SECTION 32 18 16.15
THERMO-PLASTIC VULCANIZED (TPV) RUBBER PLAYGROUND PROTECTIVE SURFACING

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM E303 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester; 2022.

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2025.

C. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment; 2022.

D. ASTM F1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; 2025.

E. CPSC Pub. No. 325 - Public Playground Safety Handbook; 2025.

1.02 SECTION INCLUDES

A. Removal of existing protective surfacing and correction of grades as necessary.

B. Protective surfacing for playground area.

1.03 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete, Control Joints and Reinforcing.

B. Section 11 68 13 - Playground Equipment: Playground layout (staking).

C. Section 32 12 16 - Asphalt Paving: Sub-base for resilient surfacing.

D. Section 32 13 13 - Concrete Paving: Sub-base for resilient surfacing.

1.04 REFERENCE STANDARDS

A. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment; most current version.

B. ASTM F1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; most current version.

C. CPSC Pub. No. 325 - Public Playground Safety Handbook; Consumer Products Safety Commission; most current version.

1.05 DEFINITIONS

A. Use Zone: The area beneath and immediately adjacent to a play structure or equipment (play event) that is designated for unrestricted circulation around equipment, and on whose surface it is predicted that a user would land when falling from or exiting the equipment.

B. Critical Fall Height: The maximum fall height at which the protective surfacing meets the requirements of ASTM F1292.

C. Fall Height: The vertical distance between the finished elevation of the designated play surface and the finished elevation of the protective surfacing beneath it as defined by ASTM F1487.

D. Protective Surfacing: Resilient ground surfacing. The characteristics of the protective surfacing are based on the fall height of the playground equipment. Changes in either the surfacing or the fall height, particularly reducing the resilience of the protective surfacing or increasing the fall height, will reduce safety-related performance.

E. Subgrade: The surface of the ground on which the protective surfacing is installed.

1.06 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures, for submittal procedures.

B. The Contractor shall submit a sample of the safety surfacing material, shop drawings, installation detail and all applicable test data (as mentioned herewith) for approval. This

submission shall be sent prior to the Pre-start meeting or no later than 45 days after receipt of the Letter of Award.

C. Product Data: For all manufactured surfacing products, provide manufacturer's product data showing materials of construction, compliance with specified standards, installation procedures, and safety limitations.
   1. Include ALL certifications where required.

D. Product Data: For natural surfacing materials, provide supplier's certification or mill certificate showing compliance with specified requirements.

E. Shop Drawings: Detailed scale drawings showing locations of existing playground equipment and exposed footings, bases, and anchorage points.
   1. Clearly identify footing and base elevations in relation to a fixed survey point on site and to subgrade elevation and depth of protective surfacing, surveyed by land surveyor licensed in the State in which the Project is located.
   2. Show locations of underground utilities, storm-drainage system and irrigation system.
   3. Show locations of related construction such as walkways and roadways, fences, site furnishings, and plantings.
   4. Show measured fall height for each playground equipment item, determined in accordance with ASTM F1487.
   5. Show Use Zone perimeters, determined in accordance with ASTM F1487.

F. Samples: For each product for which TPV color must be selected provide TPV color chart showing full range of TPV colors.

G. Maintenance Data:
   1. For manufactured surfacing products, provide manufacturer's recommended maintenance instructions and list of repair products, with address and phone number of source of supply.

1.07 QUALITY ASSURANCE

A. Maintain one copy of the latest edition of ASTM F1487 and CPSC Pub. No. 325 at project site.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Because the safety of the playground depends on strict conformance to the design criteria, this information is provided for Contractor's information.
   1. Use Zone: The protective surfacing has been designed to provide acceptable impact attenuation as defined in ASTM F1292 for Critical Height.

2.02 MATERIALS

A. The Contractor shall furnish and install safety surface under playground structures as shown on the Contract Drawings and as set forth in these specifications. Safety Surfacing shall be:

B. 1) “UNITY SURFACING” as manufactured by Unity Creations, Ltd., phone 1.877.41.UNITY. (1-877) 418-6489. ProductInfo@UnitySurfacing.com. The local representative is: Erick B. Prinz at Unity, phone 1.516.724.1357. Erick@UnitySurfacing.com

C. 2) Other Representatives: Dave Catalano at Ideal Grounds. DM-Catalano@Yahoo.com. (516) 871-7506. Or, Scott Broer at Signature Sites, Scott@SignatureSitesLLC.com (516) 662-3900.

D. 4) an equal product prior to bidding.

E. The safety surface shall be installed by a certified installer, approved by the Manufacturer.
   1. Safety surface shall be a resilient, self-interlocking, high compression molded crumb rubber type tile/mat/block utilizing a TPV (Thermo-Plastic Vulcanized) top (Blended or Skin/Rolled Rubber top) with a solid coned bottom design. The safety surface shall meet the latest U.S. Consumer Products Safety Commission (CPSC) guidelines and ASTM F1487, which shall not exceed 200 G for any fall height, and a HIC of no more than 1,000 when tested in accordance with the procedure described in the latest ASTM F1292.

a. Tile/Mats/Blocks shall be mechanically anchored through the male interlocks, using a non-corroding devise, to the solid sub-base surface every twelve (12) inches, with all anchors being recessed to the bottom channel of the male interlocks. All transitions, borders, and corners should be connected to a unit as designed by the Manufacturer.
b. The safety surfacing material shall be self-extinguishing against fire. When tested in accordance with the latest ASTM E648 "Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Heat Energy Source", the material shall have a minimum critical radial flux of 0.22 watts/cm2.
c. Safety surface shall have a slip resistant surface. When using the "British Skid Resistance Tests" in accordance with the latest ASTM E303, the wet - dynamic reading shall not be less then 40.
d. Material shall not have more than 1/16" surface distortion and shall be of uniform specified color and appearance. Color shall be TPV top unless otherwise shown.

