

SECTION 02621 - SAW-CUT GROOVES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. The General Provision of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.
- B. This Section shall be in accordance with FAA Specification Item P- 621 – Saw-cut Grooves, as included as an attachment to this Section.

1.2 SUMMARY

Work under this Section includes the requirements for the construction of saw-cut grooves in asphalt concrete pavement as shown on the plans.

1.3 REFERENCES:

- A. FAA Specification Item P-621 – Saw-cut Grooves as modified herein.
- B. Section 02401, Asphalt Mix Pavement, Surface Course (P-401).

1.4 SUBMITTALS

Prior to commencing Work in this Section, the Contractor shall submit the following information according to Section 01300, Submittals.

- A. Product data for saw-cut grooving machine.
- B. Pavement Grooving Plan including daily production rates and clean-up plans.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1 SAW-CUT GROOVES

- A. The Contractor perform saw-cut grooves in accordance with FAA Specification Item P-621, and as modified herein.

PART 4 - MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. Method of measurement and payment shall be in accordance with FAA Specification Item P-621, paragraph 621-4.1.

4.2 BASIS OF PAYMENT

- A. Basis for payment shall be in accordance with FAA Specification Item P-621, paragraph 621-5.1.

PART 5 - ATTACHMENTS

5.1 FAA SPECIFICATIONS

- A. P-621, Saw-Cut Grooves

END OF SECTION 02621

ITEM P-621 SAW-CUT GROOVES

DESCRIPTION

621-1.1 This item consists of constructing saw-cut grooves to minimize hydroplaning during wet weather, providing a skid resistant surface in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR).

CONSTRUCTION METHODS

621-2.1 Procedures. The Contractor shall submit to the RPR the grooving sequence and method of placing guide lines to control grooving operation. Transverse grooves saw-cut in the pavement must form a 1/4 inch (+1/16 inch, -0 inch) wide by 1/4 inch ($\pm 1/16$ inch) deep by 1-1/2 inch (-1/8 inch, +0 inch) center-to-center configuration. The grooves must be continuous for the entire runway length. They must be saw-cut transversely (perpendicular to centerline) in the runway and high-speed taxiway pavement to not less than 10 feet from the runway pavement edge to allow adequate space for equipment operation.

The saw-cut grooves must meet the following tolerances. The tolerances apply to each day's production and to each piece of grooving equipment used for production. The Contractor is responsible for all controls and process adjustments necessary to meet these tolerances. The Contractor shall routinely spot check for compliance each time the equipment aligns for a grooving pass.

a. Alignment tolerance. The grooves shall not vary more than $\pm 1\text{-}1/2$ inch (38 mm) in alignment for 75 feet (23 m) along the runway length, allowing for realignment every 500 feet (150 m) along the runway length.

b. Groove tolerance.

(1) Depth. The standard depth is 1/4 inch (6 mm). At least 90% of the grooves must be at least 3/16 inch (5 mm), at least 60% of the grooves must be at least 1/4 inch (6 mm), and not more than 10% of the grooves may exceed 5/16 inch (8 mm).

(2) Width. The standard width is 1/4 inch (6 mm). At least 90% of the grooves must be at least 3/16 inch (5 mm), at least 60% of the grooves must be at least 1/4 inch (6 mm), and not more than 10% of the grooves may exceed 5/16 inch (8 mm).

(3) Center-to-center spacing. The standard spacing is 1-1/2 inch (38 mm). Minimum spacing 1-3/8 inch (34 mm). Maximum spacing 1-1/2 inch (38 mm).

Saw-cut grooves must not be closer than 3 inches (8 cm) or more than 9 inches (23 cm) from transverse joints in pavements. Grooves must not be closer than 6 inches (150 mm) and no more than 18 inches (0.5 m) from in-pavement light fixtures. Grooves may be continued through longitudinal construction joints. Grooves may be continued through the longitudinal joints. Where lighting cables are installed, grooving through longitudinal or diagonal saw kerfs shall not be allowed.

621-2.2 Environmental requirements. Grooving operations will not be permitted when freezing conditions prevent the immediate removal of debris and/or drainage of water from the grooved area. Discharge and disposal of waste slurry shall be the Contractor's responsibility.

621-2.3 Control strip. Groove a control strip in an area of the pavement outside of the trafficked area, as approved by the RPR. The area shall be 50 feet long by two lanes wide. Demonstrate the setup and alignment process, the grooving operation, and the waste slurry disposal.

621-2.4 Existing pavements. Bumps, depressed areas, bad or faulted joints, and badly cracked and/or spalled areas in the pavement shall not be grooved until such areas are adequately repaired or replaced.

621-2.5 New pavements. New asphalt pavements shall be allowed to cure for a minimum of 30 days before grooving, to allow the material to become stable enough to prevent closing of the grooves under normal use. If it can be demonstrated that grooves are stable, and can be installed with no spalling, tearing or raveling of the groove edge, grooving may occur sooner than 30 days with approval of the RPR. All grade corrections must be completed prior to grooving. Spalling along or tearing or raveling of the groove edges shall not be allowed.

621-2.6 Grooving machine. Provide a grooving machine that is power driven, self-propelled, specifically designed and manufactured for pavement grooving, and has a self-contained and integrated continuous slurry vacuum system as the primary method for removing waste slurry. The grooving machine shall be equipped with diamond-saw cutting blades, and capable of making at least 18 inches (0.5 m) in width of multiple parallel grooves in one pass of the machine. Thickness of the cutting blades shall be capable of making the required width and depth of grooves in one pass of the machine. The cutting head shall not contain a mixture of new and worn blades or blades of unequal wear or diameter. Match the blade type and configuration with the hardness of the existing airfield pavement. The wheels on the grooving machine shall be of a design that will not scar or spall the pavement. Provide the machine with devices to control depth of groove and alignment.

621-2.7 Water supply. Water for the grooving operation shall be provided by the Contractor.

621-2.8 Clean-up. During and after installation of saw-cut grooves, the Contractor must remove from the pavement all debris, waste, and by-products generated by the operations to the satisfaction of the RPR. Cleanup of waste material must be continuous during the grooving operation. Flush debris produced by the machine to the edge of the grooved area or pick it up as it forms. The dust coating remaining shall be picked up or flushed to the edge of the area if the resultant accumulation is not detrimental to the vegetation or storm drainage system. Accomplish all flushing operations in a manner to prevent erosion on the shoulders or damage to vegetation. Waste material must be disposed of in an approved manner. Waste material must not be allowed to enter the airport storm sewer system. The Contractor must dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

621-2.9 Repair of damaged pavement. Grooving must be stopped and damaged pavement repaired at the Contractor's expense when directed by the RPR.

621-2.10 Production rate. The Contractor shall furnish sufficient equipment to complete grooving within the construction phasing schedule indicated and contract time limits specified.

ACCEPTANCE

621-3.1 Acceptance testing. Grooves will be accepted based on results of zone testing. All acceptance testing necessary to determine conformance with the groove tolerances specified will be performed by the RPR.

Instruments for measuring groove width and depth must have a range of at least 0.5 inch (12 mm) and a resolution of at least 0.005 inch (0.13 mm). Gauge blocks or gauges machined to standard grooves width, depth, and spacing may be used.

Instruments for measuring center-to-center spacing must have a range of at least 3 inches (8 cm) and a resolution of at least 0.02 inch (0.5 mm).

The RPR will measure grooves in five zones across the pavement width. Measurements will be made at least three times during each day's production. Measurements in all zones will be made for each cutting head on each piece of grooving equipment used for each day's production.

The five zones are as follows:

- Zone 1 Centerline to 5 feet (1.5 m) left or right of the centerline.
- Zone 2 5 feet (1.5 m) to 25 feet (7.5 m) left of the centerline.
- Zone 3 5 feet (1.5 m) 25 feet (7.5 m) right of the centerline.
- Zone 4 25 feet (7.5 m) to edge of grooving left of the centerline.
- Zone 5 25 feet (7.5 m) to edge of grooving right of the centerline.

At a random location within each zone, five consecutive grooves sawed by each cutting head on each piece of grooving equipment will be measured for width, depth, and spacing. The five consecutive measurements must be located about the middle blade of each cutting head ± 4 inches (100 mm). Measurements will be made along a line perpendicular to the grooves.

- Width or depth measurements less than 0.170 inch (4 mm) shall be considered less than 3/16 inch (5 mm).
- Width or depth measurements more than 0.330 inch (8 mm) shall be considered more than 5/16 inch (8 mm).
- Width or depth measurements more than 0.235 inch (6 mm) shall be considered more than 1/4 inch (6 mm).

Production must be adjusted when more than one groove on a cutting head fails to meet the standard depth, width, or spacing in more than one zone.

METHOD OF MEASUREMENT

621-4.1 All work under this section will not be measured for payment.

BASIS OF PAYMENT

621-5.1 Items covered by this section will be paid by lump sum. The contract price paid shall be for full compensation for furnishing and placing all materials and all labor, equipment, tools, and incidentals necessary for each of the construction phases.

Payment will be made under:

<u>Item No.</u>	<u>Description</u>	<u>Unit</u>
02621.1B	Saw-cut Grooves (Phase 4)	Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5320-12

Measurement, Construction, and Maintenance of Skid Resistant
Airport Pavement Surfaces

END OF ITEM P-621

END OF SECTION 02621