

## SECTION 02871

### PLAYGROUND EQUIPMENT AND SAFETY SURFACING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. This section consists of a general description of required playground equipment, poured-in-place safety surface, and the installation of said equipment. Contractor shall be responsible for site installation of these items and for furnishing and installing footings, anchors, fasteners, touch-up, repair and other accessory items as required.

##### 1.2 REFERENCE STANDARDS

- A. Safety Standards & Guidelines: All public playground equipment supplied shall meet all applicable provisions of the following:
  - 1. "Handbook for Public Playground Safety" published by the Consumer Product Safety Commission (CPSC)
  - 2. ASTM F1487-01 "Standard Consumer Safety Performance Specification for Playground Equipment for Public Use," published by the American Society for Testing and Materials (ASTM).
  - 3. ASTM F1292, Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
  - 4. ASTM F2223, Standard Guide for ASTM Standards on Playground Surfacing.
  - 5. ASTM F2479, Standard Guide for Specification, Purchase, Installation and Maintenance of Poured-In-Place Playground Surfacing.
  - 6. ASTM F1951, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
  - 7. ASTM F2049, Standard Guide for Fences/Barriers for Public, Commercial, and Multi-Family Residential Use Outdoor Play Areas.
  - 8. Americans With Disabilities Act
- B. Quality Certification: All public playground equipment supplied shall be certified to ISO 9001 and IPEMA standards.

##### 1.3 SUBMITTALS

- A. Submit Manufacturers' Catalog Data.
- B. Submit shop drawings indicating structure and equipment layout; footing quantity, size, design, and location.

- C. Submit shop drawings depicting equipment locations as proposed on plan that indicates safety zones as recommended by equipment manufacturer and complying with recommendations as stated in above referenced industry standard documents.
- D. Submit Shop Drawings for installation where additional details are necessary for proper installation or as requested by owner's representative.
- E. Provide certification, after installation and substantial completion, by the playground installer, certifying that the equipment has been installed per the manufacturer's recommendations and instructions, and meets or exceeds all necessary safety requirements as stated in above referenced industry standard documents.
- F. Submit product information and samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Owner's Representative selection.
- G. Submit proof of surface installer training in writing a minimum of one week prior to installation.

#### 1.4 QUALIFICATIONS

- A. Equipment Installer Qualifications: An experienced and certified installer who has completed work with similar equipment, materials, and design, and to the extent similar with this project and whose work has resulted in construction with a record of successful in-service performance. Contractor to provide a list of all subcontractors and their appropriate qualification. Installer shall follow manufacturer's instructions and installation documentation for all equipment.
- B. Surface Installer Qualifications: Company specializing in outdoor resilient surfaces in the USA for at least 10 years. The applicator shall be approved and trained, with a minimum of three years' documented experience. Conditions of all surface substrates with respect to structural performance shall be evaluated and approved by the surface installer prior to application of surface system.

#### 1.5 DELIVERY AND STORAGE

- A. Deliver and store products in original, unopened containers with labels intact when not being installed and protect during construction operations to prevent damage, theft, or vandalism.
- B. Inspect parts within 48 hours of delivery, compare with manufacturers bill of material, and report any missing or non-conforming parts to manufacturer.
- C. All surface materials shall be protected from weather and binders shall be stored in temperatures no lower than 40° F.

- D. All touch up, cleaning, repair or replacement shall be at contractor's expense.

#### 1.6 WARRANTY

- A. Minimum lifetime warranty on all deck posts, steel deck posts, and fastening system, and associated fastening hardware against structural failure caused by corrosion or deterioration from exposure to weather, or defective materials or defective workmanship.
- B. Minimum 15-year warranty on support materials and decks against structural failure caused by corrosion, defective materials, or defective workmanship.
- C. Minimum 10 year warranty on all steel components including railings, loops, and rungs against structural failure caused by defective materials or defective workmanship.
- D. Minimum 1-year warranty on all products not listed above against structural failure caused by defective materials or defective workmanship.
- E. Minimum 5-year warranty on safety surfacing against structural failure caused by defective materials or defective workmanship.

#### 1.7 MINIMAL WEATHER CONDITIONS

- A. At the time of surface material application, ambient air temperature shall be no less than 40 °F and rising and remain so for at least 72 hours after completion.
- B. All surface materials shall be protected from weather and other damage prior to application, during application and while curing.

### PART 2 PRODUCTS

#### 2.1 GENERAL

- A. All material components of the poured-in-place surface system shall be obtained from the same source.
- B. All play equipment, posts, ladders, decks, rails, etc. shall be constructed of fully-welded tubular galvanized steel with manufacturer's coatings, factory applied.
- C. Fasteners shall be stainless steel.
- D. All play equipment roof structures and other selected equipment shall be integrally colored, prefinished PVC, polymer, or other molded plastics.

#### 2.2 ACCEPTABLE MANUFACTURERS AND EQUIPMENT.

- A. Refer to conceptual playground equipment layout drawing.

- B. Major playground equipment manufacturers meeting the requirements of this specification will be considered. All equipment suppliers and installers must meet or exceed the qualifications outlined within this section and must demonstrate that proposed equipment is equal or equivalent to conceptual design equipment.
- C. Major playground safety surface manufacturers meeting the requirements of this specification will be considered.

## 2.3 MATERIALS

- A. Poured-in-Place Primer: Single component moisture cured polyurethane primer.
- B. Poured-in-Place Binder: An elastic polyurethane pre-polymer with minimal odor, excellent weathering and binding characteristics. Binder shall be 100% MDI based and contain 0% TDI monomers. NOTE: TDI is listed as a carcinogen with OSHA and the IARC. Special handling is required with more than .1% TDI.
- C. Poured-in-Place black base: Shall be recycled SBR rubber:
  - 1. Ground at ambient temperature.
  - 2. Ground into 3/8" shredded strands and contain less than 4% dust.
  - 3. Transported in suitable bags to protect from moisture.
- D. Poured-in-Place EPDM rubber top course: Shall be UV stable.
  - 1. Colors – Colors to be determined by owner from manufacturer's standard color catalog.
  - 2. Typical size: 1-3mm.
  - 3. Include and provide aliphatic binder for all colors susceptible to fading according to manufacturers guidelines.
- E. Poured-in-Place System shall:
  - 1. Have been tested for shock attenuation under ASTM F 1292 G-Max and HIC
  - 2. Be non-slip and porous.
  - 3. Have Class B fire rating.
  - 4. Have the following minimum technical specifications:
    - a. Thermal resistance:  $r=2.32$   
(astm c 518-76)
    - b. Thermal conductivity:  $k=0.75$   
(astm d 257)
    - c. Compression endurance: no deterioration  
(10,000 cycles w/10 ton load)
    - d. Flame spread/ federal spec. Lll-t-43, type ii,  
smoke density: class i pass
    - e. Flammability: greatest radius: 1" (25mm)  
(cst london, 90609/1) classified: best category of flammability

- f. Abrasion resistance: 0.3812g loss  
(astm d 1044)
- g. Spike resistance: according to otto graff institute/stuttgart  
approved for 1/4" spike  
(din 18035)
- h. Flexibility factor: 0-1  
(astm f 147)
- i. Durability: wear index (g/1000  
(cst london, 90609/1) revolutions)  
unaged: 1.64  
air aged: 2.40
- j. Water permeability: 1.7 ltr./sec./sq. Meter  
(din 18035, part g) (0.4 gal./sec./sq/ yd.)
- k. Thermal stability range: -50°C to +100°C  
(-58°F to 212°F)
- l. Freeze/thaw: no change (-50°C (-58°F), 40 cycles)
- m. Slip resistance: 65-70 units/approved  
(cst london, 90609/1)
- n. Tensile, psi: 200 psi (top surface)  
(astm d 412)

### PART 3 Execution

#### 3.1 INSPECTION

- A. Prior to application of the poured-in-place surface system, installer shall evaluate the substrate's structural performance and notify Owner's Representative of all discrepancies. Work shall not proceed until unsatisfactory conditions are corrected.
- B. Prior to equipment installation, installer shall examine the substrates and conditions under which all equipment is to be installed and notify the owner's representative in writing of conditions detrimental to the proper, complete, and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

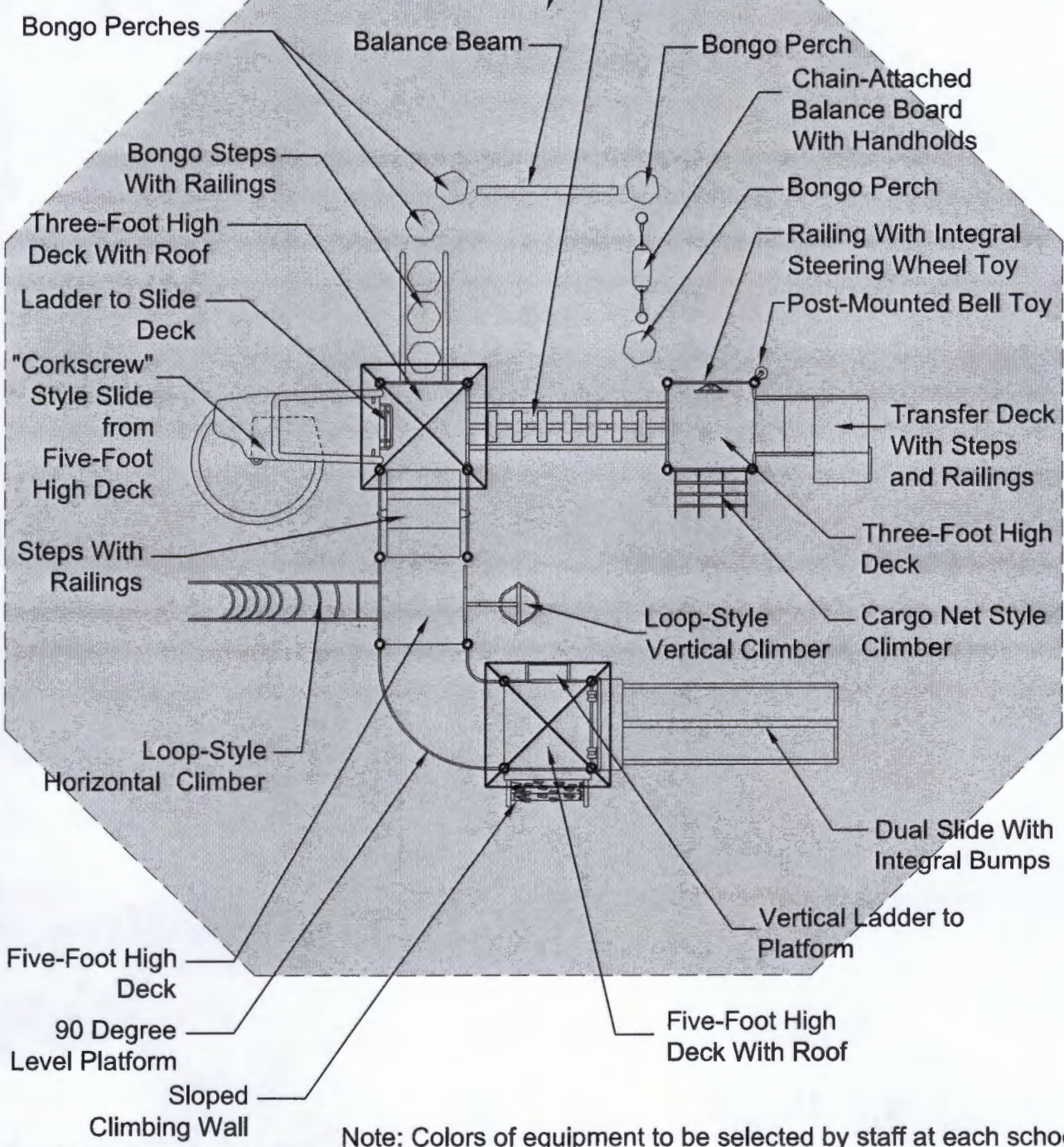
- A. Verify sub base drainage prior to installation with Owner's Representative. Base material shall drain properly.
- B. Poured-in-place surface system installation:
  - 1. Primer: Where necessary, shall be applied at a rate of 300 sq. ft. per gallon to the substrate or geotextile fabric on the substrate using a short nap roller.
  - 2. Base Mat:

- a. Urethane to rubber ratio of 13.64% (12/88), which equals a mix of 12% urethane and 88% rubber, by weight, to achieve maximum resilience.
    - b. Using trowel, SBR/binder mix shall be spread in a consistent density to specified thickness at a rate of 31 lbs. and 13 oz. total weight per cubic foot to the specified depth.
    - c. SBR/binder mix shall be allowed to cure (necessary time varies based on temperature and humidity).
  3. Primer: Where necessary, shall be applied at a rate of 300 sq. ft. per gallon to the base mat using a short nap roller.
  4. Top Course:
    - a. Urethane to rubber ratio of 21.95% (18/82), which equals a mix of 18% urethane and 82% rubber, by weight, to achieve maximum wearability and resilience.
    - b. Using trowel, EPDM/binder mix shall be spread in a consistent density to specified thickness at a rate of 2.44 lbs. per square foot, which yields a nominal thickness of 1/2".
    - c. EPDM/binder mix shall be allowed to cure (necessary time varies based on temperature and humidity).
- C. Play Equipment Installation:
  1. Assemble all equipment that requires pre-assembly before installation begins.
  2. Install equipment at the locations agreed upon. Install level, plumb, secure and in accordance with manufacturer's recommendations, directions, and detail drawings. Cooperate with other trades. Repair and replace damaged units as directed by the owner's representative.
  3. Protect installed equipment from damage, blemishes, or indication of use until completion and acceptance of the project.

END OF SECTION

Certified Safety Surface, Poured-in-Place,  
50% Color, 50% Black,  
Colors Selected By Staff At Each School  
(Approximately 1,470 SF or As Required)

Individual Sloped Steps With  
Handrails (8-Foot Span)



Note: Colors of equipment to be selected by staff at each school.

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| <p>Scope of Work Definition<br/>Playscapes Playground Installation<br/>Prototype Playground Layout</p> |  | <p>Not to Scale</p> |
|--------------------------------------------------------------------------------------------------------|--|---------------------|