

UNIFLEX™ URETHANE COATING SYSTEM GUIDE SPECIFICATION FOR CURED CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope of work shall include all materials, labor, equipment, and supervision necessary to install a urethane roof coating system as outlined in this Specification. All work shall be performed by properly trained Contractor personnel in a safe, professional, timely and workmanlike manner and in accordance with all federal, state, and local laws, rules and regulations, this Specification and good roofing practice.
- B. Restoration of existing Structural Concrete roof decks using urethane roof coating. This Specification is suitable to protect and extend the service life of previously coated and non-coated concrete roof deck systems. NOTE: Conditions/Materials that are not acceptable for application of Uniflex liquid applied coatings:
 - 1. Split-slab, topping slab conditions
 - 2. LWIC
 - 3. Green Concrete less than 60 days (*see decking section for more information*)
 - 4. Polished Concrete
- C. Decking-Acceptable concrete substrates are:
 - 1. Cast-in-place structural
 - 2. Pre-cast structural
 - a. Metal pan decks to which concrete is poured must be venting type.
 - b. Structural Concrete in vented metal pan decks must be cured a minimum of 28 days.
 - c. The deck is vented from the underside to facilitate drying.
 - d. In non-vented metal pan decks new concrete should be cured for a minimum of 60 days before coating membranes are applied.
 - e. For composite steel deck construction, allow concrete to cure sixty (60) days.
 - f. Concrete shall have a light broom finish. Steel float finishes are too smooth and compromise the adhesion of the waterproofing system.
 - g. Decks with a steel float finish must be sandblasted or equivalent prior to the application of the Uniflex liquid applied system.
 - h. Commercial detergents and sandblasting may be necessary to remove sealers and release compounds.
- D. Any instructions on the Manufacturer's Product Data Sheets are to be considered part of these Specifications and should be followed in any performance of the work.
- E. Additional details and specific areas of repair may be selected, modified, or added as necessary.

1.2 RELATED WORK

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 01 Specifications, apply to this section.
- B. Contractor shall review all sections of the project specifications to determine items of work that may interface with the application of the roof coating system. Compliance with applicable building codes shall be assured by the specifier or engineer, while coordination and execution of related sections shall be the responsibility of the Contractor.

1.3 REFERENCES

- A. ASTM
- B. Miami-Dade
- C. CRRC

1.4 REVIEW/ SUBMITTALS

- A. Prior to bid, all project specifications, details, submittals, photographs, inspection reports and existing substrate conditions shall be provided to Manufacturer for review and pre-application warranty approval.
- B. At the time of bidding, the Contractor shall submit to the Owner the following:
 - 1. A certificate or letter from the Manufacturer approving the Contractor in good standing for application of the Manufacturer's products and systems at the time of the work.
 - 2. Provide cured sample of products to be installed.
 - 3. The Manufacturer's standard details and approved shop drawings for the coating system.
 - 4. Product and Material Safety Data Sheets for each product indicated in this Specification.
 - 5. Sample copy of Manufacturer's warranty to be issued upon successful completion of the project.
 - 6. Sample copy of the Contractor's warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall have a minimum of 20 years' experience manufacturing roof coatings and be ISO 9001: 2008 Certified.
- B. Products listed herein shall be provided by a single manufacturer or approved by the primary roofing Manufacturer for compatibility.
- C. Contractor represents and warrants that it is experienced in and qualified to perform the work described herein and can provide the necessary equipment, supervision, and trained workforce capable of completing the work in a safe, prompt, diligent, professional, and workmanlike manner and in accordance with all federal, state and local laws, rules and regulations, this Specification and good roofing practice.

- D. Contractor shall be thoroughly familiar with all codes, regulations and standards governing the work to be performed and shall provide written proof of all required licenses and permits prior to project commencement.
- E. Contractor shall be approved by Manufacturer for application of Manufacturer's products and systems and in good standing at the time of the work and shall coordinate with Manufacturer prior to bidding and commencement of work regarding any Manufacturer's warranty to be issued upon successful completion of the project.
- F. Contractor shall inspect the project to examine the actual job and site conditions and must be familiar with local conditions and all things required to complete the work that will have a bearing on its costs and completion.
- G. All substrates must be peel tested for adhesion strength and those results provided to Manufacturer prior to application of the coating system.
- H. Contractor is responsible for ensuring a trained foreman is on-site during the application of the coating system and any related work. A daily log of application activities and environmental conditions shall be maintained and available on-site with copies of specification, TDS, and MSDS. A copy of the activity log shall be submitted to Manufacturer upon completion of project.
- I. Contractor shall check wet film thickness during application of the coatings to ensure achievement of required coverage rates.
- J. In the event Contractor finds that performance or completion of the work will be delayed for any reason, Contractor shall notify the Owner, the Owner's Representative and Manufacturer in writing as soon as possible.
- K. There shall be no deviations made from the Specifications unless submitted in writing by the Contractor and approved in writing by the Specifier, Owner and Manufacturer.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Products shall be delivered to jobsite in Manufacturer's original unopened and undamaged containers bearing Manufacturer's original labels. Package labels must be clearly visible on pallets. Verify products are within Manufacturer's recommended shelf-life.
- B. Store all products in a dry, well ventilated, weather tight location at temperatures between 50° F and 99° F. Do not store products at higher temperatures or in direct sunlight. Protect all products from freezing or other damage during transit, handling, and storage. Store and handle products in a manner that will ensure there is no possibility of contamination. Keep lids tightly sealed when not in use. Do not stack pallets more than two (2) high. If these storage conditions are not possible, special consideration in storage must be taken.
- C. Do not subject existing roof to unnecessary loading of stockpiled products or other materials.
- D. Record batch numbers in daily project activity log. Submit to Manufacturer upon project completion.
- E. Store and dispose of all products and materials used on the project in accordance with all federal, state, and local requirements for the proper handling and disposal of such products and materials.

1.7 PROJECT CONDITIONS

A. Condition of Existing Substrate

1. The Owner, Owner's Representative and Contractor shall thoroughly inspect and determine the condition of the roof system and substrate to be coated, and the suitability of the roof system for the application and performance of the coating system.
2. All surfaces and substrates which are to be coated must be properly prepared, clean, dry, structurally sound, and free from any moisture, dirt, contaminants, or any other conditions which may interfere with the application and performance of the coating system. (See section Contractor shall approve the condition of the roof system and substrate prior to application of the roof coating system.
3. The roof coating shall have good resistance to ponding water. However, areas of prolonged ponding water may, depending on environmental conditions, require additional inspection and maintenance (including cleaning and re-coating) during the warranty period. The NRCA recommends that all roofs be designed and built to have positive drainage. Any questions or concerns about deck deflection because of ponding water conditions shall be directed to a competent and properly licensed design professional.
4. If any unusual, unexpected, or concealed conditions are discovered at any time prior to or during the work, the Contractor shall stop work immediately and notify the Owner, Owner's Representative and Manufacturer in writing as soon as possible.

B. Protection and Coordination

1. Owner will occupy the premises during the work. Contractor will cooperate with the Owner to allow for the continued use of the facilities during the work.
2. Contractor shall take all necessary precautions when using roof coatings or other materials around air intakes and air conditioning units to avoid any disturbance, including odors, for the Owner and building occupants. All air intakes and air conditioning shall be adequately protected or closed during the work on the roofing system to prohibit odor intake into the building.
3. If ventilators exist on the roof, the Contractor shall determine what material is being exhausted onto the roof surface. Contractor shall contact the Manufacturer to determine if the exhaust materials will interfere with surface preparation, application, adhesion, or other performance of the coating system.
4. Contractor shall take all necessary measures to protect unrelated work or adjacent areas from over-spray and spillage.
5. Contractor shall coordinate scheduling with the Owner to relocate or protect vehicles, building occupants, building contents and unrelated work from damage.
6. Site clean-up during and after completion of the work shall be completed to Owner's reasonable satisfaction.

1.8 WEATHER AND SURFACE TEMPERATURE

- A. Contractor shall proceed with roofing work only when the existing and forecasted weather conditions and surface temperatures will permit work to be performed in accordance with Manufacturer's recommendations and good roofing practice, including:
1. Ambient air temperature must be 50°F and rising, but not above 120°F during the entire application and curing process.
 2. Surface temperatures must be between 50°F and 150°F during application. If surface temperatures exceed 150°F during application, wait for roof to cool.
 3. Never apply coating to a wet or damp surface. Roof surface must be free from any moisture with no precipitation in the forecast until coating is dry. Do not apply coating if weather does not permit 4-6 hours of dry time prior to precipitation. Low humidity, low temperatures, cloud cover and calm air will slow the dry time.
 4. Extra precaution is needed when applying material in windy conditions. Never spray material when excessive wind conditions exist. Contractor should monitor wind condition to prevent over-spray. If winds become excessive, spraying should stop.

1.9 PRE-APPLICATION CONFERENCE

- A. Prior to scheduled commencement of the coating application and any related work, Contractor shall conduct a meeting on the roof with the Architect, Owner, Manufacturer, and any other persons directly involved with the performance of the work. The Contractor shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review methods and procedures related to the roofing work and any special Owner requirements.
- B. All parties shall view representative areas of the roofing substrate and discuss conditions of the substrate, penetrations, and any other work to be completed prior to application of the coating system.
- C. Review roofing system requirements, specifications, detail drawings, Contract Documents and required submittals, both completed and in progress.
- D. Review and finalize the construction schedule related to roofing work, and verify availability of materials, Contractor's personnel, equipment, and facilities needed to consistently make progress and avoid delays.
- E. Review results from Contractor's inspections, adhesion, and non-destructive testing.
- F. Review fore-casted weather conditions expected. Establish procedures for coping with unfavorable conditions, including the possibility of temporary roofing work.

1.10 WARRANTY

- A. Project warranties beyond those found on Product Data Sheets require Manufacturer approval prior to job commencement. Any warranties for the project must be submitted and accepted by the Owner at the time of contract award. Please contact Manufacturer for any requirements and associated costs or fees which may be associated with warranty issuance. Recommendations and requirements are subject to change from project to project based on existing conditions.
- B. Manufacturer may issue to the Building Owner either (a) Material Only Warranty or (b) Systems Warranty, as may be agreed to at time of contract award. Any warranties issued shall be for the coating application only and shall not provide coverage for the existing roofing system, including the substrate or structural deck. Any presence by Manufacturer personnel on the project does not provide any additional coverage beyond that stated in the applicable warranty.
- C. The Contractor may provide the Owner with a workmanship warranty as may be agreed to by the Contractor at time of contract award.

1.11 REGULATORY AND SAFETY

- A. Contractor will perform all work in a safe, professional, timely and workmanlike manner and in accordance with all federal, state, and local laws, rules and regulations related to the work to be performed hereunder, the Specifications and good roofing practice.
- B. Contractor shall be thoroughly familiar with all codes, regulations and standards governing the work to be performed and shall provide written proof of all required licenses and permits prior to project commencement.
- C. Contractor shall establish and enforce a safety program for its work and employees which meets or exceeds all federal, state and local laws, rules and regulations, including proper fall protection and all other applicable requirements of the Occupational Safety and Health Act of 1970 (OSHA), and all other requirements which may be necessary for the safety of its employees, Owner and the public.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Products other than those described in Part 2 may be submitted for review and acceptance by Manufacturer. Manufacturer's review shall be for compatibility purposes only with Manufacturer's products. The specifications and application instructions for products not supplied by Manufacturer must be reviewed by the Owner and/or Owner's Representative for final approval and use on the project. Manufacturer will not provide any warranty coverage for products other than those supplied by the specified Manufacturer.

2.2 ACCEPTABLE MANUFACTURERS

- A. Uniflex Fluid Applied Roofing Systems, 101 W. Prospect Avenue, Cleveland, Ohio 44115
- B. Contact the Uniflex Technical Department at uniflex.technical@sherwin.com with any questions and for a complete list of approved products.

2.3 COMPONENTS

- A. Urethane Roof Coating:
 - 1. Uniflex™ 46-600 URETHANE88 WHITE
 - 2. Uniflex™ 46-620 URETHANE88 GRAY BASE
- B. Additional Materials:
 - 1. Walkways: (optional)
 - a. #11 - C93 granules or like granules (.84 to 2.0 minimum size)

PART 3 - EXECUTION

3.1 INSPECTION AND TESTING

- A. All roof system areas shall be inspected for moisture in accordance with the guidelines of the Standard Practices for Moisture Surveying of Roofing and Waterproofing Systems.
- B. Based on inspection and testing, a roof plan shall be made to show all areas of water intrusion, ponding water, cracks, honeycombing, fracturing, and any deteriorated or damaged decking or other materials.
- C. General Requirements: Inspect roof concrete surface prior to application. Surface must be:
 - 1. Clean, dry, and structurally sound.
 - 2. Latent concrete free.
 - 3. Commercial detergents and sandblasting may be necessary to remove sealers and release compounds.
 - 4. Ponding water should be remediated to limit accumulation.
 - 5. Slope of roof area must not be less than ¼" per foot.
 - 6. Cracks should be identified and treated.
 - 7. Fill bug-holes, air pockets, cracks, and other voids with an Uniflex sealant.
 - 8. Concrete irregularities and fins should be removed.
 - 9. Wall membrane flashings should be inspected and repaired per membrane flashing manufacture guidelines.
 - 10. Commencement of the work or any parts thereof shall mean acceptance of the substrate

- D. Prior to application of the coating system, Contractor shall perform adhesion testing over substrates including previously coated and non-coated roof membranes. Contractor shall follow industry approved method for field adhesion test methods. The minimum test patch size shall be one square foot. Contractor shall allow roof coating to cure for a minimum of 72 hours prior to conducting peel test.
- E. Contractor shall perform adhesion testing in areas of existing roofing membrane indicating worn substrates, any change in substrate, areas that show evidence of ponding water conditions or previously coated areas. All adhesion test results shall be recorded and submitted to Manufacturer for additional evaluation. Coating must achieve a minimum of two (2) pounds per lineal inch. Results of less than two (2) pounds per lineal inch shall be reported to Manufacturer
- F. If any unusual, unexpected, or concealed conditions are discovered at any time prior to or during the work, the Contractor shall stop work immediately and notify the Owner, Owner's Representative and Manufacturer in writing as soon as possible.

3.2 PREPARATION

- A. After inspection and testing, the Contractor shall make all necessary repairs to the roofing system. Contractor shall not proceed with application of the coating system until all repairs have been made and any unsatisfactory conditions have been corrected, including any repairs which may be recommended by the Manufacturer or any design professional. Preparation of the roof substrate is the responsibility of the Contractor.
- B. Contractor shall remove and replace any deteriorated or damaged decking or other materials with like kind or better-quality materials.
- C. Prior to power washing, Contractor shall repair all conditions affecting the water tightness of the roof. The membrane must be made sound and watertight. All repairs shall be made in accordance with NRCA guidelines and good roofing practice. Upon written request, Manufacturer can provide additional repair details.
- D. Any mechanical equipment and roof penetrations including stacks, vents and pipes must be securely installed, properly sealed and made completely watertight, and any abandoned pipes and vent stacks shall be removed, and holes filled in and roofed with like decking, all in accordance with NRCA guidelines and good roofing practice. Upon written request, Manufacturer can provide additional repair details.
- E. All roof curbs and parapet walls shall be properly sealed and waterproofed in accordance with Uniflex guidelines and good roofing practice. Upon written request, Manufacturer can provide additional repair details.
- F. Pitch Pans
 - 1. Remove one (1) inch of existing pitch pan material, fill and trowel to create a slight slope with an appropriate pitch pan sealant.
- G. All skylights must be sealed and made watertight in accordance with NRCA guidelines and good roofing practice. Upon written request, Manufacturer can provide additional repair details.

H. Stacks and other penetrations:

1. Apply one layer of Urethan88 gray base at sixteen (16) wet mils extending three (3) inches on horizontal and three (3) inches up vertical surface ensuring a smooth and continuous watertight finish.
2. All roof penetrations must have a pitch pan, boot or other NRCA flashing detail.
3. Inspect all sealants at counter flashings and replace as needed.

I. Curb and Wall and other termination points: (*see varying condition requirements*)

1. Cold joint conditions {not pre-detailed with approved roofing flashing membrane}
 - a. Apply one layer of Urethan88 gray base at sixteen (16) wet mils extending six (6) inches on each side of the vertical and horizontal surface and other termination points ensuring a smooth and continuous watertight finish.
 - b. Leading edges of Uniflex flashing grade material should be brought to a zero taper.
2. Cast-in-place structural and or poured-in-place structural (pre-detailed with approved roof flashing membrane)
 - a. Apply one layer of Urethan88 gray base at sixteen (16) wet mils extending six (6) inches on each side of the vertical and horizontal surface and other termination points ensuring a smooth and continuous watertight finish.
 - b. Apply one layer of Urethan88 gray base at sixteen (16) wet mils extending six (6) inches onto prefabricated roofing membrane extending three (3) inches onto the vertical and horizontal surface ensuring a smooth and continuous watertight finish.
 - c. Leading edges of Uniflex flashing grade material should be brought to a zero taper.
 - d. Inspect all sealants at counter flashings.

J. Drains:

1. At drain conditions, apply a layer of Uniflex Urethane 88 Gray Base at sixteen (16) wet mils
 - a. Remove existing clamping rings
 - b. Uniflex coating must extend a minimum of three (3") inches into drain assembly.
 - c. Uniflex coating must extend a minimum of twelve (12") inches beyond the edge of the drain assembly.
 - d. Allow to Uniflex coating to cure before reinstalling clamping ring.
 - e. Reinstall clamping ring applying enough pressure to affect a seal between clamping ring and liquid applied flashing/coating.
 - f. Temporarily block all drains during the application of liquid applied materials, or other materials that might block the drains. Remove blocking when work is not in progress and upon completion.

K. Crack Treatment:

1. Seal cracks and joints over 1/16 inch but less than 1/8 inch with Uniflex Urethane 88 Base Coat. Apply at a width of twelve (12) inches wide, at sixteen (16) wet mils centered over cracks.
2. Seal cracks and joints 1/8 inch to 1/4 inch with Uniflex Urethane 88 Base Coat and polyester fabric. Apply Base Coat at a width of twelve (12) inches wide at 16 wet mils. Center and embed a six (6) inch wide piece of Uniflex Reinforced Fabric 20-85A fabric into base coat. Allow to cure and apply an additional sixteen (16) wet mils over the fabric.
3. Larger cracks and joints may require grinding work and backer rod to be used].

L. Wood Blocking:

1. Contractor shall inspect and replace any deteriorated or damaged wood blocking or sleepers in accordance with NRCA guidelines and good roofing practice. Upon written request, Manufacturer can provide additional repair details.

M. Expansion Joint and Control Joints:

1. Use curb flashing repair methods on the curbs only. Do not coat expansion or control joints with curb flashing materials. If existing expansion joint materials are repairable use materials and methods recommended by the original manufacturer of the joint. Replace the expansion joint if deteriorated with a new expansion joint system, which will counter flash the UNIFLEX base flashing.

N. Surface Cleaning

1. Contractor shall first remove any dirt or debris from the roof by using a broom or air blower.
2. After brooming and prior to power washing, Contractor shall re-inspect the roof surface for conditions affecting the watertightness of the roof. The membrane shall be repaired so water is not injected into the concrete during the cleaning process.
3. The roof shall be power washed using a power washer with greater than 2,000psi. The Contractor shall take caution not to inject water into the concrete roof deck.
4. Any areas of algae, mildew or fungus on the roof membrane or the existing coating shall be treated with a non-filming detergent and water solution.
5. Clear water rinse until all cleaning residue is removed.
6. After cleaning and rinsing the roof, Contractor should ensure that no dirt, debris, or contaminants are present that may interfere with proper adhesion of the coating system.
7. Contractor shall allow 24-48 hours for complete drying before application of the coating system.
8. All substrates must be dry and in accordance with Roof Coating Manufacturer's published literature prior to installation of roof coating. It is the responsibility of the building owner or their representative to ensure substrate is dry and in acceptable condition for the application of a roof coating.

3.3 COATING SYSTEM APPLICATION

A. General:

1. Surface preparation is critical prior to application of the coating system. Contractor shall ensure that all surfaces and substrates which are to be coated have been properly prepared and are clean, dry, structurally sound and free from any moisture, dirt, contaminants or any other conditions which may interfere with the application and performance of the coating system.

B. Protection and Start-Up Procedures:

1. Contractor shall only apply coating when the existing or fore-casted weather conditions and surface temperatures will permit work to be performed as described in Section 1.8.
2. Owner shall be notified of start times so that fresh air intakes may be closed, sealed off or adequately protected and HVAC units shut down.
3. If Contractor is spray applying the coating system, Contractor shall post notices a minimum of 48 hours around building and parking lots prior to any spraying.
4. Contractor shall protect unrelated work and adjacent surfaces from over-spray or spillage by using masking tape, plastic/paper sheets, stretch wrap, tarps or plywood, or some other material.
5. Contractor shall remove drain screens and seal the drainpipe to prevent plugging of drain during the coating operation and shall unplug drains and reinstall screens after spray operation has been completed
6. Contractor shall follow all of Manufacturer's mixing instructions for the products prior to application.

C. Application Methods:

1. Roller: For best results when using a roller, pour coating onto substrate and then spread using squeegee. Back roll using a $\frac{3}{4}$ " roller.
2. Spray: Airless spray equipment with a recommended minimum air pressure of 3,300 psi at the tip and a tip size of .031 - .035 (e.g.. 635 tip) is recommended for best results.
3. Contractor shall frequently verify correct mil thickness using a standard wet mil gauge during application of the coating.
4. During application of the coating, Contractor will look for and correct any pinholes, blisters or conditions which may affect the performance of the roof coating.
5. The contractor shall review all surfaces to receive the coating membrane and report any discrepancies prior to installing the waterproofing system.

D. Application of Base Coating:

1. Uniflex Urethane88 Gray Base
 - a. Apply one (1) layer of Uniflex Urethane88 Gray Base Coating at one and a quarter (1.25) gallons per square [Twenty (20) wet mils; Fifteen and a half (15.5) dry mils]
 - b. Allow to cure prior to applying finish coat(s)

E. Application of Finish Coat(s): (select one option)

1. Ten Year Uniguard Warranty
 - a. Apply one layer of Uniflex Urethane88 White Finish at one and a quarter (1.25) gallons per square [Twenty (20) wet mils; Fifteen and a half (15.5) dry mils]
2. Fifteen Year Uniguard Warranty
 - a. Apply two layers of Uniflex Urethane88 White Finish Coat at one and a quarter(1.25) gallons per square [Twenty (20) wet mils; Fifteen and a half (15.5) dry mils] each.
 - b. Do not apply any layer at more than 20 wet mils.
 - c. Allow four hours cure time between coats.
3. Twenty Year Uniguard Warranty
 - a. Apply three layers of Uniflex Urethane88 White Finish Coat at one and a quarter(1.25) gallons per square [Twenty (20) wet mils; Fifteen and a half (15.5) dry mils] each.
 - b. Do not apply any layer at more than 20 wet mils.
 - c. Allow four hours cure time between coats

F. Job Completion

1. Inspect completed application and correct any defects.
2. Manufacturer's representative may inspect the completed roofing system and notify the Contractor of any defects in the application.
3. Clean up all debris, excess materials, and equipment and remove from site.
4. Restrict traffic to only essential personnel. Provide appropriate protection against traffic and construction activities on completed roofs.

Uniflex does not practice or provide any architecture or engineering services. If an Owner has a need for architectural or engineering services in relation to the project, the Owner should obtain the services of a competent and properly licensed architect or structural engineer. Neither Uniflex nor its employees offer any opinion or make any representation or warranty, and expressly disclaims any opinion, representation, or warranty, on the strength or soundness of the structure, including the roof deck. Any inspections of the roofing system by Uniflex or its employees are for suitability of the substrate for roof coating application and for warranty issuance purposes only.