Weathering and Aging of Surface Systems and Materials.

4.) ASTM D573:

Standard Test Method for Rubber – Deterioration in an Air Oven.

5.) ASTM E108:

Modified Test Methods for Fire Tests of Surface Systems and Materials

- 6.) ASTM E108 – Modified For Roof Coverings:
Standard Test Methods for Fire Tests of Roof Covering Materials.
- 7.) ASTM E303-93:
Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
- 8.) ASTM F1951-99:
Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- 9.) ASTM C518-98:
Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus. Measuring = Insulation/R-Values.
- 10.) ASTM E903, E891, E1980
Hemispherical Spectral Reflectance and Total Emittance Test. Presents results of spectral reflectance and total emittance of products tested.
- 11.) ASTM E648
Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source (NFPA Designation No. 253)
- 12.) CPSC-CH-E1002-08:
LEAD Test - For compliance with US Public Law 110-314 (HR 4040 “Consumer Product Safety Improvement Act of 2008”), lead in accessible substrate materials.
- 13.) Water Penetration Test:
For compliance with Sustainable Storm Water Run-off in a testing environment to determine how much water flows through the product based on real world scenarios.
- 14.) Leadership in Energy and Environmental Design (LEED):
 - 1.) Criteria development by the United States Green Build Council (USGBC):
 - a.) Materials and Resources:
Up to 6 points / credits toward LEED certification.
Recycled Content.....MR. 4.1
Recycled Content.....MR. 4.2
Local/Regional Materials.....MR 5.1
Local/Regional Materials.....MR 5.2
Construction Waste Mgt.....MR 2.1
Construction Waste Mgt.....MR 2.2
 - b.) Indoor Environmental Quality:
Up to 1 point / credit toward LEED certification.
Low Emitting Materials.....EQ 4.1
- 15.) ANSI/FM 4474 Test (Adhered):
Simulated Wind Up-lift Pull-Force Test Procedure, to allow design pressure that is estimated to be 277.5 psf (2:1 Factor of Safety) for systems installed in this manner.
- 16.) ASTM D 3161-09 (Adhered, Non-Adhered, Over-Top and with Kick-Plate)

Standard Test Method for Wind Resistance (Fan-Induced) via air velocity of 150 MPH.

17.) UL 2218, Class 4 Impact Resistance, 2010.

Standard Test Method for Impact Resistance of Prepared Roof Covering Materials.

B.) Submittals:

1.) General:

Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

2.) Product Data:

Submit manufacturer's product data, specifications and installation instructions.

3.) Verification Samples:

Submit manufacturer's standard verification samples of 4"X4" minimum. Two of the submitted samples must show the male/female self-interlocking connection (with "Button-Lock™ Technology").

4.) Quality Assurance/Control:

a.) Manufactured a minimum of one-million (1,000,000) square feet of safety surfacing, flooring and paver products, known as self-interlocking tiles/mats/blocks/pavers.

b.) Certificate of qualifications of the surfacing installer.

c.) Utilize an installer having five (5) years experience with projects of similar scope and complexity.

5.) Closeout Submittals: Submit the following:

a.) Warranty documents specified herein.

b.) Repair & Maintenance documents as issued by the manufacturer.

b.) Photographs of completed installation, with close-up shots of cut tiles.

c.) Submit listed "Closeouts" in accordance with Conditions of the Contract and Division 1 Closeout Procedures Section.

C.) Approvals:

Contact manufacturer for information on approvals by major owners, agencies, architects, engineers, municipalities and other industry entities.

D.) Environmental Considerations:

This resilient, rubberized safety surfacing flooring and paver products in the tile/mat/block form makes extensive use of clean recycled tire rubber and other recycled rubber products as a major component of its operation.

E.) Testing Data Results:

1.) Shock Attenuation (ASTM F1292-04 & F355.95):

a. G-max – Less than 200 =PASSED.

b. Head Injury Criteria – Less than 1000 =PASSED.

- 2.) Weathering/Aging (ASTM C67, D573 & F1292-95): =.....PASSED.
- 3.) Flammability (ASTM E108 & E108 Modified for roof covers): =PASSED.
- 4.) Flammability (ASTM E648).....PASSED
- 5.) Skid Resistance (ASTM E303-93):
 - a. WET =PASSED.
 - b. DRY =PASSED.
- 6.) ADA Accessibility (ASTM F1292-99): =PASSED.
- 7.) R-Value, Thermal Conductivity (ASTM C518-98): =PASSED.
- 8.) Lead In Materials/Children's Products (CPSC-CH-E1002-08): =PASSED.
- 9.) Reflectance/SRI and Emmittance (ASTM E903, E891, E1980).....VARIES
- 10.) Water Penetration Test (Sustainable Storm Water MGT/Run-off).....VARIES
- 11.) Pull Force Test On Solid Sub-Base (ANSI/FM 4474 Approval, Appendix B...277.5 psf.
- 12.) United States Green Build Council (USGBC) via LEED:Up to 7.
- 13.) Wind Test (ASTM D 3161-09 Adhered, Non-Adhered, Over-Top, Kick-Plate)..150 MPH
- 14.) Class 4 Impact Resistance (UL 2218, 2010) PASSED

Note: Actual test reports and additional product information are available upon written request.

5.) INSTALLATION:

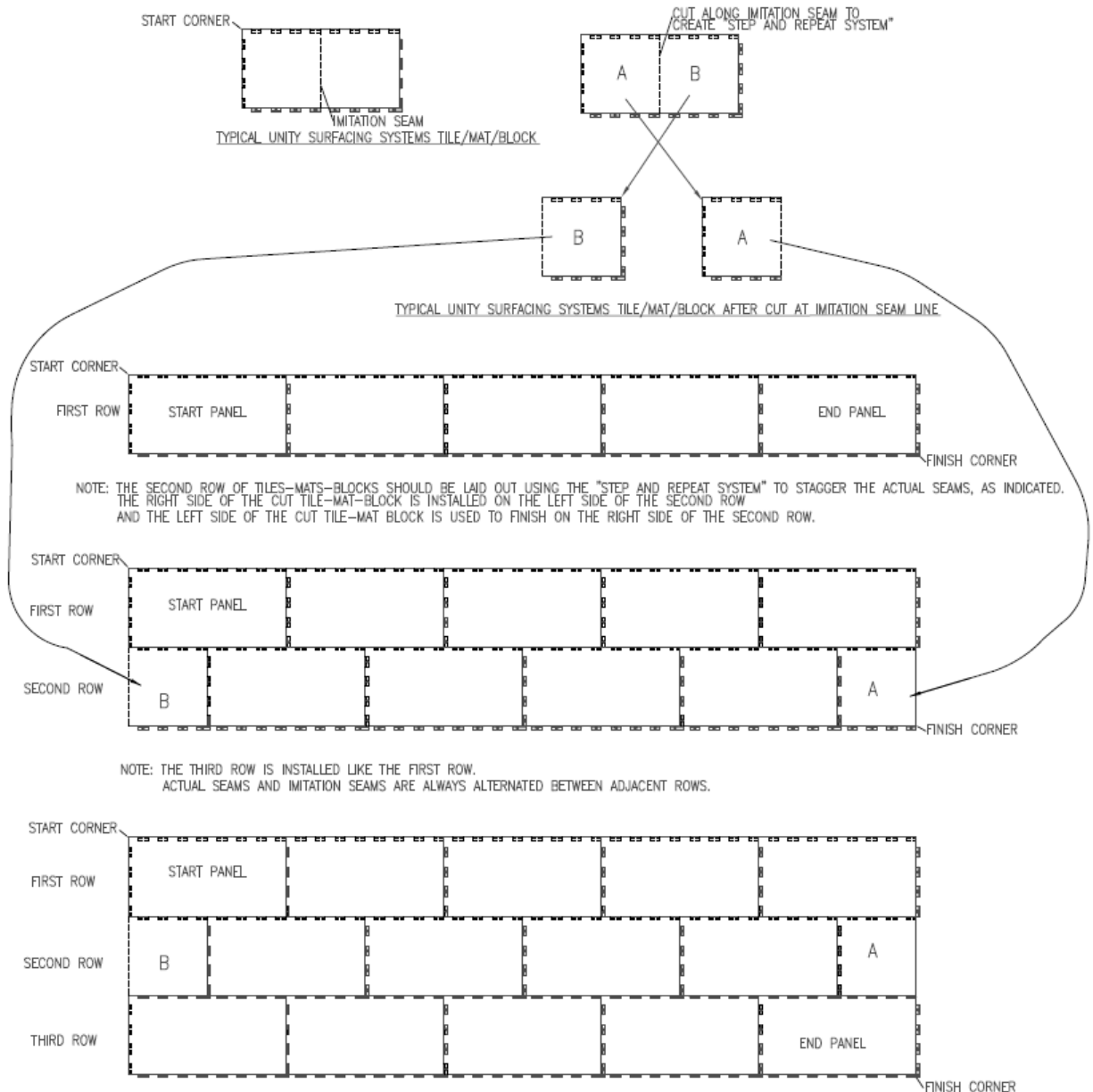
A.) Preparatory Work:

