

Specification for Preparing New Asphalt or Concrete Pavement Surfaces for markings, Removal Requirements for Re-Marking in SAME location and in a NEW location

Scope:

These specifications are intentionally separate from the pavement marking materials application specification portion of the project to assure all parties (Contractor, Engineer and Inspector) have clear guidelines and expectations on what is the acceptable and not acceptable pavement surface conditions when (1) Preparing New Asphalt or Concrete Pavement Surfaces for markings, (2) Removal Requirements for Re-Marking in SAME location and (3) Removal Requirements for Re-Marking in a NEW location

Definitions:

Markings are defined as all pavement markings, traffic stripes, road surface markings or any device or material applied on a road surface, parking space or facility to provide guidance and information to drivers and pedestrians.

Surface Preparation is defined as creating a SP surface profile after the removal of any dirt, oil, films, paint, markings, cure, sealer, sound and unsound asphalt or concrete and other materials that will interfere with the adhesion or penetration of any sealer, coating or marking material. The surface shall be profiled to open the pore structure of the substrate and establish profiles suitable for the application of the specified marking material as recommended by the material manufacturer.

Surface Profile (SP): is the measure of the average distance from the peaks of the surface to the valleys as seen through a cross sectional view of the hard surface. The dimension is defined pictorially and through physical samples in the SP Profile Chart <http://www.smithmfg.com/profiles.php> as is expressed as a Surface Profile Number SP1–10 (SP1, nearly flat smooth surface and SP10, extremely rough with amplitude greater than 1/4").

Construction or Maintenance Work:

The details of the location of this work shall be designated on the plan drawings or as required by the Engineer. The Contractor and Engineer should evaluate the surfaces prior to commencing work so that all parties can acknowledge and record existing pavement and/or joint conditions. The Contractor shall schedule and coordinate the surface-prep work with the Engineer prior to the start of any pavement marking work.

Removing prior markings (obliteration) for Re-Marking in SAME location:

Before re-marking over existing markings in the same location make certain that the existing markings meets current marking dimensional sizes and are not excessively thick, loose, flaking or blistering, have excessive cracking, chipping or discoloration, have poor pavement adhesion, loss of reflectivity or vehicular damage. If these conditions are not met, then the markings shall be permanently removed and replaced. If these conditions are met, confirm with the manufacturer if the new markings are compatible with the existing markings prior to remarking.

Removing prior markings (obliteration) for Re-Marking in NEW location:

If markings must be removed and not re-applied in the same location, the markings must be removed using a method that will not cause deep scars where water can accumulate or pond. Since the removal process naturally leaves some surface scars especially on undulated surfaces, the Engineer will determine the limits and percentages of pavement marking removal to include the removal of any material that is poorly bonded, peeling or flaking. All traces of removed markings that may conflict with any new markings, shall be removed and the remaining surface shall be left approximating the contiguous surface (as is expressed as a Surface Profile Number) with only surface shadowing that will normally fade and blend with the surrounding oxidized surface over time are accepted. Painting over to match the existing pavement surface or using heat or an open flame to remove the existing pavement markings to blackout, hide, or disguise markings is unacceptable.

Existing pavement markings shall be removed to the percentage specified by the Engineer, accepting that requiring 100% removal will cause more pavement surface damage to the pavement due to the final 10% of material remaining being the most difficult to remove when the surfaces are not flat. The percentage of removal will be accepted as follows:

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| •Reducing thick markings: 85-90% | •Installing a new material: 90-100% |
| •Removing obsolete markings: 95-100% | •Installing a new color: 90-95% |
| •Overlaying a new surface: 90-100% | •Changing marking patters: 90-100% |

Protection of Existing Pavement Surfaces and Markings:

The Engineer shall approve any safe operational equipment (scarifying, blasting, erasing, grinding, milling, shaving, scraping, etc.), cutter tool consumables and removal process that will result in a clean, dry and profiled surface to maximize bonding strength for the marking materials while protecting the existing pavement surface from damage. The Contractor shall not be held responsible for the repair of any pre-existing failed surface conditions, under or adjoining the pavement markings. If discovered, the Contractor shall notify the Engineer of the defect to take corrective action as specified under the contract plans.

Damage is defined as the result from the use of any removal process that causes the surface structure to weaken or the substructure to undermine requiring remediation to correct the surface failure at the Contractor's expense. Any process that washes out the binder or sand in asphalt and causes joint deterioration or fracturing concrete will not be accepted. Any surface rutting, pitting or deep scarring, causing the surface to deteriorate or deep grooving causing water to accumulate or pond is not accepted. When water ponds where markings previously existed, they appear as false markings or ghost lines. All repairs as a result of the removal operations shall be performed to the satisfaction of the Engineer at the contractor's expense.

Surface Profiles (Roughness)

The surface shall be profiled using a dry mechanical abrasion process to open the pore structure of the substrate and establish profiles suitable for the application of the specified marking material recommended by the manufacturer. Surface Profiles can be accomplished by a variety of tools, equipment and materials and is dependent upon the type of surface to be prepared, plus the type of system and material thickness to be installed. All factors play an important role in the selection process. Regardless of the method selected or tools employed, the final surface must allow for the secure mechanical bond of the pavement marking to the hard surface. The type of service to which the structure will be subjected will also help to define the degree of profile required. If the binder material manufacturer does not recommend an SP range for their product, the follow is a recommend SP# range. (SP1-3): Thin Paint, (SP3-5): High Builds (4-6): Epoxy, Polyester, Urethane, MMA, Thermoplastic, Preform Tapes..

Dust and Debris Collection:

All airborne dust from the surface-prep operations shall be contained and HEPA filtrated to protect operators and work environment. The dust producing removal operations shall provide a positive means to control airborne dust with use of a dust collector attached to the removal equipment. Any remaining materials shall be collected with a secondary operation. Accumulation of heavier debris, accumulated piles of any debris on the surface or from the right of way as a result from the removal operation shall be collected and disposed of in accordance with applicable Federal, State, and Local regulations, at no additional cost. Prior to the installation of the marking material, all remaining loose materials or debris must be removed using a vacuum or compressed air or blower as long as it does not create a nuisance.

Field Tests:

Conduct field tests before, during and after the surface is prepared and prior to the applications of the markings with provisions provided under this specification and acceptable engineering practices. Should the surface conditions of clean, dry and profiled not be met, the Inspector shall give immediate same day notice for the Contractor to remedy at Contractor's expense and prior to receiving acceptance notice.

Key Scrape Test:

This test determines the surface integrity prior to starting any surface profiling or preparation work. With the serrated side of a key, lightly scrape the surface. If the key dislodges aggregate or some of the surface, it would receive a *falling* "F" grade. A passing "P" grade indicates the surface is structurally sound. Should the key test fail, after the surface profiling work, the Inspector shall give immediate notice for the Contractor to remedy at Contractor's expense and prior to receiving acceptance notice. The Contractor shall not be held responsible for the repair of any pre-existing failed surface conditions, under or adjoining the pavement markings. If discovered, the Contractor shall notify the Engineer of the defect to take corrective action as specified under the contract plans.

Tape Pull Test:

This test is used to determine surface cleanliness prior to the pavement marking application. Cut a 10" length of duct tape and hand tamp the adhesive side to the prepared area. Quickly peel the tape off the surface and reposition the tape with the adhesive side up. Measure the captured dirt/debris and record the results. If dirt covers more than 1", representing 10% of the overall coverage area, the surface requires additional cleaning. Continue cleaning until the Inspector gives a passing "P" grade.

Surface Profile Comparison:

Confirm that the desired profile SP# (1-10) of the surface has been achieved by visually inspecting and comparing the prepared surface and outlying areas to the profiles depicted by replica profile pads, replica putty, replica tape, or SP photos. Record all findings in a journal. Should the profiles not meet the specified range, the Inspector shall give immediate notice for the Contractor to remedy at Contractor's expense.

Final Markings

Apply all final markings immediately upon acceptance of the surface preparation after field-testing approval and prior to opening the road to traffic.

Observation Period, Method of Measurement, Acceptance and Payment.

The observation period shall begin with the satisfactory completion and acceptance of the work and end prior to the installation of the markings. The quantities to be paid for will be the area, in square feet, of prepared surfaces for markings removed and accepted by the Engineer. A separate unit price shall be provided for the repair of any pre-existing failed surface conditions, under or adjoining the pavement markings. For each percentage of removal required, a separate unit price shall be provided. The unit prices shall be full compensation for all work specified to include furnishing all material, labor, equipment, tools and incidentals, waste disposal work and for necessary to complete the item to the percentage specified and to the satisfaction of the Engineer. Payment will be made under the items specified in the Bid Price Proposal.