STANDARD SPECIFICATIONS

The Standard Specifications to be used in Maintenance of the Work shall be the "Caltrans 2024 Standard Specifications for Construction of Roads and Bridges" and Caltrans 2024 Standard Plan, except as modified herein special provisions.

Section 1 – MOBILIZATION

Mobilization will be measured and paid by lump sum. The payment will be full compensation for furnishing all services and providing all personnel, equipment, supplies and materials and incidentals necessary to complete mobilization for maintenance of the work, except as modified herein.

Section 2 - MEASUREMENT & PAYMENT

Contract Quantity:
The quantity to be paid is based on actual quantity of the In place material delivered onto the project site not to exceed the quantity of the material shown in the bid schedule, unless authorized by the tribe representative though a contract modification using tribes purchasing system. Payment will be made only for authorized and accepted materials base on unit of measure and unit price according to the bid schedule. Such payment shall constitute full reimbursement for all work necessary to complete the Maintenance activity, including watering, curing, and testing assistance, and all other incidental operations.

The Tribe reserves the right to make changes at any time during the progress of the work, such as increase or decrease quantities and such alteration (change in drawings or changes order) in the work within the general scope of the contract, as may be found to be necessary or desirable. Such increases or decreases shall not invalidate the contract, nor release the surety and the Contractor agrees to accept the work as altered, the same as if it had been a part of the original contract.
The maintenance work shall be paid in square yards of completed and accepted work as determined by cross sections shown on the plans.

Section 3 – PERMITS

The Contractor shall procure all permits (including utility and encroachment permits) and licenses from the appropriate utility company, local, state, and federal governmental agencies prior to commencement of the work; pay all charges and fees (including bonding fees) and give all notices necessary.

Section 4 – SURFACE UTILITIES

All surface utility locations within the roadway prism shall be identified by the Contractor prior to commencement of work and after paving the Contractor shall raise all the utility to the new finished grade.

No payments will be made for identifying the surface utility valve locations. Payment will be Included under Raise Valve to finish grade line item in the contract.

Section 4A- SUB SURFACE UTILITIES

The Contractor shall coordinate the maintenance activities with the utility companies. The contractor shall contact the ground alerts at 1-800-227-2600 and shall provide evidence of contacting utility companies and provide certifications, no later than 15 days in advance of commencement of work.

No payments will be made for this work but considered incidental to other items in the contract.

Section 5 – TEMPORARY TRAFFIC CONTROL

Maintaining roadways during work for purposes of facilitating traffic, surfacing is required to be performed on one-half width of the road. One half of the roadway width shall be made available to public traffic under alternate one-way control.

This work shall consist of furnishing traffic control devices and service for the control and protection of traffic through the area of maintenance activity in accordance with these specifications and in conformity with the details on Caltrans 2024 Standard Plan and T13.

The Contractor shall provide detailed plans per CT, T13 to the tribe's representative which indicate the details of advance warning signing required for the work and typical detour signing. Prior to the start of work, the approved plan shall be updated by the Contractor, to cover changing maintenance activities due to weather and other unforeseen instances. The contractor shall provide a lane closure plan to the tribe's representative and other local and state governments as needed at least two (2) weeks in advance of work activities.
No Maintenance work shall begin until all traffic control signs and devices are installed by the Contractor.

Section 6 – WATERING FOR DUST CONTROL

This work shall consist of developing an adequate water supply, hauling, and applying water required to control the dust caused by the Contractor's operations and the traveling public on the roadway.

No payment will be made for water used for purposes of dust control and other purposes. No arrangements will be made for use of water required for work. The Contractor shall acquire his own sources and obtain the necessary permits.

The Contractor may be required to obtain a user's permit from the local authorities if he elects to use water from a local source.

Section 7 – ROADBED

This work includes Portland cement for pulverization of the existing roadway surface and underlying materials. Base on the typical section.

Description:

Maintenance Rehabilitation of the existing roadbed with cement shall consist of pulverizing and mixing existing roadway surface materials with Portland cement, underlay materials and water to produce dense, hard, cement treated base layer. It shall be proportion, mixed, placed, compacted, and cured in accordance with this specification, and shall conform to the existing lines, grades, thicknesses, and typical cross sections shown in the drawings.

Materials:

Roadway surface material and underlay materials shall consist of the existing road surface, materials and /or underlay materials. Prior to mixing the underlay materials shall not contain roots, topsoil, or any material deleterious to its reaction with cement. After mixing the particle distribution of the processed material shall be according to the grading requirement table.

Grading Requirements:

Sieve Sizes	Percentage Passing
3 inch	100 %
2 inch	95 %
No. 4	55 %

Portland cement:

Portland cement shall comply with the latest specifications for Portland cement (type II or type V) or (ASTM C 150, ASTM C 1157, or AASHTO M 85) or blended hydraulic cements (ASTM C 595, ASTM C 1157, or AASHTO M 240) or as determined in the geotechnical report.

Water:

Water shall be free from substances deleterious to the hardening of the cement-treated material.

EQUIPMENT

Description:

The work may be performed with any machine or combination of machines or equipment that will produce a satisfactory product meeting the requirements for pulverization, cement, and water application, mixing, compacting, finishing, and curing as provided in this specification.

Mixing Methods:

Mixing shall be accomplished in place, using single-shaft or multiple-shaft mixers. Agricultural disks or motor graders are not acceptable mixing equipment.

Cement Proportioning:

Spreading of the Portland cement shall be done with a spreader truck designed to spread dry particulate such as Portland cement to insure a uniform distribution. Spreaders or distributors used shall be able to demonstrate a consistent and accurate application rate, as well as dust control during application the mechanical cement spreader shall be capable of dispending a measured quantity of cement +/- 3 lbs. per square yard in advance of the pulverizing just prior to each pass of the stabilizing operation. The pulverizing equipment shall slightly overlap (0.5") previous pass to ensure a continuous homogeneous mass of granular material and cement. Cement spreader does not have to abut or overlap previous pass if the calculated quantity of cement is dispersed in front of the pulverizing equipment.

Applying Cement:

Maximum: 12" depth of Pulverization

(Average dry density=136 lb. /ft3) X (d= 12"/12) X (Cement mix = 4%) X (9) =73.44

Apply cement to the material to be stabilized at a rate of 73.44 pounds per square yard.

Minimum: 9" depth of pulverization

(Average dry density=136 lb. /ft3) X (d= 9"/12) X (Cement mix = 6%) X (9) =36.72

Apply cement to the material to be stabilized at a rate of 55.08 pounds per square yard.

Application of Water:

Water may be applied through the mixer or with water trucks equipped with pressure- spray bars. If using the spray bar system, road base shall be pre-wet to obtain optimum moisture content prior to the dispensing of cement.

Compaction:

The processed material shall be compacted with a combination of the following: Tamping or grid roller, pneumatic-tire roller, steel-wheel roller, vibratory roller, or vibrating-plate compactor. The full depth recycled material shall be rolled with a vibratory pad/tamping foot roller and a vibratory steel drum soil compactor. The pad/ tamping foot roller drum shall have a minimum of 112 tamping feet 3 inch in height, a minimum contact area per foot of 17-inch square, and a minimum width of 84 inch. The vibratory steel drum roller shall have minimum 84-inch width single drum.

Construction Requirements:

Preparation:

Methods, equipment, tools, and any machinery to be used during construction shall be approved by the tribal representative prior to the start of the project. Prior to the actual reclaiming of the roadway, drop inlets or catch basins that might be affected shall be sufficiently barricaded to prevent reclaimed sub-base material, silt, or runoff from plugging the drainage system.

Drainage:

Sufficient surface drainage must be provided for each stage of work so that ponding does not occur on the reclaimed sub-base course prior to the placement of bituminous concrete. If there is existing ponding on the road surface the contractor shall correct the deficiency as needed. No direct shall be made for this work but considered paid under other items of contract.

Equipment:

Reclamation shall be accomplished by means of a self-propelled, travelling rotary declaimer or equivalent machine capable of cutting through existing roadway surface material to depths of up to 12 inches with one pass. The machine shall be equipped with an adjustable grading blade leaving its path generally smooth for initial compaction. Equipment such as road planers or cold milling machines designed to mill or shred the existing roadway surface materials rather than crush or fracture it shall not be allowed.

Existing road surface and any underlying granular material must be pulverized and mixed to form a homogenous mass of reclaimed sub-base material which will bond together when compacted.

Reshaping using the reclaimed sub-base material should be minimized to ensure that the roadway has a uniform thickness of reclaimed sub-base material throughout.

Equipment:

A motor grader shall be used for shaping, fine grading, and finishing the surface of the reclaimed material or any other granular materials placed to form the surface prior to paving.

Any surface irregularities which develop during or after the above-described work shall be corrected until it is brought to a firm and uniform surface satisfactory to the tribe representative.

Mixing and Placing:

Maintenance work processing shall not commence when the road surface or underlay materials that is frozen, or when the air temperature is below 40 degree F. Moisture in the materials at the time of cement application shall not exceed the quantity that will permit a uniform and intimate mixture of the pulverized road surface materials, underlying materials and cement during mixing operations, and shall be based on geotechnical recommendation regarding optimum moisture content for the processed material at start of compaction.

The operation of cement application, mixing, spreading, compacting, and finishing shall be continuous and completed within 2 hours from the start of mixing. Any processed material that has not been compacted and finished shall not be left undisturbed for longer than 30 minutes.

Scarifying:

Before cement is applied, initial pulverization or scarification may be required to the full depth of mixing. Scarification or pre-pulverization is a requirement for the following condition.

When the processed material is more than 3% above or below optimum moisture content, when the material is below optimum moisture content, water shall be added. The pre-pulverized material shall be sealed and properly drained at the end of the day or if rain is expected.

Application of Cement:

The specified quantity of cement shall be applied uniformly in a manner that minimizes dust and is satisfactory to the tribe's representative. The time from cement placement on the soil to start of mixing shall not exceed 30 minutes.

Mixing:

Mixing shall begin as soon as possible after the cement has been spread and shall continue until a uniform mixture is produced. The mixed material shall meet the following gradation conditions:

1- The final mixture (bituminous surface, granular base, and sub-grade soil) shall be pulverized based on the following table.

Sieve Sizes	Percentage Passing
3 inch	100 %
2 inch	95 %
No. 4	55 %

Additional material can be added to the top to improve the mixture gradation if this material was included in the mixture.

2- The final pulverization test shall be made at the conclusion of mixing operations. And is at the required moisture content throughout. The entire operation of cement spreading, water application, and mixing shall result in a uniform pulverized asphalt, soil, cement, and water mixture for the full design depth and width.

Compaction:

The Processed material shall be uniformly compacted to a minimum of 100% of maximum density. Field density of compacted material can be determined by nuclear method in the direct transmission mode (ASTM D 2922, AASHTO T 310), sand cone method (ASTM D 1556, AASHTO T 191), or rubber balloon method (ASTM D 2167). Optimum moisture and maximum density shall be determined prior to start of construction and in the field during construction.by a moisture-density test (ASTM D 558 or AASHTO T 134).

At the start of compaction, the moisture content shall be within 2% of the specified optimum moisture. No section shall be left undisturbed for longer than 30 minutes during compaction operations. All compaction operations shall be completed within 2 hours from start of mixing.

Follow up testing:

The contractor shall provide a follow up testing after 7 days on the same location of the previous tests location to ensure that the required compaction has been maintained. There will be no additional pay item for this work therefore is consider incidental to all the other line item in the contract.

Finishing:

As compaction nears completion, the surface of the Rehabilitated material shall be shaped to the existing lines, grades, and cross sections. If necessary or as required by the tribe's representative, the surface shall be lightly scarified or broom-dragged to remove imprints left by equipment or to prevent compaction planes. Compaction shall then be continued until uniform and adequate density is obtained.

During the finishing process the surface shall be kept moist by means of water spry devices without disturbing the required moisture content. Compaction and finishing shall be done in such a manner as to produce a dense surface free of compaction planes, cracks, ridges, or loose material. All finishing operations shall be completed within 4 hours from start of mixing.

Microracking:

After the initial moist curing period in accordance with Section 304.08 of Portland Cement Treated Soil Stabilization, Microracking of the soil – cement road sections shall be accomplished by using a

12-ton steel-wheel (smooth drum) vibratory roller, traveling at a speed of approximately 2 mph and vibrating at maximum amplitude (or other equipment approved by the Construction Manager). The road sections shall have 100% coverage exclusive of the outside 1 foot to induce minute cracks in the soil-cement road sections. A minimum of three passes are required of the vibratory roller (or other approved equipment) to reduce the stiffness of the soil-cement road sections and minimize the potential for reflective cracking to occur. After completion of Microracking, the soil-cement road sections shall be cured.

Payment:

The Microracking shall be incidental to pulverization line item; therefore, no separate payment shall be made for this work.

Curing:

Water Curing Method

After placement, spreading and compaction are completed the Portland cement treated material shall be kept continuously wet by the application of water. The application of water shall continue for a period of at least 5 to 7 days after compaction is completed. Cotton mats, rugs, carpets, or earth or sand blankets shall be used as a curing medium to retain moisture during the curing period. When cotton mats, rugs carpets, or earth or sand blankets are used to retain moisture, the entire surface of the Portland Cement treated material shall be kept damp by applying water with a nozzle that so atomized the flow that a mist and not a spray is formed until the surface is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the Portland cement treated material and shall not be allowed to accumulate on the Portland cement treated material in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period the surface shall be cleared of all curing mediums.

Follow up testing:

The contractor shall provide a follow up testing after 7 days on the same location of the previous tests location to ensure the optimum moisture has been maintained. There will be no additional pay item for this work therefore is consider incidental to all the other line item in the contract.

Curing Compound Method

Surfaces of the Portland cement treated material that are exposed to the air shall be sprayed uniformly with a bituminous curing seal. The bituminous curing seal shall be SS-1-h or CSS-1-h emulsified asphalt. The emulsified asphalt shall be diluted 50/50 and spread at a rate of 0.30 gal/yd^2.The bituminous curing seal shall be applied in sufficient quantity to provide a continuous membrane over the treated surface. The curing compound shall be applied as soon as possible after the completion of final rolling. The surface of the Portland cement treated material shall be kept moist until the curing compound is applied. At the time the curing compound is applied, the surface

of the Portland cement treated material shall be dense, free of all loose and extraneous material, and contain sufficient moisture to prevent excessive penetration of the curing compound. No traffic or equipment shall be permitted on the Portland cement treated material during the first 3 days after applying the curing compound, unless otherwise permitted by the Engineer.

Maintenance:
The contractor shall maintain the cement-treated material in good condition until all work is completed and accepted. Such maintenance shall be done by the contractor at his own expense. Maintenance shall include immediate repairs of any defects that may occur. If it is necessary to replace any processed material, the replacement shall be for the full depth, with vertical cuts, using either cement-treated material or concrete. No skin patches will be permitted.

Inspection and Testing:
The contractor shall make such inspections and tests as deemed necessary to ensure the conformance of the work to the contract documents. These inspections and test may include, but shall not be limited to:
Recycling operations including recycling speed, yield monitoring, monitoring treatment depth, procedures for avoiding recycling and curing in inclement weather, methods to ensure that segregation is minimized, procedures for mix design modification, grading and compacting operations, and cement application procedure.
Density testing of the recycled material will be performed using the nuclear method.
Only those materials, machines, and methods meeting the requirements of the contract documents shall be used unless otherwise approved by the tribe representative.
All testing of processed material or its individual components, unless otherwise provided specifically in the contract documents, shall be in accordance with the latest applicable ASTM or AASHTO specifications in effect as of the date of advertisement for bids on the project.

Section 8 – HOT ASPHALT CONCRETE PAVEMENT

The hot mix asphalt shall be based on Caltrans Section 39, for ½ inch type A.

(Sieve Size	Gradation Limits	Allowable Tolerance
¾ inch	100	-
½ inch	95-99	± 6
3/8 inch	75-95	± 6
No. 4	55-66	± 7
No. 8	38-49	± 5
No. 30	15-27	± 4
No. 200	2-8	± 2

Aggregate quality characteristics shall be as follows:

Quality Characteristic:	California Test Method	Type a Limits
Percent of crushed particles coarse aggregate (% min.)	205	
One fractured face		90
Two fractured face		75
Fine aggregate (%min.) passing No. 4 sieve And retained on NO. 8 sieve	205	
One fractured face		70
LOS Angles Rattler (% min.)	211	
LOSS at 100 rev		12
LOSS at 500 rev		45
Sand equivalent (min.)	217	47
Fine aggregate angularity (% min.)	234	45
Flat and elongated particles (%max. by weight@5:1	235	10

Hot Mix Asphalt Mix design shall comply with Caltrans requirement of Section 39-1.03B for ½ inch type A Design Requirements.

Quality Characteristic:	California Test Method	Type a Limits
Air void content (%)	367	4
Void in Mineral aggregate (%)	367	
No. 4 grading		17
3/8" grading		15
½" grading		14
¾" grading		13
Voids filled with asphalt (% (	367	
No. 4 grading		76-80
3/8" grading		73-76
½" grading		65-75
¾" grading		65-75
Dust proportion	367	
No. 4 and No. 8 grading's		0.9-2
½" and ¾" grading's		0.6-1.3
Stabilometer value (min.)	366	
No. 4 and No. 8 gradings		30
½" and ¾" gradings		37

Compaction:

The Contractor shall, during the progress of the work, perform in-place field density tests of the compacted paving mixture in accordance with CT 375 and properly calibrated nuclear testing devise. The Contractor shall compact the bituminous mixture until a uniform density has been achieved according to Caltrans Standard Specification and the job-mix design density.

The pavement containing porous or coarse surface, poorly mixed or segregated aggregate, large amounts of coarse aggregate, hairline and big cracks patches, visible joints, ruts, uneven surface and marks will be subject to CT 375, any failing test will result to rejection of the area replacing pavement shall be the responsibility of the contractor.

Number and Type of Test to be performed:

1 test for R-value every 2000'.

Test for Pulverized roadbed compaction every 500' of the length of each road.

Test for Asphalt finished grade compaction every 500' of the length of each road.

The location of test shall be in random and shall be identified by the Tribal Maintenance Representative.

Payment:

The asphalt concrete will be measured by ton only for roadway surfacing for pavement. No payment will be made for over-run quantities (exceeding the original contract quantities) unless overrun has been approved by the tribal representative. Payment for hot asphalt concrete mixture will be made only for the authorized and accepted quantities computed based on weight tickets received and signed by the tribe representative during the Maintenance activities. No payment will be made for the correction of deficiencies in work.

Section 9 – PERMANENT PAVEMENT MARKINGS

This work shall be in accordance with Caltrans Sections 84 and shall consist of applying painted and thermoplastic traffic stripe (traffic lane) and pavement markings and markers including glass beads at the location and in accordance with the details shown on the plans.

The thermoplastic material and paint for striping and pavement markings and pavement markers, and glass beads shall conform to Caltrans Specification Requirements.

Arrows, letters, and symbols shall be of the dimension and style shown on the latest revision of the standards for pavement delineation, published in the Caltrans Standard Plan 2024. The painted strip shall be 4 inches wide with tolerance of plus or minus ¼ inch per 107 square feet of painted area.

Traffic stripes shall be placed to the line established by the Contractor in accordance with Caltrans Specifications. The tolerances and appearance of strips and pavement markings shall be within Caltrans allowable deviation. The application of the thermoplastic and paint stripe and pavement markings to the area shall be in accordance with Caltrans Specification Requirements. Placement of pavement markers shall be in accordance with Caltrans Specifications.

Mixing of the paint shall be performed in accordance with Caltrans Specification Requirements. All application equipment used in the traffic striping, pavement markings, and for placement of pavement markers, shall meet all Caltrans Specification Requirements.

Method of Measurement:
The accepted quantities of stripes, pavement markings and pavement markers will be measured as follows.

a. Broken yellow or white traffic stripes will be measured in lineal feet along the centerline from end to end of the stripes including gaps.

b. Solid yellow or white traffic stripes will be measured in lineal feet along the centerline from end-to-end continuous stripe.

c. The thermoplastic or paint pavement markings will be measured by each type of symbol or arrow at each location placed.

D. the quantity of reflective and non-reflective pavement markers will be as a unit determined from the actual count in place.

Traffic Stripe: A longitudinal centerline or a longitudinal lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is a traffic line as shown.

Pavement Marking:
A transverse marking such as (1) a limit line, (2) a stop line; or (3) a word, symbol, shoulder, parking stall, or railroad grade crossing marking.

Quality Control and Assurance:
Within 14 days of applying a traffic stripe or a pavement marking, the retro reflectivity of the traffic stripe or the pavement marking must be a minimum of 250 mill candelas per square meter per lux for white and 150 mill candelas per square meter per lux for yellow. Test the retro reflectivity under ASTM E 1710.

Materials:
Glass beads applied to paint and molten thermoplastic material must comply with State Specification 8010-004.

Tolerances and Appearance:
A completed traffic stripe must:

1. Have clean, well-defined edges without running or deformation
2. be uniform
3. Be straight on a tangent alignment and on a true arc on a curved alignment

The width of a completed traffic stripe must not deviate from the width shown by more than ¼ inch on a tangent alignment and ½ inch on a curved alignment.

The length of the gaps and individual stripes that form a broken traffic stripe must:

1. Not deviate by more than 2 inches from the lengths shown
2. Be uniform throughout the entire length of each broken traffic stripe so that a normal striping machine will be able to repeat the pattern and superimpose successive coats on the applied traffic stripe.

A completed pavement marking must comply with the dimensions shown and have well-defined edges without running or deformation.

A complete thermoplastic traffic stripe or thermoplastic pavement marking must be free of runs, bubbles, craters, drag marks, stretch marks, and debris.

Surface Preparation:

Use mechanical wire brushing to remove dirt, contaminants, and loose material from the pavement surface that is to receive the traffic stripe or pavement marking.

Use abrasive blast cleaning to remove laitance and curing compound from the surface of new concrete pavement that is to receive the traffic stripe or pavement marking.

Where a new traffic stripe joins an existing traffic stripe, allow enough distance between the new and existing striping patterns to ensure continuity at the beginning and end of the transition.

Application of Stripes and Markings:

Apply thermoplastic for a pavement marking with a stencil or a preformed marking.

Apply paint for a pavement marking with a stencil and hand spray equipment.

You may use permanent tape for a traffic stripe or a pavement marking instead of paint or thermoplastic. The permanent tape must be on the Authorized Material List. If permanent tape is used for a traffic stripe or a pavement marking, apply the tape under the manufacturer's instructions.

Immediately remove drips, overspray, improper markings, paint, and thermo0plastic tracked by traffic using an authorized method.

Apply a traffic stripe or a pavement marking to a dry surface during a period of favorable weather when the pavement surface is above 50 degrees F.

The glass beads must be embedded in the coat of paint or thermoplastic to a depth of ½ their diameters.

Verify the rate of glass beads application by stabbing the glass bead tank with a calibrated rod.

PAINTED TRAFFIC STRIPES AND PAVEMENT MARKINGS

Submittals:

For each batch of paint, submit:

1. Certificate of Compliance

MATERIALS:

The paint for traffic stripes and pavement markings must comply with the specifications for the paint type and color shown in the following table:

Paint Type	Color	Specification
Waterborne traffic line	White, yellow, and black	State Specification PTWB-01R2
Acetone-based	White, yellow, and black	State Specification PT-150VOC(A)
Waterborne traffic line for the international symbol of accessibility and other curb markings	Blue, red, and green	Federal Specification TT-P-1952E

The color of painted traffic stripes and pavement markings must comply with ASTM D 6628.

Mixing:

Mix the paint by mechanical means until it is homogeneous. Thoroughly agitate the paint during its application.

Application Equipment:

Use mechanical means to paint traffic stripes and pavement markings and to apply glass beads for traffic stripes.

The striping machine must be capable of superimposing successive coats of paint on the 1st coat and upon existing stripes at a speed of at least 5 mph.

