



U. S. Department  
of Transportation  
**Federal Aviation  
Administration**

Great Lakes Region  
Illinois, Indiana, Michigan  
Minnesota, North Dakota,  
Ohio, South Dakota,  
Wisconsin

2300 East Devon Avenue  
Des Plaines, Illinois 60018

Policy and Procedures Memorandum-Airports Division

NUMBER: 5370.4A

DATE: April 22, 1999

SUBJECT: Material Testing During Construction for Airport Development  
Projects Involving Federal Investment Funds.

CANCELLATION: PPM 5370.4, dated October 1, 1990

REFERENCES: AC 150/5370-10, Standards for Specifying Construction of  
Airports, dated February 17, 1989.

OIG Final Report No. R5-FA-9-129, Airport Construction  
Materials Conformance in FAA Great Lakes Region, dated  
August 7, 1989

Program Guidance Letter 92-4, dated April 20, 1992

APPENDICES: 1. - Changes from Prior PPM 5370.4, dated October 1, 1990

2. - Background and Basis for PPM 5370.4A

3. - Special Condition for Pavement Projects in Excess of  
\$250,000.00.

4. - Testing Laboratory Accreditation Requirement, AGL-620  
Memorandum, dated August 27, 1997

1. Background:

a. On August 7, 1989, the Office of Inspector General (OIG) submitted a report assessing the FAA's monitoring and control over the use of airport construction standards and compliance with contract paving material and testing requirements. The overall objective of this audit was to determine if sponsor acceptance procedures, approved by the FAA, resulted in pavements being constructed in close conformance with approved designs. Three areas were identified in which potential improvement might be appropriate and are listed in Appendix 2.

b. Based on its findings, the OIG made recommendations that are set forth in Appendix 2.

Distribution: AGL-600/601/602/610/620  
BIS-ADO/CHI-ADO/DAET-ADO/MSP-ADO  
ALL STATE AVIATION DIRECTORS (FOR INFORMATION THRU ADO)

Originated by: AGL-620

2. Policy/Procedures. In response to the OIG Audit on Airport Construction Materials Conformance, FAA, on a national basis, agreed to require certain additional procedural measures pursuant to sponsor certifications to ensure improved adherence to quality control.

a. Control Over Construction Contract Standards.

(1) The sponsor will be required to take necessary steps to ensure the use of FAA standards and acceptance testing procedures are understood and properly implemented by consultants, testing firms, and contractors.

(2) Use of FAA standards and acceptance testing procedures will be emphasized at predesign conferences and sponsor-consultant seminars. Sponsor certification will identify (or include by reference) appropriate pay reduction, lot size, and testing provisions, consistent with FAA standards. The Sponsor will certify that the required test provisions have been included in contract specifications. The FAA (See PPM 5320.1) must approve any exceptions.

(3) Sponsors must develop and carry out a construction management program for all grant agreements which contain pavement projects (total pavement structure, including subgrade, subbase, base, and surface courses) estimated to cost in excess of \$250,000.00 (See Appendix 3). This plan shall detail the measures and procedures to be used to comply with the quality control provisions of the construction contract, including, but not limited to, all quality control provisions and tests required by the Federal specifications. As a minimum, the program shall include:

(a) The name of the person representing the sponsor, who has overall responsibility for contract administration of the project and the authority to take necessary actions to comply with the contract.

(b) Names of testing laboratories and consultant engineering firms with quality control responsibilities on the project, together with a description of the services to be provided.

(c) Procedures for determining that testing laboratories meet the requirements of the American Society of Testing and Materials (ASTM) standards on laboratory evaluation referenced in the contract specifications (D3666, C1077), or other testing laboratory requirements approved by FAA (See Appendix 4.)

(d) Qualifications of engineering supervision and construction inspection personnel.

(e) A listing of all tests required by the contract specifications, including the type and frequency of tests to be taken, the method of sampling, the applicable test standard, and the acceptance criteria or tolerances permitted for each type of test.

(f) Procedures for ensuring that the tests are taken in accordance with the program; they are documented daily; and the proper corrective actions, where necessary, are undertaken.

(4) FAA project managers will accept the sponsor's certifications or, if the sponsor refuses to provide a certification, review the sponsor's contracts to assure inclusion of appropriate pay reduction, lot size, and testing provisions.

b. Control Over Contract Compliance Relevant to the Sufficiency of Material Testing Requirements.

(1) The sponsor or his agent will be required to take necessary actions to ensure that during construction all required tests are accomplished and performed in accordance with contractual agreements.

