



DUROSLEEVE™



PART 1 – GENERAL

1.1 SUMMARY

- A. This Section specifies requirements for restoring deteriorated piles using an extruded PVC SnapJacket encasement. The work shall consist of using PVC extruded single piece openable and lockable jacket to create a watertight form around the pile to be restored, and filling the annulus between the jacket and the pile with grout or concrete.
- B. Contractor shall provide all labor, materials, tools, and equipment required for the completion of the following Work, as shown on the Contract Documents and specified herein:
 - 1. Prepare existing areas, as defined by these specifications and related Contract Drawings, designated to receive pile restoration
 - 2. Design, furnish, fabricate, and install all jackets, shores, and bracing
 - 3. Prepare installation and placement shop drawings listed below
 - 4. Prepare design drawings for shores, and bracing if required
 - 5. Furnish all submittals required by this Section of the Specifications
 - 6. Coordinate all work with other trades on site.

1.2 REFERENCES

- A. The latest edition and addenda of the following publications in effect on the date of Contract Award are part of this Specification and, where referred to by title or basic designation only, are applicable to the extent indicated by the specific reference:

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01xxx, Submittals.
- B. Details shall be carried out in accordance with the local building codes, and as shown on plans.
- C. Product Data:
 - 1. Shoreline Plastics LLC PVC product data sheets showing material properties and strength.
 - 2. Concrete and Grout cut sheets showing material properties and strength.
 - 3. Concrete and Grout MSDS sheets.
- D. Design and Shop Drawings:

The following information must be provided and sealed by a professional civil engineer:

 - 1. Calculations showing the confining pressure provided by the jacket being used.
 - 2. Shop drawings showing the SnapJacket installation steps, and the filler material to be placed in the annular space.

PART 2 - PRODUCTS

2.1 PVC Snapjacket properties

1. The PVC Snapjacket shall be extruded from a high impact, weatherable compound that meets the NSF potable water and zero lead requirements.
2. The PVC SnapJacket shall have the minimum properties listed in the table below.

Manufacturer	Shoreline Plastics LLC	
Product	PVC SNAPJACKET	
MATERIAL		
Raw Material	Polyvinyl chloride (PVC),	
Extruded Material	Uniaxially Oriented PVC-M	
Molecular Weight (resin)	65	K value
Relative Viscosity	2.15	dL/gm
Inherent Viscosity	0.91	dL/gm
Relative Density	1.41	
Cell Classification	12111	ASTM D-1784
MECHANICAL PROPERTIES:		
Impact Strength:	20 kJ/m ² Izod 20°C ASTM D-256	
Impact strength:	8 kJ/m ² Izod 0°C ASTM D-256	
Tear strength:	750-1000 lbf/in ASTM D-624	
Hardness:	80	Shore D durometer
Coefficient of Friction:	0.3 μs	PVC to PVC
Ultimate Tensile Strength:	257	kg/cm ²
Tensile Strength @ Break: %	150-300	ASTM-D 638
Tensile Stress @ Yield:	352	kg/cm ²
Tensile Modulus:	2206	MPa
Flexural Modulus:	2413	MPa
Abrasion resistance:	260,000 cycles with minimal wear gravel and river sand *	
Tear Strength	25.8-35.5	N/m

THERMAL PROPERTIES:		
Softening Point:	80-84 C	Vicat AS 1462.5
Max continuous service Temp:	65 C	
Shrinking Temperature:	82 C	
FIRE PERFORMANCE:		
Flammability: Oxygen index	0.45	ASTM D 2863
Ignitability index	2	AS 1530 (tested as a tube)
Smoke produced index	8	AS 1530 (tested as a tube)
Flame spread index	0 Does not support combustion	
TOXICITY		
PVC compound meets NSF std 61 for use with potable water		
ELECTRIC PROPERTIES:		
Dielectric strength (Breakdown)	14-20 kV/mm	
Volume resistivity	10 ¹⁶ Ohm.cm (60% RH)	
Surface resistivity	10 ¹³ - 10 ¹⁴ Ohm	
Dielectric constant	3.4-3.6 at 25° C (60Hz)	
Dissipation factor	0.015-0.020 at 20°C	
NOTES:		
Ultra Violet Weathering: SnapJacket maintains the same level of UV protection as Vinyl siding and Vinyl windows with an exposure rating in excess of 50 years.		
PVC is immune to Microbiological and Macrobiological attack.		
<ul style="list-style-type: none"> • Testing conducted by Technical University of Darmstadt Germany 		
Sources		DATA SHEET NO.
		Slpls815/1

3. PVC Snapjacket Shall be of Shoreline Plastics manufacture.
<http://shorelineplastics.com/>

2.2 SPACERS

If Spacers are used to create an annulus around the pile they shall be of the non-reactive type.

2.3 ALTERNATIVE MATERIALS

Any alternative materials proposed as a substitute for the materials specified in this specification shall be submitted for review and approval to the Project Engineer at least 15 days prior to the bid date.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Timber Piles
 1. All timber piles scheduled to receive Snapjacket encasements shall be cleaned using high pressure water jett. Contractor shall take precautions in order not to remove intact timber section from the existing timber piles during preparation activities. The purpose of this preparation is to remove all marine growth and any soft surface layer that may have accumulated on the piles. Severely deteriorated timber may be removed with water blast.
 2. The elapsed time between the cleaning of a timber pile and the installation of the encasement on that timber pile shall not exceed 72 hours. If this time frame is exceeded contractor shall re-clean the pile prior to encasement.
 3. Contractor shall remove any marine growth that has accumulated on the pile prior to the installation of the Snapjacket.
- B. Concrete
 1. All loose and deteriorated concrete shall be removed using hydraulic or pneumatic hand tools.
 2. Contractor shall take precautions not to damage non-spalled or cracked concrete at location of scheduled repair.
 3. After loose concrete is chipped away, all concrete surfaces scheduled to receive encasements shall be cleaned using high pressure water-jetting with rating of 5000 psi. The purpose

of this preparation is to remove all marine growth and any soft surface layer that may have accumulated on the extension. The elapsed time between the cleaning of the concrete surface and the installation of the SnapJacket encasement shall not exceed 72 hours. If this time frame is exceeded contractor shall re-clean the pile prior to encasement.

4. Contractor shall remove any marine growth that has accumulated on the concrete surface prior to encasement.

3.2 APPLICATION

1. PVC SnapJacket Cut the required length of the jacket. Note that the jacket must allow a minimum of a 2 inch annular space between the pile and jacket for structural applications.
2. The snapjacket must extend a minimum of 12 inches below the mudline and a minimum of 12 inches above the high water line.
3. When the snapjacket is in place around the piling Wrap, snap it together to engage
4. Adjust the snapjacket such that it drops at least 12 inches below the mudline and adjust up so the top is at least 12 inches above the high water mark.
5. Make sure that the piling is centered in the Snapjacket.

A. Concrete/grout fill

1. Fill is specified by the owner
Concrete/ can be batch mixed and poured by hand into the annular space between the piling and the Snapjacket or For larger projects can be pumped.

B. Application

1. When the Snapjacket is snapped in to place the Snapjacket joint is water tight when properly installed, it is recommended that the water is pumped out from between the pile and jacket before the concrete/grout is introduced into the annular space.
2. We recommend that jackets larger than 12" in diameter and longer than 10 feet be supported with a ratchet strap prior to filling with concrete.
3. Once the concrete /grout fill has set, a grout crown should be applied to the top of the snapjacket.

3.3 INSPECTION

1. The Work to be provided in accordance with this Section of the Specification shall be subject to inspection by Owner at any time(s) during the progress of the Work. Contractor shall provide

- access and any labor, materials, tools, and equipment required by Owner to complete inspection of the Work as specified herein.
2. Completed installations shall be visually inspected to confirm the integrity of the Snapjacket and the concrete/grout fill. Any deficiencies shall be corrected at the Contractor's expense. The Contractor shall propose a repair method and submit it to the Engineer for approval prior to implementing said repair.
 3. Acceptance of structure shall be contingent on the Work meeting all of the requirements of the Contract Documents as indicated by the results of all testing, inspection, and other quality assurance procedures required by Owner.

4. TYPICAL APPLICATION

Step 1. Clean off marine growth on piling

Step 2. Measure length of Snap Jacket needed to extend 10 to 12" below the mudline to height of at least one foot above mean high tide. For best protection and longest life of piling it is recommended to jacket piling all the way to the bottom of the deck.

Step 3. Cut Snap Jacket to length using a fine tooth sawsall or a Dremel circular saw.

Step 4. Remove soil around bottom of piling by using a pressure washer or a jet pump. Area should be large enough to allow the Snap Jacket to extend below the mudline at least a foot and have room to snap the jacket together once in place.

Step 5. Place the Snap Jacket around the piling. The easiest method is by opening the bottom section of the jacket then placing around the top section of the piling and then sliding it down the piling. After placing the jacket around the piling, snap the Jacket closed. It is best to start at the bottom and work your way up to the top (this prevents sand from filling the female gap). You may need to use a small ratchet strap in order to snap together (it is important to be sure that the male insert is in alignment with the female all the way up the jacket before starting the snapping process).

Step 6. Position in place and let the sand fill back in around the bottom of the jacket. This holds the jacket in place at the bottom and use a couple of spacers at the top to keep in place.

Step 7. Fill the space between the piling and Jacket with ready mix concrete or type M Mortar mix. Use ready mix concrete for larger spaces of 1 ½" or more and type M mortar mix for space less than 1 ½". **If you are using the Snap Jacket to repair a supporting structure on decayed pilings then structural engineering should be obtained.**

Step 8. After concrete sets, a crown should be placed around the top of the piling and Snap Jacket, it should slop away from the piling to keep water from pooling at the top of the Jacket.