The striping machine must:

1. Have rubber tires
2. be maneuverable enough to produce straight lines and normal curves in true arcs
3. be capable of applying traffic paint and glass beads at the specified rates
4. Be equipped with:
    - 4.1 Pointer or sighting device at least 5 feet long extending from the front of the machine
    - 4.2 Pointer or sighting device extending from the side of the machine to gage the distance from the centerline for painting shoulder stripes
    - 4.3 Positive acting cutoff device to prevent depositing paint in gaps of broken stripes
    - 4.4 Shields or an adjustable air curtain for line control
    - 4.5 If pneumatically operated, pressure regulators and gages that is in full view of the operator.
    - 4.6 Paint strainer in the paint supply line.
    - 4.7 Paint storage tank with a mechanical agitator that operates continuously during painting activities.
    - 4.8 Glass bead dispenser located behind the paint applicator nozzle that is controlled simultaneously with the paint applicator nozzle.
    - 4.9 Calibrated rods for measuring the volumes of paint and glass beads in the paint and glass bead tanks.

Air-atomized spray equipment must:

1. be equipped with oil and water extractors and pressure regulators
2. Have adequate air volume a d compressor recovery capacity
3. Have properly sized orifices and needle assemblies for the spray gun tip

Where the configuration or location of a traffic stripe is such that the use of a striping machine is not practicable, you may apply the traffic paint and glass beads by other methods and equipment if authorized. The Engineer determines if the striping machine is practicable for a particular use.
For existing surfaces, apply traffic stripes and pavement markings in 1 coat.
For a new surface, except the black stripe between the 2 yellow stripes of a double traffic stripe, apply traffic stripes and pavement markings in 2 coats. The 1st coat of paint must be dry before applying the 2nd coat.
Paint a 1-coat, 3-inch-wide black stripe between the two 4-inch-wide yellow stripes of a double traffic stripe.
If the two 4-inch-wide yellow stripes are applied in 2 coats, apply the black stripe concurrently with the 2nd coat of the yellow stripes.

Apply each coat of paint for any traffic stripe in 1 pass of the striping machine, including the glass beads, regardless of the number, width, and pattern of the individual stripes.
Do not paint traffic stripes and pavement markings if:

1. Freshly painted surfaces could become damaged by rain, fog, or condensation.
2. Atmospheric temperature could drop below 40 degrees F for acetone-based paint and 50 degrees F for waterborne paint during the drying period.

On 2-lane highways:

1. When the 1st coat of the centerline stripe is applied in the same direction as post miles increase, use the right-hand spray gun of the 3 spray guns used to apply the double yellow stripe to apply a single yellow stripe.
2. When the 1st coat of centerline stripe is applied in the same direction as post miles decrease, use the left-hand spray gun of the 3 spray guns used to apply the double yellow stripe to apply a single yellow stripe.
3. Apply the 2nd coat of centerline striping in the opposite direction of the 1st coat.

Apply 10coat paint at an approximate rate of 1 gallon per 107 square feet.
Apply 2-coat paint at the approximate rate sown in the following table:

	Square foot coverage per gallon	
Paint Type	**1st coat**	**2nd coat**
Waterborne Paint	**215**	**215**
Acetone-based paint	**360**	**150**

Apply glass beads at an approximate rate of 5 lb. /gallons of paint.

Section 10-Culverts and Drains

Corrugated Metal Pipe:
Corrugated metal pipe Culverts shall be in accordance with section 66 of Caltrans 2024 standard specification. The BIA Standard Size shall be Gage 14

Culvert Beddings:
Culvert bedding shall be in accordance with section 19-3.02E (2) of Caltrans 2024 standard specification.

Sieve sizes	Percentage passing
No. 4	90-100
No. 200	0-5

No payment shall be made for pipe bedding. Pipe bedding placement and material shall be considered incidental to Corrugated Metal Pipe prices.

Section 11- SLURRY SEAL

Gradation:

1- The gradation shall be based on section 37-3.02 Materials Type III of Caltrans 2024 Standard Specification.
2- The Asphalt Emulsion shall be Anionic/ Quick Set (QS-1h) or Cationic/Quick Set (CQS-1h).
3- The Slurry Seal Spread Rated shall be based on 37-3.03D (4) (b) of Caltrans 2024 Standard Specification and shall be 25 pound per square yard of dry aggregate.

Section 12 – CHIP SEAL

Gradation:

1-The gradation shall be based on section 37-2.02H (2), of Caltrans 2024 Standard specification. Use Medium 3/8" max Gradation per table provided in the appendix**.**
2- The Polymer Modified Rejuvenating Emulsion (PMRE) as provided in the appendix of the specification. The Binder application Rate shall be 0.425 Gallon per Square yard