Approved Modifications to AC 150/5370-10

Central Region

09-24-2019

This regional guidance provides modifications to Advisory Circular 150/5370-10H, Standards for Specifying Construction of Airports, which account for materials and conditions unique to the Central Region. These modifications are the result of local weather and climatic conditions and represent the accepted materials and products used to obtain quality construction within the FAA Central Region. The appendix includes sample specifications for Recycled Aggregate Base Course, Hot Mix Asphalt (HMA) – State Mix and Portland Cement Concrete Pavement (PCC) – State Mix.

# These current modifications supersede all previous editions. Inclusion of these modifications in all development project specifications is required within the Central Region, and therefore do not require a separate Sponsor request for approval of modification to standards. All other Sponsor initiated modifications to standards, including omission of the regional modifications, must be submitted to Central Region for review and approval prior to use. Refer to Central Region AIP Guidance AIP-950 Sponsor Modifications for information on requesting a Sponsor initiated modification of FAA standards.

Please contact Dan Wilson at (816) 329-2643 if you have any questions regarding this guidance.

**Index of Revisions**

| **Revision No.** | **Date** | **Sections/Paragraphs** | **Revision** |
| --- | --- | --- | --- |
| 0 | 09/24/2019 | Original Document | Approved Regional Modifications to Revised AC 150/5370-10H |
| 1 | 2/12/2020 | P501-2.1.d, P610-2.1.a | Revision of ASR Requirements |
| 2 | 8/11/2021 | P501-2.1.c Course Aggregate Table | Revision of Note 3 for Clarification |
| 2 | 8/11/2021 | P501-4.8,4.17 and 4.18 | Revision of the 3 paragraphs for Clarification |
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Item L-125 Installation of Airport Lighting Systems

# ITEM P-219M- Recycled Bituminous Aggregate Base Course With Fly Ash

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

**NOTE TO ENGINEER:** This sample specification is intended for projects that will utilize recycling operations to reuse existing **bituminous base** course combined with existing or virgin aggregate as an aggregate base. In order to develop a stable aggregate base course the existing bituminous material should be combined with either existing aggregate base. The addition of Type C Flyash can create a very stable base course, which can be used under either HMA or PCC pavements.

Utilizing a pavement recycler to mix existing bituminous pavement with aggregate base combined with type C Fly Ash can create an economical base and reuse a valuable resource. The existing bituminous material needs to be pulverized such that the maximum particle size is 2” or less. The recycled bituminous pavement should represent no more than approximately 50% of the Recycled Bituminous Aggregate Base Course. Use of more than 50% recycled bituminous material needs to be based upon demonstration that material can be placed and compacted such that it forms a stable base. Use of > 50% recycled material may be difficult to compact, material may ‘bridge ‘over.

If existing pavement needs to be removed to facilitate re-grading of subgrade then you need to place sufficient controls on gradation of recycled pavement to assure that it will create a stable base course.

This base course is only appropriate as a subbase under light duty pavements (< 60 K)

Refer to P-219 for recycled concrete aggregate base course

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

### ITEM P-219M RECYCLED BITUMINOUS AGGREGATE BASE COURSE WITH FLY ASH

DESCRIPTION

**219M-1.1** This item consists of a base course composed of [fly ash, recycled bituminous pavement, existing aggregate base, and virgin aggregate] constructed on an existing subgrade in accordance with these specifications and in conformity to the dimensions and typical cross sections shown on the plans.

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

NOTE TO ENGINEER: This paragraph will need to be edited to include materials being used on this project

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

MATERIALS

**219M-2.1 AGGREGATE.**

The aggregate shall consist of materials produced by recycling operations on the existing bituminous runway pavement, aggregate base and subgrade. The Contractor will use the aggregate produced by the recycling operation, with the exception that in no case will material larger than 2” in any dimension be permitted to be used in the aggregate base, and no more than 50% of the material can be from the recycled bituminous pavement. All material over 2” shall be removed by the Contractor. The material will be sampled and tested by the Contractor after processing to determine the density and moisture requirements for placing and compaction of the recycled aggregate base material. See Table 1 Gradation Requirements

Recycled concrete aggregate shall consist of at least 50%, by weight, cement concrete; virgin aggregates may be added to meet the 50% minimum concrete requirement. The remaining 50% may consist of the following materials:

|  |  |  |  |
| --- | --- | --- | --- |
| **Deleterious Materials Material** | | **Quantity** | |
| Wood | | 0.1% maximum | |
|  | |  | |
| Brick, mica, schist, or other friable materials | | 4% maximum | |
|  | |  | |
|  | |  | |
| Asphalt concrete | | 45.9% maximum | |
|  | |  | |
| Total | | 50 % maximum | |

Table 1. GRADATION REQUIREMENTS

|  |  |  |  |
| --- | --- | --- | --- |
| **Sieve Designation** | **Percentage by weight passing sieves** | | |
|  |  |  |  |
|  | **2'' maximum** | **1 1/2'' maximum** | **1''maximum** |
|  |  |  |  |
| 2 inch (50.0 mm) | 100 | -- | -- |
| 1‑1/2 inch (37.0 mm) | 70-100 | 100 | -- |
| 1 inch (25.0 mm) | 55-85 | 70-100 | 100 |
| 3/4 inch (13.0 mm) | 50-80 | 55-85 | 70-100 |
| No. 4 (4.75 mm) | 30-60 | 30-60 | 35-65 |
| No. 40 (0.45 mm) | 10-30 | 10-30 | 10-25 |
| No. 200 (0.075 mm) | 5-15 | 5-15 | 5-15 |

**219M-2.2 PRODUCT CONTROL**.

The Contractor shall handle the material in such a manner that the following requirements shall be maintained:

a. Deleterious Substances. Materials for aggregate base shall be kept free from weeds, sticks, grass, roots and other undesirable foreign matter.

b. Uniformity of Mix. The materials shall be thoroughly mixed by the Contractor in such a manner as to ensure that the final product has a uniform gradation.

c. Stockpiling. The equipment and methods used for stockpiling aggregates and for removing the aggregates from the stockpiles shall be such that no detrimental degradation or segregation of the aggregate will result, no appreciable amount of foreign material will be incorporated into the aggregate and no intermingling of the stockpiled material will occur.

**219M-2.3 SAMPLING AND TESTING.**

1. **Aggregate base materials.** The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraphs 219-2.1 and 219-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements. **[ ]**
2. **Gradation requirements.** The Contractor shall take at least **[** two**]** aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 219M-2.1. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**The Engineer may require additional sampling points for quality requirements. The Engineer shall define when additional sampling points are needed in the above paragraph. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**219M-2.4 FLY-ASH.**

Fly-ash shall meet ASTM Specification C-618, section 3.3 when sampled and tested in accordance with Sections 5, 6, and 8 unless otherwise shown on the plans. Fly ash shall be Class C containing a minimum of 25% CaO. The source of the fly ash shall be identified and approved in advance of stabilization operations in order that laboratory tests can be completed.

Fly ash shall be stored and handled in closed weatherproof containers until immediately before distribution. Temporary storage (less than 12 hours) of fly ash in pits may be allowed provided that wetting of the fly ash by rain or ground water is not allowed. Fly ash exposed to moisture prior to mixing with aggregate mixture shall be discarded.

**219M-2.5 SEPARATION GEOTEXTILE.**

**[** Not used. **] [** Separation Geotextile shall be **[** class 2 **]**, **[** 0.02 sec-1 **]** permittivity per ASTM D4491, Apparent opening size per ASTM D4751 with **[** 0.60 mm **]** maximum average roll value. **]**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**The use of a geotextile to prevent mixing of a subgrade soil and an aggregate subbase/base is appropriate for pavement structures constructed over soils with a California Bearing Ratio greater than 3.**

**Generally, on airport projects, a Class 2 geotextile with a permittivity of 0.02 and AOS of 0.6 mm will be sufficient.**

**See AASHTO M288 for additional notes regarding separation geotextiles.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**219M-2.6 WATER**.

Water used for mixing and/or curing shall be clean and fee of oil, salt, acid, alkali, sugar, vegetable or other substances injurious to the finished product. Water shall be tested in accordance with and shall meet the suggested requirements of AASHTO T26. Water known to be of potable quality may be used without testing.

CONSTRUCTION METHODS

**219M-3.1 CONTROL STRIP**.

The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor’s demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted or removed and replaced at the Contractor’s expense. Full operations shall not continue until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved by the RPR.

**219M-3.2 COLD MILLING**.

The existing bituminous pavement will be cold milled to a depth of [ ] inches below surface grade.

**219M-3.3 MIXING**.

The remaining bituminous pavement, existing aggregate base and virgin aggregate shall be uniformly blended with [\_\_% fly ash or\_\_ # pounds per square yard] and water with recycler to a depth of [\_\_\_ inches insert depth] below the milled surface. No more than 50% of the finished product should come from the recycled bituminous pavement.

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

NOTE TO ENGINEER: Recommend adding at least 10% fly ash. Depth of mixing a function of how much bituminous pavement and aggregate base is being recycled.

Best results with mixtures containing Fly Ash if compacted on the dry side of optimum.

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

**219M-3.4 PLACING**.

The recycled aggregate base course material shall remain in place on the undisturbed subgrade.

The maximum depth of a compacted layer shall be 12 inches. If the total depth of the compacted material is more than 12 inches, it shall be constructed in two or more layers. In multi-layer construction, the base course shall be placed in approximately equal depth layers. Prior to placing the next layer the, previously constructed layer shall be cleaned of loose and foreign material prior to placing the next layer

**219M-3.5 COMPACTION**.

Immediately upon completion of the spreading operations, the recycled aggregate shall be thoroughly compacted. The number, type and weight of rollers shall be sufficient to compact the material to 95% of density as determined by ASTM D1557.

The moisture content of the material during compaction shall be within -2% -0% of the optimum moisture content.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE TO SPECIFIER: If proof rolling to be required, one needs to make appropriate selections to define what equipment will be used to perform proof rolling, if size of proof roller not defined then contractor could proof roll with an empty truck or with low tire pressure both of which will alter results. Just saying ‘proof roll’ subgrade is not sufficient, without specifying size of equipment and what is acceptable results.

Delete paragraph 207-3.4.1 if not required

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***.**

**219M-3.4.1 Proof Rolling**

Proof Rolling Compacted base course shall be proof rolled with a [Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80 psi]] [ [\_\_ ton Proof Roller with tires spaced not more than 32” o.c with tires inflated to [100/125/150 psi] in the presence of the [Soils Engineer / Engineer]. Soft areas of subgrade that deflect > 1” or show permanent deformation > 1” shall be removed and reworked

**219M-3.5 ACCEPTANCE**.

Aggregate base course shall be accepted for density on a lot basis. A lot will consist of one day’ production not to exceed [1000] square yards (square meters). A lot will consist of one half day’s production where a day’s production is expected to consist of 1000 to 2000 square yards.

Each lot shall be divided into four equal sub-lots. Two tests shall be made for each sub-lot. Sampling locations will be determined by the Engineer on a random basis in accordance with ASTM D 3665.

Each lot will be accepted for density when the field density is at least 95% of the maximum density of laboratory specimens prepared from samples of the base course material in accordance with ASTM D 1557.

When nuclear gages are to be used for density determination, testing shall be in accordance with Section 120.

The moisture content of the material during compaction shall be from -2% to 0% of the optimum moisture content as determined by ASTM D 698.

**219M-3.6 WEATHER LIMITATIONS.**

Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

**219M-3.6 MAINTENANCE.**

The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at their expense.

**219M-3.7 SURFACE TOLERANCES.**

After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and recompacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor’s expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

1. **Smoothness.** The finished surface shall not vary more than 3/8-inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.
2. **Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +0 and 1/2 inch (12 mm) of the specified grade.

**219M-3.8 ACCEPTANCE SAMPLING AND TESTING FOR DENSITY.**

Recycled Concrete Aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each **[** 1200 square yds (1000 m2) **]**. Sampling locations will be determined on a random basis per ASTM D3665

**a. Density.** The **[** RPR shall perform all density tests **] [** Contractor’s laboratory shall perform all density tests in the RPR’s presence and provide the test results upon completion to the RPR for acceptance **]**.

Each area shall be accepted for density when the field density is at least **[** 100% **]** of the maximum density of laboratory specimens compacted and tested per ASTM **[** 1557 **] [** D698 **]**. The in-place field density shall be determined per **[** ASTM D1556. **] [** or **] [** ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. **]**. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**The Engineer may specify ASTM D698 or ASTM D1557 for areas designated for aircraft with gross weights of less than 60,000 pounds (27200 kg). The Engineer shall specify ASTM D1557 for areas designated for aircraft with gross weights of 60,000 pounds (27200 kg) or greater.**

**The Engineer may adjust the testing area as appropriate to the job size.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**b. Thickness.** Depth tests shall be made by test holes at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**The Engineer may modify the above thickness control paragraph to permit the thickness determination by survey. Survey shall be required before and after placement of the base. The survey interval should be specified based on the size of the project.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

METHOD OF MEASUREMENT

**219M-4.1** The quantity of recycled aggregate base course to be paid for will be determined by measuring the number of square yards of material constructed and accepted by the Engineer as being in compliance with plans and specifications.

**[219M-4.2** Separation geotextile shall be measured by the number of **[** square yards **] [** square meters **]** of materials placed and accepted by the RPR as complying with the plans and specifications excluding seam overlaps and edge anchoring. **]**

BASIS OF PAYMENT

**219M-5.1** Payment shall be made at the contract unit price per square yard for recycling the existing bituminous pavement, aggregate base course, subgrade and mixing with flyash, spreading and compacting the recycled material to the compacted thickness as indicated on the drawings. This price includes all of the necessary handling to move the material to the areas for spreading and compacting as well as stockpiling of any excess material. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools and incidentals to complete the item. Payment will be made under:

[ **219M-5.2** Payment shall be made at the contract unit price per [ square yard ] [ square meter ] for separation geotextile. The price shall be full compensation for furnishing all labor, equipment, material, anchors, and incidentals necessary. ]

Payment will be made under:

Item P-219-5.1 Recycled Concrete Aggregate Base Course per square yard (square meter)

**[** Item P-219-5.2 Separation Geotextile per **[** square yard **] [** square meter **] ]**

**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.

ASTM International (ASTM)

ASTM C29 Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C117 Standard Test Method for Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

ASTM C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C136 Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregate

ASTM D75 Standard Practice for Sampling Aggregates

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2700 kN-m/m3))

ASTM D2419 Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate

ASTM D3665 Standard Practice for Random Sampling of Construction Materials

ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D4643 Standard Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Heating

ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

**END OF ITEM P-219M**

**ITEM P-401, Plant Mix Bituminous Pavements**

**401-2.3**, The following PG Grades are recommended

Iowa

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 58/-28 | 64/-28 |
| S | 64/-28 | 70/-28 |

Kansas

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-22 | 70/-22 |

Missouri

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-22 | 70/-22 |

Nebraska

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-28 | 70/-28 |

**401-3.3 Table 2:** For all gradations, change the allowable range for material passing the No. 200 sieve from “3-6” to “0-4”

# ITEM P-403 BASE and LEVELING COURSES

**403-2.3**: Add the following to the note to the engineer:

**Iowa**

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 58/-28 | 64/-28 |
| S | 64/-28 | 70/-28 |

**Kansas**

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-22 | 70/-22 |

**Missouri**

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-22 | 70/-22 |

**Nebraska**

|  |  |  |
| --- | --- | --- |
| Region | <60K | >60K |
| N | 64/-28 | 70/-28 |
| S | 64/-28 | 70/-28 |

# ITEM P-501 Cement Concrete Pavement

**501-2.1.a Reactivity (1)**: Remove “Coarse aggregate and fine aggregate shall be tested separately in accordance with ASTM 1260, however, the length of test shall be extended to 28 days (30 days from casting). Tests must have been completed within 6 months of the date of the concrete mix submittal.”

Replace with “Coarse aggregate and fine aggregate shall be tested separately in accordance with ASTM 1260. Tests must have been completed within 12 months of the date of concrete mix submittal.”

501-2.1.c Table “**Coarse Aggregate Material Requirements”**

Note 3 – Remove existing note and replace with “[ 3 Coarse aggregate may only be accepted from sources that have a 20-year service history for the same gradation to be supplied with no history of D-Cracking. The aggregate supplier must certify the ***20-year service history and include surveillance documentation from a State DOT for at least 20 years.  Documentation from the DOT should include an aggregate gradation that matches the gradation used in the project mix design.*** Aggregates that do not have a 20-year record of service free from major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless the material currently being produced has a durability factor greater than or equal to 95 per ASTM C666. The Contractor shall submit a current certification and test results to verify the aggregate acceptability. Test results will only be accepted from a State Department of Transportation (DOT) materials laboratory or an accredited laboratory. Certification and test results which are not dated or which are over one (1) year old or which are for different gradations will not be accepted.  ***State DOT tests are not considered to be a sufficient substitution for ASTM 666.*** ]”

**501-4.8 Concrete Placement. REMOVE THE FOLLOWING STATEMENT FROM PARAGRAPH “**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.”

REPLACE WITH “For public and construction traffic after placement and before acceptance see 501-4.17 Protection of pavement and 501-4.18 Opening to construction traffic.”

**501-4.17 Protection of pavement. Remove all of existing 4.17 and replace with “**The Contractor shall protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor’s employees and agents until accepted in writing by the RPR. This shall include watchmen to direct traffic and the erection and maintenance of warning signs, lights, pavement bridges, crossovers, and protection of unsealed joints from intrusion of foreign material, etc. Any damage to the pavement occurring prior to final acceptance shall be replaced at the Contractor’s expense. Slabs shall be removed to the full depth, width, and length of the slab. The replacement slabs shall be doweled and tied at the direction of the RPR.