(2) The sponsor or his agent will require a Contractor Quality Control Program in accordance with the General provisions, Section 100 of AC 150/5370-10A for all pavement projects in excess of \$250,000.00.

(3) The sponsor or his agent, at completion of the project, shall prepare a final test and quality control report documenting the results of all tests performed, highlighting those tests that failed or did not meet the applicable test standards. The report shall include the pay reductions applied.

(4) Upon project completion, the sponsor is required to identify and summarize the total amount and value of accepted material that was not fully tested in accordance with contractual agreements. At the time of final project evaluation, the ADO project manager may ask to see the test reports, if he deems it is necessary.

(5) The sponsor or his agent is required to provide explanations or justifications for accepting material without fulfilling the contractual testing requirements in the final project closeout report. During the construction phase of a project, close coordination between the sponsor and the resident engineer will be required to assure the necessary approvals are issued. Decisions made and concurrence given should be well documented. At the time of final Federal evaluation, the ADO projects manager may ask to see this documentation in addition to the final project closeout report.

(6) Occasionally, FAA has concurred in the Sponsor's acceptance of material, in a project involving Federal investment, that was not fully tested in accordance with contractual agreements. In these cases, it must be justified and documented (in summary) in the Sponsor's final project closeout report. The material must be noted, in detail in sponsor records, as fully tested, if alternative methods of acceptance have been established and approved.

(7) FAA projects managers may review, for participation purposes, final project closeout reports, containing the sponsor-provided summaries of material, that was not fully tested.

Note: Project records are required to be maintained by the sponsor for 3 years after the project has been completed (49 CFR 18, section 18.42).

(8) Failure to provide a complete report, as described in paragraphs 3, 4, & 5, or failure to provide for required tests, shall, absent any compelling justification, result in reduced Federal participation in construction costs of the applicable pavement. Such reduction shall be at the discretion of the FAA and will be based on the type or types of required tests not performed or not documented. It will be commensurate with the proportion of applicable pavement to the total pavement constructed under the grant agreement.

(9) FAA projects managers will document their findings and actions taken to assure compliance with the grant agreement via normal final project closeout. It is the responsibility of the sponsor to document material testing findings and actions taken, and to summarize these in the final project closeout report.

c. Control Over Contract Compliance Relevant to Out-of-Tolerance Test Results.

(1) The sponsor or his agent will monitor all projects and be available to resolve any problems, as they develop, to minimize the amount of out-of-tolerance material.

(2) The sponsor will identify and summarize the total amount and value of accepted out-of-tolerance material in the final project closeout report. FAA projects managers will emphasize this requirement for all future projects. The summary information will be required for review by the FAA projects managers at the time of the final evaluation and closeout.

(3) The sponsor will document explanations or justifications for accepting out-of-tolerance material, as well as any actions taken in response to these test results. The basis for accepting out-of-tolerance material will be justified by the sponsor's resident engineer and approved by the sponsor.

(4) FAA projects managers, when performing a project evaluation may:

(a) Review the reported summaries of out-of-tolerance pavement material. They may also review detailed records to verify out-of-tolerance materials that have been allowed by the sponsor or his agent.

(b) Identify and report to the sponsor any observed unsatisfactory sponsor supervision and inspection of material testing that may require correction.

(c) Require the sponsor to document FAA findings and sponsor follow-up actions taken to assure compliance with the grant agreement. It is the responsibility of the sponsor to document findings and actions with regard to the acceptability of materials and to report these to the FAA projects manager in the final project closeout report.

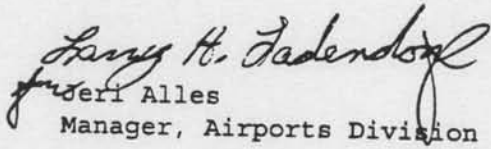
(d) Conduct independent tests and to reduce grant payments accordingly, if such independent tests determine that sponsor's tests results are inaccurate.

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(5) FAA projects managers will advise airport sponsors that payment reduction provisions in pavement specifications will be appropriately enforced. If the sponsor fails to apply reductions in payment, the FAA may nevertheless apply the penalties to the sponsor.

(6) Project managers will continue to emphasize the above measures to grant recipients for pavement projects in excess of \$250,000. The reporting of such measures is also required as a special condition for grants that contain paving work estimated in excess of \$250,000.00 (See Appendix 3.)

  
Teri Alles  
Manager, Airports Division

April 22, 1999

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Appendix 1.

APPENDIX 1. - CHANGES FROM PRIOR PPM

1. The information contained in Program Guidance Letter 92-4, dated April 20, 1992 has been incorporated into the PPM.
2. AGL-620 memorandum, dated August 27, 1997, concerning testing laboratory accreditation requirements has been included in the PPM.
3. The web sites of the national accreditation authorities have been included to facilitate verification of testing firm status.

APPENDIX 2. BACKGROUND AND BASIS FOR PPM 5370.4A

On August 7, 1989, the Office of Inspector General (OIG) submitted a report assessing the FAA's monitoring and control over the use of airport construction standards and compliance with contract pavement material and testing requirements. The overall objective of this audit was to determine if sponsor acceptance procedures, approved by the FAA, resulted in pavements being constructed in close conformance with approved designs. The following three problem areas were identified:

a. All six of the pavement construction contracts established minimum material or testing standards which were allegedly less stringent than the quality control standards established in FAA's advisory circulars. The OIG attributed this to the FAA's inadequate monitoring and control over the contract review and/or certification process. In the OIG's opinion, these contract omissions and ambiguities diminished reasonable assurances that the pavement would meet acceptable quality level standards.

b. About \$4.1 million (48.8 percent) of the pavement material reviewed was not deemed fully tested in accordance with the contractual agreements. Of this amount, \$2.9 million was unresolved because sponsors failed to perform concrete thickness tests, with which pay reduction provisions were associated. This was attributed by the OIG to the FAA's inadequate visibility and control over the pavement material, which was allegedly often accepted without being fully tested. Accordingly, the OIG further believed the FAA did not have proper assurance that the associated pavement material conformed to the contract specifications and minimum quality levels needed to achieve a full service life.

c. At least \$890,000 (10.6 percent) of the pavement material reviewed was reported not to comply with one or more of the contractual standards, i.e., out-of-tolerance material. The use of out-of-tolerance material was attributed by the OIG to the FAA's inadequate visibility and control over the pavement material. Accordingly, the OIG believed the FAA did not have proper assurance that the accepted out-of-tolerance material would not result in premature failures, reductions in expected service life, and/or increased maintenance costs.

Note: The FAA Great Lakes Region did not concur with the OIG's opinion in any of the above cases, a thru c; i.e., that the deficiencies are necessarily indicative of defective material, that reasonable assurances were lacking, or that inadequate visibility or control was present.

Based on its findings, the OIG made the following recommendations:

a. Control Over Construction Contract Standards

(1) Require that the sponsors (i) provide contract certifications that specifically identify appropriate pay reduction, lot size, and testing provisions, which comply with FAA's published standards, or (ii) provide a written explanation as to why such provisions were not used.

(2) Require that the FAA engineers review the sponsors' certifications or contracts to assure that these documents have specifically addressed appropriate pay reduction, lot size, and testing provisions.

(3) Require FAA engineers, when accepting certifications, to review the contracts to verify they are in accordance with FAA standards.

NOTE: Prudent resource management does not require review of sponsor contracts, but promotes acceptance of certification.

b. Control Over Material Testing Requirements

(1) Require each sponsor to identify and summarize the total amount and value of accepted material that was not fully tested in accordance with contractual agreements.

(2) Require each sponsor to provide explanations or justifications for accepting material without fulfilling the contractual testing requirements.

(3) Require FAA inspectors, when performing an inspection, to (i) review the reported summaries of pavement material which was not fully tested, (ii) identify and report any unsatisfactory sponsor supervision and inspection of material testing, and (iii) document their findings and actions taken (on the inspection report) to assure that material testing is performed in accordance with contractual standards.

(4) Require sponsors to complete thickness acceptance tests for the \$2.9 million in untested concrete. Where tests are completed, apply contract pay reductions for failed thickness tests, if any. If tests are not completed, recover the Federal share of unresolved costs. (This item was handled separately).

c. Control Over Out-of-Tolerance Test Results

(1) Require each sponsor to identify and summarize the total amount and value of accepted out-of-tolerance material.

(2) Require each sponsor to provide explanations or justifications for accepting out-of-tolerance material, as well as any actions taken in response to these test results.

(3) Require FAA inspectors, when performing an inspection, to (i) review the reported summaries of out-of-tolerance pavement material, (ii) identify and report any unsatisfactory sponsor supervision and inspection of material testing, and (iii) document their findings and actions taken (on the inspection report) to assure that installed material complies with contractual standards.



