

SPECIFICATIONS FOR BONDED WEARING COURSE

1.0 DEFINITIONS

The term Director [Superintendent, etc.] shall mean the Director of Public Works of the awarding authority.

The term Designee shall mean an employee of the awarding authority, designated by the Director.

The term Contractor shall mean a professional company contracted by the awarding authority to perform work under this agreement.

2.0 DESCRIPTION

The Bonded Wearing Course consists of a warm polymer modified asphalt emulsion bond coat followed immediately with an ultra-thin hot mix asphalt wearing course. The tack coat is spray applied immediately prior to the application of the wearing course to produce a durable wearing surface that can be opened to traffic. The finished surface treatment has a minimum thickness of 1/2". All pavement repairs, crack filling and joint filling will be paid for under the appropriate items.

3.0 MATERIALS

3.1 Mixture Requirements:

The contractor shall formulate and submit to the awarding authority, a job mix Formula (JMF) that satisfies the design general limits listed in the Mixture Requirements table below. The production tolerances customarily used by the awarding authority for HMA shall apply, but shall not fall outside the following gradation requirements.

Sieve Size	% Passing
3/4" (19 mm)	-
1/2" (12.5 mm)	100
3/8" (9.5 mm)	95 – 100
#4 (4.75 mm)	40 – 60
#8 (2.36 mm)	21 – 34
#16 (1.18 mm)	15 – 26
#30 (0.60 mm)	10 – 20
#50 (0.30 mm)	7 – 16
#100 (0.15 mm)	5 – 10
#200 (0.075 mm)	4 – 7
% PGB	4.9 – 5.4

*Note: All aggregate percentages are based on the total weight of the aggregate.

3.2 Asphalt Binder:

Use the appropriated performance graded binder, (PGAB), for the project’s geographical location and design traffic level.

3.3 Coarse Aggregate:

The coarse aggregates selected should be those typically used for high performance surfaces. Coarse aggregates, such as crushed gravel, limestone, dolomite, sandstone, granite, chert, traprock, ore tailings, slag or other similar materials, or blends of two or more of the above may be acceptable. When coarse aggregates for these mixes are from more than one source or of more than one type of material, they shall be proportioned and blended to provide a uniform mixture.

	Test Method	Value
LA Abrasion Value, % loss	AASHTO T96-94	30 max
Soundness, % loss Magnesium Sulfate or Sodium Sulfate	AASHTO T104-94	18 max 12 max
Flat and Elongated Ratio, % @ 5:1	ASTM D-4791	10 max
% Crushed, single face	ASTM D-5821	95 min
% Crushed, two or more crushed faces	ASTM D-5821	85 min
Cleanliness (% passing 0.60 mm, (#30))	ASTM D-142	2 max
Resistance to stripping*	ASTM D-3625	80 min **

*Anti-Stripping agents may be required to provide resistance to stripping.

** If the awarding authority currently uses a higher value then that value shall apply.

3.4 Fine Aggregate:

The fine aggregate shall be 100% crushed and have a minimum sand equivalent of 50, (AASHTO T 176-86).

3.5 Mineral Filler:

Hydrated lime, fly ash, baghouse fines and cement are acceptable as mineral filler.

3.6 Bond Coat:

Use grade CRS-1P polymer modified asphalt emulsion meeting the requirements of AASHTO T208 except as modified in the below table. If latex is used, it is required that it be co-milled at the bulk emulsion facility, to ensure complete and balanced blending.

Property	Test Method	Minimum	Maximum
Elastic Recovery, 25°C	AASHTO T301	65	
Residue by Distillation, %	AASHTO T59	63	
Penetration of Residue, 25°C, 100g, 5 sec	AASHTO T49	60	150

4.0 EQUIPMENT

The equipment used by the Contractor shall include, but not be limited to, one or more of the following:

4.1 Paving:

The self-priming paver must be capable of spraying the bond coat, applying the hot asphalt overlay and smoothing the surface of the mat in one pass, without equipment driving on or disrupting the bond coat, at a rate of 30-100 feet per minute. The self-priming paver must incorporate a receiving hopper, feed conveyor, insulated storage tank for emulsion, metered tack coat spray bar and a variable width, heated, ironing type screed. The screed must have the ability to be crowned at the center both positively and negatively and have vertically adjustable extensions to accommodate the desired pavement profile.

4.2 Roller:

Use steel wheeled double drum rollers weighing at least 8 ton that are equipped with functioning water systems and scrapers to prevent the fresh mix from adhering to the roller drums.

5.0 CONSTRUCTION PROCEDURES

5.1 Streets to be Treated:

The Contractor and the Director shall mutually determine the streets which shall receive bonded wearing course treatment. Measurements of streets to be treated shall be made by the Contractor and the Director or his/her Designee, and the Contractor shall prepare a cost estimate for each street prior to beginning work.

5.2 Staging and Disposal Locations:

The awarding authority shall provide a staging area for equipment and materials to be used on the project. The Contractor and Director shall mutually review and agree that the location is of adequate size and condition to allow for safe and secure usage for the required operation(s).

The awarding authority shall provide a location for disposal of asphalt/aggregate debris created in the adjustment of utility castings/structures, milling of keyways, and any pre- or post- project sweeping.

5.3 Surface Preparation:

All surface preparations shall be completed by the awarding authority prior to applying the surface treatment unless otherwise noted or bid as separate items.

The awarding authority shall be responsible for removal of all thermoplastic traffic markings, cleaning and flush filling all cracks and joints greater than 1/4" wide. The awarding authority shall place a leveling course on planed, milled or existing surface, if required.

The contractor shall adjust all City-owned roadway castings/utility structures. If required, the City will coordinate the re-setting/adjustment of all non-City-owned utility structures with the various utility companies.

The contractor shall cover all manhole covers, water boxes, gas boxes, catch basins and other such utility structures with plastic or building felt. Reference each for location and uncovering after application.

The contractor shall cut keyways at limits of work and additional locations as directed by the Director to a sufficient depth to create smooth transitions and good ride quality.

The contractor shall thoroughly clean the surface by sweeping immediately prior to application of the bonded wearing course. Prior to sweeping, the awarding authority shall have removed all vegetation and soil that is bound to the roadway surface.

The contractor shall remove all standing water. A damp surface is acceptable if favorable weather conditions are expected during paving operations.

5.4 Weather Limitations:

The minimum pavement surface temperature for application of the bond coat and placement of the wearing course is 50°F.

5.5 Application:

Apply the bond coat at a temperature of 120° - 170 F. Provide a uniform application across the entire width to be overlaid, at a rate of 0.15 - 0.25 gallons per square yard. Continuously monitor the rate of spray.

No equipment shall come in contact with the bond coat before the hot mix asphalt concrete wearing course is applied.

Immediately after applying the bond coat, apply the hot mix asphalt overlay across the full width of the bond coat at a temperature of 280° - 335°F.

5.6 Compaction:

Begin compaction immediately after the application of wearing course. Use a minimum of two (2) passes. The roller(s) will not be allowed to stop on the freshly placed wearing course. Use an adequate number of rollers to complete compaction before the pavement temperature falls below 185°F. Protect the wearing course from traffic until the rolling operation is complete and the material has cooled sufficiently to resist damage.

5.7 Traffic Control:

All Traffic Control to be provided by the Awarding Authority.

6.0 PERFORMANCE

The awarding authority will not award this contract unless the Contractor furnished satisfactory evidence of his/her ability and experience to perform this work, and that he/she has sufficient capital and equipment to enable him/her to prosecute the work successfully and to complete it within the time named in the contract. The Contractor shall not sublet any portion of this contract, and will own all equipment used to complete such contract. As part of the bid, the Contractor must submit a list of six similar and successfully completed jobs on which they have been the prime contractor, whose relevance to the proposed job shall be deemed by the

awarding authority. The name, address, and telephone number of a contact person involved with each of these projects must be included so they can be investigated prior to the award of the contract. It will be the responsibility of each bidder to visit the job site with the Director. The awarding authority can reject any bid of a contractor who has not visited the work site.

7.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

7.1 Bonded Wearing Course:

Payment for Bonded Wearing Course shall be made at the contract unit price per square yards times the number of square yards, measured by the Contractor and the Director or his/her designee, of road surface treated. Price per square yard shall be for complete in place quantities. Upon completion of work, and acceptance by the Director, the Contractor shall submit a payment request to the Director. Payment shall be net thirty (30) days.

7.2 Other Work:

Measurement of and payment for other work such as patching, leveling, sweeping and crack sealing shall be bid as separate item(s).

8.0 GUARANTEE

Any material or workmanship found to be defective for up to one (1) year from the date of acceptance by the Director shall be replaced by the Contractor at no cost to the awarding authority. Upon notification of defective material or workmanship, the Contractor shall immediately replace such defective areas.

SPECIFICATIONS FOR ADJUSTMENT OF STRUCTURES

1.0 DESCRIPTION

Work under this item shall include adjusting sewer manhole castings, stormwater manhole castings, and catch basins castings to the proposed finished grade of the bonded wearing course surface. Adjustment of structures to grade when the change is 6 inches or less will be measured in place by the unit each, complete and approved. Adjustment of structures to grade when the change is greater than 6 inches shall be performed in accordance to the Specifications for Structure Vertical Rebuild.

2.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Adjustment of structures shall be measured in place by the unit each, complete and approved. The unit bid price per each shall include all labor, materials and equipment necessary to complete the work as necessary or as directed by the Owner.

SPECIFICATIONS FOR STRUCTURE VERTICAL REBUILD

1.0 DESCRIPTION

Work under this item shall include vertical masonry rebuild for adjustment of structures requiring a change of greater than 6 inches to meet the proposed finished grade of the bonded wearing course surface. Vertical masonry rebuild of structures to grade will be measured in place by total height in feet, complete and approved.

2.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Vertical masonry rebuild of structures to grade when the will be measured in place by total height in feet, complete and approved. The unit bid price per each shall include all labor, materials and equipment necessary to complete the work as necessary or as directed by the Owner.

SPECIFICATIONS FOR ADJUSTMENT OF GATE BOXES

1.0 DESCRIPTION

Work under this item shall include adjusting water & gas gate and service boxes to the proposed finished grade of the bonded wearing course surface. Adjustment of gates to grade when the change is 6 inches or less will be measured in place by the unit each, complete and approved.

2.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Adjustment of gate boxes shall be measured in place by the unit each, complete and approved. The unit bid price per each shall include all labor, materials and equipment necessary to complete the work as necessary or as directed by the Owner.

PRICE ADJUSTEMENT

A fluctuating price will be required for this bid to allow for price adjustments based on the period price of asphalt cement in the awarding authority's state. The price adjustment will be based on the variance in price for the asphalt cement component only from the Base Price to the Period Price. Base price for this bid will be \$_____ per ton of asphalt cement.

"Base Price" = the price of PG binder liquid per ton that exists on the bid opening date, listed above.

"Period Price" = the price of PG binder liquid per ton on the date the stabilization work is performed.

BID FORM

BASE BID: BONDED WEARING COURSE applied to town prepared roadways in accordance with the attached specifications.

Est. Quantity (SY) _____ x Price per Square Yard \$ _____ = \$ _____

BID ITEM 2: ADJUST STRUCTURES. Contractor to adjust manhole/catch basins.

Est. Quantity (EA) _____ x Price per Unit \$ _____ = \$ _____

BID ITEM 3: VERTICAL REBUILD OF STRUCTURES. Contractor to rebuild vertical masonry of structures.

Est. Quantity (FT) _____ x Price per Foot \$ _____ = \$ _____

BID ITEM 4: ADJUST GATE BOXES. Contractor to adjust gate boxes.

Est. Quantity (EA) _____ x Price per Unit \$ _____ = \$ _____

TOTAL BID ON ITEMS 1-4: \$ _____

Bidder: _____ Phone: _____

Address: _____ Fax: _____

Signature: _____

Printed Name & Title: _____

Date: _____

REFERENCE LIST FOR BONDED WEARING COURSE

Please list six similar projects that have been completed as the Prime Contractor:

Owner:	Owner:
Address:	Address:
City, State, Zip:	City, State, Zip:
Contact:	Contact:
Phone:	Phone:
Contract Amount:	Contract Amount:

Owner:	Owner:
Address:	Address:
City, State, Zip:	City, State, Zip:
Contact:	Contact:
Phone:	Phone:
Contract Amount:	Contract Amount:

Owner:	Owner:
Address:	Address:
City, State, Zip:	City, State, Zip:
Contact:	Contact:
Phone:	Phone:
Contract Amount:	Contract Amount: