

**COUNTY OF STANISLAUS  
DEPARTMENT OF PUBLIC WORKS**

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**SPECIFICATIONS**

**FOR**

**SB-1 Roadway Reconstruction Project Bentley Road and  
Warnerville Road  
Contract No. 9636**

**BOARD OF SUPERVISORS**

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**The Specifications contained herein have been prepared by or under the direction of  
the following registered engineer.**



**Approved By:**

  
**Nathaniel Tumminello, P.E.**

**Bid Opening Time and Date: 2:00 p.m., September 5, 2018**

**COUNTY OF STANISLAUS  
DEPARTMENT OF PUBLIC WORKS**

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operation.

The depth, width and shape of the cut shall be as shown on the construction detail plans or as designated by the Engineer. The final cut shall result in a uniform surface conforming to the typical cross sections. The outside lines of the planed area shall be neat and uniform. Planing asphalt concrete pavement operations shall be performed without damage to the surfacing to remain in place and shall be the entire width of the area to be surfaced.

Planed widths of pavement shall be continuous except for intersections at cross streets where the planing shall be carried around the corners and through the conform lines. Following planing operations, a drop-off of more than 0.15-foot will not be allowed between adjacent lanes open to public traffic.

Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If asphalt concrete has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary asphalt concrete taper shall be constructed. Asphalt concrete for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:30 (Vertical: Horizontal) or flatter to the level of the planed area.

Asphalt concrete for temporary tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers shall be completely removed, including the removal of loose material from the underlying surface, before placing the permanent surfacing.

Operations shall be scheduled so that not more than 7 days shall elapse between the time when transverse joints are planed in the pavement at the conform lines and the permanent surfacing is placed at the conform lines.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be disposed of in conformance with the provisions in Section 5-1.20B of the Standard Specifications. Removal operations of cold planed material shall be concurrent with planing operations and follow within 50 feet of the planer, unless otherwise directed by the Engineer.

Cold plane asphalt concrete pavement will be measured by the square foot. The quantity to be paid for will be the actual area of surface cold planed irrespective of the number of passes required to obtain the depth shown on the plans.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in cold planing asphalt concrete surfacing and disposing of planed material, including furnishing the asphalt concrete for and constructing, maintaining, removing and disposing of temporary asphalt concrete tapers, as specified in the Standard Specifications and these Special Provisions shall be included in the contract unit price paid for **Cold Plane Asphalt Concrete** and no additional compensation will be allowed.

## **SP-12 FULL DEPTH RECLAMATION (FDR) - LithTec™ DX33 LITHIFICATION**

### **WARNERVILLE ROAD - 10" DEPTH + 3% LithTec™ DX33 + DOUBLE CHIP**

#### **DESCRIPTION**

Work shall consist of pulverizing existing asphalt concrete, base and subgrade soil to the specified depths and widths in conformance to the Project Plans and Special Provisions. Add LithTec™ DX33 and water to the blended material in accordance with the specifications provided below. Compact, fine grade to the grades required, and cure prior to placement of chip seal surfacing.

This item shall consist of constructing a mixture of pulverized asphalt concrete, base material and/or subgrade soil, LithTec DX33, and water in accordance with this specification, and in conformity with the lines, grades, thickness, and typical cross sections shown on the plans. LithTec™ DX33-treated subgrade shall be constructed in a series of parallel lanes such that longitudinal and transverse joints are minimized. Contractor shall adjust grinding depth to account for Volumetric Change of the non-compacted base so the final compacted LithTec treated base is a minimum 10”.

## **MATERIALS**

### **LithTec™ DX33**

Lithified Technologies US or qualified engineer shall designate the percentage of LithTec™ DX33 by dry weight of the soil to satisfy the criteria requirement for the project. The LithTec™ DX33 specified dosage by dry weight obtained from the Maximum Dry Density per AASHTO T-99 or AASHTO T-180 or TxDOT Tex-113-E is required for all mix designs, as may be specified by Lithified Technologies US or qualified engineer.

## **WATER**

Water used for mixing or curing shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product. Water shall conform to these special provisions. The contractor is responsible for locating and purchasing water utilized in the FDR process.

## **PULVERIZED MATERIAL**

Existing asphalt concrete surfacing shall be pulverized with underlying base materials and/or subgrade soil to the specified depths and widths in conformance to the Project Plans and Special Provisions.

The asphalt concrete surfacing and underlying base/soil materials shall be pulverized such that 95 percent of the material, exclusive of rock and aggregate, will pass a 1-inch sieve. The pulverized materials shall be free of roots, sod, weeds, wood, and construction debris.

## **SUBMITTALS**

The Contractor performing the FDR shall conduct a Just-In-Time Training (JITT). The training shall be mandatory and consist of a formal joint training class on the process, required special equipment, placement and compaction methods, and quality control. Construction operations for FDR LithTec™ DX33 shall not begin until the Contractor's and the Engineer's personnel have completed the JITT. The JITT training class shall be conducted at a location convenient for both the Contractor and the Engineer. The JITT class shall be completed not more than 7 days prior to the start of the FDR process. The class shall be held during normal working hours. The Contractor shall provide a JITT instructor experienced in the construction methods, materials, and test methods associated with construction of

FDR LithTec™ DX33 projects or similar FDR projects utilizing cement or lime. A copy of the course syllabus, handouts, and presentation material shall be submitted to the Engineer at least 7 days before the day of the training. The Contractor and the Engineer shall mutually agree to the course instructor, course content, and training site.

During the process, the Contractor shall furnish the following information to the Engineer on a daily basis:

- 1) Certified weight tickets of LithTec™ DX33 delivered to the project location.
- 2) A summary of quantity of FDR LithTec™ DX33 constructed each day.

## **CONSTRUCTION METHODS**

### **GENERAL**

Prior to beginning any LithTec™ DX33 treatment, the existing subgrade shall be shaped to conform to the typical sections, lines, and grades as shown on the plans. The Engineer shall check and verify the conformance of the material to the lines, grade and elevation as shown on the plans, prior to beginning LithTec™ DX33 treatment.

Trimming and disposal of excess material, if required, will be performed on the intimate mixture of pulverized asphalt concrete, base materials and subgrade soil prior to LithTec™ DX33 treatment. Excess pulverized material is the surplus that results after trimming and grading the pulverized section to the lines and grades shown on the plans. The subgrade should be trimmed sufficiently low to allow for the added LithTec™ DX33 volume, proper material compaction, and subsequent layers of leveling and surface course asphalt concrete overlays or chip seal surfacing.

### **APPLICATION**

LithTec™ DX33 shall be applied at a rate of 3% to a subgrade depth of 10" based on the in-place dry unit weight of soil and for the treatment shown on the plans. For estimating purposes, an in-place dry unit weight of soil of 120 pcf should be used as a basis for the application rate.

The LithTec™ DX33 content shall vary no more than 0.5 percent under and not more than 1.0 percent over the specified LithTec™ DX33 content (example: tolerance on spread rate of 6.0% is 5.5% to 7.0%). However, the moving average of the rate of LithTec™ DX33 content tests/inspections shall not be less than the specified LithTec™ DX33 content. The Engineer reserves the right to increase the rate of application of LithTec™ DX33 from the specified rate during the progress of construction as necessary to maintain the desired characteristic of the stabilized subgrade. Additional LithTec™ DX33 and work required above and beyond the specified amount will be paid on a unit price basis.

LithTec™ DX33 shall be distributed with a non-pressurized mechanical vane-feed spreader equipped with on-board scales and controls capable of spreading the cement at a prescribed weight per unit area. LithTec™ DX33 shall not be spread upon the prepared material more than 2 hours prior to the mixing operation. No traffic other than the mixing equipment shall be allowed to pass over the spread LithTec™ DX33 until the mixing operation is completed.

## MIXING

Mixing of the soil, LithTec™ DX33, and water shall be done with a four-wheel drive rotary mixer (CMI RS-650, CAT 500 or equivalent). The mixing machine shall have equipment provisions for introducing water at the time of mixing through a metering device.

The full depth of the treated subgrade shall be mixed a minimum of two times with the approved mixing machine. At least one of the two mixes shall be done while introducing water into the soil through the metering device on the mixer.

Prior to mixing the subgrade material with LithTec DX33, the existing subgrade material should have a moisture content of two (2) percent over optimum moisture content based on ASTM D1557. During mixing of the FDR material and LithTec DX33, the mixed material should have a moisture content at least two (2) percent over optimum moisture content based on ASTM D1557.

