

**Town of Trumbull, Connecticut**  
Replacement of PVC Pool Lining – Beaches Pool

**TOWN OF TRUMBULL, CONNECTICUT**  
**PARKS AND RECREATION**  
**REQUEST FOR PROPOSAL**

**COMPLETE REMOVAL OF EXISTING LINER, FELT PADDING, SOME CONCRETE REPAIR AND INSTALLATION OF A NEW PVC POOL LINER**

**BID NUMBER 6275:      DUE: February 13, 2018 AT 2:00PM**

**Technical specification-scope of work -requirements**

– SWIMMING POOL PVC MEMBRANE SYSTEM

**PART 1 - GENERAL**

**RELATED DOCUMENTS**

- A. The provision of the Notice to Bidders, Instructions to Bidders, Proposals, General Conditions, Supplementary Conditions, General Requirements, related Sections and other Divisions of these documents if used as part of this project are included as a part of this Section as though bound herein.

**SUMMARY**

- B. It is the intent of this specification to describe the installation of a complete reinforced PVC membrane lining system specifically designed and formulated for use in swimming pools. The system shall consist of two layers of flexible PVC totally encapsulating a polyester inner reinforcement in combination with required accessory items to complete the installation. The sections of material shall be fuse bonded together at the site to form a watertight continuous membrane lining. The system shall be installed in accordance with the configuration as detailed on the drawings, including all necessary equipment within this specification. Individual rolls of reinforced PVC membrane shall be custom fitted and welded together at the job site using hot air welding techniques. Upon completion, the system shall provide a waterproof, yet flexible membrane, complete with all necessary fittings, attachments, flange transitions and markings.
- C. The performance characteristics and installation qualifications as established herein reflect the minimum requirements for any membrane system to be utilized on this project. Systems not meeting the minimum requirements established for this project will not be considered.
- D. This specification includes, but is not limited to, the following components:
- E. Flexible PVC membrane
- F. Slip-resistant reinforced PVC membrane
- G. Separator fleece
- H. PVC steel edging & sheets
- I. Polymer and/or Stainless Steel edging & sheets
- J. Sanitizing agents
- K. Transition flanges
- L. Edge sealants
- M. Adhesives
- N. This Specification describes Natatec® PVC Membrane Lining System as illustrated by the drawings. Should the requirements of this specification contradict any other section of the project specifications, this section shall govern.

**Scope of Work:**

- O. **Work Included:** The work specified herein and as indicated on the drawings includes, but is not necessarily limited to, furnishing all the labor, materials, equipment, appliances, services and drayage to all the operations related to the fabrication and installation of the PVC Membrane System. The Work shall be as herein specified and as denoted on the accompanying drawings.
- P. **Related Work and Responsibilities Assigned to Others:** Coordinate all activities with the appropriate party. Advise Owner's representative if proper conditions are not maintained or if responsibilities of others are not properly completed. Related work responsibilities generally include, but are not limited to the following:
  - 1. Provide and maintain appropriate and suitable environmental conditions, including temporary heat shelter and weather protection for the completion of the work.
  - 2. Surface preparation beyond the scope of minor surface patching of concrete, surface repair or cleaning of the existing interior surfaces prior to system installation. The contractor will remove existing lining and felt padding. Once removed there may be some concrete work

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- a. The Contractor will prior to the start of Contractor's work remove the existing PVC lining system and felt padding. The Contractor shall immediately inspect the condition of the pool interior, gutter system and related or adjoining areas and advise the Owner immediately of any unknown or concealed conditions that could not have been known or expected prior to removal of the existing PVC lining.
  3. **See "Part 3 – Execution, Para. 3.2, subparagraph 1. Special surface preparation or related work to be performed as part of the pool lining system installation"** for additional or special preparatory work to be performed by Contractor, the cost of which is to be included in bid Alternate(s) proposal.
  4. Perimeter sealant, caulking, or other sealing except sealants that are integral to the PVC Membrane System or PVC Decking System.
  5. Removal and reinstallation of deck and accessory equipment.
  6. Provide means for storage and disposal of scrap material, coating debris, and other material in close proximity to pool area.
  7. Electrical work, including grounding of the pool, installation of underwater lights or other components, or any related electrical work.
  8. Temporary facilities, including electrical power close to the installation site.
  9. Provide temporary water at fifty (50) psi (to gallons per minute) minimum for cleaning, rinsing, and test purposes, as well as facilities for draining pool and maintaining workable conditions within the pool area.
  10. Final cleaning of pool area outside of the PVC Membrane System.
  11. Provide and maintain all necessary barricades, signs, lights, flares, and other security as required protecting workmen and the public.
  12. Drain pool, coordinate with Contractor to ensure proper hydrostatic relief is maintained. Closely monitor water table around pool to minimize potential hydrostatic damage to pool shell. Unless specifically assigned to the Contractor, the Owner shall be responsible for removing ground or rainwater and maintaining an environment that is appropriate for the installation of the PVC membrane system.
    - a. The removal of small amounts of water from main drains or low spots in the pool shall be the responsibility of the Contractor as long as such water accumulation can be managed and quickly removed by Contractor using fractional horsepower pumps (less than ¾-HP).
    - b. The Owner shall ensure that any water relief ports and/or hydrostatic relief valves are opened and functioning properly.
  13. Immediately after installation, protect pool from damage, contamination, spatter, and spillage caused by construction work of other trades. This shall include covering of pool with protective materials when necessary, and responsibility for prompt repair or corrective measures in the event of damage.
- Q. Where items of the architectural, mechanical, or electrical general conditions, special conditions, and specifications are repeated in this Section of the Specifications or Project Documents, it is intended to call particular attention or qualify these items or to indicate that the requirements of this Section shall govern in the event of conflict with other Sections. It is not intended that any other parts of the documents shall be assumed to be omitted if not repeated herein. Should the requirements of any other Section of the project documents contradict this section, the requirements of this section shall govern.

**DEFINITIONS**

- R. References Standards: Certain applicable reference standards are incorporated herein to the extent such references are relevant, with the latest revision applicable including, but not limited to:
1. Fabrication standards:
    - ASTM - American Society for Testing Materials
    - ANSI - American National Standards Institute
    - NSF - National Sanitation Foundation
  2. The following are utilized as applicable:
    - NCAA - National Collegiate Athletic Association
    - FINA - Federation Internationale de Natation Amateur
    - USS - United States Swimming Incorporated
  3. "Contractor" means the Contractor completing the Work under this section or division of the Specifications.
  4. "SubContractor" means any entity working for the Contractor who shall have full and complete responsibility and liability for the work of any Subcontractor- The chosen and awarded contractor is responsible for all sub-contractors and will need to be listed in the bid Proposal.

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5. "Furnish" or "provide" means to supply, erect, install, and connect complete, in readiness for regular operation or use, the particular work referred to, unless otherwise specified, and shall include all necessary and required materials, supplies, labor and services.
  6. "Piping" includes in addition to pipe, all fittings, valves, hangers, and other accessories relating to such piping.
  7. "Concealed" means hidden from sight in trenches, chases, wall spaces, shafts, hung ceilings, embedded in construction, or in crawl spaces.
  8. "Exposed" means not installed underground, under slab, on grade, or "concealed" as defined above.
- S. The intent of these specifications is not to establish specific quantities, amounts, or dimensions. Thus, the reference to "one", "each", "an", "a", or like wording is for semantic purposes only. Unless specifically stipulated otherwise, provide materials, equipment, and items as detailed on the drawings or as reasonably required for complete, operational PVC Membrane System installation(s).

### SUBSTITUTIONS

- T. The PVC Membrane System has been the subject of a detailed investigation, and the design and operation of adjoining equipment and systems is based upon the specified membrane system. All base bids shall include only that equipment and systems listed herein or subsequently approved by addendum. The Owner reserves the right to reject any and all substitutions without cause and for any reason whatsoever, and the Contractor is obligated to provide only the products, equipment or systems as described by the specified manufacturer.

### TRADE NAMES

- U. When a particular manufacturer's product, system or brand name is designated in the project documents, either in the drawings, specifications or addenda thereto, only such designated products or systems by the named manufacturer may be provided.
1. When reference is made in the project documents to trade names, brand names or the products of a particular manufacturer, such references are made solely to indicate what products or systems may be furnished under the base bid and are not intended to restrict competition. Should any bidder desire to use products, systems or trade or brand names that are different from those mentioned in the project documents, application for the approval of such different products, systems, trade names or brand names must be provided to the Architect in writing a minimum of 10 days prior to the date set for the opening of bids.
  2. The burden of proving acceptability rests with the applicant and any application for approval must be accompanied with adequate and sufficient technical data, drawings and details to clearly and convincingly establish beyond all doubt that the proposed product or system meets or exceeds all express requirements of the project documents.
  3. Unless requests for approval of other products, systems, trade names or brand names have been received and approvals have been published by addendum, only such designated products or systems by the named manufacturer may be provided.

### DRAWINGS:

4. The drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangement. The drawings are intended for Contractors having experience, skill, and discretion in the execution of the work implied by the drawings.
5. If directed by the Town / owner, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
6. Under no circumstances shall any sizes, shapes, install locations or specifications be changed decreased or increased or radical changes made in any part of the installation without the written consent of the Town-owner.

### EQUIPMENT LIST:

7. The bidder shall submit a base bid to cover the work totally complete and fully ready for use in all respects as drawn and specified, based on the Project Documents AND as required OR as reasonably inferred for proper installation, operation or maintenance.
8. Each bidder shall submit the list (the "List") included with the Specifications or in the absence of list in these Specifications prepare a list identifying any and all subcontractors ( The contractor is liable for all subcontractors and that they are properly licensed) and major items of equipment and/or material involved in the Work. The Subcontractor listing shall include the name, address and contact details for any and all entities not regular employees of the Contractor. Major items shall include, but not be limited to the PVC membrane materials, fleece materials, decking, and shall include the name, address and contact details for the item. The Contractor's intent to use the exact makes specified does not relieve the responsibility of submitting such a list.
9. **The Owner intends to reject any bid that is not accompanied by such a list and reserves the right to do so.**

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### COORDINATION:

10. The Contractor shall give full cooperation to other trades and shall furnish any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delays.
11. If the Contractor installed his work before coordinating with other trades, or in a manner causing interference with work of other trades, he shall make necessary change in his work to correct the condition without extra charge.
12. Claims for extra cost (Change Orders) to cover additional coordination work performed by the Contractor without prior written approval by the Owner (the Town of Trumbull) will not be approved.

### RESPONSIBILITY

13. The Contractor's responsibility shall not end with the installation of the systems and the connecting of the various items of equipment, piping, systems, etc. He shall provide mechanics to adjust all systems properly, make required tests, and shall keep workers at the project until the entire installation shall properly function in every detail. He shall coordinate and facilitate the completion of the project until fully functional, in operation and accepted by the Owner.

### SEQUENCING AND SCHEDULING

- V. Coordinate all work activities and installation of the PVC Membrane System with other building components and the work activities of other trades

### SUBMITTALS

- W. Upon notice to proceed (letter of award) under this Contract, installation details and submittal documents shall be provided, fully illustrating the materials and procedures to be utilized. These details and submittal documents, once accepted by the Owner or Owner's Representative, shall be the basis for the fabrication, installation and inspection.
- X. Product Data: Submit manufacturer's technical information and product data including basic materials and installation instructions for the PVC Membrane System including the following:
  1. List each material finished and application and cross-reference to the shop drawing(s).
  2. Provide dimensional shop drawings showing all pertinent dimensions.
- Y. Program and Procedures: Prepare and submit a summary of the installation program that involves scheduling, preparation and installation procedures, quality control and project close-out. Submit to Owner or architect for approval.
- Z. Submit comprehensive operations and maintenance manuals. Include recommendations for corrective action of typical situations that may be encountered.
  1. Submit recommended and required values for swimming pool water chemistry and other operational aspects of maintaining the swimming pool facilities.
  2. Maintenance Instructions and Maintenance Program: Provide complete descriptive information detailing proper care, maintenance and cleaning of the system.

### QUALITY ASSURANCE

- AA. The complete and functional reinforced PVC membrane system, as specified herein and shown on the drawings, is to be the basis for receiving bids. The bidder shall offer products and materials in literal compliance with these specifications.
- BB. Qualifications of Contractors
  1. The Contractor(s) must have at least 10 years experience in the installation of PVC membrane systems in commercial, public and institutional pools, spa and aquatic facilities systems similar to those herein specified. Such experience shall include at least 5 projects of similar size and complexity in the past 5 years that incorporate equipment and construction systems similar to that specified for this project. The Contractor shall furnish complete evidence that they have the facilities, equipment, personnel, etc. to complete all assigned phases of the work.
  2. Only Contractors with demonstrated capability to meet the qualifications and the capability to furnish all work called for in the specifications will be considered. The Contractor must have the capability to supply the system requirements so that all installation, instruction, service, and warranty can be handled by one Contractor with certifiable capability for in-house construction and service.
- CC. **Past performance on similar prior projects will be a basis for acceptance or rejection of bids. Price will not be the sole factor in contract award. Bidders will be evaluated on the following factors, and the Owner reserves the right to reject any bid with or without explanation and for any reason whatsoever. Factors to be evaluated will include the following:**
  1. **Quality of product and service, including, but not limited to compliance with previous contract requirements, accuracy of communications, technical excellence, expertise and experience**
  2. **Timeliness of Performance, including but not limited to meeting dates and milestones, reliability, responsiveness, on-time delivery, and adherence to contract schedule completely done and operational by May 23, 2018.**
  3. **Cost Control, including, but not limited to value of deliverables, completeness of proposals and work scope, limited and reasonably-priced IF change orders are needed, and accurate, complete and timely requests for payment.**

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- DD. The PVC Membrane System shall be the product of a firm having at least ten (10) years experience in the design, manufacture and installation of PVC Membrane Systems used in swimming pool, aquatic or water feature applications. The firm also must have at least Five (5) installations of similar projects currently in satisfactory operation. All systems shall be in compliance with the code requirements that govern in the State of the installation.
1. **In the event an alternate manufacturer's system is approved, all Contractors will be so advised per addendum prior to bid opening to allow for inclusion of such a system or equipment in their bids. In the absence of approval for an alternate manufacturer, only the specified manufacturer's system may be incorporated in the project.**
  2. Listing or subsequent approval of a particular manufacturer as an approved manufacturer does not constitute acceptance of the manufacturer's standard configuration, materials, or equipment, except as they specifically meet or can be made to conform to the requirements defined in this specification. Any bid shall be assumed to include any and all costs to change, modify or otherwise comply fully with the requirements of this specification. Claims for additional compensation to comply with these specifications after bid for any reason whatsoever will not be considered. Only materials, equipment, or systems that absolutely comply with these specifications in all regards will be accepted. Any substitute systems from alternate manufacturers shall be in compliance with all requirements of these specifications.
- EE. Qualifications of Contractors
- FF. The Contractor(s) must have at least 10 years experience in the construction of large systems similar to those herein specified. Such experience shall include at least 5 projects of similar size and complexity in the past 10 years that incorporate equipment and construction systems similar to that specified for this project. The Contractor shall furnish complete evidence that they have the facilities, equipment, personnel, etc. to complete all assigned phases of the work.
- GG. Only Contractors with demonstrated capability to meet the qualifications and the capability to furnish all work called for in the specifications will be considered. The Contractor must have the capability to supply the system requirements so that all installation, instruction, service, and warranty can be handled by one Contractor with certifiable capability for in-house construction and service.

**GUARANTEE AND WARRANTY:**

- HH. The Contractor(s) by acceptance of the contract, in addition to all other contractual obligations, endorse and guarantee the design and acknowledge the completeness of the Project Documents.
- II. The Contractor(s) guarantee(s) by acceptance of the contract, in addition to specific warranties called for in particular section of these documents, that all work installed will be free from any and all defects in workmanship and/or material, that all apparatus will develop capacities and characteristics specified, and that if, during a period of two years, or otherwise specified, from date of certificate of completion and acceptance of work, or other date as may be mutually agreed upon by the Owner and Contractor, any such defects in workmanship, material, or performance appear, he shall, without cost to the Owner, remedy such defects within a reasonable time from receiving written notice of such defects. Nothing, however, in this Specification shall enlarge or expand upon the responsibilities of the Contractor for warranties provided or conveyed by the Contractor to the owner.
- JJ. Any Contractor submitting a bid for the swimming pool work shall maintain fully staffed operations within **180 miles** to ensure the availability of warranty services to ensure the timely response to guarantee issues.
1. The Contractor(s) will not be responsible under the guarantee for the normal maintenance obligations of the owner.
- KK. The PVC Membrane System shall be guaranteed for workmanship, materials and performance for a period of ten (10) years with an optional extended warranty for 15-years. This warranty shall not include or cover abusive or improper treatment to the PVC Membrane System by others either during construction or when operational.
- LL. A sample copy of the warranty statement in accordance with these specifications must be provided prior to approval.
- Delivery, Storage and Handling:
- MM. The PVC Membrane System components shall be delivered to the job site adequately packaged to prevent damage. Unloading and storage shall be executed by the Contractor. The materials shall not be stacked or stored in any manner which could cause damage or deformity. Site assembly or fabrication of any part of the PVC Membrane System without the complete coordination and supervision of the manufacturer or his representative is strictly prohibited.
- Project Site Conditions:
- NN. The project site prior to installation beginning and throughout the Work shall be in accordance with the Manufacturers' technical bulletins. Access for the installation of the PVC Membrane System will be by the contractor and owner.
- OO. All surface preparation necessary to produce a reasonably smooth, firm, clean and dry surface shall be completed prior to the onset of installation. The surface must be free of angular materials, bubbles, voids and large cracks. These irregularities shall be filled

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with suitable patching material or covered with galvanized or stainless steel sheet as detailed on the drawings. Tar, oil, or petrochemical compounds must be removed or isolated. Surface preparation is part of this contract.

Coordination:

PP. The manufacturer shall provide complete descriptive information detailing the design, construction and installation. The Contractor shall include all costs for visits to the project site to coordinate various aspects of design, construction, installation and commissioning of the lining system. Coordination shall include the cost for aspects of the installation and to coordinate manufacturing, testing and commissioning programs with the main Contractor(s), and other suppliers. Such visits shall take place immediately upon notice to proceed to enable all Contractors to be briefed, and a complete production and installation program to be established.

QQ. Suggested and recommended –MANUFACTURER(s)

Manufacturer: Natare Corporation, Indianapolis, Indiana or Renolit Corporation (worldwide). All bids shall include only PVC Membrane Lining Systems from these manufacturers. There may be NO KNOWN equals to these products. Any alternates or substitutions shall submitted in the with the bid proposal- The Owner intends to reject any bid that is not accompanied by such a list and reserves the right to do so.

RR.

The system specified is based upon either the Natatec® Swimming Pool Membrane System or Renolit AlkorPlan 2000, which are proprietary products of these manufacturers. The characteristics, standards and criteria listed herein have been established as the minimum acceptable values for any membrane product to be offered on this project. As all aspects and equipment within the pool system have been designed to utilize this system, products not approved and listed prior to bidding as meeting the minimum requirements listed will not be accepted as that could adversely affect the performance of the system.

SS. If alternate systems are approved prior to bidding, all bidders will be notified by addendum.

TT. Source Limitations: Provide all PVC Membrane System components through one source from a single manufacturer.

Materials

UU. Ensure that all materials used are compatible with the swimming pool environment, and that these materials are supplied as a system.

Components and Equipment

VV. Flexible Reinforced PVC Membrane: The flexible PVC membrane shall be installed to the dimensions detailed on the drawings and as required. The membrane shall consist of two (2) layers of PVC fuse, bonded to a polyester mesh substrate. The membrane shall be **no less than 60.0 mil** in thickness (.060-inch/1.5 mm), and shall conform strictly with the following chemical and physical properties as listed herein. Only those membranes specifically formulated for swimming pool use shall be considered. Roofing membranes, general waterproofing membranes, and vinyl liners shall not be acceptable. Additionally, only those swimming pool membranes meeting or exceeding the following ASTM test values, substantiated by independent documentation from a certified testing laboratory, shall be acceptable. The membrane shall be furnished in a color scheme as detailed by the drawings or in a standard color as selected by the owner.

WW. The flexible PVC membrane shall be furnished with a proprietary acrylic polymeric MicroShield coating to resist abrasion, staining, UV deterioration and microbial action. The polymeric coating shall be Natare MicroShield™ coating or Renolit AlkorPlan 2000.

XX. \*Chemical and Physical Properties:

|   |                                      |                    |
|---|--------------------------------------|--------------------|
| Thickness:                              | 60 mil                               | ASTM D374C         |
| Specific gravity:                       | 1.22 g/cc                            | ASTM D792/method A |
| Yield tension:                          | MD166 lb./in – XD160 lb./in          | ASTM D638          |
| Yield elongation:                       | MD 60% - XD 60%                      | ASTM D638          |
| Break tension:                          | MD 95 lb./in - XD 90 lb./in          | ASTM D638          |
| Break elongation:                       | MD 110% - XD 104%                    | ASTM D638          |
| Secant modulus                          | MD 1352 psi - XD 1125 psi            | ASTM D5323 (100%): |
| Tear resistance:                        | MD 25 lb. - XD 24.7 lb.              | ASTM D1004- Die C  |
| Low temp. brittleness                   | -50°C – Pass                         | ASTM D1790         |
| Water absorption:                       | <.79%                                | ASTM D570          |
| Puncture Resistance:                    | 125 lbs.                             | ASTM D4833         |
| Ply Adhesion                            | 24 in/2 in.                          | ASTM D413          |
| UV Resistance: Tensile Strength @ Yield | MD 12% - XD 16%                      | ASTM D4355         |
| Fungal and Bacteria Resistance          | No growth, staining or discoloration | ASTM G21-96        |

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|  |                      |           |
|--|----------------------|-----------|
| Resistance to Chemicals  | Excellent resistance | ASTM D543 |
| <i>(Cyanuric Acid, Sodium Dichloroisocyanurate, Trichloroisocyanuric acid, Calcium Hypochlorite, Sodium Hypochlorite with 12 ppm solution)</i> |                      |           |
| Procedure I (73.4 F) for 7 days  |                      |           |
| MD = machine direction; XD = cross machine direction *Average values plus or minus 10%   |                      |           |

YY. Slip Resistant Flexible Reinforced PVC Membrane: A slip resistant reinforced PVC membrane, 67.0 mil in thickness (.067-inch/1.7 mm) and identical in chemical and physical properties to the flexible reinforced PVC membrane described above, which includes a specifically designed embossed surface suitable for high traffic areas, shall be installed as detailed on the drawings. The slip-resistant surface shall be certified by independent ASTM Laboratory testing to comply with the requirements of ASTM C1028. Furnish in the color scheme as detailed by the drawings or as selected by the owner.

ZZ. Separator Fleece/Felt padding: The interior surfaces of the swimming pool shall be covered with an engineered polyester fleece separator, a minimum of **125.0 mil** in thickness (.125-inch/3.175 mm), weighing at least 10 ounces per square yard. The fleece separator must be resistant to freeze, thaw, moisture, soil-chemical abrasion, or ultraviolet deterioration and shall conform strictly to the following chemical and physical properties. All fleece separators shall be certified and guaranteed to be free of foreign materials, which could potentially be damaging to the liner.

AAA. Chemical and Physical Properties (Property Unit Value Test)

|                          |                        |            |
|--------------------------|------------------------|------------|
| Weight:                  | 10 oz./sq.yd.          | ASTM D5261 |
| Thickness:               | 125 mils               | ASTM D5199 |
| Grab Strength:           | 305 lbs.               | ASTM D4632 |
| Grab Elongation:         | 60%                    | ASTM D4632 |
| Trapezoid Tear Strength: | 100 lbs.               | ASTM D4533 |
| Puncture resistance:     | 130 lbs.               | ASTM D4833 |
| Mullen Burst Strength:   | 510 psi                | ASTM D3786 |
| Water Flow Rate:         | 80 gpm/ft.             | ASTM D4491 |
| Permittivity:            | 1.07 sec <sup>-1</sup> | ASTM D4491 |
| Permeability:            | 0.34 cm/sec            | ASTM D4491 |
| AOS:                     | 70/0.210 sieve size/mm | ASTM D4751 |

BBB. PVC Steel Edging: A PVC-coated steel sheet, at least 20 gauge with PVC laminated on one side shall be used to form edges, angles, corners, or other transitions where a firm surface is necessary to weld the PVC membrane.

CCC. Stainless Steel and Polymer Sheet: At least 20-gauge stainless steel or polymer sheet shall be used as required for reinforcement, shaping, or separation as required. It shall be installed over expansion joints when sealants or caulking have been installed.

DDD. Sanitizing Agents: Sanitizing agents, formulated from a mixture of halogenated organic compounds, and specifically designed for this purpose, shall be applied to the pool surface, beneath the pool liner, to prevent the growth of microbes or fungus.

EEE. Transition Flanges: Compression flanges fabricated of rigid, white polymer, 1/4 inches thick, shall be furnished at all membrane penetrations or openings to the swimming pool. All transition flanges shall be secured with stainless steel anchoring systems.

FFF. Edge Sealant: Liquid PVC edge sealant solution shall be applied to all free material edges after welding. This process is to provide a properly detailed edge on material lap joints. Only those membrane systems utilizing an edge sealant solution will be considered, as this process is critical to the overall durability of the membrane.

EXECUTION

Examination

GGG. The supervising representative or installer shall verify that the site conditions are in accordance with the Manufacturers' requirements, shop drawings and/or technical bulletins and are suitable for the installation of the membrane.

Preparation

HHH. Surface preparation shall be completed prior to the commencement of installation. The surface shall be reasonably smooth without oil or tar-based materials present. Deteriorated surfaces or voids shall be filled with cementitious patching compounds. Areas immediately surrounding fittings, lights, and other transitions or entrances to the pool shall be sound and suitable for drilling of 1/2 inch diameter anchor holes for the installation of the PVC compression flanges.

III. Special surface preparation or related work to be performed as part of the pool lining system installation is as follows:

Installation and Application

JJJ. All work to be performed by skilled technicians having adequate experience with, and specific training in, the field welding and fabrication of flexible PVC swimming pool membrane systems. Additionally, to ensure the overall integrity of the installation, the

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installing crew shall be supervised by a crew leader having had no less than two (2) years experience in the application of PVC membrane systems on at least five (5) pool projects similar in size and scope to this project.

- KKK. To ensure the integrity of the membrane installation and to secure a single source of responsibility for any required warranty service, all membrane system installation personnel shall be full-time, regular employees of the prime bidder, system manufacturer or shall be a factory trained licensee of the Manufacturer. No sub-Contractor or independent membrane installers shall be utilized without prior approval. The Contractor shall be required to submit installers experience with any proposed alternate systems in writing to the Owner for approval prior to project bid.
- LLL. If requested, the Contractor shall submit the personnel and supervisor's experience in writing to the for approval prior to award of contract
- MMM. All work is to be performed in accordance with the manufacturer's technical bulletins. Should the requirements of these bulletins contradict this or any other section of the specifications, the procedures called for in the bulletins shall govern. The work under this section shall be performed by or directed by an authorized licensee of the system manufacturer so that the complete installation will function in accordance with the intent of these specifications.
- NNN. The PVC pool lining shall be terminated to an existing perimeter gutter systems. The Contractor shall inspect the gutter skirt and verify its capability and suitability for the termination connection and report the conditions to the Owner.
- OOO. The compression skirt shall be fabricated as detailed on the drawings and shall provide a smooth, uninterrupted surface onto which the membrane shall be compressed. The PVC membrane and a silicone impregnated sponge gasket shall be compressed between a rigid PVC profile and the compression skirt through the installation of ¼"-20 stainless steel screws, located no greater than 3" O.C. A semi rigid interlocking cap strip shall be installed over the PVC profile to finish the installation. Due to the critical nature of insuring a positive, permanent and enduring watertight seal between the PVC membrane and the stainless steel gutter system, only those systems incorporating a fully welded, stainless steel membrane compression skirt will be allowed.
- PPP. One method of meeting these requirements is furnished by Natore Corporation of Indianapolis, Indiana and is available under license for use by any Contractor installing a PVC Membrane System in a swimming pool facility.

The PVC membrane Contractor is responsible for pressure testing the existing stainless steel gutter supply tube and hydrostatic testing of the return trough prior to installing the compression skirt to ensure that the gutter system is watertight.

### Sequence of Work

- QQQ. Attach the fleece to the pool wall and/or the bottom with the appropriate adhesives in the amounts adequate to secure the fleece. Isolate deteriorated surfaces of voids, cracks, or any other areas with moisture proof polymer sheet or stainless as required.
- RRR. As required for the configuration of the pool, the flexible reinforced PVC membrane shall be securely welded to PVC coated stainless steel, which has been attached to the pool surface with appropriate anchors approximately four (4) inches (100-mm) on center.
- SSS. Install PVC coated stainless steel sheet as necessary to form angles, edges, corners, or other transitions.
- TTT. Weld the flexible reinforced PVC membrane in accordance with the procedures established by the manufacturer. The joints shall be hot air welded with a minimum of two (2) inches of overlap. Probe all seams with a hand-held lance or air lance to ensure complete welding. Completely close the seam edge using a PVC edge-sealing compound.
- UUU. All seams in the membrane shall be one-piece, single overlap seams. Patching and overlaying of multiple layers of the membrane material is not acceptable. All material sections are to be applied in full roll widths and lengths except where pool conditions dictate otherwise. No scrap or short-roll material is to be utilized in the membrane installation. Any areas of the membrane that are damaged during installation are to be completely removed and replaced with new material. There are to be no visible patches on the completed membrane.
- VVV. Apply special markings, targets, lines, etc., as indicated on the drawings or as specified. The owner's representative is to provide detailed instructions as to necessary markings.
- WWW. After installation of the PVC membrane, apply an appropriate elastomeric sealant to all transitions between construction materials as indicated on the drawings, utilizing only sealants suitable for submerged application, and compatible with the flexible reinforced PVC membrane. If no elastomeric sealants are indicated, confirm with the Owner where such sealants are required. Do not proceed without Owner's agreement as to quantity and change order cost.
- XXX. All inlets, outlets, drains, underwater lights, skimmers, stanchion posts, and other required membrane penetrations shall be fitted with rigid PVC compression flanges securely anchored to the pool structure to ensure a watertight seal. The "wrapping and clamping" of the



# Town of Trumbull, Connecticut

## Replacement of PVC Pool Lining – Beaches Pool

membrane material around stanchion posts, ladder rails, and other protrusions through the membrane will not be considered acceptable. Only rigid compression flanges shall be utilized for all membrane penetrations.

### Adjusting & Cleaning

- YYY. After installation is complete, "broom" clean all surfaces. Remove all scraps, debris, or construction material and dispose of properly

### Field Quality Control

- ZZZ. Limit access to the project site to minimize possibility of damage to the membrane. Materials and equipment shall not be dragged across the surface of the liner or allowed to slide down the slopes. All parties working on the liner shall wear soft-soled shoes. Immediately following installation, verify completion and testing of all seams. Retesting may be necessary to ensure complete sealing.
- AAAA. ***[Assumes construction schedule allows for pool filling immediately upon completion of the work.]*** Upon completion of installation, the completed PVC Membrane System shall be hydrostatically tested by filling the pool or water feature to the typical operating level and operating all systems for a period of 6 hours without evidence of leakage.

### Demonstration and commissioning

- BBBB. Provide at least three full sets of bound operation and maintenance manuals that fully detail the proper system operation and maintenance techniques.
- CCCC. In the company of the Owner's representative, inspect the completed installation, make final adjustments and give operating instructions relative to its care and use.
- DDDD. Prepare a complete "Project Completion Report and Warranty Application," documenting the proper completion of the project, training of Owner's personnel, and application for warranty. Provide to Owner's representative for review and signature prior to turning over project to Owner

- END -