TUFFLEX®, INC.
UNIQUE ELASTOMERIC SURFACING SOLUTIONS

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SPECIFICATION

CLASS "A" DECK OVERLAY ON CONCRETE

ICBO Acceptance Criteria for Walking Decks AC 39 and UBC Standard 15-2
These testing methods are essentially the same as specified in ATM 108, UL 790 and NFPA No. 256

I. SCOPE: This specification covers information for materials, labor and equipment necessary for the preparation and finishing of the Class "A" Deck Overlay on Concrete. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®** Inc. or approved distributors.
The following is a list of items needed for the Class "A" Deck Overlay on Concrete.

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used for all Deck Overlay applications (new or old).

Joint Tape: 4" fiberglass "Straight Jacket" tape. Use for joints, cracks and transitions. (Optional)

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT"'. "TUFF",** or **"OUTDOOR"** depending on usage). **Note Refer to individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL: Fine ground rubber or silica sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Approved selected aggregate sand, colored quartz sand (6.5 MOHS minimum hardness) or EPDM Rubber granules may be used in this Class "A" system.

Surface Finish: The **TUFFLEX®** "AL-ESTER / FR" (Fire Rated) Colorcoat. 1st coat "FR", 2nd coat Standard "AL-ESTER". **Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III PREPARATION:

A. SUBSTRATE: Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure only. Concrete shall be visibly dry and pass sixteen (16) hour ASTM D-4263 test (4 mil or 102 microns polyethylene mat test) with no condensation prior to the application of **TUFFLEX®** RBC SOLVENT FREE "SOFT". Concrete shall have a minimum of 4000 psi (281 kg/cm^2) compressive strength. All surfaces shall be completed, clean, and free from structural defects prior to coating application. If this system must be applied prior to the suggested 28 days. refer to the advisory "**TUFFLEX®** *Waterproofing Membrane on Fresh Concrete".* (If the concrete is "ON GRADE", also refer to the **TUFFLEX®** SPECIFICATION: *"Supplemental Specification For On Grade Concrete Application").*
B. General: Prime concrete surface with **"PRIMER #1 or #3"** at the rate of 300-400 sq.ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed. Always take precautions for over-spray.

1. Primer: Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base (**B.M.M.**)

2. Depressions and Irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

3. Joints, Cracks and Transition: Fiberglass tape may be set in **TUFFLEX®** base **(B.M.M.)** Tape should be free of air, blisters, or wrinkles. Center tape over subject areas. (Optional)

4. Metal: All metal flashing should be etched with acid, white vinegar or sanded, then wiped clean and dry. Prime at the rate 500 sq.ft. per gallon. Wait until tacky, apply tape as above.

IV. INSTALLATION:

A. Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture. Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX®** **B**ase **M**embrane **M**ixture to the entire surface at the minimum rate of 4 gallons per 100 sq. ft. of **B.M.M.***, (*3 1/4 gallons of R.B.C. plus 3/4 gallon. [25%] of waler equals 4 gallons of **B**ase **M**embrane **M**ixture) carrying this mixture over the detailed areas.

3. After the application of **TUFFLEX®** base **(B.M.M.),** let stand until membrane has slightly jelled. Then broadcast the EPDM granules over the entire surface until refusal. If sand is used for texture, the membrane will need to cure slightly longer. The membrane must be jelled, but still tacky, so the sand will adhere but not sink.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: First Coat - Mix the 5 gallons of Standard "AL-ESTER" colorcoat with the 1 gallon of "FR-POWDER", in the 6 gallon pail provided (5 gal. + 1 gal = 6 gal. of FR Colorcoat). Mix for 3 minutes at low RPM. Uniformly coat the entire textured surface with the **TUFFLEX®** "AL-ESTER/FR" Colorcoat System at a rate of 1 gallon per 80 sq.ft. Allow to cure, to accept foot traffic. Second Coat - Coat the entire surface with standard **TUFFLEX®** "AL-ESTER" Colorcoat (No FR Powder) at a rate of 1 gallon per 133 sq.ft. Take care to apply each coat uniformly to assure a streak free surface **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATIONS

CLASS "A" DECK OVERLAY ON PLYWOOD

ICBO Acceptance Criteria for Walking Decks AC 39 and UBC Standard 15-2
These testing methods are essentially the same as specified in ATM 108, UL 790 and NFPA No. 256

I. SCOPE: This specification covers information for materials, labor and equipment necessary for the preparation of the Class "A" Deck Overlay on Plywood. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX® Inc.** or approved distributors. The following is a list of items needed for the Class "A" Deck Overlay on Plywood.

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used for all Deck Overlay applications (new or old).

Joint Tape: 4" Fiberglass "Straight Jacket" tape. Use for joints, cracks and transitions.

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT". "TUFF",** or **"OUTDOOR"** depending on usage). **Note Refer to individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Only an approved selected aggregate sand or colored quart sand (6.5 Moh minimum hardness) will be used in this Class A" system.

Surface Finish: The **TUFFLEX®** "AL-ESTER. FR" (Fire Rated) Colorcoat. 1st coat "FR", 2nd coat Standard "AL-ESTER". **Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III PREPARATION:
All surfaces shall be completed, clean, and free from structural defects. All Flashing details shall be properly prepared and ready for completion.

A. Plywood: Plywood should be finished side-up and free of blemishes, 3/4" ACX (for optimum performance). CDX is acceptable, though extensive patching is usually required. Be aware of (1) hollow areas between plys. (2) Wet or green plywood, it will shrink and could cause some or all seams to split. (3) Always vent decks (from sides or underneath) to relieve surface pressure.

1. Floor joist must be set at minimum of 16" o.c. for 3/4" plywood. All joints and ends must be blocked.

2. Sheeting must be fastened with ring-shank, screw nails, or deck screws at max. 6" o.c. (Glue optional)

3. A 1/8" space should be left between seam joints to allow for movement and material to flow into joint, then cover with "Tuff Tape". If plywood is installed tight, saw cut a 1/8" wide and 2 ply deep groove, fill with RBC and cover with "Tuff Tape".

B. Flashing Metal and General Surface Prep:

1. Primer: A thin coat of Primer #1 or Primer #3 can be applied if plywood is damp or green. (Optional).

2. Metal: Metal flashings should be etched with acid, white vinegar or rough, sanded, then wiped clean and dry. Apply Primer #1 or #3 at a rate of 500 sq.ft. per gallon. Wait until tacky, apply the fiberglass tape and base membrane **(B.M.M.).**

3. Depressions and other irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

4. Joints, Cracks and Transition: Fiberglass tape must be set in **TUFFLEX®** base (B.M.M.) Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

IV. INSTALLATION:

A Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture and Fiberglass tape. Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX® Base Membrane Mixture** over the entire surface at the minimum rate of 4 gallons per 100 sq. ft. (65 mils) of **B.M.M.***, (*3 1/4 gallons of R.B.C. plus 3 quarts [25%] of water equals 4 gallons of **B**ase **M**embrane **M**ixture) carrying this mixture over the detailed areas.

3. After a second thin "tac" coat of **TUFFLEX®** base (**B.M.M.**), at the rate of 1 gallon per 100 sq. ft. 3/4 gallon R.B.C. and 1/4 gallon water. Let stand until membrane has slightly jelled. Then broadcast the specified sand texture until refusal.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: First Coat - Mix the 5 gallons of Standard "AL-ESTER" colorcoat with the 1 gallon of "FR-POWDER", in the 6 gallon pail provided (5 gal. + 1 gal = 6 gal. of FR Colorcoat). Mix for 3 minutes at low RPM. Uniformly coat the entire textured surface with the **TUFFLEX®** "AL-ESTER/FR" Colorcoat System at a rate of 1 gallon per 80 sq.ft. Allow to cure, to accept foot traffic. Second Coat - Coat the entire surface with standard **TUFFLEX®** "AL-ESTER" Colorcoat (No FR Powder) at a rate of 1 gallon per 133 sq.ft. Take care to apply each coat uniformly to assure a streak free surface **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATIONS

CLASS "B" DECK OVERLAY ON PLYWOOD

ICBO Acceptance Criteria for Walking Decks AC 39 and UBC Standard 15-2
These testing methods are essentially the same as specified in ATM 108, UL 790 and NFPA No. 256

I. SCOPE: This specification covers information for materials, labor, equipment necessary for the preparation of the Class "B" Deck Overlay over Plywood. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX® Inc.** or approved distributors. The following is a list of items needed for the Class "B" Deck Overlay on Plywood.

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used for all Deck Overlay applications (new or old).

Joint Tape: 4" Fiberglass "Straight Jacket" tape. Use for joints, cracks and transitions.

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT", "TUFF", or "OUTDOOR"** depending on usage).
**Note: Refer to individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: EPDM Rubber granules may be used in this Class "B" system. If desired, an approved selected aggregate sand, colored quartz sand (6.5 Moh minimum hardness) may be used.

Surface Finish: The TUFFLEX® "AL-ESTER, FR" (Fire Rated) Colorcoat 1st coat "FR", 2nd coat Standard "AL-ESTER".
**Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION: All surfaces shall be completed, clean, and free from structural defects. All flashing details shall be properly prepared an ready for completion.

A. Plywood: Plywood should be knothole free. 3/4" ACX (for optimum performance). CDX is acceptable, though extensive patching is usually required. Be aware of (1) hollow areas between plys. (2) Wet or green plywood, it will shrink and could cause some or all seams to split. (3) Always vent decks (from sides or underneath) to relieve surface pressure.

