

# Airfield Concrete Pavement Construction

**Focus:  
FAA 'FAA Expectations of  
Central Region Office'  
Advisory Circular ~  
AC 150/5370-10H, Sections  
50, 60 and P501**

•Presented to: 2025 ICPA Workshop  
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Federal Aviation  
Administration



# Overview

- **Advisory Circular 150/5370-10H** (Standard Specifications for Construction of Airports)

**The primary emphasis :** QA/QC, what the FAA expects to see.

If time allows we will also go over some common pavement construction problems seen this year.



# Section 50

**50-01 Authority of the Resident Project Representative (RPR).** The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. **The RPR does not have the authority to accept work that does not conform to specification requirements.**



# Section 50-2 (continued)

## **50-02 Conformity with plans and specifications.**

All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) **in the contract, plans, or specifications.**



# Section 50-2 (continued)

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a **finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner**, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a **basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.**



# Section 50-2 (continued)

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.



# Section 50-2 (continued)

The term “reasonably close conformity” shall not be construed as waiving the Contractor’s responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR’s responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor’s execution of the work, when, in the RPR’s opinion, such compliance is essential to provide an acceptable finished portion of the work.



# Section 50-2 (continued)

The term “reasonably close conformity” is also intended to provide the RPR with the authority, **after consultation with the Sponsor and FAA**, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product **equal to or better** than that required by the requirements of the contract, plans and specifications...

The RPR will not be responsible for the Contractor’s means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.





# 50-3

## 50-03 Coordination of contract, plans, and specifications.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.



# 50-08

## Authority and duties of Quality Assurance (QA) inspectors

- QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. **QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.**



# 50-08 (Continued)

## Authority and duties of Quality Assurance (QA) inspectors

- QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

“RPRs and QA inspectors, please, please, please document these in your dailies.”



# 50-09

**Inspection of the work.** All materials and each part or detail of the work shall be subject to inspection. **The RPR shall be allowed access to all parts of the work** and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection...



# 60-02

## **Samples, tests, and cited specifications.**

A copy of all Contractor QC test data shall be provided to the RPR **daily**, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.



# 60-04

**Plant inspection.** The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work.

Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

- Should the RPR conduct plant inspections, the following conditions shall exist:



# 60-04 (Continued)

- a.** The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b.** The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.



# 60-04 (Continued)

- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.
- It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.





# 20-02 Qualification of bidders

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a **list of equipment** and a **list of key personnel** that would be available for the work.



# 80-05 Character of workers, methods, and equipment.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so.



# P501 – 4.2 Equipment

**a. Plant and equipment.** The plant and mixing equipment shall conform to the requirements of ASTM C94 and/or ASTM C685. Each truck mixer shall have attached in a prominent place a manufacturer's nameplate showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades. **The truck mixers shall be examined daily for changes in condition** due to accumulation of hard concrete or mortar or wear of blades. The pickup and throwover blades shall be replaced when they have worn down 3/4 inch (19 mm) or more. **The Contractor shall have a copy of the manufacturer's design on hand showing dimensions and arrangement of blades in reference to original height and depth.**

Equipment for transferring and spreading concrete from the transporting equipment to the paving lane in front of the finishing equipment shall be provided. The equipment shall be specially manufactured, self-propelled transfer equipment **which will accept the concrete outside the paving lane and will spread it evenly across the paving lane in front of the paver and strike off the surface evenly to a depth which permits the paver to operate efficiently.**



# P501 – 4.2 Equipment

## b. Finishing equipment.

**(1) Slip-form.** The standard method of constructing concrete pavements shall be with an approved slip-form paving equipment designed and operated to spread, consolidate, screed, and finish the freshly placed concrete in one complete pass of the machine so that the end result is a dense and homogeneous pavement which is achieved with a **minimum of hand finishing**. The paver-finisher shall be a heavy duty, self-propelled machine designed specifically for paving and finishing high quality concrete pavements.

**(2) Fixed-form.** On projects requiring less than [ 10,000 cubic yards (7650 cubic meters) ] of concrete pavement or irregular areas at locations inaccessible to slip-form paving equipment, concrete pavement may be placed with equipment specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be **reviewed and accepted** by the RPR.

**Hand screeding and float finishing may only be used on *small irregular* areas as allowed by the RPR.**



# P501 – 4.8 Concrete Placement.

At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed **3 feet (1 m)**. The finished concrete product must be dense and homogeneous, without segregation and conforming to the standards in this specification. **Backhoes and grading equipment shall not be used to distribute the concrete in front of the paver. Front end loaders will not be used.** All concrete shall be consolidated without voids or segregation, including under and around all load-transfer devices, joint assembly units, and other features embedded in the pavement. Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches [ a flexural strength of 550 psi(3.8 MPa)] [ a compressive strength of 3,100 psi(21.4 MPa)], based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed. **The Contractor must determine that the above minimum strengths are adequate to protection the pavement from overloads due to the construction equipment proposed for the project.**



