

Statement of Work (SOW)  
NFSR 205 Pavement Reconstruction  
Calcasieu Ranger Districts  
Kisatchie National Forest  
November 10, 2025

General.

The project involves:

NFSR 205 Roadway Rehabilitation to include but not limited to the following: Mobilization of personnel, material, and equipment at the Kincaid Recreation area on the Calcasieu Ranger District, Kisatchie National Forest. Work includes removal of failed materials, base stabilization, resurfacing, compaction and finishing to restore road to its original.

1. The contractor shall supply all material, labor, tools, equipment, vehicles, supplies, incidentals, supervision, control layout, and safety measures to complete the project.
2. The contractor shall be responsible for verifying the necessary quantities of materials to be supplied, and volumes of materials required to execute project requirements as described in the plans.
3. Project starts at Sta 0+00 (Valentine Lake Rd.) roadway ends at Sta 186+70 also includes parking lots as shown on original plans.
4. Typical Sections will be used from original drawings for roadway, and parking lots, that includes striping.
5. Remove and dispose existing wheel stops, anchors and other debris.
6. Mill 2 inches of existing asphaltic concrete, haul, spread, and compact to 6 inches in depth at 95% density on NFSR 288 1.4 miles from beginning of project to the west off of Valentine Lake Rd. 100% of original project as shown on plans will be milled.
7. Pulverize and mix in-place cement at 9% by weight starting at sta 100+07 ending at sta 174+00.
8. Apply Type 1D interlayer on soil cement chip seal.

9. Hours of work shall be any time after sunrise and before sunset any day of the week. Potable water, electrical power, and toilet facilities are not available at the project sites.
10. All work shall be done in accordance with FP-14, product manufacturer specifications, plans, OSHA, and this document

Products.

1. Government furnished property: None.
2. Contractor furnished products: All. Including but not limited to the following:

Location.

Kisatchie National Forest location as follows:

Road NAME	LATITUDE	LONGITUDE
NFSR 205	31.238160	-92.650656

Execution: Contractor coordination.

1. The Contractor shall schedule a pre-construction meeting two weeks prior to starting their construction operations.
2. The Contractor shall provide vendor mill stamps or letter of compliance with material specifications during the pre-construction meeting.
3. The Contractor shall provide traffic control service and markers compliant with MUTCD for low volume roads.
4. The Contractor shall locate and protect all utilities during construction.
5. The Contractor shall locate, protect, or perpetuate any survey monuments or property corners within the construction limits of the jobsite.
6. The Contractor shall coordinate with the Government to have any vehicles moved which may hinder contractor operations.

Execution: Roadway Rehabilitation.

Performance standards are as follows:

ITEM NUMBER	DESCRIPTION
15101	This work consists of moving personnel, equipment, material, and incidentals to the project and performing work necessary before beginning

	work at the project site. This work also includes obtaining permits, insurance, and bonds.				
20301	<p><b>203.01</b> This work consists of salvaging, removing, and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.</p> <p style="text-align: center;"><b>Material</b></p> <p><b>203.02</b> Conform to the following Section and Subsection:</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">Backfill material</td> <td style="text-align: right; padding-right: 40px;">704.03</td> </tr> <tr> <td style="padding-left: 40px;">Minor concrete</td> <td style="text-align: right; padding-right: 40px;">601</td> </tr> </table> <p style="text-align: center;"><b>Construction Requirements</b></p> <p><b>203.03 Salvaging Material.</b> Salvage with reasonable care material designated to be salvaged. Salvage in readily transportable sections or pieces. Replace or repair members, pins, nuts, plates, and related hardware damaged, lost, or destroyed during the salvage operation. Securely attach parts to adjacent members or pack them in sturdy boxes with the contents clearly marked.</p> <p>Match mark members of salvaged structures. Submit one set of drawings according to Section 104 identifying the members and their respective match marks.</p> <p>Stockpile salvaged material at a designated area on the project.</p> <p><b>203.04 Removing Material.</b></p> <p><b>(a) Submittals.</b> Submit a bridge removal plan at least 30 days before beginning bridge removal for approval. Include the following:</p> <ol style="list-style-type: none"> <li>(1) Methods and equipment to be used;</li> <li>(2) Measures to be used for protecting the environment, public, adjacent property, and workers; and</li> <li>(3) Methods to keep debris out of the stream and streambed.</li> </ol> <p><b>(b) General.</b> Saw cut sidewalks, curbs, pavements, and structures when partial removal is required.</p> <p>Construct structurally adequate debris shields to contain debris within the construction limits. Do not allow debris to enter waterways, travel lanes open to public traffic, or areas designated not to be disturbed.</p> <p>Handle material with lead paint contamination according to Subsection 563.05.</p>	Backfill material	704.03	Minor concrete	601
Backfill material	704.03				
Minor concrete	601				

Raze and remove buildings, foundations, pavements, culverts, sidewalks, curbs, fences, structures, and other obstructions interfering with the work and not designated to remain.

30501

**Description**

**305.01** This work consists of pulverizing an existing pavement and base in-place, adding crushed aggregate if required, mixing this material with cement and water, and shaping and compacting the mix to produce a stabilized base.

**Material**

**305.02** Conform to the following Subsections:

Crushed aggregate	703.06
Hydraulic cement	701.01
Water	725.01
(c)	

**Construction Requirements**

**305.03 Proportioning.** Collect representative samples of the pavement and base from the project. Process and blend these material to achieve a gradation representative of the in-place pulverized material.

Estimate the median cement content by mass to meet the requirements of Table 305-1. At this median cement content and at cement contents 2 percent above and below this median, determine the optimum moisture content, maximum density, and the parameters included in Table 305-1.

**Table 305-1  
Soil-Aggregate-Cement Mix Design Parameters**

Material or Property	Requirement
Unconfined compressive strength, ASTM D1633, Method A <sup>(1)</sup>	

Average strength (3 specimens)	200 psi (1.4 MPa) min.
Maximum strength of a single specimen break	400 psi (2.8 MPa) or less
Loss in mass, AASHTO T 135 & AASHTO T 136, 12 cycles	14% max.

(1) At 7-day cure at 70 °F (21 °C) according to ASTM D1632.

Submit a mix design for approval 30 days before production which includes the following:

- (a) Optimum cement content conforming to the requirements of Table 305-1;
- (b) Maximum density and moisture content at the optimum cement content according to AASHTO T 134, minimum of 4 points;
- (c) Source of each component material;
- (d) Results of all tests and applicable charts and graphs;
- (e) Gradation and proportion of imported crushed aggregate;
- (f) 200-pound (90-kilogram) sample of the pavement, base, and imported crushed aggregate, if requested; and
- (g) 20-pound (9-kilogram) sample of Portland cement, if requested.

Begin production only after the mix design is approved. Submit a new mix design if the CO requests due to a change in material.

**305.04 General.** See Subsection 304.03.

**305.05 Production Start-Up Procedures.**

(a) **Preparatory phase meeting.** Conduct a pre-stabilization preparatory phase meeting at least 7 days before the start of stabilizing operations according to Subsection 153.04(a).

(b) **Control strip.** Provide 7 days notice before beginning production.

On the first day of production, stabilize a 1000-foot (300-meter) control strip, one-lane wide, at the designated lift thickness and mix

design proportions. Construct the control strip on the project at an approved location.

Construct the control strip using construction procedures intended for the entire project. Take nuclear gauge density readings behind each roller pass to determine the roller pattern necessary to achieve the specification requirements in Subsection 305.10. Cease production after construction of the control strip until the stabilized base layer and the control strip are evaluated for acceptance.

Repeat the control strip process until an acceptable control strip is produced. See Subsection 106.01 for the disposition of material in unacceptable control strips. Accepted control strips may remain in place and will be accepted and measured as a part of the completed base. When a control strip is accepted, full production may begin.

Use these start-up procedures when changing construction procedures, when resuming production after a termination of production due to unsatisfactory quality according to Subsection 106.04, or the beginning of a new construction season.

**305.06 Adding Crushed Aggregate.** See Subsection 304.04.

**305.07 Pulverizing.** See Subsection 304.05.

**305.08 Applying Cement.** Do not add cement when the underlying surface is frozen, muddy, or when conditions allow for excessive loss to eroding or blowing. Begin cement application when the air temperature is above 40 °F (5 °C) and is expected to stay above 40 °F (5 °C) for 48 hours. Apply cement by one of the following methods:

**(a) Dry method.** Use a metered mechanical spreader to uniformly apply the cement. Use canvas (or similar) skirts around the spreader box to minimize dust.

**(b) Slurry method.** Use approved equipment and dispersal processes to uniformly apply a cement and water slurry without pooling or run off. Equip slurry tanks with an agitator to keep the cement suspended in water. Apply the slurry to the pulverized material with 60 minutes from time water first contacts the cement. Make successive passes over the material if necessary to obtain the proper moisture and cement content for mixing and compacting.

**305.09 Mixing.** Begin mixing within 30 minutes after cement application. Use a road reclaimer conforming to Subsection 304.05. Add water as necessary to adjust the moisture content of the mixture to within 2 percent

of optimum as indicated in the approved mix design. Continue mixing until the cement is uniformly distributed within the in situ material creating a homogeneous full depth layer. Complete mixing within 1 hour of the cement application.

**305.10 Compacting and Finishing.** Compact the processed material uniformly to at least 95 percent of maximum density as determined from AASHTO T 134. Furnish rollers sized and configured to achieve the required compaction and finishing. Operate rollers according to the manufacturer's recommendations. Compact the processed material full width by rolling from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and places not accessible to the roller, compact the material with approved tampers or compactors.

During compaction and final grading maintain the moisture content of the mixture to within 2 percent of optimum. Do not leave areas of stabilized material uncompacted or undisturbed for more than 30 minutes. Complete compaction within 1 hour after mixing.

Finish the compacted surface according to Subsection 301.06 to produce a surface that is smooth, dense, and free of compaction planes, ridges, or loose material. Clean the compacted surface of loose material, dirt, or other deleterious material by approved methods. Complete finishing operations within 4 hours from the start of mixing including corrections to irregularities in the surface.

**305.11 Construction Joints.** When cement application operations are delayed or stopped for more than 2 hours, make a transverse construction joint by cutting back into the completed work to form an approximately vertical face. Tie new work into the completed work by remixing approximately 36 inches (900 millimeters) of the completed course.

**305.12 Curing.** Cure the layer at least 1 day before placing the next course by one of the methods below:

(a) **Water method.** Keep the surface continuously moist by applying water through a spray bar equipped with nozzles producing a fine, uniform spray. During the first 24 hours of curing, use a water truck with side spray to avoid driving on the newly stabilized layer.

(b) **Prime coat method.** Seal the surface by placing an inverted prime coat according to Subsection 411.06(b). Provide and maintain a continuous film over the surface.

If approved by the CO, allow local automobile traffic on the cement stabilized layer 4 hours after finishing operations are complete. Limit traffic

speeds to 20 miles (30 kilometers) per hour. Stop traffic if there is surface marring or deformation. Do not allow truck traffic (other than equipment necessary to complete the next course) on the cement stabilized layer until the next course is placed.

**305.13 Maintenance.** Maintain the cement stabilized layer to the correct line, grade, and cross-section until placement of the next course. If the cement stabilized layer loses stability, density, or finish before placement of the next course, reprocess, recompact, and add cement as necessary to restore the strength of the damaged material.

