



CURTIS PARK NEW POOL FACILITY MANUFACTURER'S SPECIFICATIONS

Curtis Park (HWR-777)
1901 NW 24 Avenue
Miami, Florida 33125

Presented on behalf of:

City of Miami
Capital Improvements Program
444 SW 2nd Avenue
Miami, FL 33130



Presented by:

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1.0 XGRASS BONDED RUBBER LANDSCAPE SURFACING



Bonded Rubber Landscape Surfacing Specification

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Single-density, resilient, seamless, bonded rubber, landscape surfacing.

1.2 RELATED DOCUMENTS

- A. Maintenance and Cleaning Instructions
- B. Warranty
- C. Aggregate Subsurface Specification
- D. Concrete Subsurface Requirements
- E. Asphalt Subsurface Requirements

1.3 REFERENCES

- A. US Consumer Product Safety Commission (CPSC) Public Playground Safety Handbook
- B. ASTM F1292-09: Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment
- C. ASTM F1951-09: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment
- D. ASTM C1028-07: Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull Meter Method.
- E. ASTM E303-93(2008): Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
- F. ASTM D2859: Standard Test Method for Flammability of Finished Textile Floor Covering Materials
- G. ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers
- H. ASTM D624: Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- I. ASTM D2240: Standard Test Method for Rubber Property - Durometer Hardness
- J. ASTM F1551: Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials: Suffix-DIN 18-035, Part 6: Water Permeability of Synthetic Turf Systems and Permeable Bases
- K. ASTM 2047-11: Standard Test Method for Static Coefficient of Friction of Polished Coated Flooring Surfaces ad Measured by the James Machine
- L. The Consumer Product Safety Improvement Act (CPSIA) of 2008
- M. CPSC-CH-E1002-08: Standard Operating Procedure for Determining Total Lead (Pb) in Non-Metal Children's Products
- N. ASTM F963-11: Standard Consumer Safety Specification for Toy Safety
- O. CPSC-CH-C1001-09.3: Standard Operating Procedure for Determination of Phthalates

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's specification
- B. Samples: Submit manufacturer's samples of bonded rubber landscape surfacing showing texture, color, and thickness.
- C. IPEMA Certification: Submit IPEMA Certificate of Compliance to ASTM F1292
- D. Manufacturer's Project References:



1. Submit list of successfully completed projects.
 2. Include project name and location, name of owner, and type and quantity of bonded rubber landscape surfacing furnished.
- E. Installer's Project References:
1. Submit list of successfully completed projects.
 2. Include project name and location, name of owner, and type and quantity of bonded rubber landscape surfacing installed.
- F. Maintenance and Cleaning Instructions: Submit manufacturer's maintenance and cleaning instructions.
- G. Warranty: Submit manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
1. Continuously engaged in manufacturing of bonded landscape safety surfacing of similar type to that specified.
 2. Furnished a minimum of 10,000 square feet of bonded rubber landscape surfacing of similar type to that specified within the past 6 months.
- B. Installer's Qualifications:
1. Successful experience in installation of bonded rubber landscape surfacing of similar type to that specified, with a minimum of 10 projects completed within last 6 months.
 2. Employ persons trained for installation of bonded rubber landscape surfacing of similar type to that specified.
 3. Approved by manufacturer.
 4. Covered by Workers Compensation, Automotive and General Liability insurance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in a dry area at a minimum temperature of 40 degrees F.
- C. Handling: Protect materials during handling and installation to prevent damage or contamination.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Material Temperature: Ensure material temperature is a minimum of 40 degrees F at time of installation.
- B. Air Temperature: Ensure air temperature is a minimum of 40 degrees F for a minimum of 24 hours before, during, and a minimum of 72 hours after installation.
- C. Precipitation: Ensure no prospect of precipitation during and a minimum of 72 hours after installation.

1.8 LIMITATIONS

- A. The following chemicals may cause damage to the bonded rubber landscape surfacing and should be avoided: disinfectants, concentrated chlorine bleach, gasoline, diesel fuel, hydraulic and lubricating oils, acids and organic solvents.
- B. Dissolved minerals and other chemicals such as hydrochlorides from water play areas, pool surrounds and similar applications may cause surface discoloration.



- C. An amber shading may be noticeable when using standard binding agent.
- D. Areas in excess of 1000 square feet or composed of adjacent colors may contain a cold joint or seam due to the nature of the installation process. Large areas or adjacent colors require the material to be installed on separate days.

1.9 WARRANTY

- A. A three (3) year warranty from the date of completion of installation shall be provided against defects in materials and workmanship.

PART 2 - PRODUCT

2.1 MANUFACTURER

- A. XGrass

2.2 BONDED RUBBER LANDSCAPE SURFACING

- A. XGrass Bonded Rubber Landscape Surfacing
 1. Description: Single-density, resilient, seamless, bonded rubber, landscape surfacing.
 2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
 3. Material: Mixture of colored SBR rubber buffings and 100 percent solids, aromatic, MDI polyurethane binding agent.
 4. Binder to Rubber Ratio: Approximately 18.75 pounds of binder to 100 pounds of rubber.
 5. Total Thickness: From 1 inches to 5 inches
 6. Colors: Standard solid colors include Red, Brown or Green. Standard color combinations include Red/Green/Tan, Red/Brown/Tan or Red/Brown. Standard solid colors and color combinations were chosen based on popularity, UV stability, and cost.
- B. Test Results:
 1. ASTM F1292-09, Gmax < 200, HIC < 1000
 2. ASTM F1951-09, Pass
 3. ASTM C1028-07, Dry > 0.80, Wet > 0.50
 4. ASTM E303-93, Wet BPN average of both directions between 40 and 60
 5. ASTM D2859, Pass
 6. ASTM D412, Average tensile strength > 6 psi, average elongation > 15%
 7. ASTM D624, Average lbs/force at rupture > 6, average thickness > .75", average tear strength > 8 lbs/ force/inch
 8. ASTM D2240, Average change between 4% and 5%
 9. ASTM F1551, > 2000 inches/hour
 10. ASTM 2047-11, Average SCOF > 0.70
 11. CPSC-CH-E1002-08, pass
 12. ASTM F963-11, pass
 13. CPSC-CH-C1001-09.3, pass

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive bonded rubber landscape surfacing. Ensure all applicable site work, including subsurface preparation, fencing, playground equipment installation and all other relevant work, has been completed. Notify owner if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.



3.2 PREPARATION

- A. Prepare subsurface in accordance with manufacturer's instructions to ensure proper support and drainage for bonded rubber landscape surfacing. Finished elevations of subsurface shall be as indicated on the Drawings. Finished elevations of adjacent areas/ borders/edging shall be as indicated on the Drawings. Subsurface shall be installed in a true, even plane and sloped to drain unless otherwise indicated on the Drawings.
- B. Aggregate Subsurface: Aggregate subsurface shall be as specified in Section 1.2.
- C. Concrete Subsurface:
 - 1. Concrete subsurface shall be as specified in Section 1.2.
 - 2. Apply light broom finish.
 - 3. Ensure concrete is sound with no cracks or loose material.
 - 4. Ensure concrete is a minimum of 28 days old.
 - 5. Test concrete for moisture in accordance with manufacturer's instructions to ensure it has sufficiently cured and is dry.
 - 6. Power wash existing concrete in accordance with manufacturer's instructions.
- D. Asphalt Subsurface:
 - 1. Asphalt subsurface shall be as specified in Section 1.2.
 - 2. Ensure asphalt is sound with no cracks or loose material.
 - 3. Ensure asphalt is a minimum of 28 days old.
 - 4. Test asphalt for moisture in accordance with manufacturer's instructions to ensure it has sufficiently cured and is dry.
 - 5. Power wash existing asphalt in accordance with manufacturer's instructions.
- E. Variations in Elevation: Repair variations in elevation of completed subsurface greater than plus or minus 1/4 inch over 10 feet in any direction.

3.3 INSTALLATION

- A. Install bonded rubber landscape surfacing in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Ensure prepared subsurface is dry, clean and free of any foreign or loose material.
- C. Install edges in accordance with manufacturer's instructions and as indicated on the Drawings.
- D. Install cold seams as indicated on the Drawings.

3.4 PROTECTION

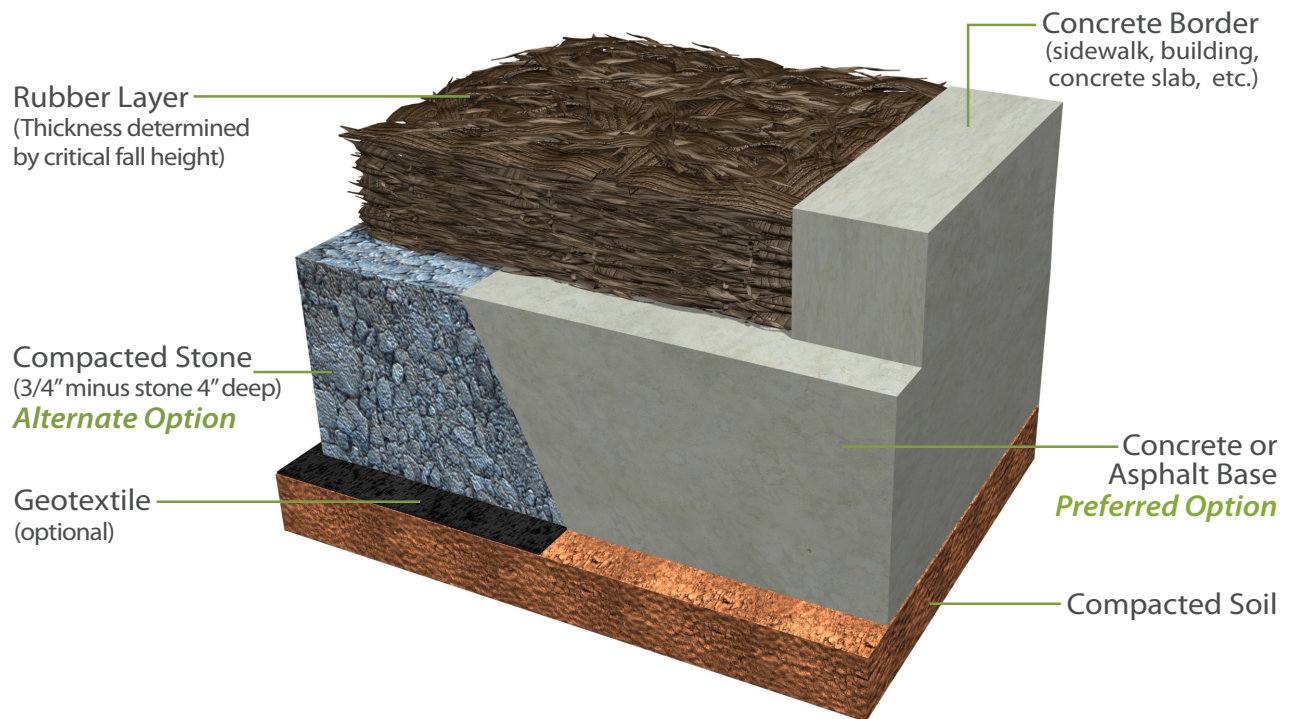
- A. Owner shall not allow foot traffic on bonded rubber landscape surfacing until a minimum of 80 percent cure is obtained. (Estimated time to obtain 80 percent cure will range from 6 to 72 hours depending on temperature and humidity.)
- B. Owner shall protect completed bonded landscape safety surfacing from damage during installation and cure time.
- C. Owner shall protect completed bonded rubber landscape surfacing from damage from subsequent construction activity.

3.5 MAINTENANCE AND CLEANING

- A. Owner should maintain and clean bonded rubber landscape surfacing in accordance with manufacturer's instructions.

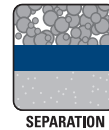


Rubber Surfacing Bonded Rubber



Components are not drawn to scale.

2.0 NON-WOVEN COLORED GEOTEXTILE



Mirafi® Orange Delineation Nonwoven Geotextile for Visual Barrier, Soil Separation and Drainage

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

The Difference Mirafi® Orange Nonwoven Geotextiles Make:

- **Utility Alert.** Mirafi® delineation geotextiles are a visual dig barrier designed to be placed above underground utilities.
- **Contaminated Soils.** Mirafi® delineation geotextiles separate contaminated soils from clean soils.
- **Archeological Sites.** Mirafi® delineation geotextiles assist in the long-term protection of historical sites.

APPLICATIONS

Mirafi® nonwoven geotextiles are used in a wide variety of applications in the environmental and general civil markets. These include separation, filtration and protection applications.

Mirafi® delineation geotextiles are used in many critical subsurface systems. The use of

this orange delineation fabric allows for safe excavations where utilities or other sensitive structures may be buried. The highly visible orange nonwoven geotextile serves as a warning to construction workers when the excavation reaches a buried structure.

Excavation near all utilities, (gas, electric, water, Cable TV and telephone) is always a sensitive operation. The use of Mirafi® delineation geotextile is a low cost-effective method of protection. In addition, lining trench's with a geotextile keeps the selected and costly backfill material separated from the native subgrade.

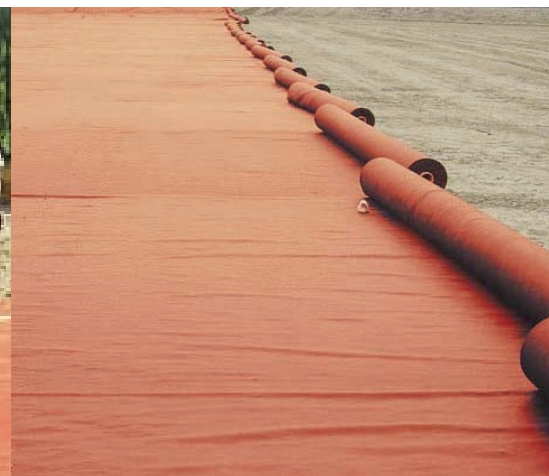
Construction in areas where contaminated soils exist poses risks when trenches or deep footings need to be excavated. These risks are minimized when the Mirafi® delineation geotextile is placed on the contaminated soils before the capping of these areas occurs. The geotextile limits particle movement between the clean new soil and the contaminated substrate. The Mirafi® delineation geotextile offers a visual barrier to future excavations of the contaminated hazard below.



Mirafi® Orange Delineation Geotextiles

Federal and State laws require that archeological sites must be protected from adverse impacts caused by engineering projects. Many archeological sites throughout the world are left in place to protect them. In some cases, after discovery, they are buried. Sites can be protected through burial below an engineered cover, if the engineering project does not require excavation. The installation of Mirafi® delineation geotextile before the new soil is placed will aid in the long term protection of these archeological sites.

* These guidelines serve as a general basis for installation. Detailed instructions are available from your TenCate™ representative.

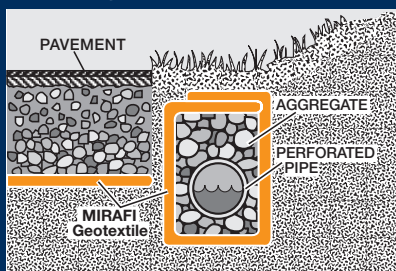


Mirafi® Orange Delineation Nonwoven Geotextiles for Visual Barrier, Soil Separation and Drainage

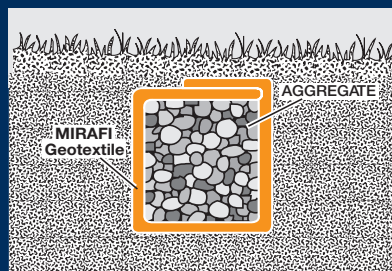
Property / Test Method	Units	140NL	160N	180N
MECHANICAL PROPERTIES				
Grab Tensile Strength ASTM D4632				
Strength @ Ultimate	lbs (N)	100 (445)	175 (779)	240 (1068)
Elongation @ Ultimate	%	75	75	70
Trapezoidal Tear Strength ASTM D4533				
	lbs (N)	50 (223)	85 (378)	90 (400)
CBR Puncture Strength ASTM D6241				
	lbs (N)	310 (1380)	480 (2136)	630 (2802)
UV Resistance after 500 hrs. ASTM D4355				
	% strength	70	80	80
HYDRAULIC PROPERTIES				
Apparent Opening Size (AOS) ASTM D4751				
	US Sieve	70	100	100
Permittivity ASTM D4491				
	mm sec ⁻¹	0.212	0.15	0.15
		2.4	1.5	1.5
Flow Rate ASTM D4491				
	gal/min/ft ² (l/min/m ²)	175 (7130)	105 (4278)	95 (3870)
Packaging				
Roll Width	ft (m)	15.0 (4.5)	15.0 (4.5)	15.0 (4.5)
Roll Length	ft (m)	360 (110)	300 (91)	300 (91)
Est. Gross Weight	lbs (kg)	143 (165)	215 (97)	265 (120)
Area	yd ² (m ²)	600 (502)	500 (418)	500 (418)

*NOTE: Mechanical Properties and Hydraulic Properties shown are Typical Value. Apparent Opening Size (AOS) properties shown are Maximum Average Roll Values. (Values and methods could change without notice)

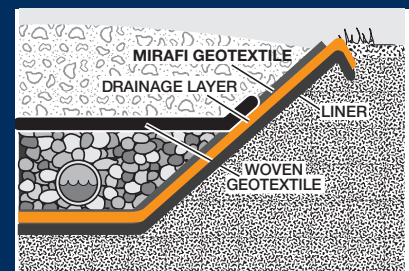
Mirafi® Orange Delineation Geotextiles



Cut-off/Inceptor Drain Along a Roadway Or Another Critical Structure



French Drain Without Pipe



Liner Protection Within a Landfill

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