

## **Water Blasting for Surface Preparation & Marking Removal**

**DESCRIPTION.** This work shall consist of cleaning and preparing Portland cement and bituminous pavement surfaces for the application of reflectorized pavement marking materials utilizing a combination of grinding and water blasting – both with vacuum recovery of debris. Examples of pavement markings requiring this item include, but are not limited to, paint, MMA, polyurea, thermoplastic and epoxy marking materials.

### **CONSTRUCTION DETAILS.**

**General.** The work required to clean and prepare pavement surfaces shall be performed in accordance with these specifications, the contract documents and to the satisfaction of the Engineer. Water blasting with vacuum recovery shall be used for all applications of pre-treatment. Grinding with vacuum recovery may be used prior to the water blasting to improve removal efficiency of old lines in a manner that minimizes damage to the pavement surface.

Before any work is begun, a schedule of operations shall be submitted for the approval of the Engineer. When the work is conducted under traffic, the Contractor shall supply all necessary flags, markers, signs, and other devices to maintain and protect traffic.

Whenever grinding and water-blasting are performed, the work shall be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that will mislead or misdirect the motorist. Any debris not picked up by vacuum recovery that remains on the roadway, including broken parts from cleaning equipment, shall be removed and disposed of in a manner satisfactory to the Engineer.

**Limits of Work.** Cleaning and surface preparation work shall be confined to the surface area specified for the application of pavement marking materials; or the surface area of existing pavement markings that is specified for removal on the plans, or as directed by the Engineer.

Surface preparation work includes cleaning for lines or cleaning for letters and symbols. Lines will be meant to include: broken line; dotted line; channelizing line; barrier lines; stop lines; crosswalk line and crossbars.

When lines are cleaned, the area of preparation will be the width of the new pavement marking, or existing line, plus 1 inch on each side. When letters and symbols are cleaned the area of preparation will be sufficiently large to accommodate the new marking, or to remove the existing marking.

**Cleaning Concrete Curing Compounds.** On new Portland cement concrete pavements, cleaning operations shall not begin until a minimum of 30 days after the placement of concrete. All new concrete pavements shall be cleaned by water blasting. When water blasting is performed, pavement markings shall be applied no sooner than 24 hours after the blasting has been completed.

The extent of the blasting work shall be to clean and prepare the concrete surface such that:

- A. There is no visible evidence of curing compound on the peaks of the textured concrete surface.
- B. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.
- C. All remaining curing compound is intact; all loose and flaking material is removed.
- D. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.

**Cleaning Existing Pavement Markings.** Existing pavement markings shall be cleaned for the purpose of:

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- A. Preparing the pavement surface for the application of new pavement markings in the same location as the existing markings.
- B. To remove existing markings that are in good condition which, if allowed to remain, will interfere with or otherwise conflict with newly applied marking patterns.

It shall be understood that in this context cleaning means the removal of an existing marking. It is not intended that all deteriorated existing pavement markings be removed. Example: If a new marking is applied to an unmarked “gap” in a broken line and the existing broken line pattern is worn or deteriorated, as determined by the Engineer, to the extent that it is not misleading or confusing to the motorist, the existing markings do not require removal.

Pavement markings shall be cleaned to the extent that 95% to 100% of the existing marking is removed. Removal operations shall be conducted in such a manner that no more than moderate color and/or surface texture change results on the surrounding pavement surface.

The determination of acceptable removal will be made by judgment of the Engineer and will be guided by the Department's pictorial standards of acceptable marking removal. Pictorial standards are available from the NYSDOT Materials Bureau.

**Replacement of Pavement Markings.** The Contractor shall not remove existing pavement markings and leave the highway unmarked overnight.

**Disposal of Waste Collected By Vacuum Recovery and Debris Removal.** Water blasting equipment used shall recover a minimum of 90% of water applied – leaving no standing water. Vacuumed water shall be filtered for re-use. Any wastewater and collected solid waste shall be disposed of in accordance with all federal, state, and local requirements. Pavement markings shall be installed within 72 hours of water blasting or as directed by the Engineer. Pavement shall be completely dry prior to PSM installation – time varying with temperature and humidity as needed.