Overlay the stabilized base within 14 days after compacting.

**305.14 Acceptance.** See Table 305-2 for sampling, testing, and acceptance requirements.

Crushed aggregate will be evaluated under Subsection 106.03.

Cement will be evaluated under Subsections 106.02 and 106.03.

Construction of full depth reclamation with cement will be evaluated under Subsections 106.02 and 106.04.

Prime coat will be evaluated under Section 411.

#### **Measurement**

**305.15** Measure the Section 305 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:

Measure crushed aggregate under Section 302.

Measure prime coat under Section 411.

Measure removal and disposal of unsuitable material under Section 203 or 204.

#### **Payment**

**305.16** The accepted quantities will be paid at the contract price per unit of measurement for the Section 305 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

40301	<p style="text-align: center;"><b>Description</b></p> <p><b>403.01</b> This work consists of constructing asphalt concrete pavement using a hot or warm mix asphalt (HMA or WMA).</p> <p>Asphalt concrete type is designated as Type I or Type II according to Subsection 403.02.</p> <p style="text-align: center;"><b>Construction Requirements</b></p> <p><b>403.02 Composition of Mix (JMF).</b> Conform to current state department of transportation material specifications for asphalt concrete.</p> <p>(a) <b>Type I.</b> Submit a state department of transportation JMF approved within the past 12 months for approval at least 30 days before production. For each proposed JMF, submit a production certification conforming to state department of transportation specifications and conforming to design parameter (a), (b), or (c) for the type of mix submitted and conforming to design parameter (d) in Table 403-1.</p> <p style="text-align: center;"><b>Table 403-1</b> <b>Asphalt Concrete Mix Requirements</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Design Parameters</th> <th style="text-align: center;">Specification</th> </tr> </thead> <tbody> <tr> <td> <b>(a) Volumetric hot asphalt concrete pavement (AASHTO M 323, AASHTO R 35, and AASHTO T 312)</b>            Gyrotory compaction level            Volumetric properties at 0.3 to 3 million ESAL's (AASHTO M 323)         </td> <td style="text-align: center;">           7, 75, 115            See Table 401-1         </td> </tr> <tr> <td> <b>(b) Hveem (AASHTO T 246 and AASHTO T 247)</b>            Stabilometer, minimum            Percent air voids <sup>(1)</sup> </td> <td style="text-align: center;">           35            3.0 – 5.0         </td> </tr> <tr> <td> <b>(c) Marshall (AASHTO T 245)</b>            Stability, pounds (kilonewtons), minimum            Flow, 0.01 inches (0.25 millimeters)            Percent air voids <sup>(1)</sup>            Compaction, number of blows each end of test specimen         </td> <td style="text-align: center;">           2000 (8.9)            8 – 14            3.0 – 5.0            75         </td> </tr> <tr> <td> <b>(d) Moisture susceptibility (AASHTO T 283)</b>            Tensile strength ratio, minimum         </td> <td style="text-align: center;">           0.80         </td> </tr> </tbody> </table> <p>(1) The percent of air voids are based on AASHTO T 166, AASHTO T 209 and AASHTO T 269.</p> <p>(b) <b>Type II.</b> Provide a mix composed of crushed stone or gravel and asphalt binder mixed in an approved plant. Use an aggregate gradation and asphalt binder of a quality conforming to those normally used</p>	Design Parameters	Specification	<b>(a) Volumetric hot asphalt concrete pavement (AASHTO M 323, AASHTO R 35, and AASHTO T 312)</b> Gyrotory compaction level Volumetric properties at 0.3 to 3 million ESAL's (AASHTO M 323)	7, 75, 115 See Table 401-1	<b>(b) Hveem (AASHTO T 246 and AASHTO T 247)</b> Stabilometer, minimum Percent air voids <sup>(1)</sup>	35 3.0 – 5.0	<b>(c) Marshall (AASHTO T 245)</b> Stability, pounds (kilonewtons), minimum Flow, 0.01 inches (0.25 millimeters) Percent air voids <sup>(1)</sup> Compaction, number of blows each end of test specimen	2000 (8.9) 8 – 14 3.0 – 5.0 75	<b>(d) Moisture susceptibility (AASHTO T 283)</b> Tensile strength ratio, minimum	0.80
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	<p>locally by either Federal or state agencies for the type of work being constructed.</p> <p>Submit the strength, quality, and gradation specifications for the asphalt concrete mix. Include copies of laboratory test reports that demonstrate aggregate, asphalt binder, additive, and mix properties meet Federal, state or local government agency specifications.</p>										
407.01	<p style="text-align: center;"><b>Description</b></p> <p><b>407.01</b> This work consists of applying a single or double course chip seal.</p> <p>Chip seal types are designated according to Tables 407-1 and 407-2.</p> <p>Asphalt binder is designated according to AASHTO M 320 and emulsified asphalt is designated according to AASHTO M 140 or AASHTO M 208.</p> <p style="text-align: center;"><b>Material</b></p> <p><b>407.02</b> Conform to the following Section and Subsections:</p> <table data-bbox="462 1039 1372 1228" style="margin-left: 40px;"> <tr> <td>Asphalt binder</td> <td style="text-align: right;">702.01</td> </tr> <tr> <td>Blotter</td> <td style="text-align: right;">703.12</td> </tr> <tr> <td>Chip seal aggregate</td> <td style="text-align: right;">703.09</td> </tr> <tr> <td>Emulsified asphalt</td> <td style="text-align: right;">702.02</td> </tr> <tr> <td>Fog seal</td> <td style="text-align: right;">406</td> </tr> </table> <p style="text-align: center;"><b>Construction Requirements</b></p> <p><b>407.03 Qualifications.</b> Provide a superintendent and foreman with experience in placing chip seals. Submit the following for approval at least 14 days before starting chip seal work:</p> <ul style="list-style-type: none"> <li>(a) Names of personnel; and</li> <li>(b) A résumé for each individual describing their experience on at least five chip seal projects of similar complexity.</li> </ul> <p><b>407.04 Composition.</b> Submit the following for approval at least 14 days before placement:</p> <ul style="list-style-type: none"> <li>(a) <b>Aggregate samples.</b> 80 pounds (35 kilograms) from the material produced for the project, the gradation range represented, and the proposed target value for each sieve size;</li> </ul>	Asphalt binder	702.01	Blotter	703.12	Chip seal aggregate	703.09	Emulsified asphalt	702.02	Fog seal	406
Asphalt binder	702.01										
Blotter	703.12										
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**(b) Asphalt sample.** 1-gallon (4-liter) sample with a production certification conforming to Subsection 106.03(a);

**(c) Spread rates.** The proposed spread rate for the asphalt and aggregate; and

**(d) Density.** The density of the aggregate according to AASHTO T 19, shoveling procedure.

#### **407.05 Equipment.**

**(a) Asphalt distributor.** See Subsection 406.03. Maintain two-way radio communication with the aggregate spreader.

**(b) Sweeper.** Furnish two sweepers conforming to Subsection 409.05(c).

#### **(c) Pneumatic-tire rollers.**

**(1)** Three rollers each with a minimum compacting width of 5 feet (1.5 meters), or two rollers each with a minimum compacting width of 6.5 feet (2.0 meters); and

**(2)** Gross mass adjustable within the range of 200 to 360 pounds per inch (3.6 to 6.4 kilograms per millimeter) of compaction width.

**(d) Aggregate spreader.** Controls to uniformly deposit aggregate over the full asphalt width.

**407.06 Surface Preparation.** See Subsection 406.04(a). Prepare the surface as follows:

**(a) Newly asphalt patched areas.** Fog seal according to Section 406.

**(b) Existing asphalt surfaces including recycled asphalt pavements.** Dry the surface.

#### **(c) Aggregate base course surfaces.**

**(1)** When using an emulsified asphalt, make the surface damp; or

**(2)** When using an asphalt binder, dry the surface.

**407.07 Weather Limitations.** Apply chip seals only when the following apply:

**(a)** Ambient air temperature is above 65 °F (18 °C);

**(b)** Surface temperature in the shade is above 60 °F (16 °C);

- (c) Surface temperature in the sun is below 150 °F (66 °C);
- (d) Weather is not foggy or rainy;
- (e) Rain or temperatures below 40 °F (4 °C) are not anticipated for at least 24 hours after application;
- (f) Sustained winds are less than or equal to 10 miles (16 kilometers) per hour; and
- (g) Application is completed at least 2 hours before sunset.

**407.08 Production Start-Up Procedures.** Conduct a pre-chip seal preparatory phase meeting according to Subsection 153.04(a).

On the first day of each chip seal layer placement, construct up to three 200- to 500-foot (60- to 150-meter) control strips that are one-lane wide according to Subsections 407.09 and 407.10. Coordinate the control strip locations with the CO. Start the first control strip at the proposed application rates. Vary the asphalt material or surface aggregate application rate for each control strip. Construct the control strip using the material, lay-down procedures, and compaction procedures intended for the entire project.

Repeat the control strip process until an acceptable control strip is produced. Cease production until the material and the control strip are evaluated and accepted. The CO will indicate which strip will serve as the approved project control strip.

Acceptable control strips may remain in place and will be accepted as a part of the completed project. Correct unacceptable control strips.

Use these start-up procedures when changing construction procedures, when resuming production after a termination of production due to unsatisfactory quality according to Subsection 106.04, or the beginning of a new construction season.

**407.09 Asphalt Application.** Calibrate asphalt distributors before the start of project and when directed by the CO. Calibrate the spray bar height, check nozzle angle, and verify longitudinal and transverse application rates according to ASTM D2995.

Spread building paper on the pavement surface at the beginning and end of each asphalt application so distributor flow is started and stopped on the paper.

Apply asphalt uniformly at the optimum application rate determined from the control strip. Do not apply more asphalt than can immediately be covered with aggregate. Correct skipped areas or deficiencies.

At the end of each day's production, provide the CO with documentation of calibrations and application rates.

Remove and dispose of material spills and associated debris at the end of each shift according to Subsection 203.05(a) and (d).

**407.10 Aggregate Application.** When emulsified asphalt is used, verify the aggregate stockpile moisture daily and use moist surfaced aggregate.

When asphalt binder is used, dry the aggregate. Precoat the aggregate uniformly with 2 to 3 percent of residual asphalt by mass of aggregate. Maintain the flow qualities of the precoated aggregate to allow uniform spreading with the aggregate spreader.

Calibrate aggregate spreaders before the start of project and as directed by the CO. Calibrate the longitudinal and transverse spread rates.

Apply aggregate uniformly at the optimum application rate determined from the approved control strip. Apply the aggregate immediately after the asphalt material is applied. Operate the aggregate spreader so asphalt is covered with the aggregate before wheels pass over it. For part-width construction, leave an uncovered 6-inch (150-millimeter) wide asphalt strip to permit an overlap of asphalt material.

Cover excess asphalt with blotter to protect traffic.

Correct excesses and deficiencies by adding or removing aggregate to achieve a uniform texture before the asphalt cures.

Operate rollers at a maximum speed of 5 miles (8 kilometers) per hour. Do not allow the aggregate to be displaced by pickup or sticking of material to the tire surface. Roll the surface to uniformly and thoroughly bond the aggregate over the full width. Complete rolling within 1 hour after asphalt is applied to the surface. Perform three passes with the rollers. Do not allow traffic to travel over aggregate until rolling is completed.

