Amend **Section 415 – COLD PLANING OF EXISTING PAVEMENT** to read as follows:

SECTION 415 - COLD PLANING OF EXISTING PAVEMENT

415.01 Description. This section describes removing existing pavement by a cold-planing process and establishing grade controls to provide a basis for a smooth riding surface.

415.02 Materials. None.

415.03 Construction.

(A) Equipment. Cold-planing machines shall be self-propelled, equipped with an automatically controlled and activated cutting drum that is capable of grade reference, maintaining transverse slope control and producing a uniformly textured surface. An Engineer accepted grade 1-piece referencing attachment, not less than 30 feet in length, shall be used. The cold-planing machine shall be capable of accurately removing the pavement surface, in one or more passes, to the required grade or cross-section indicated in the Contract Documents, without tearing or gouging underlying surface that is to remain and without contaminating milled pavement with underlying base course material. The final cut shall result in a neat and uniform milled surface.

Equip machine with cutting drum capable of producing a uniform surface finish and texture. Enclose the cutting drum in shroud to prevent discharge of loosened material into adjacent work areas. As standard equipment, provide dust suppression system, storage tanks with an adequate water, and high-pressure spray bar with spray nozzles. Provide a machine capable of cutting a crown and a depth by tilting drum axis and it shall be equipped with guidance system that controls transverse slope and longitudinal profile, matches adjacent pavements, and controls depth of cut. A mobile referencing system shall be used. Provide at minimum a 30-foot long 1-piece mobile reference to provide average elevation variations. The entire length shall be used in activating the sensor.

If referencing from existing pavement, the cold-planing machine shall be controlled by a self-contained grade reference system. The system shall be used at or near the centerline of the roadway. On the adjacent pass with the cold-planing machine, a joint-matching shoe may be used on the newly placed HMA surface. Using the existing newly paved pavement as a reference is discouraged and should not be used unless the profile of the existing pavement meets the smoothness requirements of the Contract Documents and even then, shall be used at the Contractor's own volition.

(B) Cold-Planing Pavement Profile. Prior to the start of cold-planing (planing) take a pavement surface profile test of all areas where planing is to occur. Use these profiles to create a surface profile that shall be used to install a smooth finish pavement that meets the Contract Document smoothness requirements. The planing profile shall allow the finish HMA pavement's profile in general to:

(a) Not change the drainage patterns of the existing roadway.

(b) Decrease the clearance between overhead objects, e.g., overpasses, utility lines, and the finish pavement.

(c) Decrease the effectiveness or make existing safety apparatuses non-compliant.

(d) Change geometric properties, e.g., sight distance, slopes of the roadway shall not be changed.

The method used by the Contractor to obtain planing pavement profiles will be left up to the Contractor. The Engineer will use a profile obtained using the Contractor supplied profilograph to determine the profile index, i.e., smoothness, of the new pavement regardless of what method the Contractor uses to determine the planing pavement profile. Submit all planing pavement profiles for review and acceptance by the Engineer at a minimum of 30 days before planing starts. Inform the Engineer of any existing feature that may need adjustment to obtain a smooth riding surface. Adjustments to the existing feature if made will be paid for by contract change order.

Planing shall be used to create the initial base that shall improve the existing pavement profile when paving work is properly performed. Set guidance system grade sensor on string line or other grade device to guide the planing machine to the proper cutting profile established by the planing pavement profile.

(C) Cold-Milled Surface and Removed Material. Cold-mill (mill) surface to remove pavement and to eliminate high spots and surface irregularities for a smooth roadway resurfacing. Remove thickness of existing pavement to the average minimum depth indicated in the Contract Documents. In general, the depth, length, width, and shape of the cut shall be as shown in the Contract Documents or as directed by the Engineer. Examine the milled surface and inform the Engineer if:

(a) There are any weakened pavement areas not shown in the Contract Documents.

(b) A thin milled 90 subsurface layer exists.

(c) Holes are present in the milled surface.

(d) There are indications of poor bonding of the milled layer to the layer below.

(e) Base course showing.

(f) Any condition that may be deleterious to the service life of the new overlay exists.

The Engineer may direct remedial work in these areas to provide increased pavement life as well as a smoother ride, e.g., increase the depth of the planing or do additional work to the weakened pavement areas. Additional remedial work will be considered extra work unless the Contractor over milled the pavement.

Furnish, install, and maintain grade and transverse slope references.

Adjust machine blades to avoid damaging existing items that are to remain, such as underlying pavement structure, monuments, manholes, and pipes. Remove and replace or reconstruct items damaged by planing operations.

Maintain an appropriate consistent planing speed that shall give a smooth consistent texture for the milled surface. Planing speed shall be adjusted so that the milled surface is not scalloped or individually gouged or both. The travel speed in feet per minute shall not exceed 2/3 of the cutter drum RPM, e.g., 100 RPM > 66 feet per minute. If the planing machine does not have a drum RPM gage, assume the drum speed is 1/19th of the engine RPM.

For roadways open to traffic, cold plane each day across full width of traffic lanes to avoid longitudinal pavement drop-off between lanes. Make every effort to avoid longitudinal drop offs between lanes. If this cannot be avoided at the end of the day's production, or in areas opened to public traffic, construct tapered transitions for all longitudinal and transverse pavement drop-offs before opening area to public traffic. Use the same quality of HMA for temporary tapers that is used for the HMA overlay or pavement. Use maximum slopes of 8:1 for longitudinal and 48:1 for transverse tapered transitions. When cross streets are encountered use a 48:1 taper; minimize the transition piece from being in the lane perpendicular to the cross-street. Use 48:1 slope for transition pieces for utility features found in milled areas. The difference in elevation between adjacent existing pavement and milled areas shall not exceed 3 inches. Compact transition in such a manner that the transition shall provide a smooth riding transition and shall not change its shape for the duration of its use. The transition shall be uniform in shape and

the toe of the transition shall be a set distance parallel to the unmilled edge of the adjacent pavement, i.e., the toe of the transition shall form a straight line parallel to the milled edge. Remove all transition material in the area to be resurfaced before placing the overlay.

Provide for drainage of milled surface areas and adjacent pavement. Drainage of the milled areas shall be installed on same work shift as when planing is performed.

The finished milled surface shall be suitable for public traffic to use safely and not cause damage to its vehicles or to the existing pavement. The completed surface of the milled asphalt concrete pavement shall not vary more than 0.02 foot when measured with a 12-foot straightedge parallel with the centerline. With the straightedge at right angles to the centerline, the transverse slope of the planed surface must not vary more than 0.03 foot. Check the milled surface profile every 24 feet to verify that the planing is compliant. Record drum speed and planing machine speed at every 30 minutes. Record results of checks, in a manner acceptable to the Engineer showing at a minimum:

(a) Location of the profile check showing station and offset from centerline or station and lane location for both profile check and drum speed and planing machine speed.

(b) Date and time for both profile check and drum speed and planing machine speed.

(c) When planing machine started planing and stationing, all stopping and restarting times. End of shift planing work station.

(d) Variances from straightedge, location of the variance on the straight edge.

(e) Person performing checks and recording the information shall sign and print full name on report.

(f) Submit reports weekly to the Engineer.

Re-mill areas that do not conform to Contract Document requirements or perform an Engineer accepted remedial repair if existing subsurface pavement would be too thin to re-mill and still provided the needed structural support to the pavement section.

The Engineer may reduce the number of profile and planing machine speed checks if the reports show a consistent pattern of best practices and performance. The Engineer reserves the right to reinstate the former level of checks at any time should the quality of the work start to degrade.

Clean and sweep surface of milled pavement in accordance with Section 310 - Brooming Off, with the additional requirement that all loose material shall be picked up within the roadway surface including gutters, before opening milled area to public traffic. Repeat the cleaning and sweeping of the milled pavement to the same requirements used on the first day for each day the milled area is opened to public traffic including Saturday, Sunday and holidays.

Install all temporary traffic pavement markings before opening to public traffic and maintain them until overlay is placed. Pavement markings shall be of the same size, e.g., width and length as required in the Standard Plans. For example, no Arrows made with a single 4-inch tape will be allowed, the width of arrow shall be as show in TE-29.

Dispose of milled and removed transition materials in accordance with Subsection 201.03(F) - Removal and Disposal of Material.

Minimize dust escaping from cold-planing operation and contain or remove runoff water used for dust control in accordance with Section 209 – Temporary Water Pollution, Dust and Erosion Control.

The milled surface shall not be exposed to public traffic for more than three days prior to placement of resurfacing material. Place a leveling course over the entire milled area before the end of the third day if the permanent overlay cannot be placed. The leveling course shall be removed before the installation of the overlay. The leveling course, its installation and removal and any additional HMA needed due to increased depth shall be at the Contractor's expense. Failure to install an acceptable leveling course will result in the assessment of rental fees for unauthorized lane closure charges for the areas that are non-compliant, e.g., milled areas open longer than three days, until they have received an acceptable leveling course layer or the permanent overlay. Lane rental fee charges shall start at the end of the third day's normal working hours as defined in the Contract Documents, i.e., the third day's normal end of non-overtime shift. There will be no maximum amount of lane rental assessed by the Engineer for this situation. The Engineer will unilaterally calculate the amount of rental fees to be assessed. The Engineer reserves the right to suspend the Contractor's work and continue to charge lane rental when the Engineer determines that the Contractor's work is adversely impacting the public.

415.04 Measurement. The Engineer will measure cold planing per square yard in accordance with the contract documents.

415.05 Payment. The Engineer will pay for the accepted pay items listed below at the contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for one of the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Cold Planing	Square Yard

(1) 80 percent of the contract bid price upon completion of removing the indicated thickness and clean and sweep before opening to public traffic;

(2) 20 percent of the contract bid price upon completion of removing the material and disposing of the removed material.

END OF SECTION 415