1. Floor joist must be set at minimum of 16" o.c. for 3/4" plywood. All joints and ends must be blocked.

2. Sheeting must be fastened with ringshank, screw nails, or deck screws at max. 6" o.c. (Glue optional)

3. A 1/8" space should be left between seam joints to allow for movement and material to flow into joint, then cover with "Tuff Tape".If plywood is installed tight saw cut a 1/8' wide and 2 ply deep groove, till with RBC and cover with "Tuff Tape".

B. Flashing Metal and General Surface Prep:

1. Primer: A thin coat of Primer #3 can be applied if plywood is damp or green. (Optional)

2. Metal: Metal flashings should be etched with acid, white vinegar and rough sanded, then wiped clean and dry. Apply Primer #1 or #3 at a rate of 500 sq.ft. per gallon. Wait until tacky, apply the fiberglass tape and base membrane **(B.M.M.)**

3. Depressions and other irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

4. Joints. Cracks and Transition: Fiberglass tape must be set in **TUFFLEX®** base **(B.M.M.)** Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

IV. INSTALLATION:

A. Base Membrane:

1. Detail all flashings. edges and turn ups with thickened base mixture and Fiber-glass tape. Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX® B**ase **M**embrane **M**ixture over the entire surface at the minimum rate of 4 gallons per 100 sq. ft. of **B.M.M.***, (*3 1/4 gallons of R.B.C. plus 3 quarts [25%] of water equals 4 gallons of **B**ase **M**embrane **M**ixture) carrying this mixture over the detailed areas.

3. After the application of **TUFFLEX®** base (**B.M.M.**), let stand until membrane has slightly jelled. Then broadcast the EPDM granules over the entire surface until refusal. If sand is used for texture, the membrane will need to cure slightly longer. The membrane must be jelled, but still tacky, so the sand will adhere but not sink.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: First Coat - Mix the 5 gallons of Standard "AL-ESTER" colorcoat with the 1 gallon of "FR-POWDER", in the 6 gallon pail provided (5 gal. + 1 gal = 6 gal. of FR Colorcoat). Mix for 3 minutes at low RPM. Uniformly coat the entire textured surface with the **TUFFLEX®** "AL-ESTER/FR" Colorcoat System at a rate of 1 gallon per 80 sq.ft. Allow to cure, to accept foot traffic. Second Coat - Coat the entire surface with standard **TUFFLEX®** "AL-ESTER" Colorcoat (No FR Powder) at a rate of 1 gallon per 133 sq.ft. Take care to apply each coat uniformly to assure a streak free surface **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATIONS

PEDESTRIAN DECK OVERLAY ON CONCRETE

1. SCOPE: This specification covers information for materials, labor, equipment necessary for the preparation and finishing of the areas over most types of Pedestrian Walking Deck installations over Concrete. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, Inc.** or approved distribution. The following is a list of items needed for Pedestrian Deck Overlay installation:

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used for all Pedestrian Deck Overlay applications (new or old).

Joint Tape: 3" to 6" TUFF-TAPE, polyester fabric. Use for joints, cracks and transitions. (Optional)

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT"** , **"TUFF"** or **"OUTDOOR"** depending on usage).
**Note: Refer* to *individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved Selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Approved selected colored or neutral rubber granules. Sand or colored sand may also be used.

Surface Finish: TUFFLEX® "AR", "AL" or "AL-ESTER" Color-coats (clear or colored).
**Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION:

A. SUBSTRATE: Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure only. Concrete shall be visibly dry and pass sixteen (16) hour ASTM D-4263 test (4 mil or 102 microns polyethylene mat test) with no condensation prior to the application of **TUFFLEX®** RBC SOLVENT FREE "SOFT". Concrete shall have a minimum of 4000 psi (281 kg/cm^2) compressive strength. All surfaces shall be completed, clean, and free from structural defects prior to coating application. If this system must be applied prior to the suggested 28 days. refer to the advisory *"***TUFFLEX®** *Waterproofing Membrane on Fresh Concrete".* (If the concrete is "ON GRADE", also refer to the **TUFFLEX®** SPECIFICATION: *"Supplemental Specification For On Grade Concrete Application").*

B. General: Prime concrete surface with **"PRIMER #1 or #3"** at the rate of 300-400 sq.ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed. Always take precautions for over-spray.

1. Primer: Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base (B.M.M.).

2. Depressions and irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

3. Joints, Cracks and Transition: "TUFF TAPE" fabric shall be set in **TUFFLEX®** base (B.M.M.) Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

4. Metal: All metal flashing must be etched with acid, white vinegar or rough sanded, then wiped clean and dry. Prime at the rate 500 sq.ft. per gallon. Wait until tacky, apply tape as above.

IV. INSTALLATION:

A. Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture. Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX® Base Membrane Mixture** to the entire surface at the minimum rate of 2 1/2 gallons per 100 sq.ft. (40 mils) of **B.M.M.***, (* 2 gallons of R.B.C. plus 2 quarts [25%] of water equals 2 1/2 gallons of **B**ase **M**embrane **M**ixture) carrying this mixture over the detailed areas.

3. After applying the **TUFFLEX®** base (**B.M.M.)**, let stand until membrane has slightly gelled. Then broadcast selected rubber granules over entire deck surface until refusal. If sand is used for texture, the membrane may need to cure longer period of time. Membrane must still be tacky for any texture to adhere.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: Using a squeegee, or medium nap roller, uniformly overcoat the entire membrane surface with the **TUFFLEX®** Colorcoat "AR", "AL" or "AL-ESTER". Spread at the rate of 1 gallon per 90 sq.ft. depending on texture size selected. For heavy traffic, a second coat may be necessary to comply with warranty program and to assure an uniform finish. **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

THIS PUBLICATION SUPERSEDES ALL OTHERS **ON PLYWOOD.PM5 - Jan 2002**

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SPECIFICATION

SUPPLEMENTAL SPECIFICATION FOR TUFFLEX SYSTEMS APPLIED TO ON-GRADE CONCRETE

On-grade concrete presents undeniable challenges to the successful application of waterproofing membranes. but like mast problems, these are surmountable if recognized and properly mitigated.

“On-Grade”, as used here, refers to concrete flatwork in direct contract with the damp earth below it. If unrestrained, that dampness is known to continually rise up through the concrete by osmosis and evaporate into the air. Such dampness can accumulate below a restraining waterproof membrane, where it may exert a delaminating vapor pressure in mild climates, or it may freeze in cold climates, possibly flaking off the concrete top surface and any membrane attached to it.

In mild to moderate climates, concrete can last for many years with osmotic moisture evaporating from its surface continually. Usually, the only evidence might be the white powdery “Efflorescence” left on the surface by naturally occurring “Alkali” chemicals from non-acidic types of soil. Extra precautions must be taken when “Efflorescence” is evident. In most cases where the concrete has been placed directly in contact with the earth, without vapor barrier or drainage rock base, it pays to be extra careful by double priming the concrete before coating it with a waterproofing membrane.

DOUBLE PRIMING SPECIFICATION: This specification is to be used in addition to any **TUFFLEX®** Specification where **TUFFLEX®** membrane systems are applied to “0n-Grade” concrete.

A. PREPARE THE SUBSTRATE:

1. Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure additives only.
2. Concrete shall be visibly dry and pass the sixteen (16) hour ASTM-D 4263 test (4 mil polyethylene or equal mat test) with no condensation accumulation prior to the application of a **TUFFLEX®** membrane system.
3. Concrete should preferably have a minimum of 4000 psi compressive strength.
4. All surfaces shall be completed, clean and free from structural defects prior to coating application.
5. If the coating system must be applied prior to the suggested 28 days, refer to the “RED” Advisory Section, **TUFFLEX®** Waterproofing Membrane on Fresh Concrete”.

B. GENERAL:

1. Mix **TUFFLEX®** Primer #1 or #3 as per product specification, then roll or spray apply a uniform coat to the concrete surface at the rate of 300 to 400 sq.ft. per gallon (depending upon the surface porosity and finish). Allow to dry thoroughly. This coat is intended to achieve deep penetration into the concrete pores, and minimizing the vapor drive from moisture in the damp soil below the slab.
2. After the first coat has cured completely, apply a uniform second coat at the same rate of the prior coat, using care to avoid heavy ponding areas.
3. While the second coat is still slightly tacky, apply the **TUFFLEX®** membrane mixture as per the selected **TUFFLEX®** Specification.

For further information on this subject please refer to the January/February, 1999 issue of the Concrete Repair Bulletin -*”Reducing Band Failures Caused by Moisture Vapor Transmission”* by Robert Cain. **TUFFLEX®**, Inc. will be happy to supply a copy of this article upon request.

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1. SCOPE This specification covers information for materials, labor, equipment necessary for the preparation and finishing of the areas over most types of Pedestrian Walking Deck installations over Plywood. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, Inc.** or approved distribution. The following is a list of items needed for Pedestrian Deck Overlay Over Plywood installation:

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used for all Pedestrian Deck Overlay applications (new or old).

Joint Tape: 3" to 6" "TUFF-TAPE", polyester fabric. Use for joints, cracks and transitions.

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT"** , **"TUFF"** or **"OUTDOOR"** depending on usage). **Note: Refer* to *individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved Selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Approved selected rubber granules, sand or colored quartz sand (6.5 Moh minimum hardness) may be used in this system.

Surface Finish: TUFFLEX® Standard "AL-ESTER". "AL", "AR" or "AR-SF"
Colorcoats may be used.
**Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION: All surfaces shall be completed, clean, and free from structural defects. All flashing details shall be properly prepared and ready for completion.

A. Plywood: Plywood should be knothole free, *3/4"* ACX (for optimum performance). CDX is acceptable, though extensive patching is usually required. Be aware of (l) hollow areas between plys. (2) Wet or green plywood, it will shrink and could cause some or all seams to split. (3) Always vent decks (from sides or underneath) to relieve surface pressure.

1. Floor joist must be set at minimum of 16" o.c. for 3/4" plywood. All joints and ends must be blocked.

2. Sheeting must be fastened with ringshank, screw nails**,** or deck screws at max. 6" o.c. (Glue optional)

3. A 1/8" space should be left between seam joints to allow for movement and material to flow into joint and apply "Tuff Tape". If plywood is installed tight. saw cut a 1/8" wide and 2 ply deep groove. Fill the groove with RBC and apply "Tuff Tape" over the joint.

B. Flashing Metal and General Surface Prep:

1. Primer: A thin coat of Primer #3 can be applied if plywood is damp or green. (Optional)

2. Metal: Metal flashings should be etched with solvent, white vinegar or rough sanded, then wiped clean and dry. Apply Primer #1 or #3 at a rate of 500 sq.ft. per gallon. Wait until tacky, apply the "TUFF TAPE" and base membrane (**B.M.M.**).

3. Depressions and other irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

4. Joints, Cracks and Transition: "TUFF TAPE" must be set in **TUFFLEX®** base (B.M.M.) Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

IV INSTALLATION:

A. Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture and "TUFF TAPE". Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX® Base Membrane Mixture** over the entire surface at the minimum rate of 4 gallons per 100 sq.ft. (65 mils) of **B.M.M.***, (* 3 1/4 gallons of R.B.C. plus 3 quarts [25%] of water equals 4 gallons of **B**ase **M**embrane **M**ixture). Apply enough **B.M.M.** to hide all seams and defects.

3. After applying a sufficient amount of **TUFFLEX® B.M.M.**, let stand until membrane has slightly gelled. Then broadcast EPDM granules, until refusal, over entire deck surface. If sand is used for texture, the membrane will need to cure slightly longer. but still needs to be tacky to allow the sand to adhere.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: Using a squeegee, or medium nap roller, uniformly overcoat the entire membrane surface with the **TUFFLEX®** Colorcoat "AR", "AL" or "AL-ESTER". Spread at the rate of 1 gallon per 90 sq.ft. depending on texture size selected. For heavy traffic, a second coat may be necessary to comply with warranty program and to assure an uniform finish. **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

TUFFLEX®, INC.
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SPECIFICATION

OVERLAY SPECIFICATION ON SHIP-DECKS

I. SCOPE: This specification covers information for materials, labor, equipment necessary for the preparation and finishing of the areas over most types of Pedestrian Walking Area On Steel Ship Decks. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and,or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®** , **Inc**. or approved distributors. The following is a list of items needed for Pedestrian Deck Overlay installation:

Primer: TUFFLEX® Primer #1 or #3 (solvent free).

Base Membrane Matrix: TUFFLEX® Resin Binder ("SOFT". **"TUFF"** ,or **"OUTDOOR"** depending on usage). **Note: Refer to individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts. may be added for thickening and or sloping.)

Surface Texture: Approved selected colored or neutral rubber granules. Sand or colored sand may also be used.

Surface Finish: TUFFLEX® "AR", "AL" or "AL-ESTER" Color-coats (clear or colored). *Note: Refer to Colorcoat, at Technical Bulletins on each produce for maximum performance.

III PREPARATION: All surfaces shall be completed, clean and free from structural defects. All flashing shall be ready for completion.
A. Metal Surfaces: Prime the entire horizontal area and vertical turn ups to counter-flashings or terminations with **TUFFLEX®** Primer at the rate of 300-400 sq.ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed.

B. General: Prime metal surface with 'PRIMER #1 or #3" at the rate of 300-400 sq.ft.. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed. Always take precautions for over-spray).

1. **Primer:** Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base **(B.M.M.)**
2. **Depressions and Irregularities:** fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

IV. INSTALLATION: Apply the **TUFFLEX®** base membrane mixture as recommended by the Manufacture.

A. Base Membrane:
1. Detail all flashings, edges, and turn ups with a stiff **TUFFLEX®** base membrane mixture, over coating the entire prepared surfaces, feathering out onto adjoining surfaces when necessary.
2. Apply a uniform coating of **TUFFLEX®** **B**ase **M**embrane **M**ixture to the entire surface at the minimum rate of 2 1/2 gallons per 100 sq.ft. (40 mils) of **B.M.M.***, (* 2 gallons of R.B.C. plus 2 qts. [25%] of water equals 2 1/2 gallons of Base Membrane Mixture) carrying this mixture over the detailed areas.
3. After applying the **TUFFLEX®** base (**B.M.M.**), let stand until membrane has slightly gelled. Then broadcast selected rubber granules over the entire surface until refusal. If sand is used for texture, the membrane may need to cure a longer period of time. Membrane must still be tacky for any texture to adhere.
4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

B. Finish Coat: Using a squeegee, or medium nap roller. uniformly overcoat the entire membrane surface with the **TUFFLEX®** Colorcoat "AR". "AL" or "AL-ESTER" Spread at the rate of 1 gallon per 90 sq.ft.. depending on texture size selected. For heavy traffic, a second coat may be necessary to comply with warranty program and to assure an uniform finish. **Note: Refer to Colorcoat Technical Bulletin.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATION

MECHANICAL ROOM (INDOOR) SPECIFICATION

I. SCOPE: This specification covers the supply of all materials, labor, equipment necessary for the preparation and finishing of the designated walking surfaces in a workmanlike manner to best industry standards by a contractor authorized by the distributor or his representatiVe.

II MATERIALS: All materials to be installed shall be manufactured, supplied, or endorsed by **TUFFLEX®**, Inc., or inclusion of this system.

Primer: TUFFLEX® Primer #1 (for indoor use). (solvent free)

Base Membrane Matrix: TUFFLEX® Resin Binder. (solvent free)

Base Membrane Filler: Approved selected rubber granules or sand.

Surface Texture: Approved selected colored or neutral rubber granules. (OPTIONAL)

Surface Finish: TUFFLEX® Colorcoat - AR or AL as selected by owner. (OPTIONAL)

III. PREPARATION: All surfaces shall be completed, clean, and free from structural defects. All flashing shall be ready for completion

A. SUBSTRATE: Prime the entire horizontal area and vertical turn ups to counter-flashings or terminations with **TUFFLEX®** Primer at the rate of 300-400 sq.ft per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed

B. General:

1. Primer Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base membrane mixture.
2. Depressions and Irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand to a “stay-put” consistency.

IV. INSTALLATION: Apply the **TUFFLEX®** base membrane mixture, over coating the entire prepared surfaces, feathering out onto adjoining surfaces when necessary.

2. Apply a uniform coating of **TUFFLEX® B**ase **M**embrane Mixture to the entire surface at the minimum rate of 2 112 gallons per 100 sq.ft. of **B.M.M.*** approx. 40 mils (2 gallons of R.B.C. plus 2 quarts (25%) of water equals 2 1.2 gallons of Base Membrane Mixture) carrying this mixture over the detailed areas and up onto vertical surfaces to a uniform height.
3. Immediately after applying the **TUFFLEX®** base membrane mixture, while its surface is receptive, broadcast (to acceptance) a heavy covering of selected rubber granules over its entire surface until hidden. (OPTIONAL)
4. Allow **TUFFLEX®** base membrane mixture to cure to accept foot traffic.
5. Remove all excess and unattached rubber granules from the **TUFFLEX®** membrane surface by sweeping or vacuuming. (OPTIONAL)
6. Repair any holidays or imperfections in the entire rubber granule finished surface to produce a uniform appearance, both on horizontal and vertical surfaces. (OPTIONAL)

B. Finish Coat: Using a squeegee. or medium nap roller. uniformly overcoat the entire membrane surface with the **TUFFLEX®** Colorcoat “AR”, “AR-SF”, “AL”. “Al-ESTER” or “AL-ESTER FR”. Spread at the rate of 1 gallon per 90 sq.ft, depending on texture size selected. For heavy traffic, a second coat may be necessary to comply with warranty program and to assure an uniform finish. *Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs. warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding.

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SPECIFICATIONS

WATERPROOFING UNDER FLOOR TILES

American National Standard A 118.10-1993
See Test Results in "Test Data" Section of the Tufflex Specification Book

I. SCOPE: This specification covers information for materials, labor, equipment necessary for the preparation and finishing of the areas over most types of Under Tiles or Pavers installations in a workman like manner to best industry standards by a contractor authorized by a **TUFFLEX®** Distributor and/or his Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, Inc.** or approved distributors. The following is a list of items needed for Under Tiles or Pavers installation:

Primer: TUFFLEX® Primer #1 or #3 (solvent free)either may be used for all Under Tiles or Paver applications (new or old).

Joint Tape: 3" to 6" TUFF-TAPE polyester fabric. Use for joints, cracks and transitions,

Base Membrane Matrix: TUFFLEX® Resin Binder **("SOFT"** , **"TUFF"** - or **"OUTDOOR"** depending on usage).
*Note: *Refer to Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Approved selected colored or neutral rubber granules.

Surface finish: TUFFLEX® *"AR".* "AL" or "AL-ESTER" Color-coats (clear or colored). ***Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION:
A. SUBSTRATE:
Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure only. Concrete shall be visibly dry and pass sixteen (16) hour ASTM D-4263 test (4 mil or 102 microns polyethylene mat test) with no condensation prior to the application of **TUFFLEX®** RBC SOLVENT FREE "SOFT". Concrete shall have a minimum of 4000 psi (281 kg/cm^2) compressive strength. All surfaces shall be completed, clean, and free from structural defects prior to coating application. If this system must be applied prior to the suggested 28 days, refer to the advisory "**TUFFLEX®** *Waterproofing Membrane on Fresh Concrete".*

B. GENERAL: Prime concrete surface with **"PRIMER #1 or #3"** at the rate of 300-400 sq. ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed. Always take precautions for over-spray.

1. Primer: Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base **(B.M.M.)**

2. Depressions and Irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

3. Joints, Cracks and Transition: "TUFF-TAPE" fabric shall be set in **TUFFLEX®** base **(B.M.M.)** Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

4. Metal: All metal flashing must be free of oil and debris. Use acid, white vinegar or rough sand to prepare surface. Wipe clean and dry. Prime at the rate of 500 to 600 sq.ft. per gallon.

IV INSTALLATION:
A. Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture. Feather to smooth demarcations.

2. In either "Over Concrete" or "Over Plywood" applications, follow closely the proper **TUFFLEX®** "SPECIFICATION" sheets to insure the minimum mil thicknesses. (40 mils over concrete, 65 mils over plywood.)

3. After applying the base (**B.M.M.**) to the specified thickness, wait until the membrane has set up to a tacky state and then broadcast 30 mesh or finer sand on to the surface. The sand will give a mechanical grip for the mastic, thin set or mortar bed application. DO NOT fasten any wire mesh or cause any other penetrations once membrane has stopped self leveling or leaking *WILL* occur.

4. Allow the **TUFFLEX®** base (**B.M.M.**) to cure completely or until it will accept foot traffic. Reclaim any loose or unbonded sand, save for reuse.

**Note. Refer to the Tile. Pavers or Stone Manufacture Data sheets for the proper choice of and installation of either a mastic. thin set or a mortar bed application.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATIONS

FLEX-MESH DECK AND ROOF OVERLAY SYSTEM

I. SCOPE: This specification covers information for materials, labor and equipment necessary for the preparation and finishing of the Flex-Mesh Deck and Roof Overlay System. It also outlines installations which comply with industry Standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, Inc.** or approved distributors. The following is a list of items needed for the Flex-Mesh Deck and Roof Overlay System.

Primer: TUFFLEX® Primer #1 or #3 (solvent free) either may be used. Primer is only suggested on any metal flashing or areas that the metal does not cover, ie: vertical walls, roof and deck penetrations, railings, etc.

Joint Tape: 3" to 6" "TUFF-TAPE", polyester fabric should be use for joints, cracks and transitions that are not covered with the metal mesh.

Metal Lath (Diamond Lath): Galvanized, corrosion resistant 2.5 pound/square yard metal diamond lath. Metal lath shall conform to ANSI A42.3 and A42.4 specification and ASTM C841 Standards.

Staples (Plywood Substrate): When going down directly on new plywood, use minimum seven-eighth inch crown by five-eights inch long (7/8" x 5/8") No. 16 gage galvanized, corrosion-resistant heavy-wire staples. When going through one or more layers of other decking material, perform bonding tests with longer staples to assure proper length and penetration. The stapling tool should be capable of countersinking the staples.

Nails (Concrete Substrate): Galvanized, corrosion resistant one inch (I") spot-pin nails with five-eights inch (58") corrosion-resistant washers. Application tool should be capable of setting the nail and washer flush with the top of the expanded wire mesh.

Base Membrane Matria: TUFFLEX® Resin Binder **"TUFF"** is used for the "Sand Slurry" ***Note. Refer** to "*Sand Slurry" and/or "Solvent Free Tuff: Specification Sheets for further information.*

Base Membrane Filler: Approved selected aggregate sand, silica sand or colored quartz sand.

Surface Texture: Approved selected EPDM rubber granules, sand or colored quartz sand (6.5 Moh minimum hardness) may be used in this system.

Surface Finish: TUFFLEX® Standard "AL-ESTER", "AL-SF", "AL", "AR" or "AR-SF" Colorcoats may be used.
**Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION: All surfaces shall be completed, clean, and free from structural defects. All flashing details shall be properly prepared and ready for completion.

A. Plywood:

1. Plywood (new or existing) should be sound and free of imperfections. 5/8" or 3/4" CDX plywood, either is acceptable. On pre-existing plywood decks, insure that all debris and loose coatings are removed.

2. Floor joist must be set at minimum of 16" o.c. and all joints and end seams should be blocked.

3. New or existing plywood must be fastened (or re-fastened) with ringshank, screw nails, or deck screws at max. 6" o.c. (Glue optional on new construction.)

4. An inexpensive caulk may be used in seams and cracks to stop the sand slurry mixture running down into the substrate.

5. Venting decks (from sides or underneath) is necessary in this system to relieve surface pressure and stress.

Concrete:

1. Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure only. Concrete shall be visibly dry and pass sixteen (16) hour ASTM D-4263 test (4 mil or 102 microns polyethylene mat test) with no condensation prior to the application of **TUFFLEX®** Flex Mesh System. Concrete shall have a minimum of 4000 psi (281 kg/cm^2) compressive strength. All surfaces shall be completed, clean, and free from structural defects prior to coating application. If this system must be applied prior to the suggested 28 days, refer to the advisory *"**TUFFLEX®** Waterproofing Membrane on Fresh Concrete".*

B. Flashing Metal and General Surface Prep:

1. Primer: A thin coat of either Primer to areas not covered by the metal mesh.

2. Metal: Metal flashings should he cleaned with solvent, white vinegar and rough sanded. Apply Primer #1 or #3 at a rate of 500 sq.ft. per gallon. Wait until tacky before apply the sand slurry mixture.

3. Depressions and other irregularities fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

4. Transition: Any area not being covered with the Flex Mesh system must follow the normal procedures for surface applications. *Note: *Refer to individual Technical Bulletins on each product for maximum performance.*

IV. INSTALLATION

A. On Plywood:

1. The metal mesh should be placed on the deck and stapling should start from the center working to the edges. A minimum of 20 staples per sq.ft. shall be used (A random pattern of about every three inches). When the adjacent metal mesh sheet is butted up to the one that has been fastened (DO NOT over lap mesh seams), staple them both down with the same staple, placed across the seam. After the entire deck has the metal mesh installed, inspect the deck to insure that there are no high spots or areas that have not been firmly attached to the substrate. Low areas will be filled in, high areas will protrude above the deck and will cause an unsightly condition.

2. Detail all areas that are not covered with the metal mesh, with thickened base mixture and "TUFF TAPE". Feather to smooth demarcations.

3. Apply a uniform coating of **TUFFLEX®** "Sand Slurry" Mixture over the

metal mesh make sure no metal is showing. A ratio of I part RBC "TUFF", 25% water (introduce water into the mix after the sand has been added to the RBC "TUFF") and 1 1/2 parts sand (by volume) is recommended More sand may be used, but troweling is more difficult.
Refer to mixing instruction in the "Sand Slurry" Technical Bulletin to assure maximum performance.

B. On Concrete:

1. Install the metal mesh with concrete nails and anchors, Hilty or Ramset power fasteners. For power fasteners, use "Redhead" loads with the 1" nail and washer combination. Shoot fasteners about 6" apart in a random fashion, making sure that the heads are below the surface of the metal mesh.

2. Follow the same application of metal mesh placement and slurry as in the above section **"A: On Plywood"** above.

C. Intermediate / Texture Coat:

1. After the Flex Mesh System (diamond lath and sand slurry under layment) has had time to cure, apply a uniform coating of **TUFFLEX®** **B**ase **M**embrane **M**ixture over the entire surface area. Apply at the minimum rate of 2 1/2 gallons per 100 sq.ft. (40 mils) of **B.M.M.*,** (*2 gallons of R.B.C. plus 2 qts. [25%] of water equals 2 1/2 gallons of Base Membrane Mixture). Use a squeegee or medium nap roller to carrying this mixture over the metal mesh deck, making sure enough **B.M.M.** is applied to hide any mesh, seams, nail, staples or defects that are showIng. Let stand until membrane has slightly gelled (15 to 30 minutes. depending upon weather conditions). Then evenly broadcast the EPDM granules, until refusal, over entire deck surface. If sand is used for the desired texture, the membrane will need to cure slightly longer, but still needs to be tacky to allow the sand to adhere.

4. When membrane will accept foot traffic, remove all excess texture with broom or vacuum. Make any repairs necessary to imperfections or defects. Let repairs cure.

D. Finish Coat: Using a squeegee, or medium nap roller. uniformly overcoat the entire membrane surface with the **TUFFLEX®** Colorcoat "AR," *"AL"* or "AL-ESTER". Spread at the rate of 1 gallon per 80 sq.ft., depending on texture size selected. For heavy traffic, a second coat may be necessary to comply with warranty program and to assure an uniform finish. **Note: Refer to Colorcoat Technical Bulletins.*

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

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SPECIFICATIONS

HOLDING TANK COATING AND LINER

I. SCOPE: This specification covers information for materials, labor, equipment necessary for the preparation and finishing of the areas under most types of Holding Tank installations in a workman like manner to best industry standards by a contractor authorized by the distributor or his representative.

II. MATERIAIS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, INC.** or approved distributors. The following are a list of item needed for Holding Tank / Liners:

Primer: TUFFLEX® Primer #1 (solvent free) should be used for all Holding Tanks (new or old). This will seal any moisture existing in the tank walls.

Base Membrane Matrix: TUFFLEX® "SOLVENT FREE SOFT" or **"SOLVENT FREE TUFF"** Resin Binder (depending on tank usage).

Base Membrane Filler: Approved selected rubber granules or sand. (OPTIONAL, Rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

III. PREPARATION: All surfaces shall be completed, clean, and free from structural defects, new concrete should be fully cured, a suggested 28 days cure time should be observed prior to coating application. If this system must be applied prior to the suggested 28 days, refer to the advisory "**TUFFLEX®** Waterproofing Membrane on Fresh Concrete"

A. SUBSTRATE: Prime with **"PRIMER #1**" the entire vertical walls and floor of the tank, at the rate of 300-400 sq.ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed.

B. General:

1. Primer: Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base membrane mixture.

2. Depressions and Irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or rubber granules to a "stay-put" consistency.

IV. INSTALLATION: Apply the **TUFFLEX®** base membrane mixture, over coating the entire prepared surfaces, feathering out onto adjoining surfaces when necessary.

1. Apply a uniform coating of **TUFFLEX® Base Membrane Mixture** to the entire surface at the minimum rate of 3 1/2 gallons per **100** sq.ft of **B.M.M.*,** (* 3 gallons of R.B.C. plus 3 qts. (25%) of water equals 3 3/4 gallons of **Base Membrane Mixture**) carrying this mixture over the detailed areas and up onto vertical surfaces to a uniform height.

2. (OPTIONAL) If a custom sealer for color or chemical resistance is necessary, follow these steps. After applying the **TUFFLEX®** base membrane mixture, while its surface is receptive, broadcast (to acceptance) a light covering of selected, approved sand over its entire surface until hidden. When using sand wait until the membrane has set to 60% so sand does not sink into the membrane, approx. 20 minutes, depending on weather conditions. The sand is to give a mechanical bond to the mastic and or thin set.

3. Allow **TUFFLEX®** base membrane mixture to cure to accept access or foot traffic (Minimum of 24 hours, 48 hours is suggested).

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.

THIS PUBLICATION SUPERSEDES ALL OTHERS **ON PLYWOOD.PM5 - Jan 2002**

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SPECIFICATIONS

CRACK FILLING AND CAULKING MATERIALS

To be used in conjunction with the appropriate TUFFLEX® Membrane Specifications

TUFFLEX® Materials represent a new and unique urethane technology in the coatings industry; consequently, new thinking and unique approaches can be used to solve old problems.

The old approach to detailing cracks in concrete consisted of routing out the crack, and if it's large enough - using backer rod, priming the crack and area around it, and applying an expensive "tube" type caulking into the crack. The caulking material must then be allowed to cure for 12 to 24 hours! This system is extremely labor intensive and time consuming. In addition, one has to allow the caulking material to stay open to the air in order to dry. This time delay also slows down client access to the area, and in the case of parking structures, loss of revenue from not being open for business. Time equals money!

Since **TUFFLEX®** Resin Binder Concentrate (RBC) is water catalyzed and cures internally even when covered over, the crack detailing process can be radically speeded up and the materials cost is also less. Time saved and money saved!

Once the surface preparation and crack detailing is done, the appropriate **TUFFLEX®** Membrane Specification can be used to finish the job.

TUFFLEX® Base Membrane Mixture is less expensive and tougher than regular "tube" type caulking. **TUFFLEX®** BMM cannot be packaged in tubes because water must be mixed in to catalyze the material. It can, however, be used in bulk guns or disposable caulking tubes once it is catalyzed. (Make sure that you use the material in the tubes promptly or it will setup in the tubes!)

TUFFLEX® Crack Filling Specification.

All surface preparation and safety guidelines, as outlined in the appropriate **TUFFLEX®** Membrane Specification that is being used, must be followed.

If the cracking is limited to small areas, or if only a small amount of cracking is present across the deck, the cracks can be dealt with while other surface preparation is going on. If there is a lot of cracking. and the whole deck is in need of crack detailing, it is faster for all surface preparation to take place first. Then the entire deck surface can be done at one time.

After the cracked area, or the entire deck, meets the surface preparation guidelines as outlined in the **TUFFLEX®** Specification that will be used for the finished membrane, proceed as follows:

1. If the crack is large enough to take any size closed cell backer rod, place the backer rod in the crack in order to stop the material from running through and out the bottom, keeping material costs in line. For smaller cracks, just make sure the cracks are cleaned out as part of the deck preparation procedure.

2. Prime the area with the **TUFFLEX®** Primer specified in the **TUFFLEX®** Specification sheet being used.

3. Mix the Solvent-Free **TUFFLEX®** Resin Binder Concentrate "TUFF" or "SOFT" (as needed) with the normal 25% water to make the normal Base Membrane Mixture (BMM).

A. For large cracks, the BMM may be thickened with the addition of available rubber granules to make a "spackle grade" material. When detailing the cracks, trowel the material tight to the deck in order not to leave any humps that will show through the finished membrane.

B. For smaller cracks, it is faster to dump the un-thickened BMM on the primed deck surface and with a fiat squeegee, pull the material tight and force it into the cracks. Any material left on the deck surface will become part of the membrane. The **TUFFLEX®** Mixture will penetrate the cracks and effectively caulk them off.

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SPECIFICATIONS

SAND SLURRY SPECIFICATION and APPLICATION GUIDE

To be used in conjunction with the appropriate TUFFLEX® Membrane Specification

Non-structural repairs to concrete that is palled, surface cracked or in need of a flexible sloping under-layment, can be accommodated with the TUFFLEX® Sand Slurry mixture. The Sand Slurry can also be used as a flexible sloping under-layment on plywood decks and metal or aluminum ship decks.

If non-**TUFFLEX®** cementicious, epoxy or regular "tube" caulking materials are used for patching, crack filling or sloping, they must be left open to the air for a day or two in order to dry and/or outgas before being covered over with a membrane system. By using the **TUFFLEX®** Sand Slurry for preparation work, when the application is cured enough to accept foot traffic, or stiff enough to accept the next application step of material, the job can continue.

Once **TUFFLEX®** RBC is mixed with sand and catalyzed with water, it will internally cure without exposure to the air. This really speeds up the otherwise time consuming surface preparation work. All surface and safety guidelines, as outlined in the appropriate **TUFFLEX®** Membrane Specification that is being used, must be followed.

1. Clean and remove surface dirt, debris and loose concrete. If a deadline is near, this should be done dry and not by water blasting because the water will then have to be allowed to evaporate. A wet/dry shop vacuum can be used to help remove dry material, or the water if water blasting must be used.

2. If edge sloping, limited spelling or cracks are to be dealt with, you can prune only the areas you are going to deal with. It is easier to work and walk on an un-primed area, and this also prevents the tracking of primer into areas where it is not desired. After detailing the needed areas, the full area can then be primed prior to application of the specified **TUFFLEX®** membrane system.

3. Prime the area to be covered with the appropriate **TUFFLEX®** Primer. Apply the Sand Slurry mixture when the primer becomes tacky. The consistency of the Sand Slurry is controlled by the amount of sand added. By mixing in a 1/2 to one proportion of sand, the material is loose and tends to self level. By adding more sand, the material can be made stiff enough to slope with. The rule of thumb is simple: (1.) If you want the mixture thick, mix it thick If you need it thin, mix it thin. Adjust by adding more or less filler material. (2.) Do not forget to add the 25% water!

4. Once the Sand Slurry is cured enough to accept the next application of material, the job can continue. When covered over with the next application step, the Sand Slurry will still continue to internally cure.

5. If promptly overcoated, the Sand Slurry surface does not need to be primed before the **TUFFLEX®** membrane is applied. If the surface is left open overnight and or dirt and debris accumulate on the surface, it is always advisable to clean off the surface and re-prime.

Follow the appropriate **TUFFLEX®** Membrane System Specification for full surface preparation and safety information.

NOTE: Normally 25% of water is used to catalyze the **TUFFLEX®** RBC. Since the sand tends to absorb some of the water, if a lot of sand is used, add a bit more water, up to 50%, to insure enough water to catalyze the whole mixture. Any extra water will not mix in and should be poured off the top of the mixture after about one minute of mixing.

For detailed!ed mixture information, see

the red section, Advisories:

"Sand Slurry Yield".

Type of Sand

Any mesh sand can be used for the Sand Slurry. Usually 20 or 30 mesh sand is readily available. Damp "mortar" sand may be used, just add a little less water to the mixture because some water is already in the sand.

Fine Crack Filling

If a lot of fine shrinkage or hairline type surface cracking is present, it may be easier and less time consuming to prep and prime the whole affected area and squeegee an application of straight water-catalyzed **TUFFLEX®** BMM (without sand) into the cracks.