To ensure a uniformly treated section, any material/soil around manholes, utility risers, valves and adjacent to curbs/gutters or in corners, must have that material/soil pulled out by the contractor, at the depth of treatment, where it is accessible to be mixed with the reagent. After that material is mixed with the reagent, it will be placed back and compacted by the contractor.

## COMPACTION

The mixture shall be compacted in one layer. The Contractor shall regulate the sequencing of the LithTec™ DX33 treatment operations, such that the final compaction of the LithTec™ DX33 lift mixture to the specified density will be completed within 2 1/2 hours after the initial application of water during the mixing operation.

Compaction shall be by means of steel drum, pad foot and/or segmented wheel rollers of sufficient capacity to compact the full depth. Areas inaccessible to rollers shall be compacted to the required density by other means satisfactory to the Engineer. The field dry density of the compacted mixture shall be at least 95 percent in the upper 12" and at least 90 percent for the balance of the depth of treatment of the maximum dry density as determined in accordance with ASTM D 1557. Relative compaction may be determined using dry or wet density test methods. Should the LithTec™ DX33 treated subgrade yield under the weight of the compaction equipment, compaction effort will cease in an effort not to compromise the section; in this case, the maximum achievable field density will be accepted or an alternate remedial plan will be proposed by the Engineer.

## FINISHING AND CURING

After the final layer of LithTec™ DX33 treated subgrade has been compacted, it shall be brought to the required lines and grades in accordance with the typical section, and shall be kept moist. The completed section shall then be finished by rolling with a steel drum or other suitable roller approved by the Engineer. However, trimming (cuts only) can be completed within 24 hours of mixing.

The completed LithTec™ DX33 treated subgrade shall be moist cured or surfaced with a curing seal consisting of SS or CSS grade asphalt emulsion at a rate of 0.12 to 0.20 gallons per square yard of

surface. The treated subgrade shall be kept free from heavy traffic during the curing period or until the asphalt concrete surfacing is placed whichever is less, unless otherwise directed by the Engineer.

### **CONSTRUCTION JOINTS**

Construction joints shall have vertical faces and shall be made in thoroughly compacted material. Additional mixture shall not be placed against the construction joint until the joint has been approved by the Engineer. The face of the cut joint shall be lean and free of deleterious material and shall be kept moist until the placing of the adjacent **LithTec™ DX33** section.

### **REPAIR**

If the **LithTec™ DX33** section is damaged, it shall be repaired by removing and replacing the entire depth of affected layers in the damaged area. Feathering will not be permitted for repair of low areas.

### **FINISHING**

The finished FDR surface must not vary more than 0.05 foot from the lower edge of a 12-foot straight edge laid in directions parallel and perpendicular to the centerline. Contractor at their expense shall mill surface to conformance prior to surfacing.

### **MEASUREMENT AND PAYMENT**

Full compensation for furnishing, transporting and spreading **LithTec™ DX33**, the pulverization and **LithTec™ DX33** treatment of the existing pavement shall be paid for at the contract unit price per square foot to a minimum depth shown on the plans for **Full Depth Reclamation-LithTec™ DX33** and shall include costs for all pulverizing, and mixing of the existing pavement and underlying materials; for all water; for all spreading, compacting and trimming to the proper grade as shown on the plans and as specified; for all haul away of all excess pulverized material; for all curing, protection and sealing of the **LithTec™ DX33** treated subgrade; for all stiffness testing and no additional compensation will be allowed.

## **SP-13 FULL DEPTH RECLAMATION - CEMENT STABILIZATION**

### **BENTLEY ROAD - 12" DEPTH + 5% CEMENT + 3" H.M.A. TOP COAT**

#### **DESCRIPTION**

Work shall consist of pulverizing existing asphalt concrete, base, and subgrade soil to the specified depths and widths in conformance to the Project Plans and Special Provisions. Add cement and water to the blended material in accordance with the specifications provided below. Compact, fine grade to the grades required, cure and micro-crack the completed cement treated surface, prior to placement of asphalt concrete.

This item shall consist of constructing a mixture of pulverized asphalt concrete, base material and/or subgrade soil, cement and water in accordance with this specification, and in conformity with the lines, grades, thickness and typical cross sections shown on the plans. Cement-treated subgrade shall be constructed in a series of parallel lanes such that longitudinal and transverse joints are minimized. The