SECTION 07 18 13 PEDESTRIAN TRAFFIC COATING
SECTION 07 54 19 POLYVINYL-CHLORIDE ROOFING

WATERPROOF TRAFFIC MEMBRANE

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by one of the following methods:

Microsoft Word 2010 / 2016**: Click** FILE **tab > click** OPTIONS **> click** DISPLAY **> "check"** Hidden text

Microsoft Word 2007: **Click** OFFICE **tab > click** WORD OPTIONS **> click** DISPLAY **> "check"** HIDDEN TEXT option.

Microsoft Word (earlier versions): From the pull-down menus select TOOLS **>** OPTIONS. Under the tab labeled VIEW, select or deselect the HIDDEN TEXT option.

Corel WordPerfect: From the pull-down menus select VIEW, then select or deselect the HIDDEN TEXT option.

PART 1

GENERAL

1.1 SECTION INCLUDES

A. Waterproof vinyl traffic membrane, internally reinforced, single-ply, walkable roof surface.

B. Waterproof vinyl traffic membrane, internally reinforced, two-ply walkable roof surface.

C. Waterproof vinyl traffic membranes can be used on the following residential applications:
   1. Balcony decks.
   2. Roof decks.
   3. Walkways.
   4. Stairways.
   5. Above grade court yards.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete: Concrete flooring to receive vinyl decking.

B. Section 06 16 00 - Sheathing: Subfloor plywood or cementitious underlayment to

receive vinyl decking.

C. Section 06 20 13 (subsection) – Exterior Finish Carpentry: Moldings and trims at floor penetrations and terminations.

D. Section 07 18 13 (subsection) - Pedestrian Traffic Coatings.

E. Section 07 54 19 (subsection) – Polyvinyl-Chloride Roofing.

F. Section 07 60 00 – Flashings and Sheet Metal.

G. Section 07 70 00 – Roof and Wall Specialties and Accessories: Scuppers, drains counter flashings and reglets.

1.3 REFERENCES

A. **ASTM D 4434-21:** Standard Specifications for (Polyvinyl Chloride) Sheet Roofing. Reference QAI / Test report TJ8150-1c Final Rev 2 / Intertek CCRR-1122 (ASTM D4434-15).

B. **CCMC 07544:** Canadian Construction Materials Centre. Polyvinyl Chloride Roofing and Waterproof Membranes, "PVC Sheet - Applied Roofing" Type 4, Class B. Tufdek listing # 13293-L.

C. **CAN/CGSB 37.54-95**: Canadian General Standards Board Standard for Roofing and Waterproofing Membrane, Sheet Applied, Flexible Polyvinyl Chloride. Reference QAI / Test report TJ8150-1B-Final / Intertek CCRR-1122.

D. **Intertek:** Code compliance review report, Listing, Quality Control Manual and License to Mark. https://bpdirectory.intertek.com/Pages/DLP_Search.aspx

E. **QAI Class A and Class C Fire Testing:** Tufdek test report RJ3782 – 1 - Rev 1, ASTM E108-11 Class C fire rating. Tufdek test report RJ3782 – 2 - Rev 2, ASTM E108-11 Class A fire rating.

F. **QAI Test Report TJ 8150-1A:** Tufdek compliance to CCMC Master Format 07 54 19.01 – Technical Guide for PVC sheet applied membranes (exposed to light pedestrian traffic).

G. **Intertek Audited Fire Testing Report:** Class A. Intertek test report 103913168COQ-002 / Intertek CCRR-1122

H. **ICC-ES AC39 and AC75:** Acceptance Criteria for Walking Decks, Roofing membrane and roof covering systems. Trinity / Tufdek test report # T32800.08.10. / Intertek CCRR-1122

I. **Florida Building Code:** Trinity ERD / Evaluation report T32790.08.10 / Florida Building Code approval listing number - FL13993 / Intertek CCRR-1122.