At the end of each day's production, provide the CO with documentation for calibrations and application rates.

Use a pilot car according to Section 635 to limit traffic speeds to 10 miles (15 kilometers) per hour during the first 45 minutes after rolling and to 20 miles (30 kilometers) per hour for the next 24 hours.

Sweep the surface when the air temperature is below 90 °F (32 °C). Do not displace embedded material. Complete vacuum sweeping by the morning after construction. Dispose of material according to Subsection 203.05(a) and (d).

	<p><b>407.11 Placing and Finishing.</b> Apply the asphalt and aggregate according to Subsections 407.09 and 407.10 and Table 407-1. The application rates in these tables are for estimating purposes only. Determine the exact rates based on approved control strips.</p> <p><b>407.15</b> The accepted quantities will be paid at the contract price per unit of measurement for the Section 407 pay items listed in the bid schedule, except the chip seal contract price will be adjusted according to Subsection 106.05. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.</p> <p>Payment for the chip seal will be made at a price determined by multiplying the contract price by the material pay factor. The material pay factor is the lowest single pay factor determined for each specified sieve of the aggregate gradation for each aggregate gradation furnished.</p> <p>When two gradations are furnished for a double chip seal the material pay factor is weighted for the quantity of each aggregate gradation spread as a percent of the total. The material pay factor is calculated as follows:</p> $PF_{\text{Material}} = PF_{1st}[SR_{1st}/(SR_{1st} + SR_{2nd})] + PF_{2nd}[SR_{2nd}/(SR_{1st} + SR_{2nd})]$ <p>where:</p> <p>PF<sub>Material</sub> = Material pay factor.</p> <p>PF<sub>1st</sub> = Pay factor for first aggregate gradation. PF<sub>1st</sub> is the lowest single pay factor determined for each specified sieve.</p> <p>PF<sub>2nd</sub> = Pay factor for second aggregate gradation. PF<sub>2nd</sub> is the lowest single pay factor determined for each specified sieve.</p> <p>SR<sub>1st</sub> = Spread rate for the first aggregate per square yard (square meter).</p> <p>SR<sub>2nd</sub> = Spread rate for the second aggregate per square yard (square meter).</p>
41301	<p style="text-align: center;"><b>Description</b></p> <p><b>413.01</b> This work consists of removing asphalt pavement by a cold milling process.</p> <p style="text-align: center;"><b>Construction Requirements</b></p> <p><b>413.02 Equipment.</b></p> <p style="padding-left: 20px;"><b>(a) Milling machine.</b></p>

- (1) Self-propelled;
- (2) Sufficient power, traction, and stability to accurately maintain depth of cut;
- (3) Capable of removing the pavement thickness to provide profile and cross slope;
- (4) Automatic system to control grade elevations by referencing from the existing pavement by means of a ski, matching shoe, or from an independent grade control;
- (5) Automatic system to maintain cross slope;
- (6) System to effectively limit dust and other particulate matter from escaping removal operations;
- (7) Loading system or adequate support equipment to completely recover milled material at removal rate; and
- (8) Cutting width equal to at least one-third of the lane width.

(b) **Sweeper.** See Subsection 409.05(c).

**413.03 Milling.** Use a longitudinal reference to accurately guide the machine. References may include a curb, edge of pavement, or string attached to the pavement surface. Mill in a longitudinal direction.

Mill the transverse slope to within  $\frac{1}{4}$  inch in 10 feet (6 millimeters in 3 meters) of the required slope. Transition from one transverse slope to another at a uniform rate. Uniformly mill the entire roadway lane width so the cross-section of the new surface forms a straight line.

Transition between different depths of cut at a uniform rate of  $\frac{1}{2}$  inch (17 millimeters) of depth per 10 feet (10 meters). At the beginning and end of the milling work, construct a smooth transition to the original surface at this rate. Do not leave an exposed vertical edge perpendicular to the direction of travel. When the pavement remains open to traffic, limit differences in elevation between adjacent lanes according to Subsection 401.15.

Mill the surface to conform to Subsection 403.11.

Use a sweeper immediately behind the milling operations to remove and completely recover loose material. Minimize the escape of dust into the air by misting. Dispose of recovered milled material according to Subsection 211.02(a)(2).

Before opening to traffic, patch defects in milled surface according to the CO.

	<p><b>413.04 Acceptance.</b> Asphalt pavement milling will be evaluated under Subsections 106.02 and 106.04.</p> <p>Milled surfaces will be evaluated under Subsection 403.11.</p> <p style="text-align: center;"><b>Measurement</b></p> <p><b>413.05</b> Measure the Section 413 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:</p> <p>When measuring asphalt pavement milling by square yard (square meter), measure the length horizontally along the centerline of the roadway.</p> <p style="text-align: center;"><b>Payment</b></p> <p><b>413.06</b> The accepted quantities will be paid at the contract price per unit of measurement for the Section 413 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.</p>																
<p>60901</p>	<p style="text-align: center;"><b>Description</b></p> <p><b>609.01</b> This work consists of constructing or resetting curb, combination curb and gutter, or wheelstops.</p> <p style="text-align: center;"><b>Material</b></p> <p><b>609.02</b> Conform to the following Sections and Subsections:</p> <table data-bbox="454 1228 1364 1533"> <tr> <td>Asphalt concrete</td> <td style="text-align: right;">403</td> </tr> <tr> <td>Bedding material</td> <td style="text-align: right;">704.02</td> </tr> <tr> <td>Concrete coloring agents</td> <td style="text-align: right;">711.05</td> </tr> <tr> <td>Minor concrete</td> <td style="text-align: right;">601</td> </tr> <tr> <td>Mortar</td> <td style="text-align: right;">712.02</td> </tr> <tr> <td>Reinforcing steel</td> <td style="text-align: right;">709.01</td> </tr> <tr> <td>Rock for masonry structures (stone curbing)</td> <td style="text-align: right;">705.03</td> </tr> <tr> <td>Sealants, fillers, and seals</td> <td style="text-align: right;">712.01</td> </tr> </table> <p style="text-align: center;"><b>Construction Requirements</b></p> <p><b>609.03 General.</b> Excavate and backfill according to Section 209. Place and compact the bedding material. Compact the bedding material with at least three passes of a lightweight mechanical tamper, roller, or vibratory system.</p> <p><b>609.04 Stone and Precast Concrete Curb.</b> Do not use stone with visible drill marks on the exposed faces.</p> <p>Conform to the dimensions of stone curb specified and the following:</p>	Asphalt concrete	403	Bedding material	704.02	Concrete coloring agents	711.05	Minor concrete	601	Mortar	712.02	Reinforcing steel	709.01	Rock for masonry structures (stone curbing)	705.03	Sealants, fillers, and seals	712.01
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**(a) Type 1.** Saw or point the top surface of vertical stone curb to an approximate true plane with no depression or projection on that surface of over  $\frac{1}{4}$  inch (6 millimeters). Pitch the front and back arris lines straight and true. Limit projections or depressions on the back surface to not exceed a batter of 1 inch (25 millimeters) horizontal to 3 inches (75 millimeters) vertical.

Saw, point, or smooth quarry split the front exposed face of the vertical stone curb and form to an approximately true plane. Limit projections or depressions on the remaining face distance to 1 inch (25 millimeters) or less from the plane of the exposed face.

Square the ends of vertical stone curb with the top back and face and finish so when the sections are placed end to end, shows no space more than  $\frac{1}{2}$  inch (13 millimeters) in the joint for the full width of the top surface and for the entire exposed front face. The remainder of the end may break back no more than 4 inches (100 millimeters) from the plane of the joint. Cut the joints of circular or curved stone curb on radial lines.

Make stone curb segments at least 48 inches (1200 millimeters) long, but the length may vary where a depressed or modified section of curb is required for driveways, crossings, or closures.

**(b) Type 2.** Conform to the requirements of Type 1 stone curb for slope stone curb, except as follows:

The maximum allowable projection or depression on a horizontal top surface is limited to  $\frac{1}{2}$  inch (13 millimeters). On other exposed faces, the maximum allowable projection or depression is limited to 1 inch (25 millimeters).

For unexposed surfaces, the maximum allowable projection or depression from a true plane on a 24-inch (600-millimeter) length is 3 inches (75 millimeters).

The maximum allowable space showing on exposed faces between adjacent segments of slope stone curb is  $\frac{3}{4}$  inch (19 millimeters). Make slope stone curb segments at least 24 inches (600 millimeters) long.

Clean the curb material thoroughly and wet it just before setting. Set the curb in bedding material so the face and top lines are to line and grade. Make the joints  $\frac{1}{2}$  to 1 inch (13 to 25 millimeters) wide and fill the joints with mortar.

Complete the first 25 feet (8 meters) of curb to demonstrate the ability to build a curb conforming to these requirements. Do not continue construction until the 25-foot (8-meter) test section is approved.

Where a concrete pavement is constructed contiguous to the curb, construct the joints in the curb directly in line with the pavement expansion joints.

Make the curb joint  $\frac{3}{4}$  inch (19 millimeters) wide and fill it with expansion joint filler of the same nominal thickness as the pavement joint. Fill voids between the joint filler and the curb with mortar.

**609.05 Concrete Curb or Curb and Gutter.** Perform work according to Section 601. The curb or curb and gutter may be cast-in-place or slip-formed.

**(a) Cast-in-place.** Use forms that extend for the full depth of the concrete. Use curved forms for curb with a radius of 300 feet (90 meters) or less.

**(1) Contraction joints.** Construct curb in sections of uniform 10-foot (3-meter) lengths. Construct contraction joints  $\frac{1}{8}$  inch (3 millimeters) wide. Use metal divider plates. When the curb is constructed adjacent to or on concrete pavement, match the contraction joints in the pavement.

**(2) Expansion joints.** Form expansion joints at intervals of 60 feet (18 meters) using a  $\frac{3}{4}$ -inch (19-millimeter) thick preformed expansion joint filler. Where the curb is constructed adjacent to or on rigid pavement, match the expansion joints in the pavement.

Finish the concrete smooth and even with a wood float. Broom finish parallel to the curb line according to Subsection 552.14(c)(2). When an exposed aggregate finish is required, finish according to Subsection 552.14(c)(4). Leave forms in place for 24 hours or until the concrete has set sufficiently so the forms can be removed without harming the curb.

**(b) Slip-formed.** Use a self-propelled automatic curb machine or a paver with curb attachments. Use a machine that is heavy enough to obtain consolidation without the machine riding above the foundation.

Adjust the concrete aggregate gradation, if necessary, to produce a curb or curb and gutter that has well defined web marks of water on the surface. Remove and replace sections with craters larger than  $\frac{3}{16}$  inch (5 millimeters) or other sections determined to be damaged or defective. Repairing surface craters and other defective sections by plastering is not permitted.

After the concrete has hardened sufficiently to permit sawing without damage, saw contraction joints according to Subsection 609.05(a)(1). Construct expansion joints according to Subsection 609.05(a)(2).

**609.06 Asphalt Concrete Curb.** Where curb is constructed on a pavement, place a tack coat according to Section 412 on the area under the curb.

Construct asphalt concrete curb according to Section 403. Use a self-propelled automatic curb machine or a paver with curb attachments that is heavy enough to compact a curb without riding above the foundation. Make the curb uniform in texture, shape, and density. Curb may be constructed by other means only in short sections or sections with short radii.