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(4) Advise the sponsors that when computing Federal-aid participation, the total eligible project cost should be reduced by the amount of pay reductions that would have resulted from an enforcement of the contract specifications.

(5) Recover the federal share of \$37,500 for pay reductions that were warranted but not imposed (asphalt density).

Note: The OIG agreed to drop this item based on our documentation.

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Appendix 3

APPENDIX 3. SPECIAL CONDITION FOR PAVEMENT PROJECTS  
IN EXCESS OF \$250,000.00

This special condition is applicable to all new grant offers that contain paving work in excess of \$250,000.00. Pavement refers to the total pavement structure including subgrade, subbase, base, and surface course. The special condition is as follows:

The sponsor agrees to perform the following:

1. Furnish a construction management program to FAA prior to the start of construction, which shall detail the measures and procedures to be used to comply with the quality control provisions of the construction contract, including, but not limited to, all quality control provisions and tests required by the Federal specifications. The program shall include as a minimum:
  - a. The name of the person representing the sponsor, who has overall responsibility for contract administration of the project and the authority to take necessary actions to comply with the contract.
  - b. Names of testing laboratories and consultant engineering firms with quality control responsibilities on the project, together with a description of the services to be provided.
  - c. Procedures for determining that testing laboratories meet the requirements of the American Society of Testing and Materials standards on laboratory evaluation referenced in the contract specifications (D3666, C1077), or other testing laboratory requirements approved by FAA.
  - d. Qualifications of engineering supervision and construction inspection personnel.
  - e. A listing of all tests required by the contract specifications, including the type and frequency of tests to be taken, the method of sampling, the applicable test standard, and the acceptance criteria or tolerances permitted for each type of test.
  - f. Procedures for ensuring that the tests are taken in accordance with the program; they are documented daily; and the proper corrective actions, where necessary, are undertaken.
2. At completion of the project, submit a final test and quality control summary documenting the results of all tests performed, highlighting those tests that failed or did not meet the applicable test standard. The summary shall include the pay reductions applied and reasons for accepting any out-of-tolerance material.
3. Failure to provide a complete report, as described in paragraph 2, or failure to perform required tests, shall, absent any compelling justification, result in reduced Federal participation in construction costs of the applicable pavement. Such reduction shall be at the discretion of the FAA and

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will be based on the type or types of required tests not performed or not documented. It will be commensurate with the proportion of applicable pavement to the total pavement constructed under the grant agreement.

4. The FAA, at its discretion, reserves the right to conduct independent tests and to reduce grant payments accordingly, if such independent tests determine that sponsor test results are inaccurate.

Note: Professional and administrative costs for preparation of final project closeout reports are an eligible cost of airport development.

APPENDIX 4. - TESTING LABORATORY ACCREDITATION REQUIREMENT, AGL-620  
MEMORANDUM, DATED AUGUST 27, 1997



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Memorandum

Subject: ACTION: Implementing Specifications  
P-401 and/or P-501 and the Testing Laboratory  
Accreditation Requirement, GM 97-3

Date: **AUG 27 1997**

From: Manager, Safety/Standards Branch, AGL-620

Reply to  
Attn. of:

All ADO's  
ATTN: Manager, Airports District Office

Attached is a notice that states the position of the Great Lakes Region in regards to testing laboratory accreditation for AIP projects. This notice should be sent to all airport operators of obligated airports, consultants, and testing firms within your states. A copy should also be provided to each state director's office.

We have provided responses to the ADO comments received on the draft Guidance Memorandum, that was forwarded for review on July 22, 1997.

*Henry A. Lamberts*  
Henry A. Lamberts

Attachment

April 22, 1999

August 25, 1997

**ATTENTION AIRPORT OPERATORS, CONSULTANTS, AND  
TESTING FIRMS  
TESTING LABORATORY ACCREDITATION  
AIRPORT IMPROVEMENT PROGRAM (AIP)**

FAA issued change 4 (for Item P-401) and change 7 (for Item P-501) to Advisory Circular (AC) 150/5370-10A on July 7, 1992 and May 20, 1994 respectively. These changes require testing firms employed to develop mix design formulas and/or perform acceptance sampling and testing for plant mix bituminous or portland cement concrete pavement on airport projects be accredited by a national authority. The Great Lakes Region, on September 16, 1992, agreed to accept local and state construction standards that were previously approved by FAA until the next regular update, incorporating the new FAA standard, could be accomplished.