# P501 – 4.8 Concrete Placement.

**a. Slip-form construction.** The concrete shall be distributed uniformly into final position by a self propelled slip-form paver without delay. The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose. The paver shall vibrate the concrete for the full width and depth of the strip of pavement being placed and the vibration shall be adequate to provide a consistency of concrete that will stand normal to the surface with sharp well-defined edges. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms. The plastic concrete shall be effectively consolidated by internal vibration with transverse vibrating units for the full width of the pavement and/or a series of equally placed longitudinal vibrating units. The space from the outer edge of the pavement to longitudinal unit shall not exceed 9 inches (23 cm) for slipform and at the end of the dowels for the fill-in lanes. The spacing of internal units shall be uniform and shall not exceed 18 inches (0.5 m). The term internal vibration means vibrating units located within the specified thickness of pavement section.



# P501 – 4.8 Concrete Placement. (Continued)

The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without, segregation, voids, or vibrator trails and the amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete along the entire length of the vibrating unit and for a distance of at least one foot (30 cm). The frequency of vibration or amplitude should be adjusted proportionately with the rate of travel to result in a uniform density and air content. The paving machine shall be equipped with a tachometer or other suitable device for measuring and indicating the actual frequency of vibrations. The concrete shall be held at a uniform consistency. The slip-form paver shall be operated with as **nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum.** If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.



# P501 – 4.8 Concrete Placement. (Continued)

When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement shall be equipped **with protective pads** on crawler tracks or rubber-tired wheels on which the bearing surface is offset to run a sufficient distance from the edge of the pavement to avoid breaking the pavement edge. Not more than 15% of the total free edge of each 500-foot (150 m) segment of pavement, or fraction thereof, shall have an edge slump exceeding 1/4 inch (6 mm), and none of the free edge of the pavement shall have an edge slump exceeding 3/8 inch (9 mm). (The total free edge of 500 feet (150 m) of pavement will be considered the cumulative total linear measurement of pavement edge originally constructed as nonadjacent to any existing pavement; that is, 500 feet (150 m) of paving lane originally constructed as a separate lane will have 1,000 feet (300 m) of free edge, 500 feet (150 m) of fill-in lane will have no free edge, etc.). The area affected by the downward movement of the concrete along the pavement edge shall be limited to not more than 18 inches (0.5 m) from the edge.

**When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump will be removed the full width of the slip form lane and replaced at the expense of the Contractor as directed by the RPR.**





# P501 – 4.11 Finishing.

Finishing operations shall be a continuing part of placing operations starting immediately behind the strike-off of the paver. **Initial finishing shall be provided by the transverse screed or extrusion plate.** The sequence of operations shall be transverse finishing, longitudinal machine floating if used, straightedge finishing, edging of joints, and then texturing. ~~Finishing shall be by the machine method. The hand method shall be used only on isolated areas of odd slab widths or shapes and in the event of a breakdown of the mechanical finishing equipment.~~ **Supplemental hand finishing for machine finished pavement shall be kept to an absolute minimum.** **Any machine finishing operation which requires appreciable hand finishing, other than a moderate amount of straightedge finishing, shall be immediately stopped and proper adjustments made or the equipment replaced.** Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Compensation shall be made for surging behind the screeds or extrusion plate and settlement during hardening and care shall be taken to ensure that paving and finishing machines are properly adjusted so that the finished surface of the concrete (not just the cutting edges of the screeds) will be at the required line and grade. Finishing equipment and tools shall be maintained clean and in an approved condition. At no time shall water be added to the surface of the slab with the finishing equipment or tools, or in any other way. Fog (mist) sprays or other surface applied finishing aids specified to prevent plastic shrinkage cracking, approved by the RPR, may be used in accordance with the manufacturers requirements.



# P501 – 4.11 Finishing.

**c. Other types of finishing equipment.** Clary screeds, other rotating tube floats, or bridge deck finishers are not allowed on mainline paving, **but may be allowed on irregular or odd-shaped slabs, and near buildings or trench drains, subject to the RPR's approval.**

Bridge deck finishers shall have a minimum operating weight of 7500 pounds (3400 kg) and shall have a transversely operating carriage containing a knock-down auger and a minimum of two immersion vibrators. **Vibrating screeds or pans shall be used only for isolated slabs where hand finishing is permitted as specified, and only where specifically approved.**



# P501 – 4.11 Finishing.

- **d. Hand finishing.** Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade and (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical.



# 501-4.12 Surface texture.

4.12 Surface texture. The surface of the pavement shall be finished as designated below for all newly constructed concrete pavements. It is important that the texturing equipment not tear or unduly roughen the pavement surface during the operation. The texture shall be uniform in appearance and **approximately 1/16 inch (2 mm) in depth**. Any imperfections resulting from the texturing operation shall be corrected to the satisfaction of the RPR.







# Construction Concerns

Let us talk stock pile management



Federal Aviation  
Administration

# Construction Concerns

## Sawing



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# Questions



# Thank You

## Questions / Discussion

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