**609.07 Resetting Stone or Precast Concrete Curb.** Carefully remove, clean, and store the curb. Cut or fit the curb as necessary for installation. Replace lost, damaged, or destroyed curb. Reset the curb according to Subsection 609.04.

**609.08 Wheelstops.** Pin the wheelstops in place with two 36-inch (900-millimeter) sections of No. 6 (19M) reinforcing steel or ¾-inch (19-millimeter) steel rods. Reset wheelstops in the same manner.

**609.09 Acceptance.** See Table 609-1 for sampling, testing, acceptance requirements.

Material for mortar will be evaluated under Subsections 106.02 and 106.03. Mortar will be evaluated under Subsection 106.04.

Precast units (curb and wheel stops) will be evaluated under Subsections 106.02 and 106.03.

Bedding material will be evaluated under Subsections 106.02 and 106.04.

Stone for stone curbing will be evaluated under Subsections 106.02 and 106.04.

Construction of curb and gutter, and wheelstops will be evaluated under Subsections 106.02 and 106.04.

Excavation and backfill will be evaluated under Section 209.

Asphalt concrete will be evaluated under Section 403.

Minor concrete will be evaluated under Section 601.

### **Measurement**

**609.10** Measure the Section 609 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:

	<p>When measuring for curb or curb and gutter, make no deduction in length for drainage structures installed in the curb section or for driveway and handicap access ramp openings where the gutter is continuous across the opening.</p> <p style="text-align: center;"><b>Payment</b></p> <p><b>609.11</b> The accepted quantities will be paid at the contract price per unit of measurement for the Section 609 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.</p>																
63401	<p style="text-align: center;"><b>Description</b></p> <p><b>634.01</b> This work consists of applying paint, markings, and markers on finished pavement.</p> <p>Pavement markings are designated as follows:</p> <p style="padding-left: 40px;">Type A – Solventborne traffic paint with Type 1 glass beads;  Type B – Waterborne traffic paint with Type 1 glass beads;  Type C – High-build waterborne traffic paint with Type 1 and Type 3 glass beads;  Type D – Epoxy markings with Type 1 glass beads;  Type E – Epoxy markings with Type 1 and Type 3 glass beads;  Type H – Thermoplastic markings with Type 1 glass beads;  Type I – Thermoplastic markings with Type 1 and Type 3 glass beads;  Type J – Preformed pavement marking tape; or  Type K – Nonreflectorized markings.</p> <p style="text-align: center;"><b>Material</b></p> <p><b>634.02</b> Conform to the MUTCD and the following Subsections:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 40px;">Epoxy markings</td> <td style="text-align: right;">718.11</td> </tr> <tr> <td style="padding-left: 40px;">Epoxy resin adhesives</td> <td style="text-align: right;">718.17</td> </tr> <tr> <td style="padding-left: 40px;">Glass beads</td> <td style="text-align: right;">718.14</td> </tr> <tr> <td style="padding-left: 40px;">Pavement markers</td> <td style="text-align: right;">718.15</td> </tr> <tr> <td style="padding-left: 40px;">Preformed pavement marking tape</td> <td style="text-align: right;">718.13</td> </tr> <tr> <td style="padding-left: 40px;">Solventborne traffic paint</td> <td style="text-align: right;">718.09</td> </tr> <tr> <td style="padding-left: 40px;">Thermoplastic markings</td> <td style="text-align: right;">718.12</td> </tr> <tr> <td style="padding-left: 40px;">Waterborne traffic paint</td> <td style="text-align: right;">718.10</td> </tr> </table>	Epoxy markings	718.11	Epoxy resin adhesives	718.17	Glass beads	718.14	Pavement markers	718.15	Preformed pavement marking tape	718.13	Solventborne traffic paint	718.09	Thermoplastic markings	718.12	Waterborne traffic paint	718.10
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### Construction Requirements

**634.03 General.** Where existing and final pavement marking locations are identical, stake the limits of existing pavement markings before beginning pavement work.

Submit manufacturer's MSDS and product data sheets at least 7 days before applying pavement markings. A field demonstration may be required to verify the adequacy of the material.

Ship marking material in suitable containers plainly marked with the following information as appropriate for the material being furnished:

- (a) Manufacturer's name and address;
- (b) Name of product;
- (c) Lot and batch numbers;
- (d) Color;
- (e) Net mass and volume of contents;
- (f) Date of manufacture;
- (g) Date of expiration;
- (h) Statement of contents (if mixing of components is required);
- (i) Mixing proportions and instructions; and
- (j) Safety information.

Establish marking patterns or locations according to the MUTCD, plans, or state requirements. In curve widening areas, establish the edge line markings at the limits of the traveled way and the centerline markings equal distance between the edge lines.

Remove loose particles, dirt, tar, grease, and other deleterious material from the surface to be marked. Where markings are placed on rigid pavement less than 1-year old, clean the pavement of laitance and curing compounds.

Remove temporary pavement markings the same day permanent pavement markings are applied. Remove temporary and conflicting pavement markings according to Subsection 635.13 before applying permanent pavement markings.

Obtain approval before applying markings. Apply markings to a clean, dry surface, and according to the manufacturer's recommendations. Produce markings that are clean-cut and uniform in appearance by day and night.

Current state approved pavement marking material may be used, when approved by the CO. Submit proof of compliance with state specifications.

Apply glass beads immediately following paint or markings application to ensure adhesion.

Protect markings from traffic until dried to a no-tracking condition. Remove tracking marks, spilled marking material, markings in unauthorized areas, and defective markings.

