HIGH PERFORMANCE COATED ASPHALT SPECIFICATION

PART 1 – GENERAL

1.1 DESCRIPTION

A. **StreetBond** Advanced Coatings for Asphalt are specifically formulated for application to asphalt pavement and have been confirmed by a certified testing facility to possess a balance of performance properties for a durable and color-fast finish.

B. A variety of **StreetBond** coating colors are available. Please refer to www.hubss.com to view these. Custom colors are available upon request.

C. In addition to being used on flat asphalt surfaces, **StreetBond** coatings have been formulated to work in conjunction with the StreetPrint® asphalt imprinting process to create a more decorative effect. For more information about the StreetPrint® process visit www.hubss.com.

D. The StreetPrint® imprinting process is executed by elevating the surface temperature of the asphalt pavement and then pressing a metal template into the asphalt pavement to replicate, in relief, the grout depressions common to hand-laid brick or cobblestone, or any other design as shown on the drawings or described in the specifications. The imprinted asphalt pavement surface is then coated using one or more of the **StreetBond** coatings.

E. A variety of template designs are available. Please refer to www.hubss.com to view these. Custom template designs are available upon request.

F. **StreetBond** coatings are suitable for a wide variety of pavement applications. Cycle lanes, sidewalks, parking lots, walkways, cross-walks, medians, plazas, dedicated bus lanes, entranceways, and residential driveways are some examples of successful applications of **StreetBond** coatings both with and without the StreetPrint® process.

G. Certain colors of the **StreetBond** coatings have been independently verified to have an SRI greater than 29 and therefore can help projects qualify for points in the LEED program under Heat Island Effect: Non-Roof. Please refer to www.hubss.com for further information.

H. Qualifications. Only **Accredited Applicators** may bid for and perform the imprinted portion of this work. Please refer to **Section 1.3 DEFINITIONS.**

I. **StreetBond** coatings are only available from HUB Surface Systems,(Tel. 604-309-8212).

1.2 REFERENCES

A. ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.

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B. ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
C. ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.
D. ASTM D522-93A Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.
E. ASTM D1653 Standard test method for water vapor transmission or organic film coatings.
F. ASTM G-154 QUV Accelerated Weathering Environment. Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.
G. ASTM D 2369 Weight Solids Standard test method for Volatile Content of Coatings.
H. ASTM D 1475 Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.
I. ASTM D-2240 (2000) Standard Test Method for Rubber property – Durometer hardness.
J. ASTM D-5895 Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.
K. ASTM D-570 Standard Test Method for water absorption of plastics.

1.3 DEFINITIONS

A. **"Accredited Applicator"** has a valid Accreditation Certificate as offered by Quest Construction Products. (Tel. 604.309.8212). **StreetBond** applicators are reviewed on an annual basis. All **Accredited Applicators** have been qualified by Quest Construction Products to perform the Work.
B. **"Applicator"** means the installer of the **StreetBond** coatings.
C. **"Owner"** means the Owner and refers to the representative person who has decision making authority for the Work.
D. **"Textured asphalt pavement"** is asphalt pavement that has been subjected to imprinting or stamping in a specific pattern.
E. **"Non-textured asphalt pavement"** is asphalt pavement that is unstamped and is sometimes referred to as "flatwork".
F. **The "Work"** is the asphalt pavement texturing work contemplated in this bid submission and specification.
G. **"Scuffing"** is a "tear" of the asphalt pavement caused by an external force. Stationary vehicle tires turning on the pavement surface is a typical cause.
H. **"Layer"** is a pass, using the RSG spray gun, that is allowed to dry before the next pass is applied.

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1.4 SUBMITTALS

If the StreetPrint® process is to be used in all or part of this project, a copy of the current year Accreditation certificate as provided by Quest Construction Products to the **Accredited Applicator** is a required submittal**.**

PART 2 – PRODUCTS

2.1 MATERIALS – STREETBOND COATINGS

StreetBond150 coatings that have been scientifically formulated to provide the optimal balance of performance properties for a durable, long lasting color and texture finish to asphalt pavement surfaces. Some of these key properties include wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties. **StreetBond** coatings are environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

A. StreetBond150 is a premium epoxy modified, acrylic, waterborne coating specifically designed for application on asphalt pavements. It has a balance of properties to ensure good adhesion and movement on flexible pavement, while providing good durability. **StreetBond150** is durable in both dry and wet environments and can be directly applied to asphalt pavement or used as a top coat over **CemBase.**

B. StreetBond Colorant is a highly concentrated, high quality, UV stable pigment blend designed to add color to **StreetBond150** coatings. One unit of Colorant shall be used with one pail of **StreetBond150** coating material.

2.1.1 Properties of StreetBond coatings

The following tables outline the physical and performance properties of the **StreetBond** coatings as determined by an independent testing laboratory.

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TABLE 1: Typical Physical Properties of StreetBond Coatings.

Characteristic	Test Specification	SB150
Solids by Volume	ASTM D-2697	**55%**
Solids by Weight	ASTM D-2369	**68.9%**
Density	ASTM D-1475	**13.34 lbs/gal (1.599 kg/l)**

TABLE 2: Typical Performance Properties of StreetBond Coatings

Characteristic	Test Specification	SB150	
Dry time (To re-coat)	ASTM D-5895 23℃; 37% RH	**35 min**	
Taber Wear Abrasion Dry H-10 wheel	ASTM D-4060 1 day cure	**0.98 g/1000 cycles**	
Taber Wear Abrasion Wet H-10 wheel	ASTM D-4060 7 days cure	**3.4 g/1000 cycles**	
QUV E Accel. Weathering environment.	ASTM G-154 Delta E 1,500 hours	**0.53**	
Hydrophobicity Water absorption	ASTM D-570	**8.3% (9 days immersion)**	
Shore hardness	ASTM D-2240	**63 Type D**	
Mandrel Bend	ASTM D522-93A	**1/4" @ 21°C**	
Permeance	ASTM D1653	**3.45 g/m²/hr (52 mils)**	
VOC	Per MSDS	**23 g/l**	
Adhesion to Asphalt	ASTM D-4541	**Substrate Failure**	
Friction Wet	ASTM E-303 British Pendulum Tester	**WP* coated**	**64**
		WP* uncoated	**57**
		AC coated**	**73**
		AC uncoated**	**60**

*WP – test conducted on asphalt pavement in wheel path
**AC – test conducted on asphalt pavement adjacent to curb.

Certificates of Analysis are available upon request for each of these properties.

2.2 EQUIPMENT FOR STREETBOND APPLICATION

The equipment described has been designed specifically for optimal application of StreetBond coatings. Other equipment may or may not be suitable and could compromise the performance of the StreetBond coatings and/or reduce crew productivity.

A. The **Rapid Sprayer II** is a proprietary coating sprayer supplied by Integrated Paving Concepts Inc. and is capable of applying the **StreetBond** coatings to the asphalt pavement surface in a thin, controlled film which will optimize the drying and curing time of the coating.

B. The **StreetBond Coatings Mixer** is a motorized mixing device designed to ensure efficient and thorough blending of the **StreetBond** components.

PART 3 - EXECUTION

3.1 GENERAL

StreetBond coating shall be supplied and applied by an **Accredited Applicator** in accordance with the plans and specifications or as directed by the Owner. Do not begin installation without confirmation of an Accreditation Certificate. Specifications for the execution of the **StreetPrint®** system can be found at www.hubss.com.

3.2 PRE-CONDITIONS

The condition of the asphalt substrate will impact the performance of the **StreetBond** coatings. A highly stable asphalt pavement free of defects is recommended.

3.2.1 Pre-requisites for new asphalt pavement

A durable and stable asphalt pavement mix design installed according to best practices over a properly prepared and stable substrate is a pre-requisite for all long-lasting asphalt pavement surfaces. The application of **StreetBond** does not change this requirement.

For information regarding the asphalt pavement mix design where the StreetPrint® process will be used see www.hubss.com.

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3.2.3 Pavement Marking Removal: recommended guidelines

Pavement markings may be removed by sandblasting, water-blasting, grinding, or other approved mechanical methods. The removal methods should, to the fullest extent possible, cause no significant damage to the pavement surface.
The Owner shall determine if the removal of the markings is satisfactory for the application of **StreetBond** coatings. Work shall not proceed until this approval is granted.

3.2.4 Surface Preparation

The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

3.3 APPLICATION OF STREETBOND COATINGS

3.3.1 StreetBond Coating System Options

The selection of the appropriate **StreetBond** coating or system of coatings and the required number of layers of each is dependent upon the application as outlined here in **TABLE 3**.

TABLE 3: COATING SYSTEM OPTIONS

	Stamped Asphalt surface **Scuff** concern**	**Stamped Asphalt surface** **No Scuff** concern**	**Non Stamped / Textured*** Asphalt surface**
No Vehicle Traffic ▪ Pedestrian ▪ Cycle paths ▪ Sidewalks ▪ Plazas	N/A	3 layers StreetBond150	
Very Low Vehicle Traffic ▪ Residential	1 layer StreetBond150 over 2 layers StreetBond CemBase		3 layers StreetBond150
Low / Medium Vehicle Traffic ▪ Parking lots ▪ Low traffic crosswalks ▪ Low traffic entries ▪ Level Medians ▪ Cycle paths in traffic	2 layers StreetBond150 over 2 layers StreetBond CemBase		4 layers StreetBond150

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3. additional layers **StreetBond150** may be used to provide additional build thickness in high wear areas such as wheel paths and vehicle turning areas.
4. A maintenance program may be required for applications exposed to:

- scuffing
- abrasive materials (such as salt and sand)
- abrasive equipment (such as snow removal equipment)

3.3.2 Coating Application Guidelines

A. The **Applicator** shall use the **Rapid Sprayer II** to apply the **StreetBond** coatings.
B. The asphalt pavement surface shall be completely dry and thoroughly cleaned prior to application of the coatings.
C. The coating application shall proceed as soon as practical upon completion of the imprinting of the asphalt pavement where applicable.
D. The first layer of coating shall be spray applied then broomed to work the coating material into the pavement surface. Subsequent applications shall be sprayed then broomed or rolled. Each application of coating material shall be allowed to dry to the touch before applying the next layer.
E. The **Applicator** shall apply the **StreetBond** coatings only when the air temperature is 50℉ / (10℃) and rising and will no t drop below 50℉ / (10℃) within 24 hours. No precipitation should be expected within 24 hours.

3.5 COATING COVERAGE & THICKNESS

Recommended coating coverage and thickness is as outlined in **TABLE 4** below. Actual coverage may be affected by the texture of the asphalt pavement substrate and the imprint pattern selected. There will be less coverage with the first layer and higher coverage with subsequent layers.

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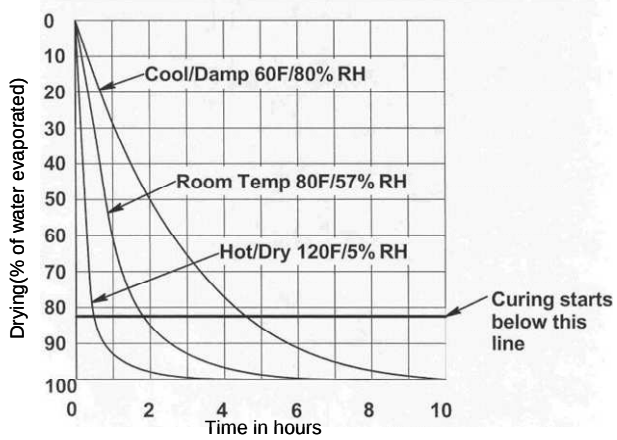
TABLE 4: COATING COVERAGE AND THICKNESS

	COVERAGE (approx.)		THICKNESS (approx.)			
# OF LAYERS	TEXTURED (Offset brick) SF/pail	NON-TEXTURED SF/pail	WET		DRY	
			mm	mil	mm	mil
3	200	225	0.65	25.7	0.36	14.1
4	150	175	0.87	34.3	0.48	18.9

3.6 OPENING TO TRAFFIC

Minimally, the surface coating must be 100% dry before traffic is permitted. The following table is a guide:

TABLE 5: COATING DRY TIMES (TYPICAL)



Coating Dry Time (Laboratory)

This graph shows the increase in drying time when temperatures are lower.

Environmental factors such as sunlight and wind play a major role in drying.

If StreetBond coatings are applied when moisture cannot evaporate, then the coating will not dry. The drying and curing of StreetBond coatings have a direct impact on performance.

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PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

The measured area is the actual area of asphalt pavement where **StreetBond** has been applied, measured in place. No deduction will be made for the area(s) occupied by manholes, inlets, drainage structures, bollards or by any public utility appurtenances within the area.

4.2 PAYMENT

Payment will be full compensation for all work completed as per conditions set out in the contract. For unit price contracts, the payment shall be calculated using the measured area as determined above.