1.4 DESIGN REQUIREMENTS

A. Drainage:
   1. Slope: 1/4 inch in 12 inches (6mm in 305mm) recommended.
   2. Direction: Slope towards drain or drainage point.
   3. Ponding Water: Exterior decks should slope away from the building to a deck edge, or drainage collection point. Decks shall be designed and constructed to avoid excessive water ponding, the responsibility of which lies with the design professional having authority of the project and not the waterproofing

contractor. Some incidental ponding after a rain is to be expected and is not covered under warranty. Standing water exceeding the following shall be rectified: 6 mm (1/4”) in depth that exceeds 1.0 square meter (10.76 square feet) and remains standing in excess of 48 hours after a rainfall has stopped on days of evaporation. The standing water must be a result of rainfall, some retained water at drains, deck edges, seams, transitions or flashing is not uncommon and is not considered an installation defect or warranty issue. Water must not be collected from other points on the building envelope such as roofs and dispensed on or across the vinyl deck surface for the purpose of drainage.

B. Structural:
   1. Tufdek membranes are acceptable for use with structures designed to support lightweight deck / roof assemblies.
   2. Tufdek is not acceptable for commercial use or public access areas.
   3. Adequacy of the structural support must be verified by the owner or the owner's technical representative and is their sole responsibility to determine.
   4. Potential live loads, such as snow or ponding water, should be considered.
   5. TJI joists are not acceptable for exterior deck support or framing.

C. Acceptable Substrate:
   1. Minimum 5/8" – Recommended 3/4” T&G exterior rated Fir plywood.
   2. Minimum 5/8” – Recommended 3/4” Tolko T-Ply Pro or Ultra T&G plywood.
   3. For Class “A” Fire rating use Minimum 1/2” PermaBase, cement underlayment installed over one of the acceptable substrates noted above in C-1 or C-2.
   4. Cured suspended slab concrete if not over metal pans or other waterproofing materials. Concrete must comply with the requirements of the applicable code.
   5. We recommend referring to the Tuff Industries Plywood Specification Bulletin and including them in the project documents.
   6. Tufdek membranes function as air and vapor barriers, proper ventilation is critical to the performance of the Tufdek waterproofing system. Poorly ventilated areas under the deck surface can lead to premature rot and deterioration of the deck and structure.
   7. **WARNING:** Some plywood grades such as G2S (good two side) and G1S (good one side) contain artificial / synthetic filler material which must be removed prior to installing Tuff vinyl membranes. If removal of synthetic filler material is not an option, then they must be covered with two coats of Zinnser Bin Shellac Based Primer Sealer.

D. Chemical Compatibility:
   1. Tufdek membranes must not come in contact with bitumen or tar-based products, pressure treated wood products or polystyrene insulations. Roof areas must not drain on or across the Tuff vinyl deck surface, long term exposure from roof area run off can affect the appearance and performance of the vinyl deck membrane.
   2. Tufdek membranes must not come in contact with copper-based metals as water runoff from copper can discolor the surface of the membrane.
   3. Tufdek membranes can be affected by chemicals found in commercial / residential environments. Many chemicals left to absorb into the membrane and then exposed to heat or ultra violet light can cause permanent discoloration or damage to Tufdek membranes. Contact Tuff Technical Department for question related to chemical incompatibilities.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Detail Drawings: Submit copies of manufacturer's standard detail drawings describing installation methods, seaming plan showing joints, termination details and interface with other materials as well as flashing conditions applicable to the project.

D. Selection Samples: For each finish product specified two complete sets of color samples 8 1/2 inches by 11 inches (216mm x 280mm), representing the manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches by 4 inches (152 mm x 102 mm) square representing actual product, color, and patterns.

F. Installer's qualifications.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section must have third party auditing of the manufacturing process, be internally reinforced and supplied by a single manufacturer with a minimum of ten (10) years' experience.

B. Installer Qualifications: All products listed in this section are to be installed by an installer with a minimum of two (2) years demonstrated experience installing products of the same type and scope as specified. Installer must have completed the factory training or have been trained by an authorized dealer who has completed the factory training.