**634.04 Solventborne Traffic Paint (Type A).** Apply paint when pavement and air temperatures are at 35 °F (2 °C) and rising. Do not heat the paint above 120 °F (49 °C). Spray paint at a 15 mil (0.38 millimeters) minimum wet film thickness or at a rate of 107 square feet per gallon (2.6 square meters per liter).

Apply Type 1 glass beads on the paint at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of paint.

On new asphalt pavements or new asphalt surface treatments, apply two applications of paint and glass beads. Apply second application after first application is track free.

**634.05 Waterborne Traffic Paint (Type B and Type C).** Apply paint when pavement and air temperatures are 50 °F (10 °C) and rising.

**(a) Type B.** Do not heat the paint above 120 °F (49 °C). Spray paint at a 15 mil (0.38 millimeters) minimum wet film thickness or at a rate of 107 square feet per gallon (2.6 square meters per liter).

Apply Type 1 glass beads on the paint at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of paint.

On new asphalt pavements or new asphalt surface treatments, apply two coats.

**(b) Type C.** Spray paint at 25 mil (0.63 millimeters) minimum wet film thickness or at a rate of 71 square feet per gallon (1.7 square meters per liter).

Use two bead dispensers. Apply Type 3 glass beads on the paint at a rate of 6 to 8 pounds per gallon (0.72 to 0.960 kilograms per liter) followed by Type 1 glass beads on the paint at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of paint.

**634.06 Epoxy Markings (Types D and Type E).** Apply epoxy when pavement and air temperatures are 35 °F (2 °C) and rising. Heat components as specified by the manufacturer. Apply at a 25 mil (0.63 millimeters) minimum dry film thickness or at a rate of 71 square feet per gallon (1.7 square meters per liter).

(a) **Type D.** Apply Type 1 glass beads on the epoxy at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of epoxy.

(b) **Type E.** Use two bead dispensers. Apply Type 3 glass beads on the epoxy at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of epoxy followed by Type 1 glass beads on the epoxy at a rate of 6 to 8 pounds per gallon (0.72 to 0.96 kilograms per liter) of epoxy.

**634.07 Thermoplastic Markings (Type H and Type I).** Apply thermoplastic when pavement and air temperatures are 50 °F (10 °C) and rising. Heat thermoplastic as specified by the manufacturer.

Apply an epoxy resin primer/sealer according to the thermoplastic manufacturer's recommendations when placing markings on rigid pavements or asphalt pavements more than 2-years old, oxidized, or having exposed aggregates.

Allow the primer/sealer to dry.

For edge lines, apply thermoplastic at 60 mil (1.5 millimeters) dry film thickness. For other lines, apply thermoplastic at 90 mil (2.3 millimeters) dry film thickness.

(a) **Type H.** Apply Type 1 glass beads on the thermoplastic at a rate recommended by the manufacturer.

(b) **Type I.** Use two bead dispensers. Apply Type 3 glass beads on the thermoplastic followed by Type 1 glass beads on the thermoplastic at rates recommended by the manufacturer.

**634.08 Preformed Pavement Marking Tape (Type J).** Install to form a durable, weather resistant bond to the pavement. Apply preformed markings according to the manufacturer's recommendations. Use preformed marking tape containing retroreflective beads.

**634.09 Nonreflectorized Markings (Type K).** Apply solvent borne or waterborne traffic paint without glass beads.

**634.10 Pavement Markers.** Install raised or recessed pavement markers when the pavement and air temperatures are 50 °F (10 °C) and rising. Apply pavement markers with an epoxy resin adhesive as recommended by the

manufacturer when the pavement is dry. Space the markers according to the MUTCD and plans.

**634.11 Acceptance.** Material for permanent pavement markings will be evaluated under Subsections 106.02 and 106.03.

Placing of permanent pavement markings will be evaluated under Subsections 106.02 and 106.04.

#### **Measurement**

**634.12** Measure the Section 634 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:

When pavement markings are measured by the linear foot (meter), measure the length of line applied along the centerline of each line applied regardless of color. Measure broken or dotted pavement lines from end to end of the line including gaps. Measure solid pavement lines from end to end of each continuous line. Measure line quantities based on a 4-inch (100-millimeter) wide line. For line widths greater than 4 inches (100 millimeters), adjust the measured length of line in the ratio of the required width to 4 inches (100 millimeters).

When pavement markings are measured by the square foot (square meter), measure the number of square feet (square meter) of line, symbol or letter marking based on the marking area shown in the plans. If not shown, measure the area of each marking in place to the nearest square foot (square meter).

#### **Payment**

**634.13** The accepted quantities will be paid at the contract price per unit of measurement for the Section 634 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

<b>SCHEDULE OF ITEMS NFSR 205</b>			
ITEM NO.	DESCRIPTON	PAY UNIT	EST. QTY.
15101	MOBILIZATION AND 3% PERFORMANCE BOND	EA	1
20301	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (WHEELSTOPS AND ANCHORS)	EA	135
30501	FULL DEPTH RECLAMATION WITH 9% CEMENT	SY	47,776
40301	LEVEL 1 OR TYPE 1 LA DOTD APPROVED ASPHALT CONCRETE	TON	7,070
40701	CHIP SEAL	SY	61,473
41301	ASPHALT PAVEMENT MILLING	TON	61,473
60908	INSTALL 6 FT RUBBER WHEELSTOPS	EA	140
63401	4 INCH TYPE H THERMOPLASTIC MARKINGS W/TYPE 1 BEADS SOLID LINES	FT	77,536
63401AA	THERMOPLASTIC ARROWS	EA	8
63401AB	THERMOPLASTIC STOP BAR	FT	12
63401AC	THERMOPLASTIC HANDICAP PARKING	EA	4
63401AD	THERMOPLASTIC VAN ACCESSIBLE HANDICAP PARKING	EA	2
63410	RAISED PAVEMENT MARKINGS	EA	960









