

**SECTION 49 – SAW-CUT GROOVES (FAA P-621)****49-1 GENERAL**

The Contractor shall perform all work required by the plans and specifications for construction of sawcut grooves in asphalt or portland cement concrete pavement in accordance with the Standard Specifications, except as specified otherwise in FAA Specification Item P-621 as included and modified hereafter, and as shown on the Plans.

ITEM P-621 SAW-CUT GROOVES**DESCRIPTION**

621-1.1 This item consists of providing a skid resistant surface that prevents hydroplaning during wet weather in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer.

CONSTRUCTION METHODS

621-2.0 Grooving must occur within 24 hours of any milling or planing activities.

621-2.1 Transverse grooves saw-cut in the pavement must form a 1/4 inch wide by 1/4 inch deep by 1 1/2 inches center-to-center configuration. The grooves must be continuous for the entire runway length. They must be saw-cut transversely in the runway pavement to not less than 10 feet from the runway pavement edge to allow adequate space for equipment operation. The Contractor must provide a grooving machine of a type equipped with diamond-saw cutting blade groove cutting head capable of making at least 18 inches 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. The wheels on the grooving machine shall be of a design that will not scar or spall the pavement. The machine must be equipped with devices to control depth of groove and alignment within the specified tolerances.

621-2.2 Tolerances.

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.

A. Alignment tolerance: *Plus or minus 1-1/2 inches in alignment for 75 feet.*

**B. Groove tolerance:**

1. **Depth.** *The standard depth is 1/4 inch. At least 90 percent of the grooves must be at least 3/16 inch, at least 60 percent of the grooves must be at least 1/4 inch, and not more than 10 percent of the grooves may exceed 5/16 inch.*
2. **Width.** *The standard width is 1/4 inch. At least 90 percent of the grooves must be at least 3/16 inch, at least 60 percent of the grooves must be at least 1/4 inch, and not more than 10 percent of the grooves may exceed 5/16 inch.*

C. Center-to-center spacing. *The standard spacing is 1-1/2 inches. Allowed tolerance:*

1. *Minimum spacing 1-3/8 inches.*
2. *Maximum spacing 1-1/2 inches.*

Saw-cut grooves must not be closer than 3 inches or more than 9 inches from transverse paving joints. Grooves must not be closer than 6 inches and no more than 18 inches from in-pavement light fixtures. Grooves may be continued through longitudinal joints. Where neoprene compression seals have been installed and the compression seals are recessed sufficiently to prevent damage from the grooving operation, grooves may be continued through the longitudinal joints. Where neoprene compression seals have been installed and the compression seals are not recessed sufficiently to prevent damage from the grooving operation, grooves must not be closer than 3 inches or more than 5 inches from the longitudinal joints.

621-2.3 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.*

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 concrete 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. Permit new Portland cement concrete pavements to cure for a minimum of 28 days before grooving. Spalling along or tearing or raveling of the groove edges shall not be allowed.*



621-2.6 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 Engineer. 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. Waste material must be disposed of in an approved manner. Waste material must not be allowed to enter the airport storm or sanitary sewer system.*

The Contractor must dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations

621-2.7 REPAIR OF DAMAGED PAVEMENT. *Grooving must be stopped and damaged pavement repaired at the Contractor's expense when in the opinion of the Engineer the result of the grooving operation will be detrimental to aircraft tires.*

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 Engineer.*

Instruments for measuring groove width and depth must have a range of at least 0.5 inches and a resolution of at least 0.005 inches. Gage blocks or gages 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 and a resolution of at least 0.02 inches.

The Engineer 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 left or right of the centerline.
Zone 2	5 feet to 25 feet left of the centerline.
Zone 3	5 feet 25 feet right of the centerline.
Zone 4	25 feet to edge of grooving left of the centerline.
Zone 5	25 feet 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 plus or minus 4 inches. Measurements will be made along a line perpendicular to the grooves.

Width or depth measurements less than 0.170 inches shall be considered less than 3/16 inches.

Width or depth measurements more than 0.330 inches shall be considered more than 5/16 inches.

Width or depth measurements more than 0.235 inches shall be considered more than 1/4 inches.

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 Method of Measurement. See Section 49-2.

BASIS OF PAYMENT

621-5.1 Measurement. See Section 49-3.

END OF SECTION P-621



49-2 METHOD OF MEASUREMENT

The yardage of sawcut grooving to be paid for shall be the number of yards of completed and accepted grooving of the type indicated on the bid schedule. The 10 foot equipment turnaround areas will not be measured for payment.

49-3 BASIS OF PAYMENT

For sawcut grooving payment shall be made at the contract unit price per square yard for the quantity, measured in place, of completed and accepted grooving of the type indicated on the bid schedule. This price shall be full compensation for furnishing all materials, labor, supervision, equipment, tools, and incidentals necessary to complete the item.

No additional payment will be made for difficulties encountered when accomplishing work under this section in areas of night construction, or in other areas subject to construction phasing restrictions.

Payment will be made under:

- Item 37.1 **[Asphalt][Portland Cement]** Concrete
- Sawcut Groovingper square yard

END OF SECTION 49



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