C. Each dealer and installation contractor is independently owned and operated. Each dealer is an authorized licensed user of the trademark Tufdek which trademark is owned by Tuff Industries Inc. Dealers and installation contractors have no authority to assume or create any obligation whatsoever, expressed or implied, in the name of Tuff Industries Inc., nor to bind Tuff Industries Inc. in any manner whatsoever. Dealers and installation contractors are solely liable for all installation-related repairs and defects and related warranty work. Tuff industries Inc. strongly recommends that customers first conduct their own independent due diligence and investigations regarding the experience and qualifications of such dealers and installation contractors prior to retaining them.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and details are approved by Architect. Complete mock-up as required to produce acceptable work.
   3. Pre Installation Meeting: Discuss waterproof practices and precautions applicable to this project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

C. Deliver all materials to the job site in their original, tightly-sealed container or unopened packaging.

D. All materials must be clearly labeled with the manufacturer's name and product identification.

E. All materials must be protected from damage during transit, handling, storage and installation. Leave all materials on pallets fully protected from moisture.

F. Reject damaged materials at delivery. Replace all damaged materials with new materials.

G. All materials shall be stored in a dry area and protected from the elements. Store membrane rolls flat on pallets.

H. Store adhesive at temperatures between 5 C (40 F) and 26 C (80 F): if adhesives are exposed to lower temperatures, verify usability with manufacturer before using.

I. Store all flammable materials in a cool, dry area away from sparks and open flames. Follow precautions outlined by manufacturer / supplier.

1.8 AMBIENT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, dew point and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY AND MAINTENANCE

A. At project closeout, provide to Owner or Owners Representative a copy of the manufacturer's current standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage. Include a copy of the manufacturer’s current Tufdek membrane maintenance instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturer: Tuff Industries Inc, located at:
389 Carion Road, Kelowna BC. V4V 2K5
Toll Free: 877-860-9333; Email: info@tuffindustriesinc.com Web: www.tufdek.com

A. Substitutions: Not permitted.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 APPLICATIONS/SCOPE

A. Apply Tufdek vinyl deck flooring on any light foot, traffic bearing decks and roof decks in residential applications; restoration and new construction.

B. Fully adhered vinyl flooring without ballast to solid construction, suspended concrete or fir plywood, on flat, sloped and unusual configuration traffic decks.

2.3 BASE SHEET MEMBRANE FOR TUFDEK / TUFF-SHIELD 2-PLY SYSTEM

A. Base Sheet Membrane:
   1. Membrane Overall Thickness: TUFF-SHIELD TX 60 mil, (1.52 mm).
   2. Internal 18x14 Weft reinforced roof membrane with Ultra Violet resistance.
   3. Sheet Width: 64.25 inches (1632 mm) typical; other standard widths as applicable to project requirements and available from the manufacturer.
   4. Weight: 1653 g/m2.
   5. Elongation Tear Strength - ASTM D 751: PASS.
   6. Dimensional Change - CGSB 37.54-95: PASS.
   7. Accelerated Weathering - ASTM G 154 at 5000 hours: PASS.
   8. Color: TUFF-SHIELD TX white top, white back.

2.4 TRAFFIC MEMBRANE

A. Supreme Tufdek Waterproof Traffic Membrane:
   1. Membrane Overall Thickness: 61 mil, (1.55 mm).
   2. Internal 18x14 Weft reinforced roof membrane with Ultra Violet resistance.
   3. Sheet Width: 64 inches (1626 mm); other standard widths as applicable to project requirements may be available from the manufacturer.
   4. Weight: 1653 g/m2.
   5. Seam Strength - CGSB 37.54-95: PASS.
   6. Elongation Tear Strength - ASTM D 751: PASS.
   7. Dimensional Change - CGSB 37.54-95: PASS.
   8. Accelerated Weathering - ASTM G 154 at 5000 hours: PASS.
   9. Color: Graphite
   10. Color: Almond
   11. Color: Desert Sand
   12. Color: Slate Grey
   13. Color: Valencia Marble
   14. Color: Sanibel Marble