With the squeegee, pull the material tight and force it into the cracks. Any material left on the surface will become part of the membrane. The more fluid straight **TUFFLEX®** mixture will penetrate the small cracks and effectively caulk them off. Even used straight, **TUFFLEX®** RBC is less expensive and tougher than regular "tube" type caulking. (**TUFFLEX® cannot** be packaged in tubes because water must be mixed in to catalyze the material. Once catalyzed. the **TUFFLEX®** mixture can then be used in bulk guns or disposable caulking tubes.)

This method does not require the expensive, time consuming and labor intensive process of routing out each crack and hand applying an expensive caulking material. When the area is set up enough to walk on, the **TUFFLEX®** surface system of choice can be applied. You will not need to let the **TUFFLEX®®** material stay open to the air for a day in order to outgas, as you would have to if you used "regular" caulking materials. Save time and money!

For further on this section, please refer to the **TUFFLEX®** Crack Filling Specification.

THIS PUBLICATION SUPERSEDES ALL OTHERS **SANDSLURRY.PM65 - Jan 2002**

TUFFLEX®, INC.
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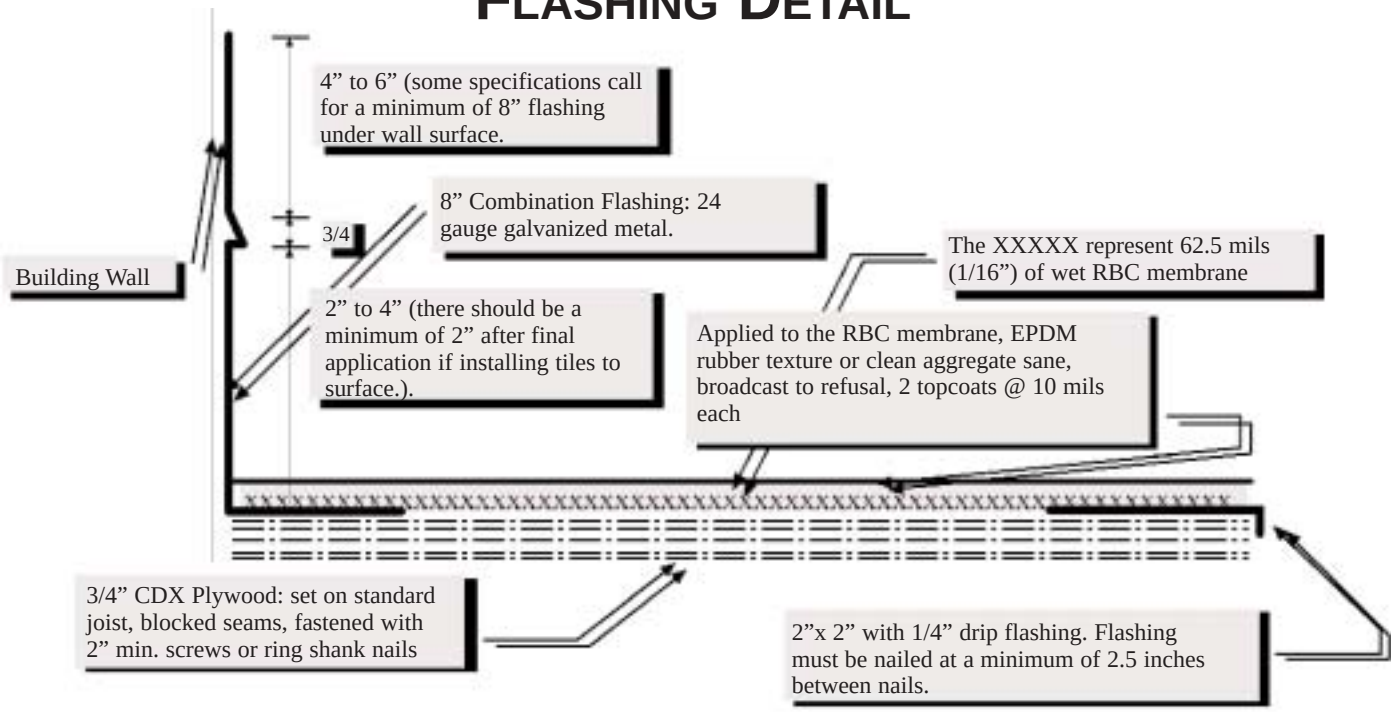
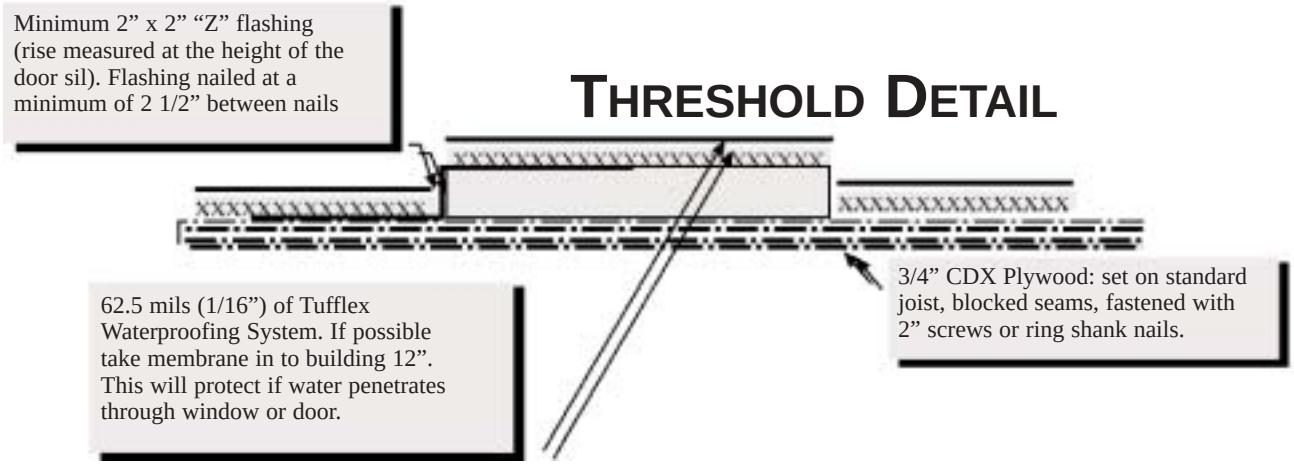
Toll Free: (888) TUFFLEX (883-3539)
Phone: (562) 404-0479
Fax: (562) 404-0493

SPECIFICATION

FLASHING DETAIL



THRESHOLD DETAIL



Note: All written details shown above are listed under “Specification” (the blue section) in the Tufflex Product Manual. Please read all specification and technical data sheets in this book for information on all products and system applications.

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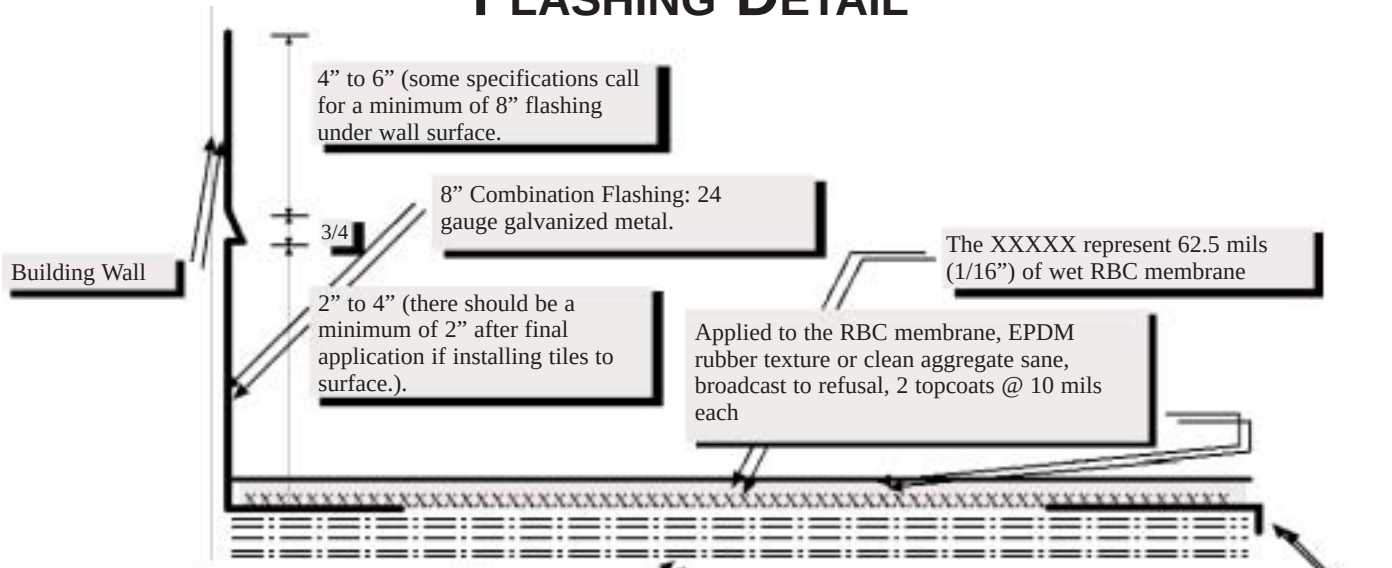

SLOPING DETAIL

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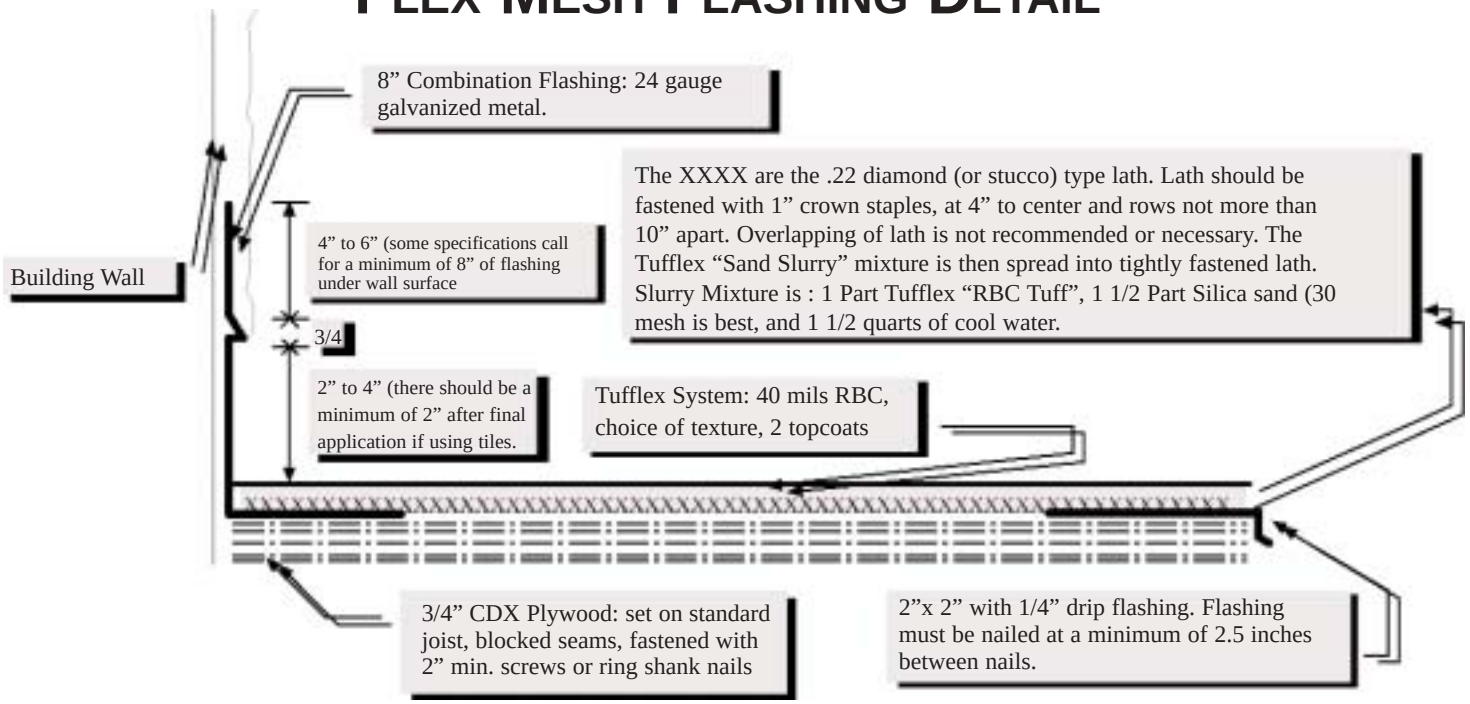
SPECIFICATION

FLEX MESH FLASHING DETAIL



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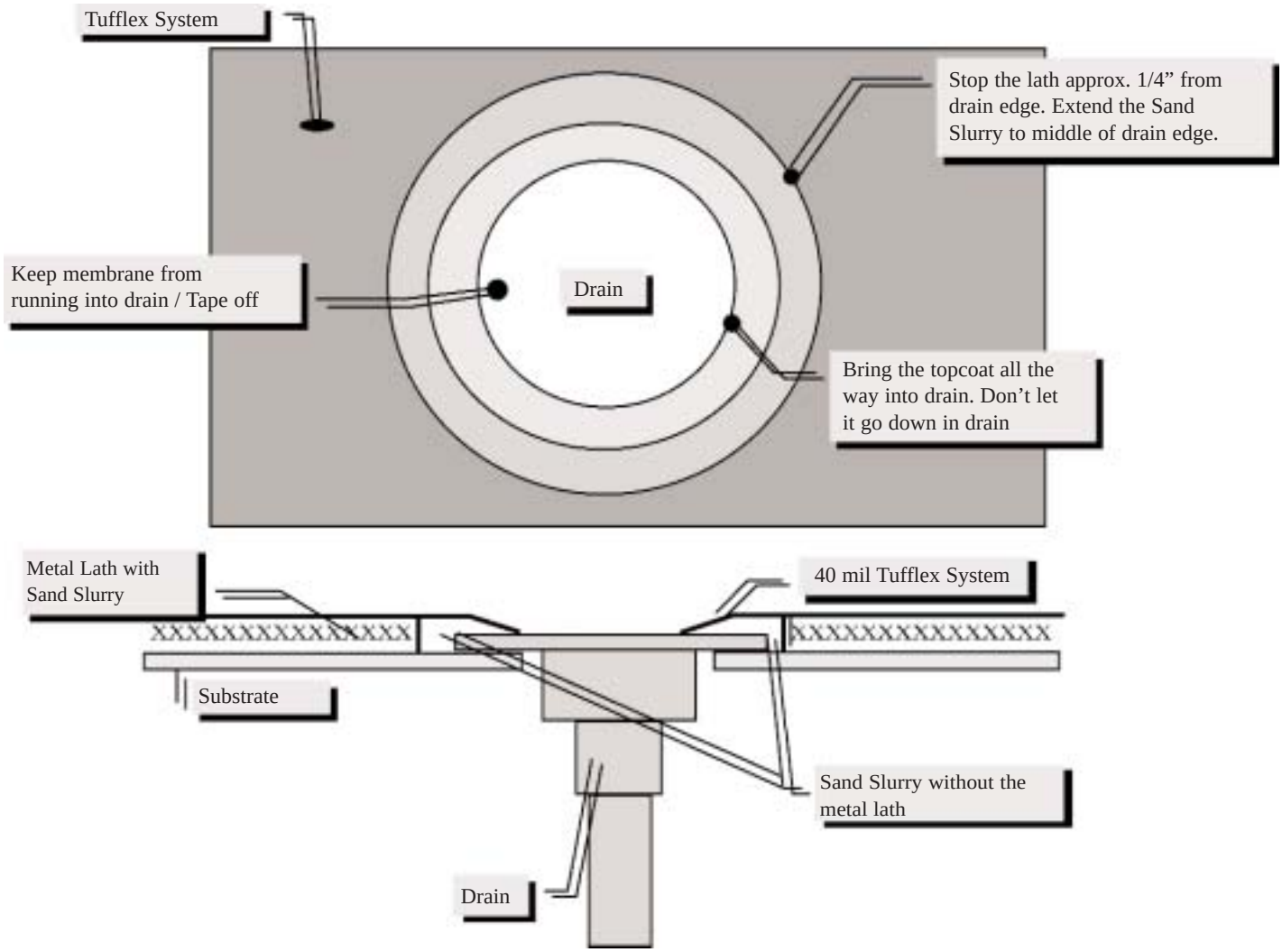
SPECIFICATION

FLEX MESH DRAIN DETAILS



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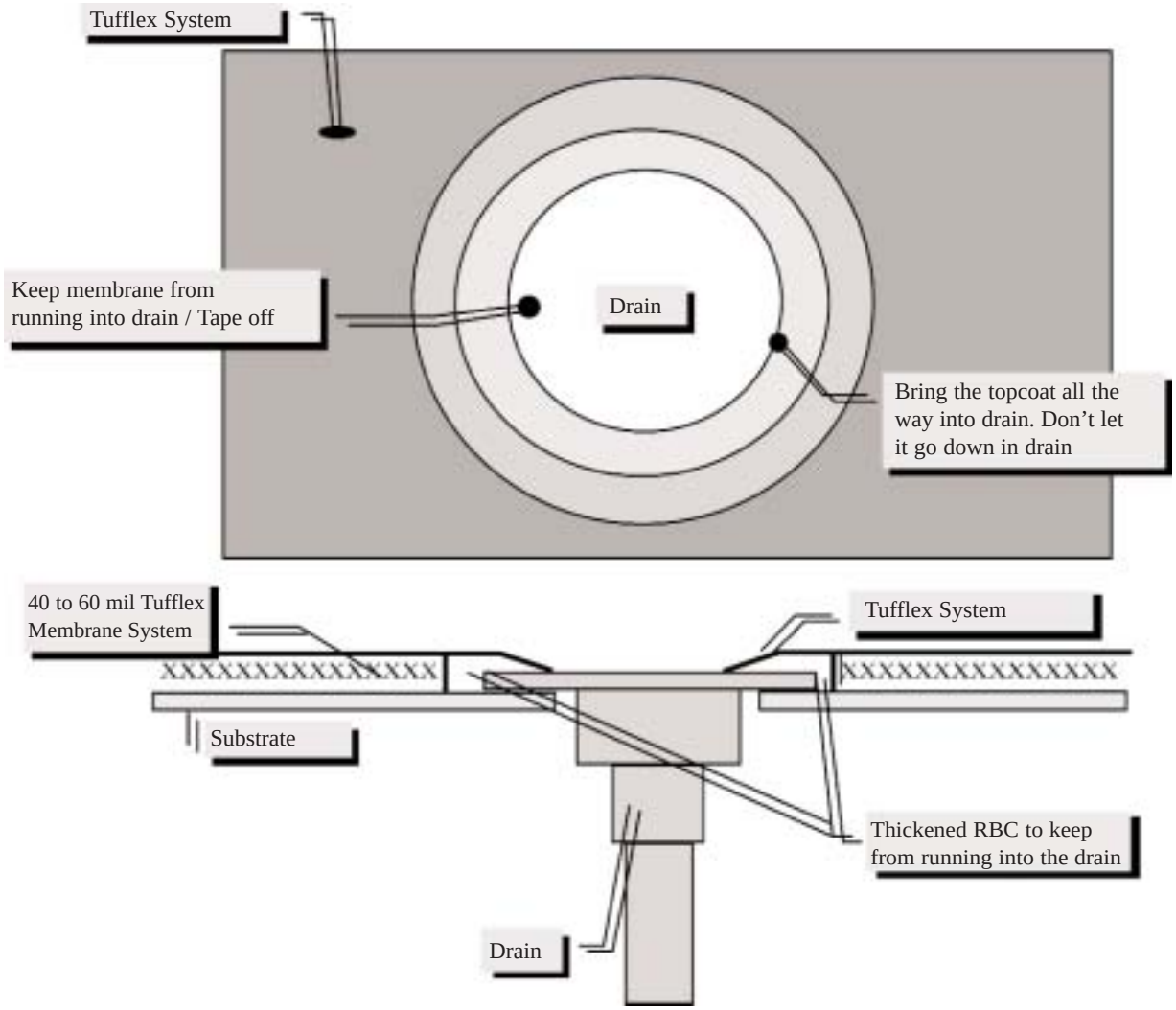
SPECIFICATION

DRAIN DETAILS



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SPECIFICATIONS

VEHICLE TRAFFIC DECK

1. SCOPE This specification covers information for materials, labor, equipment necessary for the preparation and finishing of a Vehicle Traffic Deck Waterproofing System. It also outlines installations which comply with industry standards and should be installed by a contractor authorized by a **TUFFLEX®** Distributor and/or its Trained Representative.

II. MATERIALS: All materials to be installed shall be manufactured and purchased from **TUFFLEX®, Inc.** or approved distribution. The following is a list of items needed for a Vehicle Traffic Deck installation:

Primer: TUFFLEX® Primer #1, #3 (solvent free) or #2 (Solvenated).

Joint Tape: 3" to 6" "TUFF-TAPE", polyester fabric. Use for joints, cracks and transitions. (optional)

Base Membrane Matrix: TUFFLEX® Resin Binder **"TUFF"**.
**Note: Refer to individual Technical Bulletins on each product for usage.*

Base Membrane Filler: Approved Selected rubber granules or sand. (OPTIONAL: Fine ground rubber or sand, up to equal parts, may be added for thickener and/or sloping.)

Surface Texture: Specified rubber granules and copper slag (Sharpshot/Black Beauty, etc. sandblasting copper slag, 16/20 grit. or an customer specifies.) The combination of rubber and copper slag texture makes for an excellent wear surface and will not break down and cause pinholes as is common with sand texture systems.
.
Surface Finish: TUFFLEX® Standard "ALESTER". "AL", "AR", "AR-SF" or "Tuff Shield" Colorcoats may be used.
**Note: Refer to Colorcoat Technical Bulletins on each product for maximum performance.*

III. PREPARATION:

A. SUBSTRATE: Concrete should be cured a minimum of twenty-eight (28) days with water or sodium silicate based cure only. Concrete shall be visibly dry and pass sixteen (16) hour ASTM D-4263 test (4 mil or 102 microns polyethylene mat test) with no condensation prior to application. Concrete shall have a minimum of 4000 psi (281 kg/cm^2) compressive strength. All surfaces shall be completed, clean, and free from structural defects prior to coating application. If this system must be applied prior to the suggested 28 days. refer to the advisory *"**TUFFLEX®** Waterproofing Membrane on Fresh Concrete".* (If the concrete is "ON GRADE", also refer to the **TUFFLEX®** SPECIFICATION: *"Supplemental Specification For On Grade Concrete Application").*

B. General: Prime concrete surface with **"PRIMER #1, #2 or #3"** at the rate of 300-400 sq.ft. per gallon (depending upon the surface porosity and finish). Primer may also be sprayed for additional economy and speed. Always take precautions for over-spray.

1. Primer: Allow **TUFFLEX®** Primer to dry to a slightly tacky surface before applying **TUFFLEX®** base (B.M.M.).

2. Depressions and irregularities: fill all irregularities with a **TUFFLEX®** mixture that has been thickened with sand or fine rubber granules to a "stay-put" consistency.

3. Joints, Cracks and Transition: "TUFF TAPE" fabric shall be set in **TUFFLEX®** base (B.M.M.) Tape should be free of air, blisters, or wrinkles. Center tape over subject areas.

4. Metal: All metal flashing must be etched with acid, white vinegar or rough sanded, then wiped clean and dry. Prime at the rate 500 sq.ft. per gallon. Wait until tacky, apply tape as above.

IV WATERPROOFING MEMBRANE INSTALLATION:

A. Base Membrane:

1. Detail all flashings, edges and turn ups with thickened base mixture and "TUFF TAPE". Feather to smooth demarcations.

2. Apply a uniform coating of **TUFFLEX®** **B**ase **M**embrane **M**ixture over the entire surface at the rate of 2 1/2 gallons per 100 sq.ft. (40 mils) of **B.M.M.***, (* 2 gallons of R.B.C. plus 2 quarts [25%] of water equals 2 1/2 gallons of **B**ase **M**embrane) carrying this mixture over the detailed areas.

3. After applying a **TUFFLEX®** waterproofing membrane to what ever mil thickness is required by the actual substrate surface conditions, usually 20 to 60 mils, and while it is still in a liquid state, an applicator with spiked shoes will walk out onto the wet membrane and broadcast the rubber texture granules to rejection. Approximately 250 sq. ft. per 50lb. bag. When broadcasting the granules, they must be kept away from the wet application edge so that the membrane will have a chance to lay-out smoothly and not get clotted up with the rubber texture granules as the applicator rolls and/or squeegees out the membrane material. When this application can accept foot traffic, sweep up and/or vacuum up the loose rubber granules and save for reuse. (the large push-vacuums that are used in commercial gardening for picking up leaves and grass clippings are good for this purpose and really speeds up the process.)

B. 1. LIGHT TRAFFIC WEAR SURFACE, BASIC SPECIFICATION: The final choice of the traffic bearing wear surface will depend on the amount of expected vehicle traffic. Heavy traffic and tight turning radius details would naturally require additional attention by applying additional layers of the surface wear coating. Heavier expected service duty equals more material costs and the labor costs to install these additional layers of protective coatings.

The basic traffic bearing wear surface specification follows. Additional specific site needs should be figured in additional to this Basic Specification.

Using a squeegee and/or medium nap roller, uniformly overcoat the entire waterproofing membrane and rubber texture surface with **TUFFLEX®** "AR" Colorcoat spread at the rate of 1 gallon per 80 sq. ft.. As the "AR" colorcoat is being applied and is still wet, broadcast approved copper slag texture into the "AR" colorcoat. (When broadcasting, spiked shoes may be worn in order to walk out onto the wet colorcoat surface and stay clear of the application wet edge area.) Evenly broadcast the "slag" at the rate of 1/4 lb. per sq. ft. When this application is dry enough to support foot traffic, but within 48 hours, apply a second "AR" colorcoat* at the rate of 100 sq.. ft. per gallon to the entire deck. If additional heavy volume wear surface areas are to be added in addition to this light traffic surface, do not apply the AR Colorcoat to the entire deck until the following **B–2** section is completed.

Note: Refer to the AR Colorcoat Technical Bulletin for further application and accelerated drying time information. Finish with an evenly applied final colorcoat of "AR", "AL" or TUFF-Shield within 48 hours.*

B. 2. **For Heavy Volume traffic-wear expectations and/or turning radius areas, the following additional step is required**. After placing the first "AR" Colorcoat and copper slag application across the entire deck, as per the above Basic Specification, apply an additional "AR" Colorcoat and copper slag application at the same rate, to just the turning radius areas and any other areas determined by the end user as potential heavy traffic wear areas. (Ramps, stop-and-go toll booth areas, entry - exit points, etc.) When this application is dry enough to support foot traffic, but within 48 hours, apply a coat of "AR" colorcoat at the rate of 100 sq. ft. per gallon to the entire deck area. Finish with an evenly applied final colorcoat of "AR". "AL" or TUFF-Shield to the entire deck within 48 hours.*

In addition to the waterproofing membrane application, these Specifications will result in **three** layers of wear surface protection in the light traffic areas and **four** layers of wear surface protection in the heavy traffic and turn radius areas.

*The choice of the final colorcoat type should depend on the end use customer's desires as to UV resistance, esthetics and such. Please refer to the specific materials Technical Bulletin for further information. The final "AR" and "AL" colorcoats should be applied at 125 sq. ft. per gallon. The TUFF-Shield is to be applied at 250 to 300 sq. ft. per gallon. If this parking deck is in an interior area where solvent smells cannot be tolerated, refer to the **"AR" Solvent-Free Colorcoat** Technical Bulletins.

V. WARRANTY: Except for specifically designated and overseen jobs, warranties are limited to those which are standard with the application contractor, who has total control over substrate bonding and **TUFFLEX®** system application integrity.