Since an adequate transition period has been afforded, effective October 1, 1997, all projects financed with Airport Improvement Program funds involving bituminous and concrete paving work must comply with the specifications in Advisory Circular 150/5370-10A, specifically Items P-401 and P-501. These specifications require that testing firms comply with ASTM D 3666, Standard Specifications for Agencies Testing and Inspecting Bituminous Paving Materials for Item P-401; and ASTM C 1077, Standard Practice for Laboratories Testing Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation for Item P-501.

Failure to comply with these requirements may result in loss of AIP participation in testing costs. The use of a non-accredited laboratory could also result in a loss of federal participation in the construction costs.

The FAA Great Lakes Region has accepted and will continue to accept airport owner certification that projects are constructed utilizing national standards including the use of testing firms with national credentials. We intend to audit paving projects that are advertised for bids after October 1, 1997 to verify that these national standards are included in the project specifications. Airport operators/consultants are to obtain a certification of accreditation from employed testing firms stating that the testing firm has been accredited based on compliance with ASTM D 3666 and/or ASTM C 1077. These certifications are to be retained in the project document files and be available for FAA review for a period of 3 years after completion of the project.

Attached is an initial list of testing laboratories that we understand to have national credentials at this time (See Attachment 1). Accreditation may be obtained from the National Voluntary Laboratory Accreditation Program, the American Association for Laboratory Accreditation, the AASHTO Accreditation Program, the Cement and Concrete Reference Laboratory, or any other acceptable accreditation program, in compliance with FAA national standards ( See Attachment 2).

**GREAT LAKES REGION, AIRPORTS DIVISION**

**Attachment 1**  
**August 25, 1997**

**Nationally Accredited Testing Firms in the Great Lakes Region:**

**Firms Meeting ASTM D 3666 (Required By Item P-401)**

Chicago Testing Laboratory, Inc.  
Northbrook, IL

Construction Materials Laboratory  
Sellersburg, IN

Testing Engineers & Consultants  
Troy, MI

Braun Intertec Corporation  
Minneapolis, MN

West Central Testing & Surveying  
Prinsburg, MN

Bowser-Morner, Inc.  
Dayton, OH

**Firms Meeting ASTM C 1077 (Required By Item P-501)**

STS Consultants, LTD.  
Northbrook, IL

Construction Materials Laboratory  
Sellersburg, IN

Michigan Department of Transportation  
Lansing, MI

Testing Engineers & Consultants  
Troy, MI

Braun Interec Corporation  
Minneapolis, MN

Bower-Morner, Inc.  
Dayton, OH

Bower-Morner, Inc.  
Toledo, OH

TolTest, Inc.  
Toledo, OH

**NOTE:** For a current listing of accredited testing firms see the web site address for the national accreditation authority on Attachment 2. The web site listings may not be sufficient to determine compliance with the standards and the accreditation authority may have to be contacted by phone to determine the testing firms specific areas of accreditation.

## Attachment 2 NATIONAL ACCREDITATION AUTHORITIES

1. AASHTO Accreditation Program (AAP) recognizes the competency of testing laboratories to comply with ASTM C 1077 (required by Item P-501) and ASTM D 3666 (required by Item P-401). For information regarding AAP contact:

AASHTO Material References Laboratory  
National Institute of Standards and Technology  
Building 226, Room A365  
Gaithersburg, MD 20899  
Phone: (301) 975-6704  
web site: [www.nist.gov/amrl](http://www.nist.gov/amrl)

2. The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP recognizes the competency of testing laboratories to comply with ASTM C 1077 (required by Item P-501). For information regarding NVLAP accreditation contact:

Chief, Laboratory Accreditation Program  
National Institute of Standards and Technology  
Building 411, Room A162  
Gaithersburg, MD 20899  
Phone: (301) 975-4016  
web site: <http://ts.nist.gov/nvlap>

3. The American Association for Laboratory Accreditation (AALA) recognizes the competency of testing laboratories to comply with ASTM C 1077 (required by Item P-501). For information regarding AALA accreditation contact:

American Association for Laboratory Accreditation  
Quince Orchard  
Gaithersburg, MD 20878  
Phone: (301) 644-3248  
web site: [www.a2la.org](http://www.a2la.org)

4. The Concrete Material Engineering Council (CMEC) recognizes the competency of testing laboratories to comply with ASTM C 1077 (required by Item P-501). For information regarding CMEC accreditation contact:

Construction Material Engineering Council  
3030 Dade Avenue  
Suite 100  
Orlando, FL 32804  
Phone (407) 898-1115  
web site: [www.cmec.org](http://www.cmec.org)