B. Designer Tufdek Waterproof Traffic Membrane:
   1. Membrane Overall Thickness: 61 mil, (1.55 mm).
   2. Internal 18x14 Weft reinforced roof membrane with Ultra Violet resistance.
   3. Sheet Width: 64 inches (1626 mm); other standard widths as applicable to project requirements may be available from the manufacturer.
   4. Weight: 1653 g/m2.
   5. Seam Strength - CGSB 37.54-95: PASS.
   6. Elongation Tear Strength - ASTM D 751: PASS.
   7. Dimensional Change - CGSB 37.54-95: PASS.
   8. Accelerated Weathering - ASTM G 154 at 5000 hours: PASS.
   9. Color: Birch
   10. Color: Rustic Plank
   11. Color: Driftwood
   12. Color: Beachwood
   13. Color: White Ash

2.5 ADHESIVES

A. Tuff – “Trowel-On”: Water-based synthetic polymer adhesive used for bonding all Tufdek / Tuff-Shield membranes to flat horizontal wood surfaces, Shelf life 1 Year.

B. Tuff – “Low VOC Contact Adhesive”: Solvent based adhesive for bonding all Tufdek / Tuff-Shield membranes to flat or vertical wood and / or concrete surfaces. Shelf life 1 Year.

C. Tuff – “Roll-On”: Water-based synthetic polymer adhesive used for bonding all Tufdek membranes to flat horizontal or vertical wood and / or concrete surfaces, Shelf life 1 Year.

1. Tuff – Roll-On or Tuff - Low VOC adhesive to be used for adhering Tufdek top ply to Tuff-Shield base ply in the Tufdek 2 ply system.

2.6 ACCESSORIES

A. Tuff – “Deck-Patch”: Cement based floor leveling compound used for filling plywood gaps, knotholes and uneven surfaces, follow directions for mixing on container.

B. Tuff-Seal Drain: Spun 2” aluminum drain with PVC coated flange and removable clean out grate and clamping ring.

C. Tuff-Seal Overflows: Welded aluminum overflows with PVC coated flange and a 12-inch (304.8 mm) outflow pipe.
1. Drain Diameter: 2-inch (50.8 mm) O.D. (sloped at 0%).
2. Drain Diameter: 3-inch (76.2 mm) O.D. (sloped at 0%).

D. Tuff-Clad H/D PVC Metal: 21 mil unreinforced membrane laminated to 24-gauge G-90 Galvanized steel fabricated by contractor into metal flashings and edge details.
1. Color: Grey
2. Color: Sandalwood
3. Color: White.
4. Color: Black.

E. Tuff-Seal Box Scuppers: All aluminum, open ended, sloped, PVC coated box scupper with nailing flange.

F. Tuff-Seal Box Scupper collector with drain pipe (for box scupper).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 SUBSTRATE PREPARATION

It is the Installation contractor’s responsibility for ensuring the substrate is acceptable for the application of the Tufdek membrane system

A. Correct Substrate Defects.
1. Defects that need to be corrected before work can commence should be brought to the attention of the General Contractor or Owner in writing and addressed by them.
2. For re-decking applications, remove existing waterproof system components as specified by the project designer. If components are discovered during installation that could be detrimental to the performance of the new Tufdek system, they should be brought to the attention of the Project Designer, General Contractor or Owner for corrective action.

3. If soundness and integrity of the existing structure cannot be verified, good practice requires a complete tear-off for inspection and repair. However, recovering an existing structure is an alternative to removing all existing components. Non- destructive testing, in conjunction with core cuts, must be completed to determine the condition of the existing structure.
5. The installation contractor is responsible for assuring that all wet substrate materials are dry prior to the installation of the new waterproof system.
6. In the absence of a Design Professional or General Contractor, the Installation Contractor should coordinate with the building owner to assure conditions are satisfactory to commence with the project as designed.