**OPERATOR REQUIREMENTS.** Operators of water blasting and grinding equipment shall have current certification of having successfully completed equipment manufacture’s training for each type, make, and model of equipment used. A copy of such certification shall be provided to the Engineer when requested. Such operators shall take care to remove old and/or conflicting markings and to clean the surface thoroughly while preventing damage to the pavement. The Engineer may disallow any operator to use water blasting and grinding equipment if the operator is deemed to lack the skill and judgment required to adequately prepare the pavement for markings or to prevent unnecessary pavement damage.

**METHOD OF MEASUREMENT.** Surface cleaning and preparation of pavement surfaces for lines will be measured in Square Feet. No payment will be made for cleaning the number of feet of unmarked gaps between broken or dotted line segments.

**BASIS OF PAYMENT.** The contract unit price shall include the cost of mobilization, furnishing all labor, materials and equipment to satisfactorily complete the work – including the cost of work zone traffic control as needed. The Engineer shall determine if separate payment is justified for removal of conflicting lines/letters/symbols/color in addition to payment for surface preparation of new lines/letters/symbols/color to be installed. No payment will be made under this item for the removal of pavement markings required under the section “**Defective Pavement Markings**”.

## Water Blasting for Surface Preparation & Marking Removal

*Payment will be made under:*

**Item**

Water Blasting for Surface Preparation & Marking Removal

**Pay Unit**

Square Feet\*

\*See following page for table to be used in determining area of letters and symbols

**Area of Letters and Symbols for Surface Preparation & Marking Removal (via Waterblasting)**

Type	Item	SF	
Symbols		Turn Arrow	15.50
		Through (straight) Arrow	12.50
		Combo Arrow	25.50
		Combo Arrow (left/right)	27.00
		Lane Reduction Arrow	42.00
		Bicycle Facility Arrow	4.50
		Wrong Way Arrow	24.40
		HOV Lane	13.50
		Sharks Teeth 12" x 18"	0.75
		Sharks Teeth 24" x 36"	3.00
		Speed Hump Marking	12.10
		Bike Symbol 40" x 72"	20.00
		Bike Symbol 24" x 48"	8.00
		Ped Symbol 72"	18.00
8' Letters & Numbers		A	5.50
		B	7.10
		C	4.80
		D	6.10
		E	5.90
		F	4.70
		G	5.80
		H	6.00
		I	2.60
		J	3.70
		K	5.70
		L	3.80
		M	7.40
		N	7.10
		O	6.00
		P	5.30
		Q	6.30
		R	6.30
		S	5.70
		T	3.80
		U	5.60
		V	4.80
		W	7.30
		X	4.80
		Y	3.90
		Z	5.10
		1	2.60
	2	5.80	
	3	5.80	
	4	5.10	
	5	6.10	
	6	6.20	
	7	3.80	
	8	6.70	
	9	6.20	
	0	6.00	
	10' School	94.00	

**Notes**

- 1 Letters and symbols shown to the left will be paid in accordance to the number of "Units" they represent.
- 2 For preformed thermoplastic, "1 Unit" is based on average list price from four leading preformed thermoplastic pavement marking manufacturers for the same turn arrow symbol.
- 3 For extruded thermoplastic, "1 Unit" for bid determination is derived from FHWA-approved turn arrow symbol which is 15.50 SF.
- 4 N.A. = Not Applicable because this option is not used by NYCDOT.
- 5 Symbols / letters / numbers not shown may be added to the contract using the same methodology presented above for payment.
- 6 See NYCDOT Typical Drawings in Exhibit A of this contract for typically utilized symbols and letter configurations.
- 7 The factors listed in this table are fixed for the duration of the contract unless modified by change order.