2. The Contractor must supply the proper quantity of items (tiles, transitions, glue, bolts, etc.), of sizes and shapes necessary to form adequate protection as described below.
   a. The Contractor shall guarantee that all materials and workmanship finished under this contract are perfect and in strict accordance with the contract and will remain so for a period of two (2) years from the date of acceptance. During which time the Contractor shall replace any defective material or workmanship or perform the work required to remedy the same. The Manufacturer shall warranty against shrinkage (with no gaps greater than one half-inch) for three (3) years, from the date the material is delivered.
3. ADA Compliance:
   a. If the safety surfacing is installed on top of the pavement, and not installed flush with the adjacent grade, a ramp complying with ADA Accessibility Guidelines for Play Areas (ADAAG) shall be provided. A minimum of one accessible route shall be provided for each continuous safety surfacing area, or as shown on the drawings. The ramp shall be constructed of similar materials as the safety surfacing and shall be a minimum 60” wide with a maximum slope of 1 on 12.

PART 3 EXECUTION

3.01 NOT USED

3.02 EXAMINATION

A. Playground equipment installer will perform playground layout prior to installation of footings; verify correctness of layout before starting this work.

B. Verify (in writing) that playground equipment and site furnishings located within playground area are complete.

C. Verify (in writing) location of underground utilities and facilities in the playground area. Damage to underground utilities and facilities will be repaired at Contractor's expense.

D. Verify (in writing) that subgrades are at proper elevations and that smooth grading is complete.

E. Verify (in writing) that proper depth of surfacing is marked on base supports of play equipment.

3.03 PREPARATION

A. Correct subgrade irregularities to ensure that required depth of protective surfacing can be installed, and subgrade elevation/levelness is in accordance with manufacturer's requirements.

B. Inside Use Zones remove all obstructions that would extend into the resilient protective surfacing.

C. Remove rocks, debris, and other similar items.

3.04 INSTALLATION

A. The safety surfacing itself should not create new hazards; hence, all installation shall be done as carefully as possible in a neat and workmanlike manner. Safety surfacing shall be installed within 48 hours of the installation of the adjoining play equipment.

1. All safety surfacing shall have a boarding system (concrete curbs, etc.) or beveled edge along its entire perimeter to allow for a smooth, easy transition between the existing pavement surface and the level of the safety surface, except at the ADA ramp location.
2. Each tile/mat/block must be adhered in accordance with the manufactures specific installation instructions. Adhesive shall be applied to the male interlocking joints (inside the male joints along the tile wall, the outside edge of the interlocking joints, and to the side wall of said male interlocking joint in order for glue to ooze throughout the interlocking system. Glue shall also be applied to the underside (outside edge) of each unit to solid sub-base. Said glue procedure shall allow for water to flow between the interlocking joints.
3. Each tile/mat/block must be installed by mechanical means every one (1) linear foot across the male interlocking joints. However, when typical mounting process cannot be followed, for example: tile/mat/block being installed adjacent to wall, curb, etc., perimeter units shall be completely adhered to the solid sub-base with adhesive per manufacturer.
4. Any anchoring system or tile/mat/block using “accessory items” shall not create "hard" spots within the Fall Zone, which would fail to meet test requirements already mentioned.
5. Safety surfacing shall be laid on new or existing sub-base (solid or compacted stone) and in accordance with the manufacturer's directions. The fall zone of the safety surfacing shall be installed to extend horizontally from the edges of the play equipment a minimum distance of 6 feet in all directions. The fall zone in front of the exit of a slide shall extend a minimum distance of 6 feet, a maximum distance of 8 feet, or “X” - where “X” is equal to the height of the deck the slide originates from if it is between the 6’ minimum and the 8’ maximum. In addition, the Contractor shall provide a minimum fall zone of six feet of safety surfacing from all sides of a slide. In all cases, the transition border shall not be part of the fall zone. The Contractor/Installer shall refer to and be guided by the Play Equipment (new or existing) Manufacturer’s listed protected safety surface zone/fall height for each piece of Play Equipment.
6. Surfacing tiles/mats/blocks shall be cut as neatly as required to fit tightly around posts of play equipment. Tiles/Mats/Blocks shall be laid in a tight-fitting and flush method. Voids between units greater than one-half inch (1/2”) will not be acceptable.
7. Safety surfacing will be installed over new or existing asphalt, concrete and/or compacted stone. Vendor/Installer must broom sweep the solid subbase clean and dispose of debris.
8. N.Y.C.H.A. reserves the right to make any additional tests, if it feels necessary and the Contractor shall furnish the material for testing.

3.05 RESILIENT SURFACING LAYER

A. Install in accordance with CPSC Pub. No. 325, ASTM F1487, manufacturer's instructions, and requirements of authorities having jurisdiction.

B. Install proper thickness/drop height requirements throughout Use Zone(s).

C. Clean and dry surface of sub-base.

3.06 FIELD QUALITY CONTROL

A. NYCHA or NYCHA's representative will inspect playground surfacing after installation to verify that surfacing is of proper type and depth and that playground meets specified design safety and accessibility requirements.

B. Repair or replace rejected work until compliance is achieved.

3.07 CLEANING AND PROTECTION

A. Restore adjacent existing areas that have been damaged from the construction.

B. Clean playground equipment and safety surfacing of construction materials, dirt, stains, filings, and blemishes due to shipment or installation. Clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.

C. Clean playground area of excess construction materials, debris, and waste.

D. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction.

E. Protect installed products until Substantial Completion.

F. Replace damaged products before Substantial Completion.

END OF SECTION 32 18 16.15