Store materials protected from exposure to harmful environmental conditions and at a minimum temperature of 40 degrees F and a maximum temperature of 100 degrees F. Install surfacing system when minimum ambient temperature is 40 degrees F and maximum ambient temperature is 90 degrees F.

B.) Method:

1.) Do not proceed with surfacing, flooring and/or paver installation until all applicable site work, including substrate preparation, fencing, playground equipment installation, roofing and other relevant work, has been completed and approved. Verify that substrate conditions are suitable for installation of the safety surfacing, flooring and pavers, and do not proceed with installation until unsuitable conditions are corrected.

2.). Tiles/mats/blocks shall be produced on a rectangular configuration of 22" (inches) by 44" (inches) in size [$\pm$ quarter (1/4") tolerance] with a shadow-center (fake seam) joint to achieve the use of the "step-&-repeat" systems to stagger the seams as if you were installing brickwork (zigzag). As a result, symmetry of 22" by 22" squares will be seen on properly completed jobs (installations). Each tile/mat/block is 6.72 square feet in size and has a coned (feet or leg) bottom design at $\frac{3}{4}$ " to 1" thick for the "Tough-Land" series, 1 $\frac{3}{4}$ " (1.75") thick for the Pave-Land series, 2 $\frac{1}{2}$ " (2.50") thick for the Play-Land series, 3" thick, 3 $\frac{1}{2}$ " (3.5") and 4" (4.0") thick for the "Soft-Land" series. Avoid placement when large temperature swings during the time between adhesive application and final curing are expected, as gapping between tiles may result.



Please Note: $\frac{3}{4}$ " &/or 1" thick tiles/mats/blocks/pavers do not have coned (feet or leg) bottoms for drainage as seen with the other products. This material is a solid top and bottom tile/mat/block/paver; And is usually installed on rooftop applications as walkway pads that are glued down only. Call, or e-mail for site specific details.

3.) Apply adhesive on tight product-to-product (interlock-to-interlock) installations at a rate of approximately one-hundred (100) square feet per 825 ml tube.

4.) Apply adhesive to the tiles/mats/blocks/pavers using a large caulking-gun.

5.) Apply adhesive to the interlocks, both in the joint and on top of the interlocking joint for added strength and security using a caulking-gun. Coverage rate is approximately one-hundred (100) square feet per each 825 ml tube. Such application will allow for proper rainwater drainage.

6.) Maintain a straight line at the tile joints. To keep lines straight, adjust tiles using a rubber mallet as they are installed. Apply a string line on the first couple of rows installed to maintain a straight line of installation.

Note: Rooftop installations and temporary installations often call for adhesive to be applied to the interlocks only. In these cases, do not apply adhesive directly onto the roofing membrane or sub-base materials.

C.) Precautions:

1.) The roofing membrane or substrate must be level with a slight pitch for drainage, or uniformly sloped since variations will be telegraphed through to the tile surface. Avoid installation when large temperature swings during the time between adhesive application and final curing (12 - 36 hours, depending on temperature and humidity) are expected, as gapping between tiles may result.

2.) Protect the installed surface, flooring and paver material from damage resulting from subsequent construction activity on the site. Rooftop applications are possible because tiles can be loose-laid with interlock-to-interlock bonding.

D.) Building Codes:

1.) Current date on product compliance may be obtained from the manufacturers technical support specialist.

6.) AVAILABILITY AND COST:

Contact: Unity Creations, Ltd. and/or Unity Surfacing Systems for information, availability and costs.

7.) WARRANTY:

A.) Project Warranty:

Refer to conditions of the contract for project warranty provisions.

B.) Manufacturer's Warranty:

Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

1.) Warranty Period:

Standard Five (5) Years from date of product shipment; or a Ten (10) Year Prorated from date of product shipment shall be selected prior to ordering. A

default Five (5) Year Prorated Warranty shall be issued if no other warranty is selected prior to ordering.

8.) REPAIR AND MAINTENANCE:

A.) Repair:

- 1.) Repairing damaged tiles, mats, blocks, is simple and easy. Keep in mind, our products are 22"X44" (inches) and not 22"X22" as it appears when looking at the installed product (after an installation). Take a crow bar with a flat edge (flat crow bar) and try to pry out the unit (or section) without damaging the surrounding area.



This will save the interlocks (sides) to be used again with the new (or same) unit being installed.

- 2.) Below is a photograph of a **rotozip** being applied to the “male” and “female” portion of the interlocking system. This is used to clean any and all glue for the unit to successfully re-install the panel. Be sure to match the bit with the thickness (width) of the “female” interlock – inside portion.



- 3.) If that cannot be accomplished, a utility knife will be needed to remove all the excess glue that was originally used to glue the interlocks (sides) together. The damaged unit can be lifted and discarded. Before installing a new mat, remember to remove all loose debris from the area.

Make sure the sub-surface below is compressed well. This will ensure a great fit with the existing safety surface (&/ or floor). Remember to glue the new tile/mat/block/paver securely to the existing tile/ mat/block/paver to prevent vandalism. Do not use the area for at least 12 hours (overnight).

B.) Maintenance:

- 1.) As with any other solid surface such as concrete, asphalt, cement, blacktop, etc. For outdoor usage, Unity's products will need to be swept free of debris with a **blower** and/ or vacuumed cleaner (shop vacuum). It is important to "**leaf blow**" all of Unity's products free of any debris as necessary. This will ensure that no debris gets in the **seams** of the tiles/mats/blocks/pavers thus forcing product-to-product separation. In turn, "**leaf blowing**" will help prevent such problems in the future.
- 2.) A sharp object, may be needed, to be applied at the seam(s) for areas that has more debris than others to *loosen* up the stubbornness for easier cleaning and/or blowing.



- 3.) **Broom sweeping will only lock the debris in the seams and not remove it in its entirety**
When cleaning, use a mild detergent, mix cleaner with warm to hot water as directed and apply to the floor with a wet mop. Allow the cleaner to stand about five (5) to ten (10) minutes before removing with a clean damp mop. Rinse thoroughly until the rinse water is clear. Allow to surface to dry before using again. "Armorall" may be used to acquire a deep royal shine, however, it may be slippery at first.
- 4.) As for indoor use, when the floor is dry apply two thin coats if finish (Mr. Clean) with a strip mop. Do not apply too heavily in one coat, as it may get slippery. Allow about thirty (30) minutes drying time between coats. It is not necessary to re-apply floor finish to the entire area when maintaining the heavy traffic areas. Damp mopping the entire floor and using finish in those abused areas is all that is necessary. "Armorall" may be used to acquire a deep royal shine, however, it may be **slippery**, especially indoors.
- 5.) Occasional **major cleaning** of the floor will require removal of the finish, scrubbing with a bristled brush and/ or using a power washer with no more the 3000-PSI (as noted in the "During" picture below). After which one may apply the finish found in step 2. Keep in

mind, this product is water permeable if the: “Seal Coat” is not applied and may result in excess water to find itself deep into the product. Less water – less problems.

9.) PAINTING:

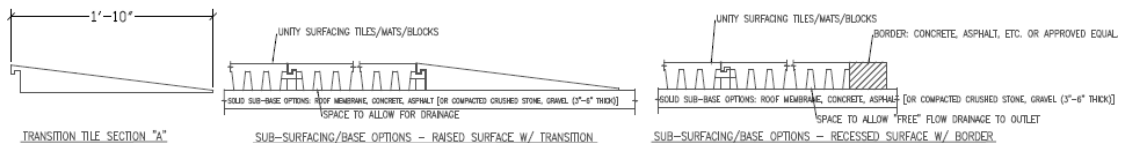
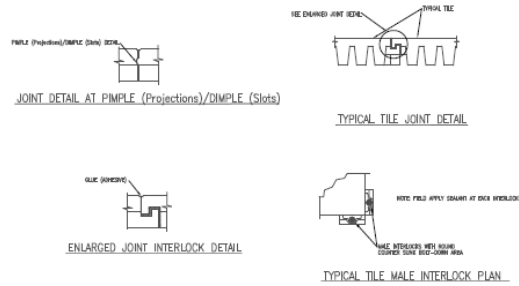
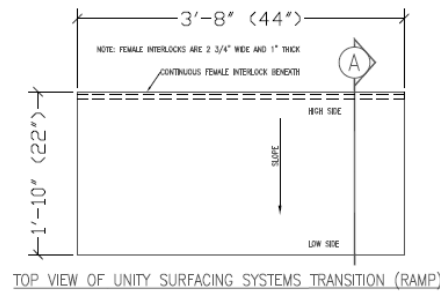
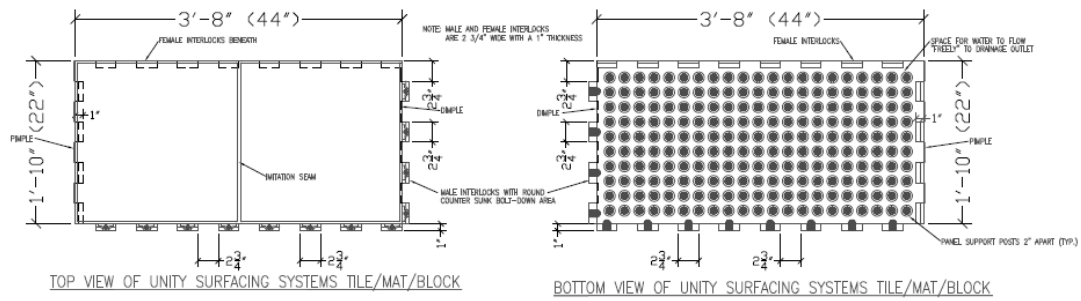
- 1.) After many years of use, like other products on the market, our products can be painted for a fresh new look. This can provide less heat build up and extend the life of the products for many years to come.



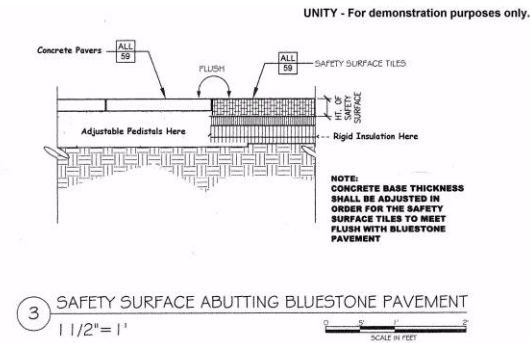
- 2.) Our two-part paints (may requiring on-site mixing) is a two-part process utilizing an “A” and “B” component. It can be simply sprayed on or rolled on (preferred) for a brand new look. In areas with multiple colors, it is recommended that a 22”X44” (inch) cut out using scrap cardboard be made to place over each product color. For example: if **red** and **green** are used in an area, make two (2) cut outs, one for **red** and one for **green**. Or if you prefer, tape off the area that is being painted to avoid any overspray or over rolling. Roll or spray the white-primer on first and allow to dry (approximately one hour), then apply the new paint (color) allowing enough time to dry (approximately two hours). Afterwards, you can enjoy the freshly painted area for many more years to come.

10.) TECHNICAL INFORMATION:

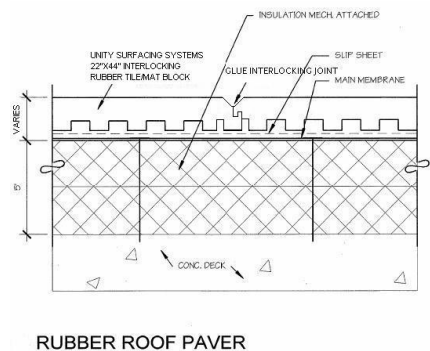
A.) Unity’s Tile/Mat/Block/Paver Detail (firm)