B. Remove Moisture

1. Ponded water, snow, frost and/or ice, must be removed from the work surface(s) and completely dried prior to installing the Tufdek System.

C. Prepare Surface

1. Acceptable substrates to which the Tufdek System is installed must be properly prepared prior to the system installation. The surface must be relatively even, clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the system. Rough surfaces that could cause damage to the membrane must be repaired as determined by the Design Professional.

D. Fill Voids

1. All surface voids of the immediate membrane substrate greater than 1/4” (6.35 mm) wide must be filled.

3.3 FULLY-ADHERED TUFDEK TX 60 "BASE PLY" MEMBRANE FOR TWO – PLY SYSTEM

A. Unroll the TX 60 membrane and position without stretching. Allow the membrane to relax for 15 minutes if the temperature is above 60 F (15 C), or at least 30 minutes if temperature is lower. Inspect membrane, remove or replace any product that is creased or damaged.

B. Lap sheets a minimum of 1.0 inch / 25.4 mm (minimum) or per acceptable standard roof practice to allow for a continuous weld area leaving room for adjustments and trimming of seams if necessary.

C. Fold back one half the width of the membrane and apply Tufdek adhesive in accordance with the manufacturers written instructions. Upon proper curing of the recommended adhesive roll membrane into the adhesive and push out air as to not create wrinkles or bubbles under the membrane. Fold back the remaining half, and repeat the process.

D. Refer to all manufacturer's instructions / specifications or contact Tufdek Technical Department for requirements.

E. Hot-air weld all seams with a continuous nominal 1.0 inch / 25.4 mm (minimum) weld width or per acceptable standard roof practice.

F. Inspect all welded seams for continuity and integrity using a seam probe, rounded screwdriver or similar blunt object. Seam checks are to be made daily by the contractor.

DETAILING

A. Detailing at various points such as posts, doorsills, scuppers or drains will only require one layer of vinyl membrane to prevent excessive buildup of materials. These details can be done with the base ply, the top ply, or both. The specifier in conjunction with the approved applicator will determine which method of installation should be used.

3.4 FULLY-ADHERED MEMBRANE

A. Unroll the Tufdek membrane and position without stretching. Allow the membrane to relax for 15 minutes if the temperature is above 60 F (15 C), or at least 30 minutes if temperature is lower. Inspect membrane, remove or replace any product that is creased or damaged.

B. Lap sheets a minimum of 1.0 inch / 25.4 mm (minimum) weld width or per acceptable standard roof practice to allow for a continuous weld area leaving room for adjustments and trimming of seams if necessary.
   1. For 2 ply system, stagger the seams on the top ply to ensure they are not directly on top of the base ply seams; to avoid build up of materials.

C. Fold back one half the width of the membrane and apply Tufdek adhesive in accordance with the manufacturers written instructions. Upon proper curing of the recommended adhesive roll membrane into the adhesive and push out air as to not create wrinkles or bubbles under membrane. Fold back the remaining half, and repeat the process.

D. Refer to all manufacturer's instructions / specifications or contact Tufdek Technical Department for further information.

E. Hot-air weld all seams with a continuous nominal 1.0 inch / 25.4 mm (minimum) weld width or per acceptable standard roof practice.

F. Inspect all welded seams for continuity and integrity using a seam probe, rounded screwdriver or similar blunt object. Seam inspections are to be made daily by the contractor.

3.5 FLASHINGS

A. Install Tuff-Clad PVC metal and / or membrane flashings and hot air weld 1.0 inch / 25.4 mm (minimum) or per acceptable standard roof practice to all metal and membrane flashings.

B. Install all flashings concurrently with the membrane as Work progresses.

3.6 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Manufacturer is not responsible or liable for the quality of the work performed by the installation contractor.

3.7 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION