DEFINITION OF TERMS

The terms listed will be used frequently throughout this article and listed in boldface for ease of reference. They describe, in detail, the methods, procedures and meanings that LifeLast, Inc. adheres to. Please read them carefully.

DEGREASE

The process of degreasing a substrate involves the removal of oil or grease-like organic or non-organic materials that could impair bonding of the coating to the substrate. Degreasing a substrate involves the use of a solvent or other cleaning agents such as ammonia, bleach, hydrochloric acid, citric acid, lye, or any other material that will dissolve or react with contaminant to remove it from the area. Common degreasers are acetone, methyl ethyl ketone, xylene, toluene, ammonia, glycol ethers, and hydrochloric acid. If the material that is used as the degreaser leaves a residue (such as hydrochloric acid or acetic acid or one of the citrus-based cleaners) the residue must be removed before the coating is applied. Caution should be exercised to verify compatibility between all cleaning agents and degreasing agents used (i.e. - do not use bleach with ammonia).

CLEAN

Cleaning the surface of the substrate is defined as the removal of all contaminants. This is typically done with ammonia or a solvent such as acetone. Dust removal can be done with the use of a vacuum system that has a suction power of 80 psi or more. Contaminants to be cleaned or removed would include dust, dirt, residue from
degreasing, waxes, oils, etc. The condition of the surface after cleaning is contaminant free. There should be no residues, oils, or dusts. Caution should be exercised to verify compatibility between all cleaning and degreasing agents used.

**PROFILE**

A profile is the creation of a texture on the surface of the substrate to be coated. The texture of profile is created by blasting the surface with a solid or liquid media or grinding the surface with a sanding disc.

The blasting media that are preferred are as follows:
1. Steel Grit
2. Alumina
3. Garnet
4. Black Beauty
5. Green Diamond
6. Steel shot
7. Silica sand
8. Soda blasting (does not create a profile)
9. Soft media blasting (does not create a profile)

The surface preparation methods for creating a profile that are preferred are as follows: (in order of preference)
1. aggregate blasting (not including silica sand)
2. shot blasting
3. abrasive wheel grinding (16 grit and larger)
4. roto peening
5. silica sand blasting
6. soft media blasting (on concrete only)

**LAITANCE**

Laitance is the weak silicatious material that is found on the surface of some concrete. The laitance is fine in texture and is the result of troweling. Repetitive troweling brings the fine sands of the concrete to the surface. The fine sands create a smooth texture but are weak in tensile strength. The removal of the laitance ensures bonding strengths that would be the maximum for that particular concrete. In some cases, bond strengths of 50-75 psi are suitable, thus the removal of the laitance is not necessary. If bond strengths of 150 psi are desired, one of the two options are: 1) the removal of the laitance is not required but the use of LifeLast Primall-EP over a clean surface is, or 2) the removal of the laitance but no priming would suffice. If bond strengths in excess of 300 psi are required, then the removal of the laitance and the use of Primall-EP is required.
SECTION II STEEL & ALLOYS

CLEANING AND DECONTAMINATION

The surface to be coated must be cleaned of all oil, grease, soil, cutting compounds, and other contaminants. The use of solvents or other commercial cleaners and degreasers is recommended. Hand wiping is acceptable if the surface is not very dirty, however if the surface is extremely contaminated, vapor degreasing or steam cleaning must be used.

The next step is the removal of all mill scale, rust, paint, oxides, corrosion products, or other foreign matter. This can be accomplished best by abrasive blasting or hand grinding where blasting is not permitted. The surface should have a minimum cleanliness of SSPC - SP10 if blasted and SSPC-SP11 if power tool cleaned. It is recommended that the surface to be coated has a profile of no less than 3 mils. Surfaces that have a profile of 3 mils or greater are more successfully coated and have a longer service life than those that have less profile. For immersion applications, a blast cleanliness of SSPC - SP5 is required, with a minimum profile of 3 mils, and the use of Primall-EP is recommended.

Blasting does not remove all the oil on the surface and can often add to the problem by introducing oil from the air used to blast. Therefore, the substrate should be cleaned and degreased after blasting. Also, the blasted surface is easily rusted if the humidity is above 85%. Care should be taken to prime the surface immediately after the blasting has been done. In high humidity environments, if rust does occur, the surface must be brush blasted again to remove the rust prior to applying the primer.

Large gaps and skip welded structures or other cavities that can not be covered or filled with LifeLast products must be filled with a moisture tolerant, quick-setting, non-shrink, high-strength epoxy polyamide mastic. Take care to avoid feathering the material onto surrounding areas. When the material has cured it must be abrasive blasted or mechanically abraded to remove all gloss and roughen the surface. The area must then be thoroughly cleaned of all dust and debris before the primer is applied.

Just before the primer or coating is applied, the area to be coated and adjacent areas should be cleaned of dirt, dust, oils and other debris. Make certain that the surface is completely dry.
ABBREVIATED BLASTING

The substrate should be abrasive blasted to provide a surface that is clean and free of any loose materials. Dry blasting techniques are preferred, but care should be taken not to remove any more material than is necessary. Blasting should remove rust, mill scale and other debris. Sharp edges should be rounded by wire brushing or grinding. An anchor pattern similar to coarse sandpaper is the type of surface to achieve (minimum profile of 3-mils).

The preferred surface preparation methods for creating a profile are as follows: (in order of preference)
1. aggregate blasting (not including silica sand)
2. shot blasting
3. abrasive wheel grinding (16 grit and larger)
4. roto peening
5. silica sand blasting

ACID ETCHING

Acid etching is not advised even though it is a procedure that is often performed.

FINAL CLEANING

After all substrates are prepared, surfaces adjacent to the work area shall be cleaned of dirt, blasting residue, and other debris to prevent wind-blown contamination of the prepared substrate or freshly applied coatings.

Just prior to primer or coating application, surfaces to be coated are to be power vacuumed to remove all dust, dirt, blasting residue, and debris. Transitions into adjacent areas not to be coated shall be neatly taped off or protected.

If you have any questions about the above procedures please consult a LifeLast, Inc. technician at the phone number on the bottom of this page.

APPLICATION OF PRIMALL-EP

The purpose of priming steel is to increase the bond strength of the urethane, protect the blasted surface from rusting and provide additional corrosion resistance in immersion applications. The use of Primall-EP is recommended when:
1. a long period of time will occur between blasting and coating;
2. blasting in high humidity environments;
3. applying urethanes in immersion environments;
4. urethanes will be exposed to high temperatures; and,
5. exceptional adhesion is required.
Please refer to application instructions for Primall-EP for application details.

APPLICATION OF LIFELAST, INC. URETHANE COATING

The application of the LifeLast urethane coating should be in compliance with the recommendations found in their respective application instruction sheets.

MISCELLANEOUS STEEL INSTRUCTIONS

CARBON STEEL

Carbon steel can have significant mill scale. All mill scale is to be removed and a clean surface obtained prior to continuing the coating process.

STAINLESS STEEL

To provide an adequate profile, stainless steel should be abrasive blasted to an SSPC-SP5 cleanliness with a minimum 3 mil profile. Stainless steel must be primed using Primall-EP prior to coating with LifeLast elastomeric urethanes.

GALVANIZED STEEL

The surface should be clean and dry with all the oil and grease removed. Solvent wiping can accomplish this in accordance with SSPC-SP1. The surface must be abrasive blasted to remove all rust and to provide a mechanical bond for the coating, minimum 3-mil profile. General procedures for preparing carbon steel may be applied to galvanized steel.

HARDENED ALLOYS

Hardened alloy steels can be difficult to create a profile on. The use of aluminum oxide (alumina), steel grit, or garnet are preferential. The more coarse the grit the deeper the profile. Degrease the surface well prior to applying Primall-EP.

USED STEEL SURFACES

Used steel surfaces can create a problem for the applicator. The key is to prepare the steel such that it resembles a new steel surface. Grease or hydrocarbon laden steel substrates are very difficult to prepare properly. In many cases, it is not possible to prepare the substrate to the specifications required for coating with LifeLast coatings. If this is the case, the contractor faces the possibility of disbondment. In such an instance, it would be wise to obtain a release of liability from the owner of the structure.