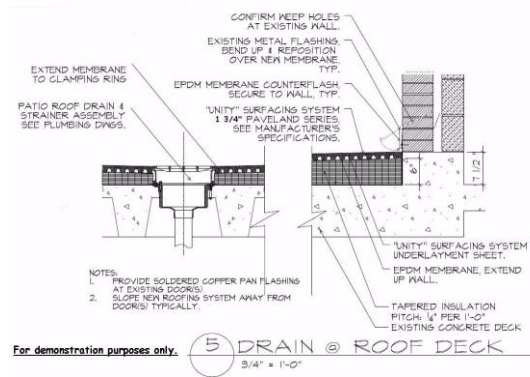
B.) Tile/Mat/Block-And-Concrete Paver Detail (example only):



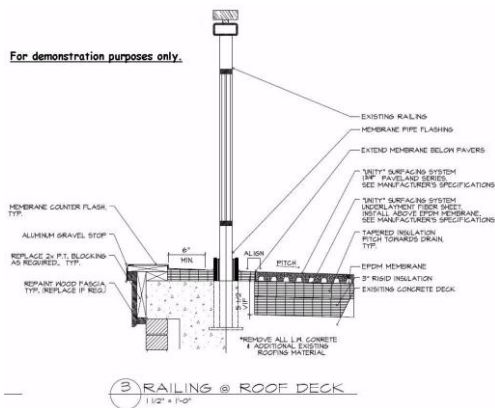
C.) Tile/Mat/Block-To-Roof Detail (example only):



D.) Tile/Mat/Block-To-Roof Drain Detail (example only):



F.) Tile/Mat/Block-To-Railing Detail (example only):



11.) BEFORE & AFTER:





12.) FILING SYSTEMS:

A.) Additional product information is available from Unity Creations, Ltd. / Unity Surfacing Systems upon written request.

B.) Architectural Product Information Binder (Division 9) is available upon written request.

13.) TECHNICAL SERVICES:

A staff of factory trained service personnel offers design assistance and technical support. For technical assistance, contact Unity Creations, Ltd. / Unity Surfacing Systems.

14.) DISCLOSURES:

A.) Specifier Disclosure Notes:

1.) Revise paragraphs above to suit project requirements. If a reader of this specification could reasonably expect to find a product or component specified in this specification, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraphs above. In the absence of related sections, delete pertaining paragraph above.

2.) Site materials and methods, drainage, playground equipment, fencing, substrate preparation, roofing materials and similar work are provided by others and are described in other sections. Consult manufacturer for specific substrate preparation requirements. Edit, retain or delete paragraphs above to suit project requirements and specifier practice.

- 3.) Article above may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in the above section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard. It is a listing of all references used in the pertaining section.
- 4.) Article above should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.
- 5.) Article Above includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate the above article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.
- 6.) Article above should include statements of prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for the section. Coordinate article with Division 1 Quality Assurance Section.
- 7.) Article above should include specific protection and environmental conditions required during storage. Coordinate article above with Division 1 Product Requirements Section.
- 8.) Article above, state physical or environmental limitations or criteria for installation such as weather, temperature, humidity, ventilation or illumination required for proper installation or application.
- 9.) Coordinate article above with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.
- 10.) Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.
- 11.) The type of rooftop playground equipment determines the required tile/mat/block/paver thickness. Depending on ASTM F1292-04 requirements for critical fall height from zero (0') to twelve (12') feet, select tile thickness from optional thicknesses: $\frac{3}{4}$ " and 1" Tough-Land for walk-way pad use, 1 $\frac{3}{4}$ " (1.75") thick for a five (5') foot fall rating, 2 $\frac{1}{2}$ " (2.50") thick for a seven (7') foot fall rating, 3" thick for an eight (8') foot fall rating, 3 $\frac{1}{2}$ " (3.50") for a ten (10') foot fall rating and 4" thick currently testing to achieve a twelve (12') foot fall rating respectively. Specify project requirements above and coordinate with working drawings.
- 12.) Edit Article above to suit project requirements. If substitutions are permitted, edit text above accordingly. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section. Specify subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items. Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

13.) Specify actions required to physically prepare the surface, area or site or to incorporate the primary products of the section. Coordinate article above with manufacturer's recommended installation requirements. Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.