Aggregates, rubble, or other similar construction materials shall not be placed on airfield pavements.

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 is responsible for the verification testing and costs associated with that testing. The Contractor must determine, with the use of FAARFIELD, that the above minimum strengths are adequate for the protection of the pavement from overloads due to the construction equipment proposed for the project. The testing results and the overload protection calculations shall be approved in writing by the RPR prior to any traffic being allowed on new pavement.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Commas are to read as “and” statements**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

In paving intermediate lanes between newly paved pilot lanes, operation of the hauling and paving equipment will be permitted on the new pavement only after the pavement has met the above criteria, and the slab edge is protected."

**501-4.18 Opening to construction traffic. Remove all of existing 4.18 and replace with “**The pavement shall not be opened to any traffic until the pavement has met the requirements of 4.17. If such tests are not conducted, the pavement shall not be opened to traffic until accepted by the RPR. Prior to opening the pavement to any traffic, all joints shall either be sealed or protected from damage to the joint edge and intrusion of foreign materials into the joint. As a minimum, backer rod or tape may be used to protect the joints from foreign matter intrusion. All new and existing pavement carrying any traffic or equipment shall be kept clean and spillage of concrete and other materials shall be cleaned up immediately.”

# ITEM P-610 Concrete for Miscellaneous Structures

**610-2.1.a Reactivity**: Remove “Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260.”

Replace with “Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within twelve months of the project in accordance with ASTM C1260.”

**ITEM T-901 SEEDING**

**901.3-4 Maintenance of Seeded Are**a: Add the following note to Engineer:

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“**Note to Specifier**:   
For projects involving runway safety areas, supplement this section to include provisions for the contractor to immediately (e.g. 48 hour response time) address erosion, washout and surface irregularities within the runway safety area once the runway is re-opened for aircraft operations. The runway safety area grading must be met at all times when the runway is open to aircraft operations.   
  
Designers are encouraged to investigate installation of an 18” wide sod strip or a 48” wide excelsior blanket next to the runway pavement edge to limit erosion due to sheet flow of storm water off the pavement edge.”

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### BASIS OF PAYMENT

**125-5.1** Payment will be made at the Contract unit price for each complete runway or taxiway light, guidance sign, reflective marker, runway end identification light, precision approach path indicator, or abbreviated precision approach path indicator installed by the Contractor and accepted by the Engineer. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

L-850A Runway Centerline Light - each

L-850B Runway Touchdown Zone Light - each

L-850C Runway Edge Light - each

L-850D Runway Threshold/End Light - each

L-850E Medium Intensity Approach Light - each

L-850F Land and Hold Short Light - each

L-852A Taxiway Centerline Light - each

L-852B Taxiway Centerline Light - each

L-852C Taxiway Centerline Light - each

L-852D Taxiway Centerline Light - each

L-852E Taxiway Intersections Light - each

L-852F Taxiway Intersections Light - each

L-852G Runway Guard Light - each

L-852S Stop bar Unidirectional Light - each

L-852T Taxiway Edge Light - each

L-804 Runway Guard Light - each

L-861 Runway Edge Light - each

L-861E Runway Threshold/End Light - each

L-861SE Runway Threshold/End Light - each

L-861T Taxiway Edge Light - each

L-862 Runway Edge Light - each

L-862E Runway Threshold/End Light - each

L-862S Stop bar Light - each

L-858Y Direction/Destination Sign - each

L-858R Mandatory Sign - each

L-858L Location Sign - each

L-858B Runway Distance Remaining Sign - each

L-849 Runway Edge Identifier Light - each

L-880 Precision Approach Path Indicator - each

L-881 Abbreviated Precision Approach Patch Indicator - each

**MATERIAL REQUIREMENTS**

AC 150/5345-5 Circuit Selector Switch

AC 150/5345-26 L-823 Plug and Receptacle, Cable Connectors

AC 150/5345-28 Precision Approach Path Indicator (PAPI) Systems

AC 150/5345-42 Airport Light Bases, Transformer Houses, Junction Boxes and Accessories

AC 150/5345-44 Taxiway and Runway Signs

AC 150/5345-46 Runway and Taxiway Light Fixtures

AC 150/5345-47 Isolation Transformers for Airport Lighting Systems

AC 150/5345-51 Discharge-Type Flasher Equipment