

**SPECIFICATIONS FOR FULL DEPTH RECLAMATION**  
**WITH CALCIUM CHLORIDE**

**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**

Work under this contract shall consist of the Contractor furnishing equipment and materials to pulverize the in-place asphalt pavement and underlying material, spray liquid calcium chloride on the pulverized mass, mix and/or blend the material, spread and compact the resultant mixture to the lines and grades shown on the plans or established by the Director or his/her Designee, cap the finished base with an application of calcium chloride. Bid quantities are approximate only; payment shall be for actual square yards reclaimed.

**3.0 MATERIALS**

3.1 Liquid Calcium Chloride:

The calcium chloride solution shall be provided by the manufacturer as a true solution and shall not be reconstituted from flake calcium chloride. The calcium shall meet the following material specifications (see ASTM Designation D98; AASHTO-M144).

Calcium Chloride	35% +/- 1%
Alkali Chloride as NaCl	2% max.
Magnesium as MgCl	0.1%

**Typical (in lbs. per gallon)**

Calcium Chloride	5.050
Sodium Chloride	0.200
Magnesium Chloride	0.004
Calcium Sulfate	0.004
Water	6.002
	<b>11.26</b>

\*Magnesium Chloride may be substituted for Calcium Chloride.

3.2 Reclaimed Base:

All pulverized material shall pass the 76.2 mm, (3-inch), sieve. The processed sub-base shall meet the following gradation:

Sieve Size	% Passing
3" (76.2 mm)	98 – 100
1 ½" (38.1 mm)	70 – 100

\*Gradation may vary due to local aggregate conditions.

4.0 **EQUIPMENT**

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

4.1 Laboratory:

Contractor must maintain a working laboratory capable of sampling and testing reclaimed soils and must be open for inspection by the awarding agency.

4.2 Reclaimer:

Reclamation will be by means of a traveling rotary reclaimer or equivalent machine capable of cutting through existing asphalt at depths up to 12 inches with one pass. The machine shall be self-propelled and equipped with an adjustable grading blade thus leaving its path generally smooth for traffic. Equipment such as road planners or cold milling machines which are designed to mill or shred the existing bituminous concrete rather than to crush or fracture it, are not considered capable of achieving specification gradation. The required and necessary action of the reclaimer will increase the percentages of fine aggregate. This machine is not intended for use on sub-bases with large boulders or ledge. Existing bituminous concrete and gravel base must be pulverized and mixed so as to form a homogeneous mass of uniformly processed base material which will bond together when compacted.

4.3 Pressure Distributor:

The distributor for calcium shall be capable of applying liquid calcium chloride in accurately measured quantities at any rate between 0.1 to 2.0 gallons per square yard of roadway surface, at any length of spray bar up to 20 feet. The distributor shall be capable of maintaining a uniform rate of distribution of material regardless of change in grade, width or direction of the road. The distributor shall be equipped with a Digital Volumetric Accumulator capable of measuring liters applied and distance traveled. The volume and measuring device shall be equipped with a power unit for the pump so that application is by pressure, not gravity. The spray nozzles and pressure system shall provide a sufficient and uniform fan-shaped spray of material throughout the entire length of the spray bar at all times while operating, and shall be adjustable laterally and vertically. The spray shall completely cover the roadway surface receiving the treatment.

4.4 Grader:

A motor grader shall be used for shaping and finishing the surface of the reclaimed base, in accordance with the lines, grades and typical cross sections shown on the plans or established by the Director of his/her Designee.

4.5 Rollers:

At least one (1) vibratory roller shall be used on each reclaimed surface, and shall have a compacting width of not less than 5 feet. Each roller shall have a gross weight of not less than 12 tons.

**5.0 CONSTRUCTION PROCEDURES**

5.1 Streets to be Treated:

The Contractor and the Director shall mutually determine the streets which shall receive reclamation. Measurements of streets to be reclaimed shall be made by the Contractor and the Director of his/her Designee. The Contractor shall prepare a cost estimate for each street prior to beginning work. Lines and grades shall be furnished by the awarding authority to all bidders at the time of job negotiation.

5.2 Surface Preparation:

Surface preparation, which may include cleaning and grubbing; removal of visible cobbles; drainage; adjusting of street irons-valve covers, manhole covers, drop inlet gratings, catch basins; signs, mail boxes and guard rail resetting; etc., will be the responsibility of the awarding authority and will be completed before the contractor moves onto the job.

5.3 Pulverization Process:

The existing road pavement shall be pulverized and mixed with equal amounts of gravel base existing in the roadway foundation. The pulverization shall blend the asphalt and base material into a homogeneous mass, utilizing the asphalt acquired from the existing pavement as a stabilizer to bond material together when compacted. After the first pulverization, one (1) application of calcium chloride totaling 0.9 gallon per square yard, shall be applied. The aggregate mass shall then be pulverized again to ensure proper asphalt, gravel, and calcium chloride blending to the desired depth. Following base compaction, shaping and fine grading, then recompaction, a final capping of 0.1 gallons per square yard of calcium chloride shall be applied. Total calcium chloride application shall be one (1) gallon per square yard.

5.4 Grading:

Sub-grade changes may be necessary to meet proposed grade lines and cross sections. In areas where the proposed roadway grade to above the present grade, additional material will be provided by the awarding authority on the site, incorporated during regrading and compaction of the pulverized material, then brought to line and grade. Any excavation of sub-base material shall be placed in windrows or stockpiled so as not to impede the work of the Contractor, for later removal by municipal forces. After the material has been thoroughly worked by the reclaimer, the mass will be shaped and fine graded.

5.5 Rolling:

Initial rolling shall be done immediately following the second reclaimer pass, and again following fine grading.

5.6 Traffic Control:

Traffic control, including police details, warning lights, barricades, and warning signs, is the sole responsibility of the awarding authority. Unless otherwise specified, the roadway shall be kept open to traffic at all times, with traffic discontinued on the lane being reclaimed. Controlled traffic may be permitted as soon as the base has been rolled.

**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, 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**

Payment for work under this agreement shall be made at the contract unit price per square yard times the number of square yard, measured by the Contractor and the Director or his/her designee, of road surface reclaimed and surface treated. Prior to the bid, the awarding authority must elect to have the grading done by other or with its own machining and forces. 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.

**BID FORM**

**BASE BID: FULL DEPTH RECLAMATION WITH CALCIUM CHLORIDE** applied to town prepared roadways in accordance with the attached specifications.

Price per Square Yard \$ \_\_\_\_\_

Bidder: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_ Fax: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Printed Name & Title: \_\_\_\_\_

Date: \_\_\_\_\_

**REFERENCE LIST FOR FULL DEPTH RECLAMATION  
WITH CALCIUM CHLORIDE**

Please list six similar projects that have been completed.

Owner:

Address:

City, State, Zip:

Contact:

Phone:

Contract Amount:

Owner:

Address:

City, State, Zip:

Contact:

Phone:

Contract Amount:

Owner:

Address:

City, State, Zip:

Contact:

Phone:

Contract Amount:

Owner:

Address:

City, State, Zip:

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Contract Amount:

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Contract Amount:

Owner:

Address:

City, State, Zip:

Contact:

Phone:

Contract Amount: