

CONCRETE TENNIS COURT

UNDER-SLAB VAPOR BARRIER

Concrete must have minimum 15 mil polyolefin vapor barrier and installed per ASTM E-1745, ASTM E-1643. Ensure that subsoil is level and compact base material. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab. Overlap joints 6 inches and seal with manufacturer's seam tape. Apply seam tape to a clean and dry vapor barrier. Seal all penetrations (including pipes) per manufacturer's instructions. Avoid the use of non-permanent stakes driven through vapor barrier. If non-permanent stakes must be driven through vapor retarder, repair as recommended by vapor retarder manufacturer. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile. Prior to installation, submit for approval manufacturer's samples, literature and installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal.

REINFORCEMENT

Steel reinforcement bars should conform to Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement ASTM A 615, Grade 60 or 40. For concrete that is 5" thick, the bars shall be No. 5 in both directions at 12" on center. Bars should be accurately positioned at mid-depth, terminating 2" away from edges and joints, and should be adequately supported by chairs with sand plates provided to prevent bar supports from sinking into the subbase. Bars should be lapped at 18" and should also be securely tied or otherwise secured so that there is no possibility of displacement when concrete is placed. At the time of concrete placement, reinforcement should be free of loose, flaky rust and other coatings or films that could interfere with bonding to the concrete.

JOINTS

A non-extruded expansion joint filler material 3/4" thick should be installed at the net line if the two halves of the court, and between courts if there is more than one court. The bottom edge of the filler material should extend to or slightly below the bottom of the slab; the top edge should be held 7/8" below the surface of the slab by a tack strip of wood, its top flush with the finished slab surface. Edges of joints should be tooled with an edging tool having a radius of 1/4". After the concrete has cured, the tack strips should be removed and the joints sealed with an elastomeric sealing compound to within 1/8" of the surface.

CONCRETE PROPORTIONING AND MIXING

The concrete should have a compression strength of not less than 3,000 psi at the 28th day after casting. The minimum cement content for finish-ability should be not less than 470 lbs. per cubic yard for 1 1/2" maximum size coarse aggregate, 520 lbs. for 3/4", 590 lbs. for 1/2" and 610 lbs. for 3/8" maximum size coarse aggregate. In freeze/thaw environments, the minimum cement content should not be less than 560 lbs. per cubic yard. The slump should not be more than 4". Ready-mixed concrete should be mixed and delivered in accordance with ASTM C 94, Specification for Ready-Mixed Concrete.

PLACING AND FINISHING

At least a full half court should be placed in one continuous operation without intervening joints of any kind. Uninterrupted concrete placing operations without intervening joints should be limited to one full court with continuous reinforcement. Concrete should be spread, consolidated, screeded, bull-floated and finished in accordance with Section 7.2 of ACI (American Concrete Institute) Standard 302, Recommended Practice for Concrete Floor and Slab Construction. When concrete is sufficiently set to withstand foot pressure with only about 1/4" indentation and the water sheen has left the surface, the slab should be uniformly finished by power floating and troweling. The final finish texture should be a medium broom finish.

SURFACE TOLLERANCES

The finished surface of the court should not vary more than 1/8" in 10' when measured in any direction.

CURING

Immediately after finishing, the concrete shall be kept continuously moist for 7 days by covering with polyethylene film, waterproof curing paper, sprinkling, ponding or other acceptable coverings. Curing time should be in accordance with surfacing system manufacturer's recommendations. No curing compounds shall be used.

SURFACE INSPECTION

Prior to application of a color finish system, the court surface shall be flooded with water and allowed to drain for one hour at 70 degrees Fahrenheit. Any ponding water remaining that is deep enough to cover five-cent coin (American), that area, commonly called a "birdbath", shall be patched and leveled in accordance with recommendations of the manufacturer of the color finish system specified. (Note: If the standing water does not cover a 5 cent piece, it is considered within tolerance and will evaporate within a reasonable time.) Re-flooding and patching may be necessary until "birdbaths" are eliminated.

CONCRETE TENNIS COURT SURFACE COLOR COATING SYSTEM

REFERENCE STANDARDS

- American Sports Builders Association (ASBA).
- United States Tennis Association (USTA) Rules of Tennis.
- International Tennis Federation (ITF).

SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including surface and crack preparation and application instructions.
- B. Samples: Submit manufacturer's color samples of color coating.
- C. Submit independent test results for solar reflectance index.
- D. Submit independent test results for 2000 Hour ASTM G154, accelerated weathering UV test, to demonstrate long-term durability and fade resistance.
- E. Submit independent test results for 2000 Hour, accelerated weathering ASTM G155 Xenon Arc test, to demonstrate long-term fade resistance and quality of pigment.

- F. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- G. Manufacturer's Project References: Submit manufacturer's list of successfully completed concrete tennis court surface color coating system projects, including project name, location, and date of application.
- H. Applicator's Project References: Submit applicator's list of successfully completed concrete tennis court surface color coating system projects, including project name, location, type and quantity of color coating system applied, and date of application.
- I. Warranty Documentation: Submit manufacturer's standard warranty.
- J. Authorized Installer Certificate: Submit manufacturer's authorized installer certificate.

QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged, for past 5 years, in manufacture of concrete tennis court surface color coating systems of similar type to that specified. United States owned company. Member: ASBA Manufacturer has surfaces that are classified by the ITF's (International Tennis Federation) pace classification program.
- B. Applicator's Qualifications: Applicator regularly engaged, for past 3 years, in application of tennis court surface color coating systems of similar type to that specified. Employ persons trained for application of tennis court surface color coating systems. Applicator must be authorized installer of the surfacing brand used.
- C. All surface coatings products shall be supplied by a single manufacturer

DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements: Store and handle materials in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until application. Store materials in clean, dry area indoors. Store materials out of direct sunlight. Keep materials from freezing. Protect materials during storage, handling, and application to prevent contamination or damage. Close containers when not in use. Retain manufacturer batch codes on each container and application dates, for warranty purposes.

AMBIENT CONDITIONS

Do not apply concrete tennis court surface color coating system when air or surface temperatures are below 50°F (10°C) during application or within 24 hours after application. Do not apply concrete tennis court surface color coating system when rain is expected during application or within 24 hours after application.

PRODUCTS

MANUFACTURER

- A. SportMaster Sport Surfaces, PO Box 2277, 2520 South Campbell Street, Sandusky, Ohio 44870. Toll Free 800-326-1994. Fax 877-825-9226. Website www.sportmaster.net.

- B. Novacrylic, as manufactured by Nova Sports U.S.A., 6 Industrial Rd., Bldg. #2., Milford, MA 01757. 800-USA-NOVA
- C. Or, approved equal

2.2 MATERIALS

- A. All coatings shall be pure acrylic, containing no asphaltic or tar emulsions, nor any vinyl, alkyd or non-acrylic resins.
- B. The color system shall be factory-mixed compounds requiring only the addition of water and sand at the jobsite. All materials shall be delivered to the jobsite in sealed containers with the manufacturer's label affixed.
- C. Patching and Leveling: 100% acrylic resin used for leveling low areas and patching cracks. 100% acrylic liquid binder. Minimum 46% solids, 8.9 lbs. per gallon. Mix on site with silica sand and Type 1 Portland Cement. Concrete adhesion promoter: Water based high solids 2-part epoxy for new concrete for adhesion and vapor control. Water based, low VOC, non-flammable. Mix on site with Jiffy blade and electric drill.
- D. Crack Sealant: 100 percent acrylic emulsion elastomeric crack sealant. Seals cracks and expansion joints up to 1/2 inch wide in concrete pavement. Weight per Gallon at 77 Degrees F: 8.8 lbs., plus or minus 0.5 lbs. Non-Volatile Material: 61 percent, plus or minus 5 percent.
- E. Color Coating:
 - a. 100% acrylic resin containing factory mixed round silica for low abrasive consistent texture.
 - b. Water based high solids concentrate, low VOC
 - c. Minimum 69.43 percent solids, 13.3 lbs. per gallon.
 - d. Mix on-site with silica sand and water.
 - e. Color coats tennis and multipurpose courts.
 - f. Weight per Gallon at 77 Degrees F: 9.2 lbs., plus or minus 0.5 lbs.
- F. Color: Owner will choose a color for out of bounds and a second color for inbound areas.
- G. Line Markings Primer
 - a. 100 percent acrylic emulsion primer, clear drying.
 - b. Water based 100% acrylic resin containing no alkyds or vinyl.
 - c. Primes line markings and prevents bleed-under for sharp lines.
- H. Chemical Characteristics, by Weight, Nominal:
 - a. Acrylic Emulsion: 38.0 percent.
 - b. Hiding Pigment: 0.0 percent.
 - c. Mineral Inert Fillers: 7.0 percent.
 - d. Film Formers, Additives: 1.5 percent.
 - e. Water: 50.0 percent.
 - f. Weight per Gallon at 77 Degrees F: 8.9 lbs., plus or minus 0.5 lbs.
 - g. Non-Volatile Material: 29 percent, plus or minus 5 percent.
- I. Line Paint: Textured Line Paint.
 - a. Water based 100% acrylic resin containing no alkyds or vinyl.
 - b. Line marking on concrete tennis courts.
- J. Chemical Characteristics, by Weight, Nominal:
 - a. Acrylic Emulsion: 25.89 percent.

- b. Pigment: 14.90 percent.
 - c. Mineral Inert Fillers: 13.12 percent.
 - d. Additives: 4.73 percent.
 - e. Water: 41.36 percent.
 - f. Weight per Gallon at 77 Degrees F: 10.65 lbs., plus or minus 0.75 lbs.
 - g. Non-Volatile Material: 45.17 percent, plus or minus 5 percent.
- K. Color of line paint: white

EXECUTION

EXAMINATION

Examine concrete tennis court surfaces to receive color coating system.

- A. Curing compounds have not been used on concrete surface.
- B. Concrete tennis courts meet ASBA construction requirements.
- C. Notify the Owner of conditions that would adversely affect application or subsequent use.
- D. The concrete shall be inspected and made sure to be free of grease, oil, dust, dirt and any other foreign matter before starting work.
- E. Do not begin surface preparation or application until unacceptable conditions are corrected.

LIMITATIONS

- A. Do not install when rain is imminent or extremely high humidity prevents drying.
- B. Do not install unless air and surface temperatures are 50 degrees F and rising.
- C. Do not install if the surface temperature is above 140 degrees F.

SURFACE PREPARATION

- A. Protection of In-Place Conditions: Protect adjacent surfaces and landscaping from contact with concrete tennis court surface color coating system.
- B. Prepare surfaces in accordance with manufacturer's instructions.
- C. New Concrete: Cure new concrete surfaces a minimum of 28 days before application of concrete tennis court surface color coating system. Acid etch with phosphoric or muriatic acid and rinse thoroughly prior to application of color coating system.
- D. Remove dirt, dust, debris, oil, grease, sealers, curing compounds, vegetation, loose coatings, loose materials, and other surface contaminants which could adversely affect application of concrete tennis court surface color coating system. Pressure wash entire surface.
- E. Repair cracks, depressions, and surface defects in accordance with manufacturer's instructions before application of color coating.
- F. Repair spalled areas and level depressions 1/8 inch and deeper with patch binder in accordance with manufacturer's instructions.
- G. Apply adhesion promoter over entire concrete surface in accordance with manufacturer's instructions.
- H. Apply one coat of filler course to provide smooth underlayment for application of color coating.
- I. Ensure surface repairs are flush and smooth to adjoining surfaces.

APPLICATION

- A. Apply concrete tennis court surface color coating system in accordance with manufacturer's instructions at locations indicated on the Site Plan.
- B. Mix materials in accordance with manufacturer's instructions.
- C. Apply Filler Course and Color Coating with a 50-60 durometer, soft rubber squeegee.
- D. Filler Course:
 - a. Apply one (1) coat on new concrete or existing acrylic surfaces with minimal repairs.
 - b. Apply two (2) coats on existing acrylic surfaces with extensive cracks or low spot repair.
- E. Apply a minimum of two (2) coats of color coating to prepared surfaces in accordance with manufacturer's instructions.
- F. Allow material drying times in accordance with manufacturer's instructions before applying other materials or opening completed surface to foot traffic.

LINE MARKINGS

- A. Lines shall be carefully measured and marked with chalk in accordance with USTA Rules of Tennis and ASBA Tennis Book Guidelines. See attached detail for reference.
- B. Apply line markings primer, after masking tape has been laid, to seal voids between masking tape and tennis court surface to prevent bleed-under when line paint is applied.
- C. All lines are to be applied by painting between painter's grade masking tape with a brush or roller. No spraying of lines allowed.
- D. Prime masked lined with one (1) coat. Allow primer to dry completely before next application. Application rate is 0.08 gallons per square yards or 1 gallon per tennis court.
- E. Apply a minimum of two (2) coats of line paint in accordance with manufacturer's instructions. Application rate is 0.08 gallons per square yards or 1 gallon per tennis court.
- F. Allow application to dry.
- G. Remove masking tape immediately after line paint is dry. Do not leave the masking tape on overnight.

PROTECTION

- A. Allow a minimum of 24 hours curing time before opening tennis courts for play.
- B. Protect applied concrete tennis court surface color coating system to ensure that, except for normal weathering, coating system will be without damage or deterioration at time of Substantial Completion.

CLEAN UP

- A. All containers and debris shall be removed and disposed of in accordance with local, state and Federal regulations.

END OF SECTION