

PERSONAL SERVICE AGREEMENT

CO-802A REV. 2/2000 (Electronic Version)

RECEIVED 3
STATE OF CONNECTICUT
OFFICE OF THE STATE COMPTROLLER
ACCOUNTS PAYABLE DIVISION
JAN 10 2005

SPONSORED PROGRAMS

1. PREPARE 5 COPIES.
2. THE STATE AGENCY AND THE CONTRACTOR AS LISTED BELOW HEREBY ENTER INTO AN AGREEMENT SUBJECT TO THE TERMS AND CONDITIONS STATED HEREIN AND/OR ATTACHED HERETO AND SUBJECT TO THE PROVISIONS OF SECTION 4-98 OF THE CONNECTICUT GENERAL STATUTES AS APPLICABLE.
3. ACCEPTANCE OF THIS CONTRACT IMPLIES CONFORMANCE WITH TERMS AND CONDITIONS SET FORTH AT SHEET 2 OF THIS FILE, AS ATTACHED HERETO AND INCORPORATED BY REFERENCE.

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| (1) <input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> AMENDMENT | (2) IDENTIFICATION NO. 5701 |
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| CONTRACTOR | (3) CONTRACTOR NAME University of Connecticut | (4) ARE YOU PRESENTLY A STATE EMPLOYEE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| | CONTRACTOR ADDRESS Connecticut Transportation Institute Box U-37, Storrs, CT 06269 | CONTRACTOR FEIN / SSN - SUFFIX 000007301-01 -06-0772160 JEL 2-28-05 |

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|---------------------|--|------------------------|
| STATE AGENCY | (5) AGENCY NAME AND ADDRESS CT Department of Transportation, 2800 Berlin Trnprk., Newington, CT 06131-7546 | (6) AGENCY NO. 5000 |
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|------------------------|--------------------------------|-----------------------------|---|
| CONTRACT PERIOD | (7) DATE (FROM) 7/29/04 | THROUGH (TO) 4/29/05 | (8) INDICATE <input type="checkbox"/> MASTER AGREEMENT <input type="checkbox"/> CONTRACT AWARD NO. 12.13-03(04) <input checked="" type="checkbox"/> NEITHER |
|------------------------|--------------------------------|-----------------------------|---|

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| CANCELLATION CLAUSE | THIS AGREEMENT SHALL REMAIN IN FULL FORCE AND EFFECT FOR THE ENTIRE TERM OF THE CONTRACT PERIOD STATED ABOVE UNLESS CANCELLED BY THE STATE AGENCY, BY GIVING THE CONTRACTOR WRITTEN NOTICE OF SUCH INTENTION (REQUIRED DAYS NOTICE SPECIFIED AT RIGHT). | (9) REQUIRED NO. OF DAYS WRITTEN NOTICE: 60 |
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| COMPLETE DESCRIPTION OF SERVICE | (10) CONTRACTOR AGREES TO: (Include special provisions - Attach additional blank sheets if necessary.) To conduct a research study with the University of Connecticut entitled, "Correlation of Nuclear Density Readings with Cores Cut from Compacted Roadways." (See Attached Proposal.) |
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| COST AND SCHEDULE OF PAYMENTS | (11) PAYMENT TO BE MADE UNDER THE FOLLOWING SCHEDULE UPON RECEIPT OF PROPERLY EXECUTED AND APPROVED INVOICES. Maximum payment not to exceed \$77,640 for contract period. Payment shall be in accordance with the provisions of Sections 2.(C), 3.(B), 3.(C) and 3.(D). |
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|--|---------------------|-----------------------|-------------------|--|-------------------|---|----------------|---------------------------------|-----------|
| (12) ACT. CD. | (13) DOC. TYPE | (14) COMM. TYPE | (15) LSE. TYPE | (16) ORIG. AGCY. 5400 | (17) DOCUMENT NO. | (18) COMM. AGCY. | (19) COMM. NO. | (20) VENDOR FEIN / SSN - SUFFIX | |
| (21) COMMITTED AMOUNT \$77,640 | | | | (22) OBLIGATED AMOUNT \$77,640 | | (23) CONTRACT PERIOD (FROM/TO) 7/29/04 to 4/29/05 | | | |
| (24) ACT. CD. | (25) COMM. LINE NO. | (26) COMMITTED AMOUNT | (27) COMM. AGENCY | (28) COST CENTER FUND SID | (29) OBJECT | AGENCY TAIL | | | (33) F.Y. |
| | | | | | | (30) FUNCTION | (31) ACTIVITY | (32) EXTENSION | |

An individual entering into a Personal Service Agreement with the State of Connecticut is contracting under a "work-for-hire" arrangement. As such, the individual is an independent contractor, and does not satisfy the characteristics of an employee under the common law rules for determining the employer/employee relationship of Internal Revenue Code Section 3121 (d) (2). Individuals performing services as independent contractors are not employees of the State of Connecticut and are responsible themselves for payment of all State and local income taxes, federal income taxes and Federal Insurance Contribution Act (FICA) taxes.

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| ACCEPTANCES AND APPROVALS | (34) STATUTORY AUTHORITY ConnDOT 13b-4 and 13b-23 |
| (35) CONTRACTOR (OWNER OR AUTHORIZED SIGNATURE) <i>Carol Welt</i> | TITLE Carol Welt Executive Director, OSP DATE 02/11/05 |
| (36) AGENCY (AUTHORIZED OFFICIAL) <i>James M. Sime</i> | TITLE James M. Sime Manager of Research DATE 3/15/05 |
| (37) OFFICE OF POLICY & MGMT. / DEPT. OF ADMIN. SERV. <i>[Signature]</i> | TITLE _____ DATE _____ |
| (38) ATTORNEY GENERAL (APPROVED AS TO FORM) <i>[Signature]</i> | TITLE AAG DATE 3/16/05 |

DISTRIBUTION: ORIGINAL-CONTRACTOR PHOTOCOPY-COMPTROLLER PHOTOCOPY-OPM/DAS PHOTOCOPY-ATTORNEY GENERAL PHOTOCOPY-AGENCY

EXECUTIVE ORDERS

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971, and, as such, this contract may be canceled, terminated or suspended by the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Three, or any state or federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this contract. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a party hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion. The contractor agrees, as part consideration hereof, that this contract is subject to the Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner. This contract is also subject to provisions of Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, and, as such, this contract may be canceled, terminated or suspended by the contracting agency or the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Seventeen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties to this contract, as part of the consideration hereof, agree that Executive Order No. Seventeen is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the contracting agency and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to listing all employment openings with the Connecticut State Employment Service. This contract is also subject to provisions of Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, and, as such, this contract may be cancelled, terminated or suspended by the contracting agency of the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Sixteen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties to this contract, as part of the consideration hereof, agree that Executive Order No. Sixteen is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the contracting agency and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to listing all employment openings with the Connecticut State Employment Service.

I. NON-DISCRIMINATION

(a). For the purposes of this section, "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Conn. Gen. Stat. subsection 32-9n; and "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. "Good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.

For purposes of this Section, "Commission" means the Commission on Human Rights and Opportunities.

For purposes of this Section, "Public works contract" means any agreement between any individual, firm or corporation and the state or any political subdivision of the state other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the state, including but not limited to, matching expenditures, grants, loans, insurance or guarantees.

(b) (1) The Contractor agrees and warrants that in the performance of the contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation or physical disability, including, but not limited to blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut. The Contractor further agrees to take affirmative action to insure that applicants with job related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, or physical disability, including, but not limited to, blindness unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action - equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor agrees to comply with each provision of this section and Conn. Gen. Stat. subsections 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Conn. Gen. Stat. subsections 46a-56, 46a-68e and 46a-68f; (b) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this section and section 46a-56. If the Contract is a public works contract, the contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

c. Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

d. The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

e. The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Conn. Gen. Stat. subsection 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

f. The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this contract and as they may be adopted or amended from time to time during the term of this contract and any amendments thereto.

g. The Contractor agrees to follow the provisions: The contractor agrees and warrants that in the performance of the agreement such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; the contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to Section 46a-56 of the general statutes; the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and Section 46a-56 of the general statutes.

h. The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Section 46a-56 of the general statutes; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

INSURANCE

The contractor agrees that while performing services specified in this agreement he shall carry sufficient insurance (liability and/or other) as applicable according to the nature of the service to be performed so as to "save harmless" the State of Connecticut from any insurable cause whatsoever. If requested, certificates of such insurance shall be filed with the contracting State agency prior to the performance of services.

STATE LIABILITY

The State of Connecticut shall assume no liability for payment for services under the terms of this agreement until the contractor is notified that this agreement has been accepted by the contracting agency and, if applicable, approved by the Office of Policy and Management (OPM) or the Department of Administrative Services (DAS) and by the Attorney General of the State of Connecticut.

Agreement No. 12.13-03(04)

Agreement for the Research Study Entitled,

"Correlation of Nuclear Density Readings with Cores Cut from Compacted Roadways"

THIS AGREEMENT, concluded at Newington, Connecticut, by and between the State of Connecticut, Department of Transportation, Stephen E. Korta, II, Commissioner, acting herein by James M. Sime, Manager of Research, Bureau of Engineering and Highway Operations, duly authorized, hereinafter referred to as "ConnDOT", and the University of Connecticut, acting herein by

hereunto duly authorized, hereinafter referred to as the "University".

WITNESSETH THAT:

WHEREAS, in-place density of hot-mix asphalt (HMA) pavement is one of the most important factors affecting the longevity of pavement; and,

WHEREAS, improper in-place density at the time of construction will seriously shorten the service life of the pavement; and,

WHEREAS, use of the nuclear density gauge provides accurate, practical advantages for measuring the in-place density; and,

WHEREAS, in order to maximize the advantages associated with the use of density gauges and to maximize the utility of the gauges, it is imperative to determine a field procedure that results in gauge readings which correlate with core values; and,

WHEREAS, ConnDOT lacks the necessary experience and personnel to undertake this study; and,

WHEREAS, the University is well qualified to render the needed services by reason of past experience; and,

WHEREAS, ConnDOT has the authority to employ such assistance as it may require in Section 13b-10 of the General Statutes of Connecticut, as revised.

NOW, THEREFORE, KNOW YE THAT:

1. **THE UNIVERSITY AGREES TO:**

- (A) Perform the study, delineated in the attached Proposal and Work Plan, hereinafter called the "Proposal."
- (B) Provide ConnDOT with seven (7) copies of quarterly progress reports which are to be received no later than three (3) working days after the end of each calendar year quarter.
- (C) Provide ConnDOT with seven (7) copies of draft interim reports on specified tasks for review by ConnDOT and the Federal Highway Administration (FHWA). Within ninety (90) calendar days after acceptance of the interim report(s) by ConnDOT, subject to action on review commentary, one hundred and twenty (120) copies of the interim report(s) shall be furnished to ConnDOT. A set of reproducibles, as well as an electronic ADOBE™ Portable Document Format (PDF) document, used in the preparation of the interim report(s), will be provided to ConnDOT within thirty (30) calendar days after the interim report(s) is(are) delivered to ConnDOT.
- (D) At the conclusion of the study, provide ConnDOT with seven (7) copies of a draft of the final report, for review by ConnDOT and FHWA. Within ninety (90) calendar days after acceptance of the draft final report by ConnDOT, subject to action on review commentary, one hundred and twenty (120) copies of the final report shall be furnished to ConnDOT. A set of reproducibles, as well as an electronic ADOBE™ Portable Document Format (PDF) document, used in the preparation of the final report, will be provided to ConnDOT within thirty (30) calendar days after the final report is delivered to ConnDOT.
- (E) Permit ConnDOT and the FHWA to review, during normal business hours, all work performed under the terms of this Agreement at any stage of the work.
- (F) Attend conferences at locations designated by ConnDOT for consultation and discussion upon request of ConnDOT.
- (G) Submit properly executed vouchers on ConnDOT invoices (Service Transfer Invoice) for payment for a billing period not to exceed a calendar quarter.

The invoice shall indicate the total costs incurred for the billing period in accordance with the provisions of Section 2.(C)(1) herein. These vouchers shall be submitted, no later than forty-five (45) calendar days after the end of each billing period, to:

Mr. James M. Sime
Manager of Research
Connecticut Department of Transportation
280 West Street
Rocky Hill, CT 06067

- (H) Not sublet any portion of the work required for the completion of this Agreement without the prior written approval of ConnDOT. The form of the Subcontractor's Agreement shall be as developed by the University and be subject to approval by ConnDOT.
- (I) Maintain an accounting system that is adequate to segregate and accumulate reasonable, allocable and allowable costs and maintain accounts and records in accordance with generally accepted accounting principles consistently applied.
- (J) Recognize the authority for determining allowable costs under the Agreement to be OMB Circular A-21, "Cost Principles for Educational Institutions," OMB Circular A-110, "Grants and Agreements with Institutions of Higher Education, Hospitals and other Nonprofit Organizations," which are incorporated herein by reference.
- (K) Permit the authorized representatives of ConnDOT, the United States Department of Transportation and the Comptroller General of the United States to perform an annual inspection and audit of all data and records of the University relating to its performance under this Agreement.
- (L) In the event that this Agreement is terminated under the provisions of Section 3.(E), the University shall permit the authorized representatives of ConnDOT, the United States Department of Transportation, and the Comptroller General of the United States to inspect and audit all data and records of the University relating to its performance under this Agreement until the expiration of three (3) years after termination of this project under this Agreement.

The University further agrees to include in all its subcontracts hereunder a provision to the effect that the Subcontractor agrees that ConnDOT, the United States Department of Transportation and the Comptroller General of the United States, or any of their duly authorized representatives, shall, until the expiration of three (3) years after termination of the project under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such Subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes work not exceeding \$25,000.

The periods of access and examination described above, for records which relate to (1) appeals for disputes, (2) litigation of the settlement of claims arising out of the performance of this Agreement, or (3) costs and expenses of this Agreement as to which exception have been taken by ConnDOT, the Comptroller General, or any of their duly authorized representatives, shall continue until such appeals, litigation, claims, or exceptions have been disposed of.

- (M) Preserve all of its records and accounts concerning the implementation of this Agreement including, but not limited to, any records, books, or other documents relative to charges, including charges for Extra Work, alleged breaches of Agreement, settlement of claims, or any other matter involving the University's or Subcontractor's demand for compensation by ConnDOT for a period of not less than three (3) years from the date of the termination of this project under this Agreement. If any litigation, claim, or audit is started before the expiration on the three (3) year period, the records shall be retained until all litigations, claims, or audit findings involving the records have been resolved.
- (N) In the event that a transfer of funds between budget categories, contained in this Agreement, is required, the University may make cumulative transfers among direct cost categories of up to ten percent (10%) of the total approved budget, without approval of ConnDOT. Larger changes require prior approval of

ConnDOT. In no case, however, will ConnDOT be responsible for expenses in excess of the approved total amount.

2. ConnDOT AGREES TO:

- (A) Furnish the University copies of any data it may have in its possession such as, but not limited to, plans, maps, reports, aerial photos, data, publications, organizational arrangements, directives, computer tapes, etc., which the University may deem of value for use and analysis.
- (B) Arrange and hold conferences upon reasonable notice as may be necessary to the University's activities covered by this Agreement.
- (C) Pay the University, in accordance with the approved Proposal, for all work authorized by ConnDOT and performed in accordance with the terms specified herein. The University may request partial payments for work performed. These requests for payment may be submitted for a billing period not to exceed a calendar quarter and shall be made on voucher forms supplied by ConnDOT on behalf of ConnDOT. Partial payment will be made by ConnDOT, on behalf of ConnDOT, on the following basis:
 - (1) Partial payments will be equal to one hundred percent (100%) of the University's costs incurred for each billing period, in conformance with the Budget contained in the Proposal, until the cumulative total amount invoiced equals 95% of the total of the Agreement value. If an invoice is submitted which results in the cumulative total amount invoiced exceeding 95% of the total Agreement value, ConnDOT shall withhold payment of that invoice and any further invoices, in accordance with the provisions of Section 2.(C)(3).
 - (2) ConnDOT agrees to pay the University an amount not to exceed the total amount of the Budget contained in the Proposal, for the contract period, established in accordance with the provisions of Sections 1.(A) and 3.(A).

(3) Final payment will be processed following completion of all services called for in the Agreement, as well as receipt of all project deliverables. The final payment to the University shall include the amount invoiced for the final billing period plus any amount withheld on previous billings, in accordance with the provisions of Section 2.(C)(1).

3. **ConnDOT AND THE UNIVERSITY FURTHER MUTUALLY AGREE TO:**

(A) The term of this Agreement shall be from July 29, 2004, to April 29, 2005.

(B) Payments to the University for work specified shall be based upon the following dated and signed certification: "The undersigned hereby certifies that payment of the sum claimed under the cited Agreement is proper and due and that information on the fiscal report is correct and such detailed supporting information is on file, available for certification and/or audit purposes, and that all services called for by the Agreement to the date of this billing, _____, have been met."

Date

Director or Appropriate Title

Date

(C) Payrolls shall be supported by time and attendance or equivalent records for individual employees. Salaries and wages of employees chargeable to more than one grant program or other cost objective will be supported by appropriate time distribution records. The method used shall conform with O.M.B. Circular A-21, "Cost Principles for Educational Institutions," and O.M.B. Circular A-110, "Grants and Agreements with Institutions of Higher Education, Hospitals and Other Nonprofit Organizations."

(D) Specific Items Costs:

- (1) Authorized reproduction and printing (including drafts of reports), will be paid for at cost as indicated by vouchers. All costs in connection with obtaining data such as, but not limited to, plans, maps, reports, aerial photos, traffic data, publications, computer tapes, etc., will be paid for at cost.
- (2) Costs for all travel and subsistence between the University's offices, meetings as well as other trips necessary in connection with the study, will be reimbursed in accordance with the University's approved Travel Regulations and rates.
- (3) Any and all costs and expenses for work in connection with and pertinent to this Agreement as approved by ConnDOT, will be paid for at cost.
- (4) Mainframe computer charges will be based on actual machine time, whether for running programs or de-bugging new programs, and will include the cost of operators and key punchers and supervisors. Charges for outside and University computers will be reimbursed at cost. Salaries for programmers will be reimbursed as other direct salaries.
- (5) For outside consulting services, required in and provided for in the project proposal, direct reimbursement will be paid the University by ConnDOT. The Agreement between the University and the Consultant governing the Consultant services shall be approved by ConnDOT prior to execution.
- (6) To the certified payroll may be added a percentage to cover fringe payroll costs for: F.I.C.A., Health Benefits, Retirement, Longevity, Vacation, Holiday, Sick Leave, etc. Reimbursement for fringe benefits and indirect costs will be based on the rates in effect at the time expenses are incurred. The base against which each rate is applied will be that specified in the University's current Indirect Cost Agreement.
- (7) All equipment purchased with project funds, as listed below, shall remain the property of ConnDOT upon completion or termination of the study:
 - Corelok Testing Device; and,

- Coring Rig Equipment, including Generator.

All equipment not listed shall remain the property of the University upon completion or termination of the study.

(E) Termination of Work:

Either party may terminate a project Agreement upon sixty (60) days written notice to the other party. The University will immediately act to minimize project costs upon issuing or receiving such notice, and will submit to ConnDOT a report describing all work completed to date. ConnDOT will reimburse the University a percentage of the total project cost that is equal to the percentage of work completed. Upon receipt of written notification from either party that this Agreement is to be terminated, the University shall immediately cease operations on work stipulated in this Agreement and assemble all material that has been prepared, developed, furnished or obtained under the terms of this Agreement, that may be in its possession or custody and shall transmit the same to ConnDOT on or before the sixtieth (60th) day following the receipt of the written notice of termination. Said material shall include, but not be limited to, documents, plans, computations, drawings, notes, records and correspondence.

(F) Time Extensions:

ConnDOT may extend the completion dates beyond the period specified when the work has been delayed for reasons beyond the control of the University. The University may present to ConnDOT, in writing, requests for extension of allotted time for completion of work. ConnDOT will evaluate such requests and if ConnDOT determines such requests are based on valid grounds, shall grant such extension of time for completion of the work as ConnDOT deems warranted. All requests by the University for extension of time must be made ninety (90) days prior to the scheduled expiration date.

The University further agrees that no charges or claim for damages shall be made by it for any delays or hindrances from any cause whatsoever during the progress of any portion of the services specified in this Agreement. Such

delays or hindrances, if any, shall be compensated for by an extension of time for such reasonable period as ConnDOT may determine, it being understood, however, that the permitting of the University to proceed to complete any services or any part of them after the date of completion or after the date to which time of completion may have been extended, shall in no way operate as a waiver on the part of ConnDOT of any of its rights herein.

(G) The title to all products of research generated under this Agreement shall reside with the University. However, the University grants to ConnDOT member departments, the United States Government, and the general public, a non-exclusive, irrevocable, royalty-free, worldwide license in such work products to use, reproduce and prepare derivative works. The University may use any of the data, plans and reports completed under the ConnDOT program for whatever purpose and may distribute products in any way. However, the following text must appear on the inside front of any reports or publications: "This report was prepared by the University of Connecticut, in cooperation with the Connecticut Department of Transportation and the United States Department of Transportation, Federal Highway Administration. The opinions, findings and conclusions expressed in the publication are those of the author(s) and not necessarily those of the Connecticut Department of Transportation or the Federal Highway Administration. This publication is based upon publicly supported research and is copyrighted. It may be reproduced in part or in full, but it is requested that there be customary crediting of the source."

(H) Publication Provisions:

- (1) The University shall be free to copyright material developed under this Agreement with the provision that ConnDOT and FHWA reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use the work for government purposes, as specified in Section 3.(G).
- (2) No reports, articles, papers or publications may be published by the University without the written authority of ConnDOT except as provided for in the following items:

- (a) All reports, articles, papers or publications shall contain the disclaimer: "This report [article, paper or publication] does not constitute a standard, specification or regulation. The contents of this report [article, paper or publication] reflect the views of the author(s) who is(are) responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the views of the Connecticut Department of Transportation or the Federal Highway Administration."
- (b) It is anticipated that, in addition to interim and final reports that may be specified in this project Agreement, the University may wish to publish papers or articles based, in whole or in part, on information developed under this project Agreement. The University shall have the right to so publish provided the manuscript is submitted to ConnDOT for concurrence. ConnDOT will have forty-five (45) calendar days to review the manuscript. If no response is provided by ConnDOT at the end of the specified period, the University may proceed with publication. In the event of nonconcurrence by ConnDOT, the University may publish the manuscript provided the following statement is included: "The Connecticut Department of Transportation and the Federal Highway Administration do not concur with the findings and conclusions of the manuscript."

(I) Federal Requirements:

The University shall comply with the Regulations of the United States Department of Transportation (Title 49, Code of Federal Regulations, Part 21), issued in implementation of Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4, and Appendix CR attached hereto, both of which are hereby made a part of this Agreement.

(J) Patent Rights:

The terms "Invention" or "Discovery," as used herein mean any invention or discovery of the University conceived or first actually reduced to practice in

the course of or under this Agreement, and includes any art, method, process, machine or manufacture, design or composition thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

23 CFR 420.121(j) of the "State Planning and Research Program Administration, Final Rule," and 37 CFR 401.14, "Standard Patent Rights Clauses," are herein by reference made part of this Agreement.

The quarterly report required in Section 1.(B) of this Agreement shall include disclosure of potentially patentable inventions or discoveries first conceived or reduced to practice since the prior report. The University shall have title to such inventions or discoveries. The University shall have the right to file patent applications on such inventions and discoveries. The University shall give written notice of its intention to file a patent application with respect to any such discovery or invention within sixty (60) days after disclosure to ConnDOT. If the University becomes the owner of any patent with respect to any invention or discovery covered by this paragraph, it shall grant to ConnDOT, its members and the Federal Government a paid-up, royalty-free, nonexclusive, irrevocable license, with the right to sublicense to practice or have practiced for or on the behalf of governmental agencies, either Federal, State, or municipal agencies including counties and townships, or quasi-governmental agencies, the patented invention or discovery. Any royalties from sales in the private sector or outside the United States shall be assigned to the University. With respect to inventions or discoveries covered by this paragraph which are not patented or patentable, such inventions or discoveries shall be jointly owned with each party having the unrestricted right to practice or have practiced the same on its behalf.

(K) 37 CFR, Part 401, "Rights To Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," is herein by reference made part of this Agreement.

(L) ConnDOT assumes no liability for payment under the terms of a specific project Agreement until such Agreement has been approved and signed by both parties.

(M) Funding:

The University shall fund all work conducted under this Agreement in the first instance and bill ConnDOT for reimbursement. In no case will ConnDOT be liable for reimbursement of project costs in excess of the amount specified in the project Agreement.

(N) Schedule A is attached hereto and made a part of this Agreement hereof. To the extent permitted by law, ConnDOT and the University shall, as part consideration for the promises of the State, fully comply with each of the terms and conditions set forth within Schedule A. It is understood and agreed among the parties that nothing within this subparagraph of this Agreement may be construed as a waiver of or limitation upon the sovereign immunity, if any, of the University or ConnDOT.

(O) It is mutually understood and agreed by the parties hereto that any official notice from one such party to the other such party (or parties), in order for such notice to be binding thereon, shall:

(a.) be in writing addressed to:

(i) when ConnDOT is to receive such notice -

Mr. James M. Sime

Manager of Research

Connecticut Department of Transportation

280 West Street

Rocky Hill, CT 06067; or,

(ii) when the University is to receive such notice -

(1) for contractual matters:

Dr. Antje Harnisch

Coordinator, Contract Services

University of Connecticut

Office for Sponsored Programs

438 Whitney Road Extension

Unit 1133

Storrs, CT 06269-1133

(2) for fiscal matters:

Ms. Joanne Zanella-Litke, M.B.A., C.P.A.

Associate Director, Office for Sponsored Programs

University of Connecticut

Office for Sponsored Programs

438 Whitney Road Extension

Unit 1133

Storrs, CT 06269-1133

- (b.) be delivered in person or be mailed United States Postal Service - "Certified Mail" to the address recited herein as being the address of the party(ies) to receive such notice; and,
- (c.) contain complete and accurate information in sufficient detail to properly and adequately identify and describe the subject matter thereof.

The term "official notice" as used herein, shall be construed to include, but not be limited to, any request, demand, authorization, direction, waiver, and/or consent of the party(ies) as well as any document(s) provided, permitted, or required for the making or ratification of any change, revision, addition to or deletion from the document, contract, or agreement in which this "official notice" specification is contained.

Further, it is understood and agreed that nothing hereinabove contained shall preclude the parties hereto from subsequently agreeing, in writing, to designate alternate persons (by name, title, and affiliation) to which such notice(s) is (are) to be addressed; alternate means of conveying such notice(s) to the particular party(ies); and/or alternate locations to which the delivery of such notice(s) is (are) to be made, provided such subsequent agreement(s) is (are) concluded pursuant to the adherence to this specification.

(P) Any standards (i.e., test methods, specifications, guidelines, suggested practices, recommended procedures, etc.) emanating from the research project shall be forwarded to the American Association of State Highway Transportation Officials (AASHTO) for consideration and possible adoption.

During the performance of this Agreement, the Second Party, for itself, its assignees and successors in interest agrees as follows:

(1) Compliance with Regulations: The Second Party shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the United States Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Agreement.

(2) Nondiscrimination: The Second Party, with regard to the work performed by it during the Agreement, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Second Party shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the Agreement covers a program set forth in Appendix B of the Regulations.

(3) Solicitations for Subcontractors, Including Procurements of Materials

and Equipment: In all solicitations either by competitive bidding or negotiation made by the Second Party for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Second Party of the Second Party's obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

(4) Information and Reports: The Second Party shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Connecticut Department of Transportation or the appropriate Federal Agency directly involved therewith, to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a Second Party is in the exclusive possession of another who fails or refuses to furnish this information, the Second Party shall so certify to the Connecticut Department of Transportation, or the appropriate Federal Agency directly involved therewith, if appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the Second Party's noncompliance with the nondiscrimination provisions of this Agreement, the Connecticut Department of Transportation shall impose such sanctions as it or the appropriate Federal Agency directly involved therewith, may determine to be appropriate, including, but not limited to:

- (a) withholding of payments to the Second Party under the Agreement until the Second Party complies, and/or
- (b) cancellation, termination or suspension of the Agreement, in whole or in part.

(6) Incorporation of Provisions: The Second Party shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The Second Party shall take such action with respect to any subcontract or procurement as the Connecticut Department of Transportation or the appropriate Federal Agency directly involved therewith, may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a Second Party becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Second Party may request the Connecticut Department of Transportation to enter into such litigation to protect the interests of the State of Connecticut, and in addition, the Second Party may request the United States to enter into such litigation to protect the interests of the United States.

SCHEDULE A

ConnDOT AND THE UNIVERSITY MUTUALLY AGREE TO:

- (A) The University hereby acknowledges and agrees to comply with the Connecticut Required Contract/Agreement Provisions entitled, "Specific Equal Employment Opportunity Responsibilities," dated March 6, 1998, a copy of which is attached hereto and made a part hereof.
- (B) The University hereby acknowledges and agrees to comply with the policies enumerated in "Connecticut Department of Transportation Policy Statement No. F&A-10 Subject: Code of Ethics Policy," dated July 30, 2004, a copy of which is attached hereto and made a part hereof.
- (C) The University agrees that the attached "Policy Statement, Policy No. ADMIN. - 19, May 12, 2003, Subject: Policy on Disadvantaged Business Enterprise Program," is hereby made a part of this Agreement. The State advises the University that failure to carry out the requirements set forth in this Policy Statement shall constitute a breach of contract and may result in termination of this Agreement by the State or such remedy as the State deems appropriate.
- The University shall comply with this provision in accordance with the "Agreements With Goals Special Provisions Disadvantaged Business Enterprises as Subcontractors and Material Suppliers or Manufacturers For Federal Funded Projects," dated October 16, 2000, attached hereto and hereby made a part of this Agreement.
- (D) The University hereby acknowledges and agrees to comply with the policies enumerated in Administrative Memorandum No. 104, dated August 28, 1984, Re: "Procurement and Property Management of

Equipment Purchased by Construction Inspection Consultant
Engineers."

- (E) The University hereby acknowledges and agrees to comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The attached copy of the "Governmental Agency Exemption Certificate" is hereby made a part hereof.
- (F) Suspended or debarred University suppliers, materialmen, lessors or other vendors may not submit proposals for a State contract or subcontract during the period of suspension or debarment regardless of their anticipated status at the time of contract award or commencement of work.
 - (1) The signature on the Agreement by the University shall constitute certification that to the best of its knowledge and belief the University or any person associated therewith in the capacity of owner, partner, director, officer, principal investigator, project director, manager, auditor or any position involving the administration of Federal or State Funds:
 - (a.) Is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b.) Has not within a three (3) year period preceding this Agreement been convicted of or had a civil judgment rendered against him/her for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction, violation of Federal or State antitrust

statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c.) Is not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b.) of this certification and,

(d.) Has not within a three (3) year period preceding this Agreement had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the University is unable to certify to any of the statements in this certification, such University shall attach an explanation to this Agreement.

(G) The University agrees to insure that the following certification be included in each subcontract Agreement to which it is a party, and further, to require said certification to be included in any lower tier subcontracts and purchase orders:

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

- (H) This clause applies to those University who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990 ("Act"), Public Law 101-336, during the term of the Agreement. The University represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the University to satisfy this standard as the same applies to performance under this Agreement, either now or during the term of the Agreement as it may be amended, will render the Agreement voidable at the option of the State upon notice to the University.
- (I) The term "date data" as used herein shall mean any program function that utilizes data or input which includes an indication of or reference to the date. The University represents that any hardware, software, data in a computer format and/or firmware [hereinafter referred to as "product(s)"] delivered to or developed for the State shall be capable of accurately processing (including, but not limited to, calculating, comparing and sequencing) date data from, into and/or between the twentieth and twenty-first centuries, including leap year calculations, when used in accordance with the purpose for which the State intends to use the product(s). Such processing shall employ an expanded character format using at least eight digits in the date fields, but shall not be based upon a sliding scale format or increase the processing time of the product(s). The accurate processing of date data by such product(s) from, into and/or between the twentieth and twenty-first centuries, including leap year calculations, shall hereinafter be referred to collectively as "Year 2000 compliant." In addition, said product(s) delivered to or developed for the State shall be capable of accurately

processing date data throughout the twenty-first century, as well as from, into and/or between centuries.

(J) Violence in the Workplace Prevention:

This contract is subject to the provisions of Executive Order No. 16 of Governor John G. Rowland, promulgated August 4, 1999 and, as such, the contract may be cancelled, terminated or suspended by the state for violation of or noncompliance with said Executive Order No. 16. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. 16 is incorporated herein by reference and made a part hereof. The parties agree to abide by such Executive Order.

(K) This Agreement shall be governed, interpreted and construed under and in accordance with the laws of the State of Connecticut, whether or not its conflict of laws principles would dictate otherwise. This Agreement shall be deemed to have been made in Hartford, Connecticut.

The University irrevocably consents with respect to any claims or remedies at law or in equity, arising out of or in connection with this Agreement to the jurisdiction of the Connecticut Superior Court (except as otherwise required by law or that Agreement), and, with respect to any claim between the Parties, to venue in Judicial District of Hartford-New Britain at Hartford or the United States Federal Court, District of Connecticut, and irrevocably waives any objections that it may have to such jurisdiction on the grounds of lack of personal jurisdiction of such court or the laying of venue of such court or on the basis of forum non conveniens or otherwise. Nothing herein shall be construed to waive any of the State's immunities.

consideration hereof, agree that said Executive Order No. 16 is incorporated herein by reference and made a part hereof. The parties agree to abide by such Executive Order.

STATE OF CONNECTICUT
BY HIS EXCELLENCY
THOMAS J. MESKILL
GOVERNOR
EXECUTIVE ORDER NO. THREE

WHEREAS, sections 4-61d (b) and 4-114a of the 1969 supplement to the general statutes require nondiscrimination clauses in state contracts and subcontracts for construction on public buildings, other public works and goods and services and

WHEREAS, section 4-61e (c) of the 1969 supplement to the general statutes requires the labor department to encourage and enforce compliance with this policy by both employers and labor unions, and to promote equal employment opportunities, and

WHEREAS, the government of this state recognizes the duty and desirability of its leadership in providing equal employment opportunity, by implementing these laws,

NOW, THEREFORE, I, THOMAS J. MESKILL, Governor of the State of Connecticut, acting by virtue of the authority vested in me under section twelve of article fourth of the constitution of the state, as supplemented by section 3-1 of the general statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The labor commissioner shall be responsible for the administration of this Order and shall adopt such regulations as he deems necessary and appropriate to achieve the purposes of this Order. Upon the promulgation of this Order, the commissioner of finance and control shall issue a directive forthwith to all state agencies, that henceforth all state contracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a provision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be cancelled, terminated or suspended by the labor commissioner for violation of or noncompliance with this Order or state or federal laws concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to such contract or subcontract.

II

Each contractor having a contract containing the provisions prescribed in section 4-114a of the 1969 supplement to the general statutes, shall file, and shall cause each of his subcontractors to file, compliance reports with the contracting agency or the labor commissioner, as may be directed. Such reports shall be filed within such times and shall contain such information as to employment policies and statistics of the contractor and each subcontractor, and shall be in such form as the labor commissioner may prescribe. Bidders or prospective contractors or subcontractors may be required to state whether they have participated in any previous contract subject to the provisions of this Order or any preceding similar Order, and in that event to submit on behalf of themselves and their proposed subcontractors compliance reports prior to or as an initial part of their bid or negotiation of a contract.

III

Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor organization or employment agency as defined in section 31-122 of the general statutes, the compliance report shall identify the said organization or agency and the contracting agency or the labor commissioner may require a compliance report to be filed with the contracting agency or the labor commissioner, as may be directed, by such organization or agency, signed by an authorized officer or agent of such organization or agency, with supporting information, to the effect that the signer's practices and policies, including but not limited to matters concerning personnel, training, apprenticeship, membership, grievance and representation, and upgrading, do not discriminate on grounds of race, color, religious creed, age, sex, or national origin, or ancestry of any individual, and that the signer will either affirmatively cooperate in the implementation of the policy and provisions of this Order, or that it consents and agrees that recruitment, employment and the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions of the Order.

IV

The labor commissioner may by regulation exempt certain classes of contracts, subcontracts or purchase order from the implementation of this Order, for standard commercial supplies or raw materials, for less than specified amounts of money or numbers of workers or for subcontractors below a specified tier. The labor commissioner may also provide by regulation for the exemption of facilities of a contractor which are in all respects separate and distinct from activities of the contractor related to the performance of the state contract, provided only that such exemption will not interfere with or impede the implementation of this Order, and provided further, that in the absence of such an exemption, all facilities shall be covered by the provisions of this Order.

V

Each contracting agency shall be primarily responsible for obtaining compliance with the regulations of the labor commissioner with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the regulations of the labor commissioner in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this Order and of the regulations of the labor commissioner issued pursuant to this Order. They are directed to cooperate with the labor commissioner and to furnish the labor commissioner such information and assistance as he may require in the performance of his functions under this Order. They are further directed to appoint or designate from among the personnel of each agency, compliance officers, whose duty shall be to seek compliance with the objectives of this Order by conference, conciliation, mediation, or persuasion.

VI

The labor commissioner may investigate the employment practices and procedures of any state contractor or subcontractor and the practices and policies of any labor organization or employment agency hereinabove described, relating to employment under the state contract, as concerns nondiscrimination by such organization or agency as hereinabove described, or the labor commissioner may initiate such investigation by the appropriate contract agency, to determine whether or not the contractual provisions hereinabove specified or statutes of the state respecting them have been violated. Such investigation shall be conducted in accordance with the procedures established by the labor commissioner and the investigating agency shall report to the labor commissioner any action taken or recommended.

VII

The labor commissioner shall receive and investigate or cause to be investigated complaints by employees or prospective employees of a state contractor or subcontractor or members or applicants for membership or apprenticeship or training in a labor organization or employment agency hereinabove described, which allege discrimination contrary to the contractual provisions specified hereinabove or state statutes requiring nondiscrimination in employment opportunity. If this investigation is conducted for the labor commissioner by a contracting agency, that agency shall report to the labor commissioner what action has been taken or is recommended with regard to such complaints.

VIII

The labor commissioner shall use his best efforts, directly and through contracting agencies, other interested federal, state and local agencies, contractors and all other available instrumentalities, including the commission on human rights and opportunities, the executive committee on human rights and opportunities, and the apprenticeship council under its mandate to provide advice and counsel to the labor commissioner in providing equal employment opportunities to all apprentices and to provide training, employment and upgrading opportunities for disadvantaged workers, in accordance with section 31-51 (d) of the 1969 supplement to the general statutes, to cause any labor organization or any employment agency whose members are engaged in work under government contracts or referring workers or providing or supervising apprenticeship or training for or in the course of work under a state contract or subcontract to cooperate in the implementation of the purposes of this Order. The labor commissioner shall in appropriate cases notify the commission on human rights and opportunities or other appropriate state or federal agencies whenever it has reason to believe that the practices of any such organization or agency violate equal employment requirements or state or federal law.

IX

The labor commissioner or any agency officer or employee in the executive branch designated by regulation of the labor commissioner may hold such hearings, public or private, as the labor commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

X

(a) The labor commissioner may hold or cause to be held hearings, prior to imposing ordering or recommending the imposition of penalties and sanctions under this Order. No order for disbarment of any contractor from further state contracts shall be made without affording the contractor an opportunity for a hearing. In accordance with such regulations as the labor commissioner may adopt, the commissioner or the appropriate contracting agency may

- (1) Publish or cause to be published the names of contractors or labor organizations or employment agencies as hereinabove described which it has concluded have complied or failed to comply with the provisions of this Order or the regulations of the labor commissioner in implementing this Order.
- (2) Recommend to the commission on human rights and opportunities that in cases in which there is substantial or material violation or threat thereof of the contractual provision or related state statutes concerned herein, appropriate proceedings be brought to enforce them, including proceedings by the commission on its own motion under chapter 563 of the general statutes and the enjoining, within the limitations of applicable law, of organizations, individuals or groups who prevent directly or indirectly or seek to prevent directly or indirectly compliance with the provisions of this Order.
- (3) Recommend that criminal proceedings be brought under chapter 939 of the general statutes.
- (4) Cancel, terminate, suspend or cause to be cancelled, terminated, or suspended in accordance with law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the nondiscrimination provisions of the contract. Contracts may be cancelled, terminated, suspended absolutely or their continuance conditioned upon a program for future compliance approved by the contracting agency.
- (5) Provide that any contracting agency shall refrain from entering into any further contracts or extensions or modifications of existing contracts with any contractor until he has satisfied the labor commissioner that he has established and will carry out personnel and employment policies compliant with this Order.
- (6) Under regulations prescribed by the labor commissioner each contracting agency shall make reasonable efforts within a reasonable period of time to secure compliance with the contract provisions of this Order by methods of conference, conciliation, mediation or persuasion, before other proceedings shall be instituted under this Order or before a state contract shall be cancelled or terminated in whole or in part for failure of the contractor or subcontractor to comply with the contract provisions of state statute and this Order.

(b) Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the labor commissioner or pursuant to his regulations shall promptly notify him of such action. Whenever the labor commissioner makes a determination under this Order, he shall promptly notify the appropriate contracting agency and other interested federal, state and local agencies of the action recommended. The state and local agency or agencies shall take such action and shall report the results thereof to the labor commissioner within such time as he shall specify.

XI

If the labor commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order, or submits a program for compliance acceptable to the labor commissioner, or if the labor commissioner so authorizes, to the contracting agency.

XII

Whenever a contracting agency cancels or terminates a contract, or a contractor has been disbarred from further government contracts because of noncompliance with the contract provisions with regard to nondiscrimination, the labor commissioner or the contracting agency shall rescind such disbarment, upon the satisfaction of the labor commissioner that the contractor has purged himself of such noncompliance and will thenceforth carry out personnel and employment policies of nondiscrimination in compliance with the provision of this Order.

XIII

The labor commissioner may delegate to any officer, agency or employee in the executive branch any function or duty of the labor commissioner under this Order except authority to promulgate regulations of a general nature.

XIV

This Executive Order supplements the Executive Order issued on September 28, 1967. All regulations, orders, instructions, designations and other directives issued heretofore in these premises, including those issued by the heads of various departments or agencies under or pursuant to prior order or statute, shall remain in full force and effect, unless and until revoked or superseded by appropriate authority, to the extent that they are not inconsistent with this Order.

This Order shall become effective thirty days after the date of this Order.

Dated at Hartford, Connecticut, this 16th day of June, 1971.


GOVERNOR

GUIDELINES AND RULES
OF STATE LABOR COMMISSIONER
IMPLEMENTING GOVERNOR'S EXECUTIVE
ORDER NO. THREE

SEC. 1. PERSONS AND FIRMS SUBJECT TO EXECUTIVE ORDER NO. THREE AND GUIDELINES AND RULES.

a. Every contractor, or subcontractor as defined in Sec. 2 hereof, supplier of goods or services, vendor, bidder and prospective contractor or subcontractor, having ten or more employees as defined in Sec. 3 of these Guidelines, having or entering into or bidding to enter into any type of contractual relationship with the State of Connecticut or any of its agencies, boards, commissions, departments or officers, and if the consideration, cost, subject matter or value of the goods or services exceeds \$5,000.00, shall be subject to the Governor's Executive Order No. Three and these Guidelines and Rules.

b. A copy of the Governor's Executive Order No. Three and of these Guidelines and Rules shall be available to each said contractor, subcontractor, supplier, vendor, bidder and prospective contractor and subcontractor, and the said Executive Order No. Three and these Guidelines and Rules shall be incorporated by reference and made a part of the contract, purchase order, agreement or document concerned. A copy of the Executive Order and of these Guidelines and Rules shall be furnished to a contracting party or bidder on request.

c. All persons, partnerships, associations, firms, corporations and other entities having less than ten employees as defined in Sec. 3 at the time of the bid and execution of the contract and continuing through the performance of the contract are exempt from the provisions of the said Executive Order and these Guidelines and Rules. All contracts, subcontracts, purchase orders and agreements wherein the consideration is \$5,000.00 or less shall be exempt from Executive Order No. Three and from these Guidelines and Rules.

SEC. 2. SUBCONTRACTORS.

As used herein, subcontractors are persons, partnerships, associations, firms or corporations or other entities having contractual relationship with a contractor who in turn has a contract with the State of Connecticut or any of its agencies, boards, commissions or departments. Subcontractors below this tier are exempt from the Executive Order and from these Guidelines and Rules.

SEC. 3 EMPLOYEES.

As used herein, employees are persons working full or part-time irrespective of personnel classification whose wages, salaries, or earnings are subject to the Federal Insurance Contribution Act and/or to Federal Withholding Tax as a matter of law (whether in fact or not any actual withholding occurs in a given case), in an employee-employer relationship at the time of bid, contract execution, or offer or acceptance, and/or during any time thereafter during the existence of the performance period of the contract to the conclusion thereof.

SEC. 4. REPORTS.

a. Prior to the execution of the contract or prior to acceptance of a bid, as the case may be, the contractor, subcontractor, bidder or vendor shall file a report with the State Labor Commissioner, which report shall be complete and contain all of the information therein prescribed. The report shall be on Form E.O. 3-1, a facsimile of which is attached hereto and made a part hereof, or in lieu thereof the contractor, subcontractor, bidder or vendor shall submit a detailed report containing all of the information required in Form E.O. 3-1.

b. The Labor Commissioner may require the filing of additional reports prior to final payment or prior to any renewal or extension of the contract and during the duration of the contract at such times as the Commissioner may, in his discretion, from time to time deem necessary. The Labor Commissioner may require the filing of additional information or reports, and the contractor, subcontractor, bidder or vendor shall furnish said information or reports within the times prescribed by the Labor Commissioner.

c. The Labor Commissioner may, at his discretion, also require timely statistical reports on the number of minority employees employed or to be employed in the performance of the contract, and the Labor Commissioner may define such minority groups or persons.

d. Reports filed pursuant to these Guidelines and Rules in implementation of Executive Order No. Three are not public records subject to public inspection, but may be inspected only by federal and state officials having jurisdiction and authority to investigate matters of this type. All federal and state agencies empowered by law to investigate matters relating to Executive order No. Three shall have access to these reports for inspection or copying during regular business hours.

e. Any person who wilfully, wantonly or through negligence destroys or permits to be destroyed, alters or allows to be altered after filing, any reports submitted in compliance herewith shall be subject to penalties as prescribed by law.

SEC. 5. MANDATORY CLAUSES IN DOCUMENTS.

a. All contracts shall contain the following provisions verbatim:

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971 and, as such, this contract may be cancelled, terminated or suspended by the state labor commissioner for violation of or noncompliance with said Executive Order No. Three, or any state or federal law concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to this contract. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the state labor commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion.

The (contractor), (subcontractor), (bidder), (vendor) agrees, as part consideration hereof, that this (order) (contract) is subject to the Guidelines and Rules issued by the state labor commissioner to implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the state labor commissioner.

These provisions are in addition to and not in lieu of other clauses required by law.*

* N.B. The above paragraphs contain requirements additional to those set forth in July 16, 1971 directive to state agencies.

b. Every purchase order or like form submitted by a vendor or bidder, as applicable shall contain the following clause verbatim:

Vendor agrees, as part of the consideration hereof, that this order is subject to the provisions of Executive Order No. Three and the Guidelines and Rules issued by the Labor Commissioner implementing said Order as to nondiscrimination, and vendor agrees to comply therewith.

c. Where preprinted contract forms have been prescribed by federal authority and the rules of the federal agency prohibit the alteration thereof, the compliance officer of the State agency concerned shall submit to the Labor Commissioner a suggested short form or addendum acceptable to the federal agency, and in such cases, after approval by the Labor Commissioner, said clause may be substituted.

SEC. 6. COOPERATION OF STATE AGENCIES, BOARDS AND COMMISSIONS.

Every agency, board, commission and department of the State of Connecticut shall cooperate with the Labor Commissioner in the implementation of Executive Order No. Three and shall furnish such information and assistance as the Labor Commissioner may from time to time request.

SEC. 7. INVESTIGATIONS, COMPLAINTS.

The Labor Commissioner may initiate an investigation upon receipt of a complaint alleging discrimination. The Labor Commissioner may request that an investigation be conducted by the State agency which is the party to the contract in question. Investigations shall be conducted in accordance with acceptable legal standards, safeguarding the rights of all parties involved, and obtaining all of the relevant facts necessary for a complete determination of the issues. If the Labor Commissioner is not satisfied with the investigation or any part thereof he may order it to continue or to proceed further.

SEC. 8. HEARINGS.

The Labor Commissioner or officers designated by the heads of the State agencies, boards and commissions may conduct hearings on complaints filed. Hearings shall be held only after a report of the complaint has been filed with the Labor Commissioner and after a hearing on the complaint has been authorized or directed by the Labor Commissioner. Hearings shall be conducted in accordance with the accepted principles of administrative law. All parties shall be afforded the opportunity to a full, fair, impartial and complete hearing, the opportunity to examine and cross examine witnesses and to be present at all sessions of the hearing. If any party is vulnerable to a charge of a violation of the law, he shall be afforded the opportunity to procure counsel who may be present at the hearing.

SEC. 9. EQUAL EMPLOYMENT OPPORTUNITIES.

All State contracting agencies, employers, and labor unions shall use their best efforts to provide equal employment opportunities to all apprentices and to provide training, employment and upgrading opportunities for disadvantaged workers in accordance with section 31-51(d) of the General Statutes.

SEC. 10. DUTIES OF CONTRACTING AGENCIES.

All State contracting agencies shall be responsible for compliance with said Executive Order and with all state and federal laws relating to equal employment opportunities. All contracting agencies conducting investigations for the Labor Commissioner pursuant to Executive Order No. Three and these Guidelines and Rules shall report to the Labor Commissioner the action taken or recommended with regard to each complaint filed. Each officer of the executive department, every commissioner, and each executive head of each State agency, board and commission in the executive branch of the State government is expected to assume the responsibility of seeing to complete compliance with the Governor's Executive Order No. Three and shall forthwith take steps to assure and guarantee that there shall be no discrimination within their departments, agencies, boards or commissions in the performance of any state contract or subcontract on the basis of race, creed, color, sex, age, national origin or national ancestry, or in any way in violation of any state or federal law relating thereto.

BY VIRTUE OF THE AUTHORITY VESTED IN ME PURSUANT TO EXECUTIVE ORDER NO THREE EFFECTIVE JULY 16, 1971, AND THE GENERAL STATUTES OF CONNECTICUT

Dated at Wethersfield, Connecticut this 19th day of Nov., 1971.

JACK A. FUSARI
LABOR COMMISSIONER

STATE OF CONNECTICUT

BY HIS EXCELLENCY
THOMAS J. MESKILL

GOVERNOR

EXECUTIVE ORDER NO. SEVENTEEN

WHEREAS, Section 31-237 of the General Statutes of Connecticut as amended requires the maintaining of the established free services of the Connecticut State Employment Service to both employers and prospective employees and

WHEREAS, Section 31-5 of the General Statutes of Connecticut requires that no compensation or fee shall be charged or received directly or indirectly for the services of the Connecticut State Employment Service and

WHEREAS, large numbers of our citizens who have served in the Armed Forces of our nation are returning to civilian life in our state and seeking employment in civilian occupations and

WHEREAS, we owe a duty as well as gratitude to these returning veterans including the duty to find suitable employment for them and

WHEREAS, many of our handicapped citizens are fully capable of employment and are entitled to be placed in suitable employment and

WHEREAS, many of the citizens of our state who are unemployed are unaware of the job openings and employment opportunities which do in fact exist in our state and

WHEREAS, notwithstanding the free services of the Connecticut State Employment Service, many of our Connecticut employers do not use its free services or do not avail themselves fully of all of the services offered.

NOW, THEREFORE, I, THOMAS J. MESKILL, Governor of the State of Connecticut, acting by virtue of the authority vested in me under the fourth article of the Constitution of the State and in accordance with Section 3-1 of the General Statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The Labor Commissioner shall be responsible for the administration of this Order and shall do all acts necessary and appropriate to achieve its purpose. Upon promulgation of this Order, the Commissioner of Finance and Control shall issue a directive forthwith to all state agencies that henceforth all state contracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a provision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be cancelled, terminated or suspended by the Labor Commissioner for violation of or noncompliance with this Order, notwithstanding that the Labor Commissioner is not a party to such contract or subcontract.

II

Every contractor and subcontractor having a contract with the state or any of its agencies, boards, commissions, or departments, every individual partnership, corporation, or business entity having business with the state or who or which seeks to do business with the state, and every bidder or prospective bidder who submits a bid or replies to an invitation to bid on any state contract shall list all employment openings with the office of the Connecticut State Employment Service in the area where the work is to be performed or where the services are to be rendered.

III

All state contracts shall contain a clause which shall be a condition of the contract that the contractor and any subcontractor holding a contract directly under the contractor shall list all employment openings with the Connecticut State Employment Service. The Labor Commissioner may allow exceptions to listings of employment openings which the contractor proposes to fill from within its organization from employees on the rolls of the contractor on the date of publication of the invitation to bid or the date on which the public announcement was published or promulgated advising of the program concerned.

IV

Each contracting agency of the state shall be primarily responsible for obtaining compliance with this Executive Order. Each contracting agency shall appoint or designate from among its personnel one or more persons who shall be responsible for compliance with the objectives of this Order.

V

The Labor Commissioner shall be and is hereby empowered to inspect the books, records, payroll and personnel data of each individual or business entity subject to this Executive Order and may hold hearings or conferences, formal or informal, in pursuance of the duties and responsibilities hereunto delegated to the Labor Commissioner.

VI

The Labor Commissioner or any agency officer or employee in the executive branch designated by regulation of the Labor Commissioner may hold such hearings, public or private, as the Labor Commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

VII

(a) The Labor Commissioner may hold or cause to be held hearings, prior to imposing, ordering, or recommending the imposition of penalties and sanctions under this Order. In accordance herewith, the Commissioner or the appropriate contracting agency may suspend, cancel, terminate, or cause to be suspended, cancelled, or terminated in accordance with law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the listing provisions of the contract. Contracts may be cancelled, terminated, suspended absolutely or their continuance conditioned upon a program for future compliance approved by the contracting agency.

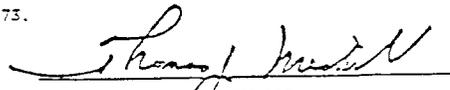
(b) Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the Labor Commissioner, shall promptly notify him of such action. Whenever the Labor Commissioner makes a determination under this Order, he shall promptly notify the appropriate contracting agency of the action recommended. The agency shall report the results to the Labor Commissioner promptly.

VIII

If the Labor Commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order.

This Order shall become effective sixty days after the date of this Order.

Dated at Hartford, Connecticut, this 15th day of February, 1973.


GOVERNOR

CONNECTICUT REQUIRED CONTRACT/AGREEMENT PROVISIONS
March 6, 1998

Specific Equal Employment Opportunity Responsibilities

1. General

- A. Equal Employment Opportunity Requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246, Executive Order 11375, the Railroad Revitalization and Regulatory Reform Act of 1976 and other U.S. Department of Transportation nondiscrimination legislation are set forth in this Required Contract/Agreement Provision. The requirements set forth in these special provisions shall constitute the specific affirmative action requirements for project activities under this contract (or agreement) and supplement the equal employment opportunity requirements set forth in other related contract provisions.
- B. "Company" refers to any entity doing business with the Connecticut Department of Transportation and includes but is not limited to the following:
- | | |
|----------------|---|
| Contractors | Vendors (where applicable) |
| Subcontractors | Suppliers of Materials (where applicable) |
| Consultants | Municipalities (where applicable) |
| Subconsultants | Utilities (where applicable) |
- C. The Company will work with the Connecticut Department of Transportation and the federal government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract or agreement.
- D. The Company and all their subcontractors or subconsultants holding subcontracts or subagreements of \$10,000 or more on federally-assisted projects and \$5,000 or more on state funded projects, will comply with the following minimum specific requirement activities of equal employment opportunity. The Company will physically include these requirements in every subcontract or subagreement meeting the monetary criteria above with such modification of language as is necessary to make them binding on the subcontractor or subconsultant.
- E. These Required Contract Provisions apply to all state funded and/or federally-assisted projects, activities and programs in all facets of the Connecticut Department of Transportation operations resulting in contracts or agreements.

2. Equal Employment Opportunity Policy

The Company will develop, accept and adopt as its operating policy an Affirmative Action Plan utilizing as a guide the Connecticut Department of Transportation Affirmative Action Plan Guideline.

3. Equal Employment Opportunity Officer

The Company will designate and make known to the State Department of Transportation contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy

- A. All members of the Company's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the Company's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
- (1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less than once every six (6) months thereafter, at which time the Company's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable Company official.

- (2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable Company official covering all major aspects of the Company's equal employment opportunity obligations within thirty (30) days following their reporting for duty with the Company.
 - (3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate Company official in the Company's procedures for locating and hiring protected class group employee.
- B. In order to make the Company's equal employment opportunity policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Company will take the following actions:
- (1) Notices and posters setting forth the Company's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - (2) The Company's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment

- A. When advertising for employees, the Company will include in all advertisements for employees the notation: "An Equal Opportunity Employees." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
- B. The Company will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the Company will, through its EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the Company for employment consideration.
- In the event the Company has a valid bargaining agreement providing for exclusive hiring hall referrals, the Company is expected to observe the provisions of that agreement to the extent that the system permits the Company's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the Company to do the same, such implementation violates Executive Order 11246, as amended.)
- C. The Company will encourage its present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in the areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

6. Personnel Actions

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoffs, and termination, shall be taken without regard to race, color, religion, sex, or national origin, etc. The following procedures shall be followed:

- A. The Company will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- B. The Company will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

- C. The Company will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Company will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- D. The Company will promptly investigate all complaints of alleged discrimination made to the Company in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Company will inform every complainant of all of his avenues of appeal.
- E. The general contract provision entitled A(76) Affirmative Action Requirements is made part of this document by reference. In conjunction with this contract provision, only the job categories will change in order to be comparable with the job categories utilized by the Company proposing to do business with the Connecticut Department of Transportation. The goals and time tables will remain the same throughout the contract provision.

7. Training and Promotion

- A. The Company will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
- B. Consistent with the Company's work force requirements and as permissible under Federal and State regulations, the Company shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Training Special Provision is provided under this contract, this subparagraph will be superseded.
- C. The Company will advise employees and applicants for employment of available training programs and entrance requirements for each.
- D. The Company will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. Unions

If the Company relies in whole or in part upon unions as a source of employees, it will use its best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the Company either directly or through an association acting as agent will include the procedures set forth below:

- A. The Company will use its best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
- B. The Company will use its best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin, etc.
- C. The Company is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the Company, the Company shall so certify to the Connecticut Department of Transportation and shall set forth what efforts have been made to obtain such information
- D. In the event the union is unable to provide the Company with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the Company will, through independent recruitment efforts, fill

the employment vacancies without regard to race, color, religion, sex or national origin, etc. making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the Company has a collective bargaining agreement providing for exclusive referral failed to refer minority employees). In the event the union referral practice prevents the Company from meeting the obligations pursuant to Executive Order 11246, as amended, these provisions, such Company shall immediately notify the Connecticut Department of Transportation.

9. Subcontracting

- A. The Company will use its best efforts to solicit bids from and to utilize minority group subcontractors, or subcontractors with meaningful minority group and female representation among their employees. Companies shall obtain a list of applicable Disadvantaged Business Enterprises firms from the Division of Contract Compliance.
- B. The Company will use its best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.
- C. The General Contract Provisions entitled "Minority Business Enterprises as Subcontractors" is made part of this document by reference and its requirements are applicable to all entities proposing to do business with the Connecticut Department of Transportation.

10. Records and Reports

For the duration of the project, the company will maintain records as are necessary to determine compliance with the Company's equal employment opportunity obligations and Affirmative Action requirements. Additionally, the company will submit all requested reports in the manner required by the contracting agency.

- A. The number of minority and nonminority group members and women employed in each work classification on the project.
- B. The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to Companies which rely on whole or in part on unions as a source of their work force).
- C. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and
- D. The progress and efforts being made in securing the services of minority and female owned businesses.
 - (1) All such records must be retained for a period of three (3) years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State Department of Transportation and the U.S. Department of Transportation including consultant firms.
 - (2) If on-the-job training is being required by the "Training Special Provision," the Company will be required to furnish a Monthly Training Report and Supplement Report (1409) for each trainee.

11. Affirmative Action Plan

- A. Contractors, subcontractors, vendors, suppliers, and all other Companies with contracts, agreements or purchase orders completely state funded will submit an Affirmative Action Plan if the contract value is \$5,000 or over.
- B. Contractors, subcontractors, vendors, suppliers, and all other Companies with federally-assisted contracts, agreements, or purchase orders valued at \$10,000 or more will submit an Affirmative Action Plan.
- C. Companies with contracts, agreements, or purchase orders with total dollar value under that which is stipulated in A and B above shall be exempt from the required submission of an Affirmative Action Plan unless otherwise directed by the Division of Contract Compliance.



CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. F&A-10
July 30, 2004

SUBJECT: Code of Ethics Policy

No employee of the Connecticut Department of Transportation shall, either individually (or as a member of a group), directly or indirectly, solicit or accept any gift or gratuity from any person or organization with whom the Department has, has had, or may expect to have, a business relationship which could cause, or create the appearance of, a conflict with or influence the performance of the employee's duties with the Department. Anything of value that any person or organization attempts to give to an employee of this Department shall be immediately returned. If such thing of value is received by other than personal delivery from the subject person or organization, it shall be taken to the Office of Personnel along with the name and address of the person or firm who gave the item. The Office of Personnel along with the recipient of the item of value will arrange for the donation of the item to a local charity (e.g., Foodshare, local soup kitchens, etc.). The Office of Personnel will then send a letter to the gift giver advising them of this donation.

No employee of this Department shall, either individually (or as a member of a group), directly or indirectly, solicit the sale of tickets for a charitable event or accept any gift for the benefit of a charitable organization from any person or organization with whom the Department has, has had, or may expect to have, a business relationship which would cause, or create the appearance of, a conflict with or influence the performance of the Department.

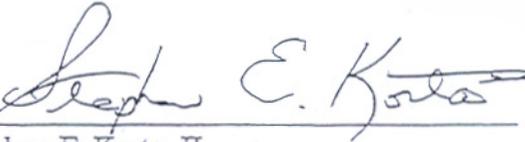
No employee of this Department shall use or distribute State information or use State equipment or materials for other than State business purposes.

No employee of this Department shall allow any private obligation of employment or enterprise to take precedence over his/her responsibility to the Department.

No employee of this Department shall accept employment with any consultant, contractor, appraiser, or any other organization or individual which is under contract or agreement with the State of Connecticut, nor shall any employee of this Department have, directly or indirectly, a financial interest in any business, firm, or enterprise doing business with the State of Connecticut, which could cause, or create the appearance of, a conflict with or influence the performance of the employee's duties with the Department.

In addition to the above, all employees of this Department are to comply with Sections 1-79 through 1-89 of the Connecticut General Statutes, as amended, entitled Code of Ethics for Public Officials.

(This Policy Statement supersedes Policy Statement No. F&A-10 dated March 25, 1999)



Stephen E. Korta, II
Commissioner

List 1 and List 3

(Managers and supervisors are requested to distribute a copy of this Policy Statement to all employees under their supervision.)



CONNECTICUT DEPARTMENT OF TRANSPORTATION
POLICY STATEMENT

Policy No. ADMIN.-19
May 12, 2003

SUBJECT: Policy on Disadvantaged Business Enterprise Program

The Department of Transportation (DOT) is committed to an effective implementation of a Disadvantaged Business Enterprise (D.B.E.) Program as defined in Title 49, Code of Federal Regulations, Part 26, and includes the following objectives:

- (a) To ensure nondiscrimination in the award and administration of DOT-assisted contracts in the Department's highway, transit, and airport financial assistance programs;
- (b) To create a level playing field in which D.B.E.s can compete fairly for DOT-assisted contracts;
- (c) To ensure that the Department's D.B.E. Program is narrowly tailored in accordance with applicable law;
- (d) To ensure only firms that fully meet this part's eligibility standards are permitted to participate as D.B.E.s;
- (e) To help remove barriers to the participation of D.B.E.s in DOT-assisted contracts; and
- (f) To assist the development of firms that can compete successfully in the marketplace outside the D.B.E. Program.

The Director of Equal Opportunity Assurance has been designated as the D.B.E. Liaison Officer. In that capacity, the Director of Equal Opportunity Assurance is responsible for implementing all aspects of the D.B.E. Program. Implementation of the D.B.E. Program is accorded the same priority as compliance with all other legal obligations incurred by the Connecticut Department of Transportation in its financial assistance agreements with the U.S. Department of Transportation.

As part of the requirements for Title 49, Code of Federal Regulations, Part 26, effective immediately, I am directing the following be included in all federal-aid contracts, all financial assistance agreements, and in all subcontracts.

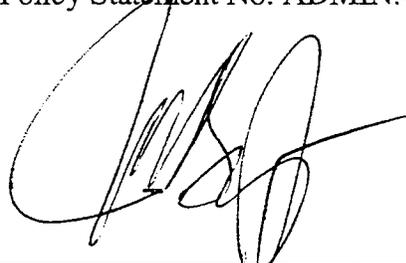
For all agreements with contractors, subcontractors, consultants, cities, towns, and all recipients of State or federal-assistance funds:

- 1) The contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

In addition to the above, all financial agreements shall also contain the following statement:

- 2) The recipient shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its D.B.E. Program or the requirements of 49 CFR Part 26. The recipient shall take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. The recipient's D.B.E. Program, as required by 49 CFR Part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the Department may impose sanctions as provided for under Part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 et seq).

(This statement supersedes the Commissioner's Policy Statement No. ADMIN.-19, dated March 14, 2003.)



James F. Byrnes, Jr.
Commissioner

AGREEMENTS WITH GOALS
SPECIAL PROVISIONS
DISADVANTAGED BUSINESS ENTERPRISES
AS SUBCONTRACTORS AND MATERIAL SUPPLIERS OR MANUFACTURERS
FOR FEDERAL FUNDED PROJECTS

Revised – October 16, 2000

NOTE: Certain of the requirements and procedures stated in this special provision are applicable prior to the execution of the Contract document.

I. ABBREVIATIONS AND DEFINITIONS AS USED IN THIS SPECIAL PROVISION

- A. "CDOT" means the Connecticut Department of Transportation.
- B. "DOT" means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration ("FHWA"), the Federal Transit Administration ("FTA"), and the Federal Aviation Administration ("FAA").
- C. "Broker" means a party acting as an agent for others in negotiating contracts, agreements, purchases, sales, etc., in return for a fee or commission.
- D. "Contract," "agreement" or "subcontract" means a legally binding relationship obligating a seller to furnish supplies or services (including, but not limited to, construction and professional services) and the buyer to pay for them. For the purposes of this provision a lease for equipment or products is also considered to be a Contract.
- E. "Contractor," means a consultant, second party or any other entity doing business with CDOT or, as the context may require, with another Contractor.
- F. "Disadvantaged Business Enterprise" ("DBE") means a small business concern:
 - 1. That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock of which is owned by one or more such individuals; and
 - 2. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.
- G. "DOT-assisted Contract" means any Contract between a recipient and a Contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees.
- H. "Good Faith Efforts" means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement. Refer to Appendix A of 49 Code of Federal Regulation ("CFR") Part 26 – "Guidance Concerning Good Faith Efforts," a copy of which is attached to this provision, for guidance as to what constitutes good faith efforts.

- I. “Small Business Concern” means, with respect to firms seeking to participate as DBEs in DOT-assisted Contracts, a small business concern as defined pursuant to Section 3 of the Small Business Act and Small Business Administration (“SBA”) regulations implementing it (13 CFR Part 121) that also does not exceed the cap on average annual gross receipts specified in 49 CFR Part 26, Section 26.65(b).
- J. “Socially and Economically Disadvantaged Individuals” means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –
 - 1. Any individual who CDOT finds on a case-by-case basis to be socially and economically disadvantaged individual.
 - 2. Any individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:
 - i. “Black Americans,” which includes persons having origins in any of the Black racial groups of Africa;
 - ii. “Hispanic Americans,” which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
 - iii. “Native Americans,” which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
 - iv. “Asian-Pacific Americans,” which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Burnei, Samoa, Guam, The U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;
 - v. “Subcontinent Asian Americans,” which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
 - vi. Women;
 - vii. Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

II. GENERAL REQUIREMENTS

- A. The Contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted Contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of the Contract or such other remedy, as the DOT deems appropriate.

- B. The Contractor shall cooperate with CDOT and DOT in implementing the requirements concerning DBE utilization on this Contract in accordance with Title 49 of the Code of Federal Regulations, Part 26 entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs" ("49 CFR Part 26"), as revised. The Contractor shall also cooperate with CDOT and DOT in reviewing the Contractor's activities relating to this Special Provision. This Special Provision is in addition to all other equal opportunity employment requirements of this Contract.
- C. The Contractor shall designate a liaison officer who will administer the Contractor's DBE program. Upon execution of this Contract, the name of the liaison officer shall be furnished in writing to CDOT's Division of Contract Compliance.
- D. For the purpose of this Special Provision, DBEs to be used to satisfy the DBE goal must be certified by CDOT's Division of Contract Compliance for the type(s) of work they will perform.
- E. If the Contractor allows work designated for DBE participation required under the terms of this Contract and required under III-B to be performed by other than the named DBE organization without concurrence from CDOT's unit administering the Contract, CDOT will not pay the Contractor for the value of the work performed by organizations other than the designated DBE.
- F. At the completion of all Contract work, the Contractor shall submit a final report to CDOT's unit administering the Contract indicating the work done by, and the dollars paid to DBEs. If the Contractor does not achieve the specified Contract goals for DBE participation, the Contractor shall also submit written documentation to the CDOT unit administering the Contract detailing its good faith efforts to satisfy the goal that were made during the performance of the Contract. Documentation is to include but not be limited to the following:
 - 1. A detailed statement of the efforts made to select additional subcontracting opportunities to be performed by DBEs in order to increase the likelihood of achieving the stated goal.
 - 2. A detailed statement, including documentation of the efforts made to contact and solicit bids/proposals with CDOT certified DBEs, including the names, addresses, dates and telephone numbers of each DBE contacted, and a description of the information provided to each DBE regarding the scope of services and anticipated time schedule of work items proposed to be subcontracted and nature of response from firms contacted.
 - 3. Provide a detailed statement for each DBE that submitted a subcontract proposal, which the Contractor considered not to be acceptable stating the reasons for this conclusion.
 - 4. Provide documents to support contacts made with CDOT requesting assistance in satisfying the Contract specified goal.
 - 5. Provide documentation of all other efforts undertaken by the Contractor to meet the defined goal.

- G. Failure of the Contractor at the completion of all Contract work to have at least the specified percentage of this Contract performed by DBEs as required in III-B will result in the reduction in Contract payments to the Contractor by an amount determined by multiplying the total Contract value by the specified percentage required in III-B and subtracting from that result, the dollar payments for the work actually performed by DBEs. However, in instances where the Contractor can adequately document or substantiate its good faith efforts made to meet the specified percentage to the satisfaction of CDOT, no reduction in payments will be imposed.
- H. All records must be retained for a period of three (3) years following acceptance by CDOT of the Contract and shall be available at reasonable times and places for inspection by authorized representatives of CDOT and Federal agencies. If any litigation, claim, or audit is started before the expiration of the three (3) year period, the records shall be retained until all litigation, claims, or audits findings involving the records are resolved.
- I. Nothing contained herein, is intended to relieve any Contractor or subcontractor or material supplier or manufacturer from compliance with all applicable Federal and State legislation or provisions concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of this Contract.

III. SPECIFIC REQUIREMENTS:

- A. The Contractor shall assure that certified DBEs will have an opportunity to compete for subcontract work on this Contract, particularly by arranging solicitations and time for the preparation of proposals for services to be provided so as to facilitate the participation of DBEs regardless if a Contract goal is specified or not.
- B. Contract goal for DBE participation equaling 0 percent of the total Contract value has been established for this Contract. Compliance with this provision may be fulfilled when a DBE or any combination of DBEs perform work under Contract in accordance with 49 CFR Part 26, Subpart C, Section 26.55, as revised. **Only work actually performed by and/or services provided by DBEs which are certified for such work and/or services can be counted toward the DBE goal. Supplies and equipment a DBE purchases or leases from the prime Contractor or its affiliate cannot be counted toward the goal.**

If the Contractor does not document commitments, by subcontracting and/or procurement of material and/or services that at least equal the goal stipulated in III-B, or document a plan which indicates how the Contractor intends to meet the goal in the future phase(s) of the work, the Contractor must document the good faith efforts that outline the steps it took to meet the goal in accordance with VII.

- C. Prior to execution of the Contract the Contractor shall indicate, in writing on the forms provided by CDOT to the Director of Contract Administration or CDOT's unit administering the Contract, the DBE(s) it will use to achieve the goal indicated in III-B. The submission shall include the name and address of each DBE that will participate in this Contract, a description of the work each will perform and the dollar amount of participation. This information shall be signed by the named DBE and the Contractor. The named DBE shall be from a list of certified DBEs available from CDOT. **In addition, the named DBE(s) shall be certified to perform the type of work they will be contracted to do.**

- D. The prime Contractor shall provide a fully executed copy of each agreement with each DBE named to achieve the goal indicated in III-B to CDOT's unit administering the Contract.
- E. The Contractor is required, should there be a change in a DBE they submitted in III-C, to submit documentation to CDOT's unit administering the Contract which will substantiate and justify the change, (i.e., documentation to provide a basis for the change for review and approval by CDOT's unit administering the Contract) prior to the implementation of the change. The Contractor must demonstrate that the originally named DBE is unable to perform in conformity to the scope of service or is unwilling to perform, or is in default of its Contract, or is overextended on other jobs. **The Contractor's ability to negotiate a more advantageous agreement with another subcontractor is not a valid basis for change.** Documentation shall include a letter of release from the originally named DBE indicating the reason(s) for the release.
- F. Contractors subcontracting with DBEs to perform work or services as required by this Special Provision shall not terminate such firms without advising CDOT's unit administering the Contract in writing, and providing adequate documentation to substantiate the reasons for termination if the DBE has not started or completed the work or the services for which it has been contracted to perform.
- G. When a DBE is unable or unwilling to perform or is terminated for just cause the Contractor shall make good faith efforts to find other DBE opportunities to increase DBE participation to the extent necessary to at least satisfy the goal required by III-B.
- H. In instances where an alternate DBE is proposed, a revised submission to CDOT's unit administering the Contract together with the documentation required in III-C, III-D, and III-E, must be made for its review and approval.
- I. Each quarter after execution of the Contract, the Contractor shall submit a report to CDOT's unit administering the Contract indicating the work done by, and the dollars paid to the DBE for the current quarter and to date.

IV. MATERIAL SUPPLIERS OR MANUFACTURERS

- A. If the Contractor elects to utilize a DBE supplier or manufacturer to satisfy a portion or all of the specified DBE goal, the Contractor must provide the CDOT with:
 - 1. An executed "Connecticut Department of Transportation DBE Supplier/Manufacturer Affidavit" (sample attached), and
 - 2. Substantiation of payments made to the supplier or manufacturer for materials used on the project.
- B. Credit for DBE suppliers is limited to 60% of the value of the material to be supplied, provided such material is obtained from a regular DBE dealer. A regular dealer is a firm that owns, operates, or maintains a store, warehouse or other establishment in which the materials or supplies required for the performance of the Contract are bought, kept in stock and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the firm must engage in, as its principal business, and in its own name, the purchase and sale of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone and petroleum products, need not keep such products in stock if it owns or operates distribution equipment. Brokers and packagers shall not be regarded as material suppliers or manufacturers.

- C. Credit for DBE manufacturers is 100% of the value of the manufactured product. A manufacturer is a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Department of Transportation or Contractor.

V. NON-MANUFACTURING OR NON-SUPPLIER DBE CREDIT:

- A. Contractors may count towards their DBE goals the following expenditures with DBEs that are not manufacturers or suppliers:
 - 1. Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment materials or supplies necessary for the performance of the Contract provided that the fee or commission is determined by the CDOT to be reasonable and consistent with fees customarily allowed for similar services.
 - 2. The fees charged for delivery of materials and supplies required on a job site (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is a DBE but is not also the manufacturer of or a regular dealer in the materials and supplies, provided that the fees are determined by the CDOT to be reasonable and not excessive as compared with fees customarily allowed for similar services.
 - 3. The fees or commissions charged for providing bonds or insurance specifically required for the performance of the Contract, provided that the fees or commissions are determined by the CDOT to be reasonable and not excessive as compared with fees customarily allowed for similar services.

VI. BROKERING

- A. Brokering of work by DBEs who have been approved to perform subcontract work with their own workforce and equipment is not allowed, and is a Contract violation.
- B. DBEs involved in the brokering of subcontract work that they were approved to perform may be decertified.
- C. Firms involved in the brokering of work, whether they are DBEs and/or majority firms who engage in willful falsification, distortion or misrepresentation with respect to any facts related to the project shall be referred to the U.S. Department of Transportation's Office of the Inspector General for prosecution under Title 18, U.S. Code, Section 10.20.

VII. REVIEW OF PRE-AWARD GOOD FAITH EFFORTS

- A. If the Contractor does not document commitments by subcontracting and/or procurement of material and/or services that at least equal the goal stipulated in III-B before execution of the Contract, or document a plan which indicates how the Contractor intends to meet the goal in future phase(s) of the work, the Contractor must document the good faith efforts that outline the specific steps it took to meet the goal. Execution of the Contract will proceed if the Contractor's good faith efforts are deemed satisfactory and approved by CDOT. To obtain such an exception, the Contractor must submit an application to CDOT's Director of Contract Administration or CDOT's unit administering the Contract, which documents the specific good faith efforts that were made to meet the DBE goal. **Application forms for Review of Pre-Award Good Faith Efforts are available from CDOT's Division of Contract Administration.**

The application must include the following documentation:

1. a statement setting forth in detail which parts, if any, of the Contract were reserved by the Contractor and not available for subcontracting;
 2. a statement setting forth all parts of the Contract that are likely to be sublet;
 3. a statement setting forth in detail the efforts made to select subcontracting work in order to likely achieve the stated goal;
 4. copies of all letters sent to DBEs;
 5. a statement listing the dates and DBEs that were contacted by telephone and the result of each contact;
 6. a statement listing the dates and DBEs that were contacted by means other than telephone and the result of each contact;
 7. copies of letters received from DBEs in which they declined to bid or submit proposals;
 8. a statement setting forth the facts with respect to each DBE bid/proposal received and the reason(s) any such bid/proposal was declined;
 9. a statement setting forth the dates that calls were made to CDOT's Division of Contract Compliance seeking DBE referrals and the result of each such call; and
 10. Any information of a similar nature relevant to the application.
- B. All applications shall be submitted to the Director of Contract Administration or CDOT's unit administering the Contract. Upon receipt of the submission of an application for review of pre-award good faith efforts, CDOT's Director of Contract Administration or CDOT's unit administering the Contract shall submit the documentation to the Division of Contract Compliance who will review the documents and determine if the package is complete and accurate and adequately documents the Contractor's good faith efforts. Within fourteen (14) days of receipt of the documentation the Division of Contract Compliance shall notify the Contractor by certified mail of the approval or denial of its good faith efforts.

- C. If the Contractor's application is denied, the Contractor shall have seven (7) days upon receipt of written notification of denial to request administrative reconsideration. The Contractor's request for administrative reconsideration should be sent in writing to: Director of Contract Administration or CDOT's unit administering the Contract, P.O. Box 317546, Newington, CT 06131-7546. The Director of Contract Administration or CDOT's unit administering the Contract will forward the Contractor's reconsideration request to the DBE Screening Committee. The DBE Screening Committee will schedule a meeting within fourteen (14) days from receipt of the Contractors request for administrative reconsideration and advise the Contractor of the date, time and location of the meeting. At this meeting the Contractor will be provided with the opportunity to present written documentation and/or argument concerning the issue of whether it made adequate good faith efforts to meet the goal. Within seven (7) days following the reconsideration meeting, the chairperson of the DBE Screening Committee will send the contractor via certified mail a written decision on its reconsideration request, explaining the basis of finding either for or against the request. The DBE Screening Committee's decision is final. **If the reconsideration is denied, the Contractor shall indicate in writing to the Director of Contract Administration or CDOT's unit administering the Contract within fourteen (14) days of receipt of written notification of denial, the DBEs it will use to achieve the goal indicated in III-B.**
- D. Approval of pre-execution good faith efforts does not relieve the Contractor from its obligation to make additional good faith efforts to achieve the DBE goal should contracting opportunities arise during actual performance of the Contract work.

APPENDIX A TO 49 CFR PART 26 – GUIDANCE CONCERNING GOOD FAITH EFFORTS

- I. When, as a recipient, you establish a Contract goal on a DOT-assisted Contract, a Bidder/Contractor must, in order to be responsible and/or responsive, make good faith efforts to meet the goal. The Bidder/Contractor can meet this requirement in either of two ways. First, the Bidder/Contractor can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the Bidder/Contractor can document adequate good faith efforts. This means that the Bidder/Contractor must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.
- II. In any situation in which you have established a Contract goal, Part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, it is up to you to make a fair and reasonable judgment whether a Bidder/Contractor that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the Bidder/Contractor has made. The efforts employed by the Bidder/Contractor should be those that one could reasonably expect a Bidder/Contractor to take if the Bidder/Contractor were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE Contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE Contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call: meeting quantitative formulas is not required.
- III. The Department also strongly cautions you against requiring that a Bidder/Contractor meet a Contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a Contract, even though the Bidder/Contractor makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.
- IV. The following is a list of types of actions which you should consider as part of the Bidder/Contractor's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.
 - A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the Contract. The Bidder/Contractor must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The Bidder/Contractor must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
 - B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out Contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.

- C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the Contract in a timely manner to assist them in responding to a solicitation.
- D. (1) Negotiating in good faith with interested DBEs. It is the Bidder/Contractor's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A Bidder/Contractor using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as Contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a Bidder/Contractor's failure to meet the Contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime Contractor to perform the work of a Contract with its own organization does not relieve the Bidder/Contractor of the responsibility to make good faith efforts. Prime Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids/proposals in the Contractor's efforts to meet the project goal.
- F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
- G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- H. Effectively using the services of available minority/women community organizations; minority/women Contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

- V. In determining whether a Bidder/Contractor has make good faith efforts, you may take into account the performance of other bidder/Contractors in meeting the Contract. For example, when the apparent successful Bidder/Contractor fails to meet the Contract goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful Bidder/Contractor could have met the goal. If the apparent successful Bidder/Contractor fails to meet the goal, but meets or exceeds the average DBE participation obtained by other Bidder/Contractors, you may view this, in conjunction with other factors, as evidence of the apparent successful Bidder/Contractor having made good faith efforts.

CONNECTICUT DEPARTMENT OF TRANSPORTATION
DBE SUPPLIER/MANUFACTURER AFFIDAVIT

This affidavit must be completed by the State Contractor's DBE notarized and attached to the Contractor's request to utilize a DBE supplier or manufacturer as a credit towards its DBE Contract requirements; failure to do so will result in not receiving credit towards the Contract DBE requirement.

State Project No. _____

Federal Aid Project No. _____

Description of Project _____

I, _____, acting in behalf of _____
(Name of person signing Affidavit) (DBE person, firm, association or organization)
of which I am the _____ certify and affirm that _____
(Title of Person) (DBE person, firm, association or organization)

is certified Connecticut Department of Transportation DBE. I further certify and affirm that I have read and understand 49 CFR, Sec. 26.55(e)(2), as the same may be revised.

I further certify and affirm that _____ will assume the actual and
(DBE person, firm, association or organization)

contractual responsibility for the provision of the materials and/or supplies sought by _____.
(State Contractor)

If a manufacturer, I produce goods from raw materials or substantially alter them before resale, or if a supplier, I perform a commercially useful function in the supply process.

I understand that false statements made herein are punishable by Law (Sec. 53a-157), CGS, as revised).

(Name of Organization or Firm)

(Signature & Title of Official making the Affidavit)

Subscribed and sworn to before me, this ____ day of _____ 20____.

Notary Public (Commissioner of the Superior Court)

My Commission Expires

CERTIFICATE OF CORPORATION

I, _____, certify that I am the _____ (Official)
of the Organization named in the foregoing instrument; that I have been duly authorized to affix the seal of the Organization to such papers as require the seal; that _____, who signed said instrument on behalf of the Organization, was then _____ of said Organization; that said instrument was duly signed for and in behalf of said Organization by authority of its governing body and is within the scope of its organizational powers.

(Signature of Person Certifying) (Date)

State of Connecticut by His Excellency

John G. Rowland

Executive Order No. 16

WHEREAS, the State of Connecticut recognizes that workplace violence is a growing problem that must be addressed; and

WHEREAS, the State is committed to providing its employees a reasonably safe and healthy working environment, free from intimidation, harassment, threats, and /or violent acts; and

WHEREAS, violence or the threat of violence by or against any employee of the State of Connecticut or member of the public in the workplace is unacceptable and will subject the perpetrator to serious disciplinary action up to and including discharge and criminal penalties.

NOW, THEREFORE, I, John G. Rowland, Governor of the State of Connecticut, acting by virtue of the authority vested in me by the Constitution and by the statutes of this state, do hereby ORDER and DIRECT:

1. That all state agency personnel, contractors, subcontractors, and vendors comply with the following **Violence in the Workplace Prevention Policy**:

The State of Connecticut adopts a statewide zero tolerance policy for workplace violence.

Therefore, except as may be required as a condition of employment —

- No employee shall bring into any state worksite any weapon or dangerous instrument as defined herein.
- No employee shall use, attempt to use, or threaten to use any such weapon or dangerous instrument in a state worksite.
- No employee shall cause or threaten to cause death or physical injury to any individual in a state worksite.

Weapon means any firearm, including a BB gun, whether loaded or unloaded, any knife (excluding a small pen or pocket knife), including a switchblade or other knife having an automatic spring release device, a stiletto, any police baton or nightstick or any martial arts weapon or electronic defense weapon.

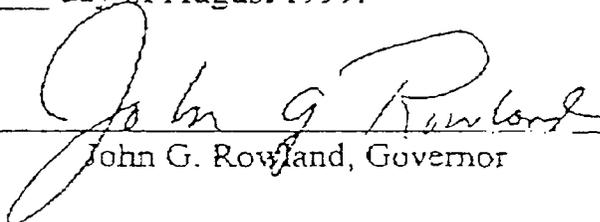
Dangerous instrument means any instrument, article, or substance that, under the circumstances, is capable of causing death or serious physical injury.

Violation of the above reasonable work rules shall subject the employee to disciplinary action up to and including discharge.

2. That each agency must prominently post this policy and that all managers and supervisors must clearly communicate this policy to all state employees.

3. That all managers and supervisors are expected to enforce this policy fairly and uniformly.
4. That any employee who feels subjected to or witnesses violent, threatening, harassing, or intimidating behavior in the workplace immediately report the incident or statement to their supervisor, manager, or human resources office.
5. That any employee who believes that there is a serious threat to their safety or the safety of others that requires immediate attention notify proper law enforcement authorities and his or her manager or supervisor.
6. That any manager or supervisor receiving such a report shall immediately contact their human resources office to evaluate, investigate and take appropriate action.
7. That all parties must cooperate fully when questioned regarding violations of this policy.
8. That all parties be advised that any weapon or dangerous instrument at the worksite will be confiscated and that there is no reasonable expectation of privacy with respect to such items in the workplace.
9. That this order applies to all state employees in the executive branch.
10. That each agency will monitor the effective implementation of this policy.
11. That this order shall take effect immediately.

Dated in Hartford, Connecticut this 4th day of August 1999.



John G. Rowland, Governor

Filed this 4th day of August 1999





Susan Byskiewicz, Secretary of the State

Proposal for the Research Project
Entitled, "Correlation of Nuclear
Density Readings with Cores Cut from
Compacted Roadways"

Correlation of Nuclear Density Readings with Cores Cut from
Compacted Roadways

July 6, 2004

Prepared by:
James Mahoney, Operations Manager and Head Research Engineer

Connecticut Advanced Pavement Laboratory
Connecticut Transportation Institute
University of Connecticut

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I. Introduction and Background Summary

In-place density of hot-mix asphalt (HMA) pavement is one of the most important factors affecting the longevity of pavement. Furthermore, the in-place density measurements of pavements can be used in conjunction with the maximum theoretical density values to compute the air voids present in the pavement. Pavements with too many air voids are prone to raveling, generally caused by an increased rate of oxidative hardening of asphalt binder as well as being susceptible to damage from freeze-thaw cycles due to the increased permeability of the pavement. Pavements with too few air voids are more likely to exhibit permanent deformation in the form of rutting in the surface. In either case, improper in-place density at the time of construction will seriously shorten the service life of the pavement. The Connecticut Department of Transportation (ConnDOT) regularly monitors in-place density during construction and can assess penalties for pavements that do not meet mat or joint density requirements.

The measurement of in-place density is not straightforward and is commonly determined using one of two methods. The first method is to cut a core out of the compacted pavement and measure its density in accordance with one of the prescribed AASHTO test methods. While there is some disagreement on the accuracy of these methods, they are generally viewed as accurate. Because this method involves field and lab work, it is relatively expensive. The second method to determine in-place density is through the use of a nuclear density gauge. Current ConnDOT specifications require use of the nuclear density gauge which has practical advantages over coring for measuring the in-place density. The nuclear density gauge is capable of providing real-time information during construction. Density measurements can be obtained within several minutes of the completion of compaction using the nuclear density gauge. This allows the construction crew to modify their practices to achieve the desired density, as opposed to waiting a minimum of 24 hours for the return of useful lab-

based core results. Therefore, the nuclear density gauge is capable of returning in-place density measurements that can aid in directing construction operations throughout the day without damaging the pavement.

There are, however, several limitations associated with the use of nuclear density gauges for the determination of the in-place density. Nuclear density gauge readings tend to exhibit a bias as compared to the “true density” as measured from core samples. Historically, the density specification developed for use with the nuclear density gauge tried to correct for this bias. To quantify these biases, nuclear density gauges that are to be used on ConnDOT projects are required to undergo an annual bias determination procedure on standard blocks with known densities. (These blocks are located at the ConnDOT Research and Materials Laboratory in Rocky Hill, Connecticut.) This bias determination procedure generates a single value that is either added or subtracted to all density measurements made with a particular nuclear density gauge on asphalt pavements throughout that construction season. In the event that readings from a nuclear density gauge become suspect, ConnDOT has a provision to require the nuclear density gauge bias determination be repeated to ensure the gauge is reading properly. An analysis of the data collected during the 2003 construction season also indicates that the offset between nuclear density gauges readings and core densities vary with the type of asphalt pavement mixture being placed. This suggests that determination of a single bias value on an annual basis may be problematic. Table 1 shows the overall standard deviation for the percent compaction difference between nuclear density gauge readings and the corresponding core density readings for each of the three projects.

Table 1 – Standard Deviation of Percent Compaction Difference Between Nuclear Density Gauge Readings and Core Saturated Surface Dry Densities

| | Contractor | ConnDOT | CAP Lab | Overall Average |
|---------|------------|---------|---------|-----------------|
| Route 2 | 0.88 | 1.71* | 0.5 | 0.69 |
| I-95 | 0.73 | 0.56 | 1.8 | 1.03 |
| I-384 | 1.31 | 1.16 | 1.09 | 1.19 |

* Excluded from Route 2 overall average as nuclear gauge was determined to be malfunctioning.

The data collected from 2003 shows a substantial difference in the data scatter between projects with respect to the difference between percent compaction of the nuclear density gauges and the cores.

During the 2003 construction season, the Connecticut Advanced Pavement Lab (CAP Lab) attempted to develop a procedure to correlate the readings obtained from nuclear density gauges to cores cut from the roadway. The correlation procedure can be seen in Appendix A. The goal of the 2003 construction season correlation procedure was to develop a methodology to correct differences in density values obtained using gauges versus cores cut from the compacted roadway. This was to be achieved by developing a “correlation” factor specific to each project and pavement type. These correlation factors were to account for surface texture differences as well as differences between aggregates.

Three pilot projects were undertaken during the 2003 construction season to validate this correlation procedure. The first project was Route 2 in Bozrah, Connecticut. The in-place density values obtained by the CAP Lab and contractor’s nuclear density gauges showed a consistent relationship to the in-place density values obtained through the analysis of core samples. The ConnDOT nuclear density gauge exhibited mechanical problems for the duration of this project, resulting in an elimination of ConnDOT’s data. The second pilot

project took place on I-95 in Stonington, Connecticut. The data collected from the three nuclear density gauges on this project showed a slightly larger variation than the data gathered from the Route 2 project. The differences between the nuclear density gauge readings and the core values on this project tended to decrease throughout the duration of the project. The third pilot project took place on I-384 in Manchester, Connecticut. The data obtained from this project indicated the greatest variation between the nuclear density gauge values and the core values. The variation observed during the third pilot project has caused the greatest concern regarding the procedures used for nuclear gauge readings as well as the ability to develop a methodology for correlation between gauges and cores.

II. Problem Statement

Nuclear density gauges provide real-time, in-place density information during the construction of asphalt pavements. In order to maximize the advantages associated with the use of the density gauges and to maximize the utility of the gauges, it is imperative to determine a field procedure that results in gauge readings which correlate with core values. The procedure developed for the correlation must take into account many different factors such as the variability inherent to the nuclear gauges, differences in surface texture as well as differences between mixes containing different aggregates, length of gauge reading and number of gauge readings. The need for accurate measurements of the in-place density of pavement is critical since these values are used to determine payment levels for contractors.

III. Objective

The objective of this project is to develop a field procedure for use of the nuclear density gauge that will result in nuclear gauge density data that closely resembles in-place density obtained from cores cut from the compacted

roadway. The improved field procedure and thus measurement method correlation will ensure reduced variability between density values obtained using the nuclear density gauges and cores. This procedure must also address the variability that is inherent to the material, equipment and operator. Measurement of the bulk specific gravity of the cores will be performed using the Corelok testing procedure. The development of the field procedure will also examine the length of the measurement period as well as the number of nuclear gauge measurements required to adequately represent the in-place density of the material in a discrete location.

IV. Evaluation Plan

The success of this project, in terms of achieving high correlations, will be based upon the use of the improved field measurement procedure.

V. Benefits

The ability to use nuclear density gauges to measure in-place density of HMA pavements provides real-time data that can be used to modify construction practices to achieve the desired in-place density during placement without damaging the pavement. Testing using nuclear density gauges can be completed relatively quickly, therefore allowing for the testing of many more locations than would be possible if coring were the only method used to determine in-place density.

The use of nuclear density gauges allows a more comprehensive in-place density testing program which helps to ensure that pavements constructed will meet or exceed their anticipated service life. The findings of this research are intended to avoid potential disputes regarding density measurements where variations in measurements have been noted.

The improved field procedures will be first used on all limited access highway paving projects throughout Connecticut. This procedure would then be phased in on paving projects on secondary roads.

VI. Research Results

The results of this research will be presented in a final report. The final report will include: an Executive Summary; the correlation procedure in a format comparable to AASHTO testing standards; the findings of the pilot projects; as well as the statistical analysis used to verify that the correlation procedure adequately compensated for the variability inherent to nuclear density testing. In addition to the 125 printed copies of the final report, the following items will also be generated:

- Adobe PDF file containing the final report
- Quarterly progress reports (1 electronic copy in both Microsoft Word and Adobe PDF)
- Draft final report (3 printed copies plus one electronic copy in Microsoft Word and Adobe PDF)

The graduate student funded through this project will publish this work as a thesis.

VII. Implementation

The methodologies resulting from this project are expected to be suitable for implementation by ConnDOT and contractors on paving projects occurring on limited access highways in the State of Connecticut. As confidence in the methodology grows, it is anticipated that this methodology will be used on all paving projects throughout Connecticut. The results of this project will be used to improve the quality of the measurements made using nuclear density gauges.

VIII. Work Plan

The proposed work plan is divided into the following tasks:

Task 1 – Technical Committee

A technical committee will be established to provide guidance for the project. This committee will consist of both ConnDOT personnel as well as HMA Industry personnel. The technical committee will assist in the selection of pilot projects during the 2004 construction season. The technical committee will also provide input as to the statistical methods that will be used to evaluate the data.

Task 2 – Literature Review

A literature review will be conducted to examine similar research. Information gathered from this literature review will be used to make adjustments to the work plan to provide the best methodology to ensure the success of the project.

Task 3 - Repeated Measurements - *Thin Lift Mode*

Currently, ConnDOT requires that all measurements made with a nuclear density gauge use a minimum of a 30 second measurement period. During the 2003 pilot projects, the contractor and ConnDOT used a 30 second measurement period while the CAP Lab used a 60 second measurement period (due to the limitations of the nuclear density gauge). All of the nuclear density gauges were set in the *thin lift* mode for all of the measurements made during the 2003 pilot projects. The CAP Lab's nuclear density gauge was the most consistent throughout its use during the 2003 pilot projects. At end of the 2003 construction season, a limited effort was conducted to evaluate the repeatability of measurements taken without moving the gauge. The measurement period used for this effort corresponded to the measurement periods used on the pilot projects. The repeated measurements made on the ConnDOT granite block

(164.5 pcf) with the nuclear gauge that was forced to use the 60 second measurement had a standard deviation based upon percent of maximum density of that was 0.38 while the other two gauges (30 second measurements) each had a standard deviation of 0.95.

This task will involve performing repeated measurements without moving the gauges but using a range of measurement periods (15 seconds, 30 seconds, 45 seconds, 60 seconds, 90 seconds and 120 seconds) to see if the variability observed with the gauges is decreased as the measurement period is increased. This experiment will be performed on at least three different HMA surfaces, made using different types of aggregate, as well as the nuclear density gauge block at the ConnDOT Materials Lab in Rocky Hill, Connecticut. Twenty measurements will be made per measurement length (as defined above) with each nuclear density gauge present at each project site. The nuclear density gauges will not be moved between measurements. Measurements made on HMA surfaces will be performed immediately after construction of that surface and every attempt will be made to place each of the nuclear density gauges on the same area to reduce variability that could be introduced by measuring on an uneven surface. This data will be used to evaluate the variability inherent with each of the nuclear density gauges and this will be compared to information collected during the 2003 construction season to determine if using increased measurement time reduces the variability of each of the gauges and allows for better correlation with core-derived values.

Task 4 – Repeated Measurements - Backscatter Mode

Most nuclear density gauges used to measure the in-place density of HMA pavements are equipped to measure density in two different modes. The first mode is the backscatter mode and the second mode is *thin lift* mode. The goal of the *thin lift* mode is to measure the in-place density of only the pavement layer being placed. Unfortunately, the methodology used in the *thin lift* in-place density

computation varies by manufacturer. Therefore, it is possible that some of the variability observed in the data is introduced by the different *thin lift* methods used by the different nuclear density gauges.

The backscatter mode for nuclear density gauges is generally used to measure the density of thicker HMA pavements. When the backscatter mode is used, the process used by nuclear density gauge to take readings is essentially similar to the *thin lift* mode except the data is not processed through the *thin lift* algorithm.

The experiment conducted for Task 2 will be repeated during this task except that the gauges will be used in the backscatter mode. At the completion of the testing at each site used for Task 2 and 3, two cores will be taken for additional information about the area under test. This data will be used to determine if some of the variability observed during the 2003 construction season was associated with the differences in the measurements obtained by using the *thin lift* mode. This task will be conducted in conjunction with Task 2. Information collected from Task 2 and Task 3 will be used to recommend whether the nuclear density gauges used on the 2004 pilot projects will be used in either the backscatter or *thin lift* mode.

Task 5 – Database

A database will be developed to allow the input of data from all parties. The CAP Lab will house the database. The flow of information will be restricted to prevent problems arising from competing HMA producers receiving data not pertaining to their own projects. The development of a comprehensive database will expedite the data collection as well as the exchange of the data. During the 2003 pilot projects, data was collected in spreadsheets. Each of the participating parties generated a spreadsheet for each day of data collection. A great deal of work was required to ensure all of the data was compiled as there were 3

spreadsheets generated for each day of data collection. A database will eliminate the need to compile 3 spreadsheets for each day's data collection.

Each participant will be provided with a licensed copy of the Filemaker® database program. The main advantage to using this program is its ease of use. Training will be provided to all parties responsible for data entry. This will be the means of transferring data between all parties.

Task 6 – 2004 Pilot Projects

It is envisioned that during the 2004 construction season, at least 3 pilot projects will be undertaken to collect additional information needed to validate a procedure used to correlate nuclear density gauge readings with core values. It will be desirable for data collection to occur for approximately 10 days per pilot project with minimal gaps between paving days to minimize potential material variability. An attempt will be made to include projects that involve different HMA producers as well as different types of aggregates.

During the 2004 construction season, the procedures used to complete the research will be comparable to the procedures used in the 2003 construction season, which can be seen in Appendix A, with several notable exceptions.

These exceptions are:

- All measurements with the nuclear density gauges will be made using the measurement period determined to be appropriate from Tasks 3 and 4.
- All core locations will be in the travel lanes.
- The ten cores collected for original correlation factor determination will be distributed throughout the entire first day's production.

- Five cores will be cut each day after the correlation factor has been established to verify the initial correlation factor. The average of the five will be used to verify the correlation factor for the day. The five daily cores will provide information required to estimate the effect of averaging multiple nuclear gauge readings from random locations to arrive at the average for the day's production.
- It is proposed that alternate cores (located 1 foot in the longitudinal direction of paving) will be cut when time allows. No nuclear density values will be taken at this location unless the original core is damaged. These cores will be used to estimate the amount of variation observed spatially within the mat by comparing the bulk specific gravities obtained using the Corelok procedure.
- The bulk specific gravity for all cores will be determined using the Corelok procedure.
- The contractor will be allowed 1 week to perform bulk specific gravity testing on the cores using the Corelok procedure. (This assumes the contractor chooses to test the cores.) The cores will then be delivered to ConnDOT for testing. Upon completion of testing by ConnDOT, the CAP Lab will retrieve the cores from ConnDOT and will perform bulk specific gravity testing on them using the Corelok method.
- Nuclear density gauge standard counts will be required to be performed everyday and this data will be reported along with the day's data.
- Once per day (on pavement that was placed that day), a location will be chosen where a series of 10 repeated measurements will be performed without moving the nuclear density gauge between readings.

- Each project will also have a location on either an entrance or exit ramp where the operator of each nuclear density gauge will be required to take 4 measurements every day. This location will be selected with safety as the primary factor. These 4, 1-minute, measurements will be collected using the same procedure as is used for the correlation procedure, by rotating the gauge 90 degrees between each measurement. This location will be marked using several dots of temporary paint to ensure the same pavement location and nuclear density gauge orientation will be used throughout the project.

This additional data gathered during the 2004 pilot projects will provide the information needed to quantify the variability observed as well as developing a “correlation” factor for use of the nuclear density gauges. The additional data collected during this research project will be used to provide confidence in the data collected with nuclear density gauges. It is not anticipated that this level of data collection will be required to perform a correlation for a typical paving project.

Coring performed for this project will be performed by either the paving contractor or the CAP Lab. This will be determined on a project by project basis in accordance with the desire of the paving contractor.

Task 7 – Final Report

A final report will be generated for this project. The final report will contain the data and findings of the project. It will also include a discussion of the methodology used to evaluate the data collected during the project and a recommended field procedure for collection of nuclear density gauge readings that can be correlated with core values and used for acceptance purposes.

IX. Anticipated Work Schedule

It is anticipated that the work outlined in this proposal will require 9 months to complete. Figure 1 shows the anticipated work schedule for this project.

X. Anticipated Costs to Complete the Project and Budget Justification

The estimated cost to complete this project is \$77,640. Table 2 contains a detailed budget for the project.

The budget values in the salary portion of the budget represent the anticipated costs associated with the collection of field data, data analysis and presentation of findings. The supplies line item represents the costs associated with the supplies required to perform the field testing as well as the laboratory testing. The equipment line item represents the cost associated with the purchase of a Corelok testing device. This device is required for the laboratory testing portion of the project. The contractals line item includes the costs associated with the reproduction and distribution of the final report. Funds in the travel line item involve the in-state travel costs associated with the collection of the field data.

Table 1 - Budget
Correlation of Nuclear Density Readings with Cores Cut from Compacted Roadways
2004

| | <u>% of Effort⁽¹⁾</u> | | <u>Cumulative</u> |
|--------------------------------------|----------------------------------|-----------------|-------------------------|
| James Mahoney, PI | 13% | 8,129.00 | |
| Dr. Lisa Aultman-Hall | 3% | 2,680.00 | |
| Technical Assistant II - DaDalt | 20% | 8,500.00 | |
| Research Assistant I | 23% | 9,660.00 | |
| Financial Assistant II - Mather | 4% | 1,701.00 | |
| Grad. Stud. - Summer | | 1,269.00 | |
| Grad. Stud. 20 hours/week 1 semester | | <u>8,737.00</u> | |
| Subtotal Salaries & Wages | | 40,676.00 | 40,676.00 |
| | <u>Fringe Rate</u> | | |
| James Mahoney, PI | 32% | 2,601.28 | |
| Dr. Lisa Aultman-Hall | 32% | 857.60 | |
| Technical Assistant II - DaDalt | 32% | 2,720.00 | |
| Research Assistant I | 32% | 3,091.20 | |
| Financial Assistant II - Mather | 48% | 816.48 | |
| Grad. Stud. - Summer | 10% | 126.90 | |
| Grad. Stud. 20 hours/week 1 semester | 15% | <u>1,310.55</u> | |
| Subtotal Fringes | | 11,524.01 | 52,200.01 |
| Supplies | | 500.00 | 52,700.01 |
| Contractuals | | 750.00 | 53,450.01 |
| Equipment ⁽²⁾ | | 10,500.00 | 63,950.01 |
| Travel | | | |
| In-State | | 750.00 | 64,700.01 |
| Indirect (20% of Total) | | 12,940.00 | <u><u>77,640.01</u></u> |

(1) Multiplied current salaries by 1.05 to use in computation

(2) Represents Anticipated Cost of Corelok Testing Device Required for Project
Includes the equipment cost required for cutting cores from the compacted roadway

XI. Qualifications of the Research Team

The Connecticut Transportation Institute (CTI) is a center within the School of Engineering at the University of Connecticut. Established in 1974, CTI is devoted to transportation research, education and service. The personnel at CTI consists of program coordinators, research engineers, technicians, graduate students and faculty in addition to its own financial and administrative personnel. In addition to contract research and programs, CTI is comprised of three special programs (the Connecticut Cooperative Highway Research Program, the New England Transportation Consortium and Connecticut Technology Transfer Center) and one specialized facility: the Connecticut Advanced Pavement Laboratory (CAP Lab).

The Connecticut Transportation Institute is uniquely positioned to lead this project. The experience and successful programming at the CAP Lab and Connecticut Technology Transfer Center are outlined here. Numerous programs and projects similar to those proposed here have been undertaken by CTI units in the recent past.

Connecticut Advanced Pavement Laboratory

The CAP Lab is a 10,000 square foot research and testing facility for HMA. The CAP Lab is accredited under the AASHTO Accreditation Program for Aggregate, Performance Graded Binder as well as HMA testing. The CAP Lab has all of the necessary equipment to perform the required testing for Superpave[®] HMA mix designs. This equipment includes; Dynamic Shear Rheometers, Bending Beam Rheometers, an asphalt binder Direct Tension Tester, a Rotational Viscometer, Pressure Aging Vessels, a Rolling Thin Film Oven, Superpave[®] Gyrotory compactors, an Ignition Oven as well as applicable aggregate testing equipment. The CAP Lab is also equipped to perform dynamic modulus testing of HMA mixtures.

The CAP Lab has two key personnel that provide the backbone of its qualifications in addition to research engineers, graduate students and technicians. Mr. James Mahoney is currently the Head Research Engineer and Operations Manager. In addition to his eight years of research experience, he has acted as instructor for approximately 60 workshops and courses providing guidance to approximately 1,200 professionals and technicians. He is respected as a regional authority and field expert especially in the area of HMA materials. Dr. Jack Stephens brings over 50 years of research, administration and teaching experience to bear in his current role as special technical advisor.

The CAP Lab staff has recently completed a number of large research projects funded by state DOTs and industry. These projects include: *E* - Dynamic Modulus Test Protocol, Problems and Solutions, Application of Thermographic Imaging to Bituminous Concrete Pavements, Determination of the PG Binder Grade for Use in a RAP Mix as well as Connecticut Superpave^{II} Gyrotory Compactor Round Robin*. The Dynamic Modulus project examined the testing protocol and made suggested revisions to eliminate problems encountered determining the Dynamic Modulus. As the Dynamic Modulus is being integrated into the newest Pavement Design Guide, improving the testing protocol to provide accurate and reproducible results is critical.

The CAP Lab personnel are very active with the New England Transportation Technician Certification Program (NETTCP). Certification courses for NETTCP in the Soils and Aggregate Inspector, Soils and Aggregate Laboratory Technician and the Performance Graded Asphalt Binder courses are conducted for state, local and private industry personnel. The CAP Lab staff is involved in NETTCP committees governing the content of Quality Assurance Technologist, HMA Paving Inspector, as well as PG Binder Technician certification courses. The CAP Lab is also represented on the NETTCP Board of Directors. CAP Lab staff members are certified in areas such as PG Binder Technician, HMA Plant

Technician, HMA Paving Inspector, Soils and Aggregate Lab Technician, Soils and Aggregate Inspector, Concrete Technician, Concrete Inspector as well as Quality Assurance. The CAP Lab works in conjunction with the Technology Transfer Center at the Connecticut Transportation Institute to offer approximately five workshops per year involving HMA pavement technology.

Appendix A

Procedure Used for 2003 Field Projects

IN-PLACE DENSITY OF HOT MIX ASPHALT PAVEMENT USING A NUCLEAR DENSITY GAUGE CORRELATED TO CORES

1.0 Scope

- 1.1 This method covers the determination of density of Hot Mix Asphalt (HMA) pavements in accordance with Connecticut Department of Transportation Form 814 section 4.06-9. This method requires the correlation of Nuclear Density Gauge readings with core densities determined in accordance with AASHTO T166.
- 1.2 All Nuclear Density Gauges to be used on a project must be correlated to the HMA and field conditions present at a project by the use of cores.
- 1.3 This correlation procedure must be performed for all HMA mixes to be used as base material, binder course and wearing surface. Leveling courses are exempt from this requirement.
- 1.4 The use of leveling sand is prohibited when testing in accordance with this procedure.

2.0 Apparatus

- 2.1 Nuclear Density Gauge with the factory matched standard reference block including manufacturer's Operator's Manual for the specific gauge, factory calibration, Standard Count Log Book and proper transport case.
- 2.2 A rolling measuring device that will measure from 1 to 1000 linear feet.
- 2.3 Coring machine capable of sawing cores with a minimum 6 inch (150 mm) diameter and with minimal distortion of the specimen.
- 2.4 Diamond blade wet saw.
- 2.5 Forced draft oven capable of maintaining 125 ± 5 degrees Fahrenheit.
- 2.6 Equipment conforming to AASHTO T166 for determining the Bulk Specific Gravity of cores.

3.0 Calibration

- 3.1 The Nuclear Density Gauge shall be calibrated in accordance with ASTM D2950 every 12 months or sooner if the readings from the gauge become suspect.

- 3.1.1 Calibration shall be performed by the gauge manufacturer or by other methods acceptable to the Engineer.
- 3.2 Copies of gauge calibration certificates will be submitted to the Engineer.
- 4.0 Standardization
- 4.1 Standardization of the Nuclear Density Gauge shall be performed at the start of each day's work. The gauge shall be turned on and allowed to stabilize for 10-20 minutes prior to performing Standardization.
- 4.2 Follow the manufacturer's procedure for performing the Standardization.
- 4.3 Record the Standard Count in the Standard Count Log Book. If the Standard Count exceeds the tolerances established by the manufacturer, repeat the Standardization procedure. If the second Standard Count is within the manufacturer's tolerances, the gauge may then be used. If the second Standard Count remains outside of the manufacturer's tolerances, then the Nuclear Density Gauge must be adjusted or repaired as recommended by the manufacturer before use.
- 4.4 After completing Standardization, the Nuclear Density Gauge power should remain on for the rest of the day.
- 5.0 Establishing Nuclear Density Correlation Factor
- 5.1 A correlation factor between Nuclear Density Readings and cores tested in accordance with AASHTO T166 shall be established for each HMA mixture used on a project. A new correlation factor will also be established when the job mix formula changes sufficiently to require a new mix design to be submitted. Also, a new correlation factor will be required when the target compacted thickness is changed or when the correlation verification is outside of the acceptable limits. A new correlation factor should be established whenever the test results from the Nuclear Density Gauge become suspect. If a different Nuclear Density Gauge is used than was correlated for the project, a new correlation factor must be established for that Nuclear Density Gauge.
- 5.2 The correlation factor will be established during the construction of the test strip. If no test strip is being constructed for the project, the first 550 feet of paving will be considered equivalent to a test strip and used to establish a correlation factor.

- 5.3 10 test locations will be chosen by dividing the test strip or equivalent into 10 subsections of equal length. One test location will occur within each of the sections. Its location will be determined randomly in accordance with ASTM D3665 or other method acceptable to the Engineer.
- 5.3.1 For purposes of establishing the correlation factor, no testing shall occur within 50 feet of the starting transverse joint and no testing will occur within 1 foot of either longitudinal edge.
- 5.3.2 For purposes of establishing subsections, the total length of the test strip or equivalent for establishing a correlation factor shall be the total length less the beginning 50 feet. The first subsection will begin 50 feet from the starting transverse joint.
- 5.3.3 No testing for purposes of establishing the correlation factor shall occur within 1 foot of a longitudinal edge. Any random transverse location falling within 1 foot of a longitudinal edge shall be eliminated and a new random transverse location determined. Unless otherwise noted, transverse offsets are referenced from the left edge when facing the direction of paving.
- 5.3.4 All measurements used for random locations shall be rounded to the nearest foot.
- 5.4 Locate points determined randomly as described in section 5.3.
- 5.5 At each test location, 4 nuclear density readings shall be taken. The bias in the gauge should be set to zero. For each reading, the operator must ensure the Nuclear Density Gauge is seated on a flat surface. This may be accomplished by ensuring the Nuclear Density Gauge does not rock when downward force is applied at each corner of the Nuclear Density Gauge. It is critical to maintain maximum contact area between the Nuclear Density Gauge and the pavement surface. At no time shall any gap exceed 0.25 inches. The Nuclear Density Gauge testing mode used for determining correlation factor must be recorded on Connecticut Department of Transportation testing report form YYY and used throughout the entire project.
- 5.5.1 Place the Nuclear Density Gauge parallel with the direction of paving such that the center of the Nuclear Density Gauge is over the random location. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft³.

- 5.5.2 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 5.5.1. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 5.5.3 Rotate the Nuclear Density Gauge 90 degrees placing the center of the Nuclear Density Gauge in the center of the crayon footprint established in 5.5.1. The Nuclear Density Gauge should now be perpendicular to the direction of paving. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 5.5.4 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 5.5.3. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 5.5.5 The Nuclear Density Value in lb/ft^3 for this location will be represented by the average of the 4 readings.
- 5.5.6 This process shall be repeated for all Nuclear Density Gauges to be used on the project.
- 5.6 A core shall be cut at the Contractor's expense from the center of the crayon footprint outlines created in section 5.5. The coring apparatus must be able to cut a core with minimal disturbance to the specimen.
 - 5.6.1 The temperature of the mat shall be sufficiently cool to allow the core to be cut without distorting it. This may be aided by applying ice or dry ice to the surface prior to cutting. It is recommended that the maximum surface temperature of the pavement be 100-120°F prior to cutting the core.
 - 5.6.2 The minimum diameter of the core shall be 6 inches.
 - 5.6.3 The core bit must cut completely through the layer being tested. If the core delaminates after penetrating the full depth of the layer of interest, then coring may stop. If the core does not delaminate, then the coring must extend on until the core is free.
 - 5.6.4 After removing the core, the core should be inspected to ensure it is not damaged or distorted.
 - 5.6.5 Each core shall be labeled using a permanent marker with: Project Number, Core Number matching subsection number, Date, Nominal Maximum Aggregate Size and Traffic Level.

- 5.6.6 Any core that appears to be damaged or distorted shall be rejected. A new test location will be established moving in the direction of paving at least 2 feet to the closest dry location, while maintaining the same transverse offset. A new Nuclear Density Value must be determined for each gauge on the project at the new location.
- 5.6.7 Each core location shall be patched by the Contractor at the contractor's expense.
 - 5.6.7.1 Excess water shall be removed from core hole.
 - 5.6.7.2 The sides of the hole shall be tacked.
 - 5.6.7.3 HMA from the project will be used to fill the hole. Compaction of the core hole shall be accomplished by using a circular tamper.
- 5.7 This process will be repeated until all 10 test locations have been completed.
- 5.8 The cores will be transported by the Contractor back to the Contractor's test facility at the Contractor's expense for Bulk Specific Gravity Determination.
- 5.9 The Bulk Specific Gravity for each core shall be determined by the Contractor using AASHTO T166 – Method A. Pavement layers adhered to the layer of interest must be removed by wet sawing prior to testing. All preparation and testing of the cores is at the Contractors expense.
 - 5.9.1 The dry mass of the core specimen shall be obtained first by drying the specimen to a constant mass in accordance with AASHTO T166 – Method A before determining its weight in water or its Saturated Surface Dry mass.
 - 5.9.2 The cores' bulk specific gravities must be submitted to the Engineer within 48 hours of the construction of the test strip or equivalent.
 - 5.9.3 The Contractor, at no expense, will retain the cores for a period of no less than 2 weeks to allow the Connecticut Department of Transportation to collect the cores at their discretion.
 - 5.9.4 The Connecticut Department of Transportation will perform Independent Assurance testing on the cores in accordance with AASHTO T166.

- 5.10 The percent compaction for each of the cores will be determined by the following equation:

$$(\% \text{ Compaction})_{\text{core}} = 100 * \text{Bulk Specific Gravity} / \text{Maximum Theoretical Specific Gravity}$$

- 5.11 The percent compaction for each Nuclear Density Value (NDV) determined in section 5.5.5 will be found by the following equation:

$$(\% \text{ Compaction})_{\text{NDV}} = 100 * \text{NDV in lb/ft}^3 / (\text{Maximum Theoretical Specific Gravity} * 62.4)$$

- 5.12 Determine the difference between $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$ for each test location.
- 5.13 Determine the average and standard deviation for the difference between $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$.
- 5.14 Multiply the standard deviation found in section 5.13 by 2. Add and subtract this to the average difference between $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$ to determine the acceptable limits for differences between $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$.
- 5.15 Reject all test locations outside the acceptable limits established in section 5.14. If less than 5 test locations are within the acceptable limits, additional locations must be tested to ensure a minimum of 5 test locations are within the ± 2 standard deviations from the average tolerance. Recalculate the average and standard deviation with the reduced set of data.
- 5.16 The average difference between $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$ found after rejecting data points outside the ± 2 standard deviation tolerance is the correlation factor for that particular Nuclear Density Gauge. Repeat step 5.11 through 5.15 for each Nuclear Density Gauge being correlated to be used on the project.
- 5.16.1 Nuclear Density Gauges with correlation factors greater than 5% shall be considered suspect and not utilized on the project until the Nuclear Density Gauge is recalibrated.
- 5.17 The recalculated average difference between the $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}} \pm 2$ recalculated standard deviations will be the established tolerances for the verification cores.

6.0 Verification Cores

- 6.1 For every production day with anticipated tonnage exceeding 1000 tons, a verification of the correlation factor must be performed for each Nuclear Density Gauge used on the project.

- 6.2 One test location selected randomly in the first 150 feet of the first paving pass will be chosen in accordance with ASTM D3665 or other method approved by the Engineer. No verification cores shall be cut within 1 foot of a longitudinal edge or 50 feet of a transverse joint. Any randomly determined verification core location falling within 1 foot of a longitudinal edge or 50 feet of a transverse joint shall be excluded and a new random location determined.
- 6.3 At the test location, 4 nuclear density readings shall be taken. The bias in the gauge should be set to zero. For each reading, the operator must ensure the Nuclear Density Gauge is seated on a flat surface. This may be accomplished by ensuring the Nuclear Density Gauge does not rock when downward force is applied at each corner of the Nuclear Density Gauge. The maximum allowable void space between the Nuclear Density Gauge and the pavement is 0.25 inches.
- 6.3.1 Place the Nuclear Density Gauge parallel with the direction of paving such that the center of the Nuclear Density Gauge is over the random location. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 6.3.2 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 6.3.1. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 6.3.3 Rotate the Nuclear Density Gauge 90 degrees placing the center of the Nuclear Density Gauge in the center of the crayon footprint established in 6.3.1. The Nuclear Density Gauge should now be perpendicular to the direction of paving. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 6.3.4 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 6.6.3. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 6.3.5 The Nuclear Density Value in lb/ft^3 for this location will be represented by the average of the 4 readings.
- 6.3.6 This process shall be repeated for all Nuclear Density Gauges to be used on the project.

- 6.4 A core shall be cut at the Contractor's expense from the center of the crayon footprint outlines created in section 6.3. The coring apparatus must be able to cut a core with minimal disturbance to the specimen.
 - 6.4.1 The temperature of the mat shall be sufficiently cool to allow the core to be cut without distorting it. This may be aided by applying ice or dry ice to the surface prior to cutting. It is recommended that the maximum surface temperature of the pavement be 100-120°F prior to cutting the core.
 - 6.4.2 The minimum diameter of the core shall be 6 inches.
 - 6.4.3 The core bit must cut completely through the layer being tested. If the core delaminates after penetrating the full depth of the layer of interest, then coring may stop. If the core does not delaminate, then the coring must extend on until the core is free.
 - 6.4.4 After removing the core, the core should be inspected to ensure it is not damaged or distorted.
 - 6.4.5 Each core shall be labeled using a permanent marker with: Project Number, Core Number (sequential with the start of the project), Date, Nominal Maximum Aggregate Size and Traffic Level.
 - 6.4.6 If the core appears to be damaged or distorted it shall be rejected. A new test location will be established moving in the direction of paving at least 2 feet to the closest dry location, while maintaining the same transverse offset. A new Nuclear Density Value must be determined for each gauge on the project at the new location.
 - 6.4.7 The core location shall be patched by the Contractor at the contractor's expense.
 - 6.4.7.1 Excess water shall be removed from core hole.
 - 6.4.7.2 The sides of the hole shall be tacked.
 - 6.4.7.3 HMA from the project will be used to fill the hole. Compaction of the core hole shall be accomplished by using a circular tamper.
- 6.5 The core will be transported by the Contractor back to the Contractor's test facility at the Contractor's expense for Bulk Specific Gravity Determination.

- 6.6 The Bulk Specific Gravity for the core shall be determined by the Contractor using AASHTO T166 – Method A. Pavement layers adhered to the layer of interest must be removed by wet sawing prior to testing.
- 6.6.1 The dry mass of the core specimen shall be obtained first by drying the specimen to a constant mass in accordance with AASHTO T166 – Method A before determining its weight in water or its Saturated Surface Dry mass.
- 6.6.2 The core’s bulk specific gravity must be submitted to the Engineer within 48 hours of removing the core.
- 6.6.3 The Contractor at no expense will retain the core for a period of no less than 2 weeks to allow the Connecticut Department of Transportation to collect the core at their discretion.
- 6.6.4 The Connecticut Department of Transportation will perform Independent Assurance testing on the cores in accordance with AASHTO T166.
- 6.7 The percent compaction for the core will be determined by the following equation:
- $$(\% \text{ Compaction})_{\text{core}} = 100 * \text{Bulk Specific Gravity} / \text{Maximum Theoretical Specific Gravity}$$
- 6.8 The percent compaction for the Nuclear Density Value (NDV) determined in section 6.3.5 will be found by the following equation:
- $$(\% \text{ Compaction})_{\text{NDV}} = 100 * \text{NDV in lb/ft}^3 / (\text{Maximum Theoretical Specific Gravity} * 62.4)$$
- 6.9 Compute the difference between the $(\% \text{ Compaction})_{\text{core}}$ and $(\% \text{ Compaction})_{\text{NDV}}$.
- 6.10 Compare the result obtained in section 6.9 with the recalculated average difference (section 5.15) +/- 2 recalculated standard deviations and +/- 3 recalculated standard deviations. If the result is within the +/- 2 recalculated standard deviations, the correlation factor is considered acceptable. If the result is between the +/- 2 and +/- 3 recalculated standard deviations, the correlation factor is considered questionable. Two consecutive questionable correlation factors would warrant the development of a new correlation factor. If the result is outside the +/- 3 recalculated standard deviations, the correlation factor is deemed to be suspect and a new correlation factor must be established.

- 7.0 Nuclear Density Testing - Mat
- 7.1 All gauges used for in-place density determinations must be correlated to cores for the appropriate project placed HMA.
- 7.2 Testing locations will be selected randomly in accordance ASTM D3665 or other method approved by the Engineer.
- 7.3 Testing will occur at the frequencies prescribed in Connecticut Department of Transportation Form 814 section 4.06-9.
- 7.4 At the test location, 4 nuclear density readings shall be taken. The bias in the gauge should be set to zero. For each reading, the operator must ensure the Nuclear Density Gauge is seated on a flat surface. This may be accomplished by ensuring the Nuclear Density Gauge does not rock when downward force is applied at each corner of the Nuclear Density Gauge. The maximum allowable void space between the Nuclear Density Gauge and the pavement is 0.25 inches.
- 7.4.1 Place the Nuclear Density Gauge parallel with the direction of paving such that the center of the Nuclear Density Gauge is over the random location. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 7.4.2 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 7.4.1. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 7.4.3 Rotate the Nuclear Density Gauge 90 degrees placing the center of the Nuclear Density Gauge in the center of the crayon footprint established in 7.4.1. The Nuclear Density Gauge should now be perpendicular to the direction of paving. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 7.4.4 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 7.4.3. Take a reading using a minimum 30 second count. Record this value in lb/ft^3 .
- 7.4.5 The Nuclear Density Value (NDV) in lb/ft^3 for this location will be represented by the average of the 4 readings.

7.4.6 The % compaction for the location shall be determined using the following equation:

$$\% \text{ compaction} = 100 * [\text{NDV} / (\text{Max Theo Sp. Gravity} * 62.4)] + \text{correlation factor}$$

Where: NDV = Average of the 4 Nuclear Readings about the test location
Maximum Theoretical Specific Gravity for that day's production
Correlation Factor = Value found in section 5.16

8.0 Nuclear Density Testing – Longitudinal Joints

- 8.1 All gauges used for in-place density determinations must be correlated to cores for the appropriate project placed HMA.
- 8.2 Longitudinal joint testing locations will be selected randomly in accordance ASTM D3665 or other method approved by the Engineer. All density measurements will be taken with the radioactive source approximately 6 inches from the visible longitudinal joint on the freshly compacted side of the joint.
- 8.3 Testing will occur at the frequencies prescribed in Connecticut Department of Transportation Form 814 4.06-9.
- 8.4 At the test location, 2 nuclear density readings shall be taken. The bias in the gauge should be set to zero. For each reading, the operator must ensure the Nuclear Density Gauge is seated on a flat surface. This may be accomplished by ensuring the Nuclear Density Gauge does not rock when downward force is applied at each corner of the Nuclear Density Gauge. The maximum allowable void space between the Nuclear Density Gauge and the pavement is 0.25 inches.
- 8.4.1 Place the Nuclear Density Gauge parallel with the direction of paving such that the center of the Nuclear Density Gauge is over the random location. Mark the footprint of the Nuclear Density Gauge with a crayon. Take a reading using a minimum 30 second count. Record this value in lb/ft³.
- 8.4.2 Rotate the Nuclear Density Gauge 180 degrees placing the Nuclear Density Gauge back on the pavement within the crayon footprint outline previously made in 8.4.1. Take a reading using a minimum 30 second count. Record this value in lb/ft³.
- 8.4.3 The Nuclear Density Value (NDV) in lb/ft³ for this location will be represented by the average of the 2 readings.

8.4.4 The % compaction for the location shall be determined using the following equation:

$$\% \text{ compaction} = 100 * [\text{NDV} / (\text{Max Theo Sp. Gravity} * 62.4)] + \text{correlation factor}$$

Where: NDV = Average of the 4 Nuclear Readings about the test location
Average Maximum Theoretical Specific Gravity for that day's production
Correlation Factor = Value found in section 5.16

9.0 Report

Project Number

Date

Location of Test

Mixture Type and Thickness

Manufacturer, Model and Serial Number of Nuclear Density Gauge

Gauge Operation Mode

Wet Density Computed by the Nuclear Density Gauge

Maximum Theoretical Specific Gravity or Density

Percent Compaction

Name of Operator

Deviations for the Pilot Projects:

- 1.1 All cores will be tested by the Connecticut Department of Transportation in accordance with AASHTO T166 and ASTM PS 131/132 using the Corelok apparatus
- 2.6 Must also have Corelok equipment conforming with ASTM PS 131/132.
- 5.1 Results will also be generated using the Bulk Specific Gravities as determined using the Corelok equipment in accordance with ASTM PS 131/132. Recommendations as to tolerances for requiring the development of a new correlation factor will be made at the conclusion of the Pilot Projects.
- 5.3 At each test location established an alternate test location will also be established and tested. It will be located by moving in the direction of paving at least 2 feet to the closest dry location, while maintaining the same transverse offset. These cores will be noted with the letter A after the core subsection number. There will be 20 cores taken at the beginning of each project. All 20 cores will be tested by the contractor and then turned over to the Connecticut Department of Transportation for further testing.
- 5.5 The orientation of the Nuclear Density Gauge shall be noted. The goal of this is determine if testing in all 4 directions is required.
- 5.9.3 For purposes of the Pilot Projects, the contractor will after completing tests deliver the cores to the central lab in Rocky Hill, CT.
- 6.2 An additional verification core shall be cut by moving in the direction of paving at least 2 feet to the closest dry location, while maintaining the same transverse offset. This core will be noted with the letter A after the sequential core number.
- 6.3 Direction of gauge for readings must be noted. Similar to section 5.5.
- 6.6.3 For purposes of the Pilot Projects, the contractor will after completing tests deliver the cores to the central lab in Rocky Hill, CT.
- 7.4 Direction of gauge for readings must be noted. Similar to section 5.5.

Appendix B

Resume of Key Personnel

James Mahoney
5 Birch View Drive
Ellington, CT 06029
(860) 870-5959 H
(860) 486-5956 W

**PROFESSIONAL
EXPERIENCE**

Operations Manager, Connecticut Advanced Pavement Laboratory (CAP Lab), March 1996 - Present.

Manage daily lab operations and scheduling, including project management and AASHTO Accreditation. Projects managed include "Superpave Implementation" sponsored by the New England Transportation Consortium, North Eastern States Pooled Fund subcontract between the North East Center of Excellence for Pavement Technology (Northeastern Superpave Center at Penn State) and the CAP Lab, "Application of Thermal Imaging to Bituminous Concrete Pavements sponsored by ConnDOT and several projects sponsored by the Joint Highway Research Advisory Council. Instructed several New England Transportation Technician Certification Program (NETTCP) certification courses including Superpave PG binder Technician. Taught National Highway Institute training courses dealing with Superpave. Instructed Technology Transfer Center course "Superpave for Municipalities". Participated in various ConnDOT Task Force Committees for Asphalt Pavement Improvement. Designed Superpave pavements for experimental test sections as part of the Federal Long-Term Pavement Performance program. Member of the Board of Directors for NETTCP. Serving as co-chair for the NETTCP HMA Paving Technician Committee. Developed modified Superpave procedures for addition of RAP. Designed numerous Superpave mixes for various traffic design levels for contractors.

Adjunct Lecturer, University of Connecticut - Torrington Branch, Fall 1995-Present. Classes taught include Foundations of Engineering, Applied Mechanics I and II.

Computer Consultant, Cornwall Planning Group, 1993-Present. Research, recommend and secure new equipment, maintain computer operations, and oversee the development of database and specialized business applications.

James Mahoney

EDUCATION

Master of Science: Geotechnical Engineering, University of Connecticut, August 1995. Thesis research included the development and implementation of a laboratory testing program.

Bachelor of Science; Civil Engineering, University of Connecticut, May 1993.

CERTIFICATIONS:The following are New England Transportation Technician Certification Program (NETTCP) certifications:

HMA Plant Technician
HMA Paving Inspector
Soils and Aggregate Laboratory Technician
Soils and Aggregate Inspector
PG Binder Technician
QA Technologist

PUBLICATIONS & TECHNICAL REPORTS

Anderson, David A., M. O. Marasteanu, C. E. Antle, A. Stonex, J. M. Mahoney, J. E. Stephens, "Background Information for the Development of a Statistically Based Acceptance Plan for Performance Graded Binders", NECEPT Pooled Fund Study - Task R6, February 2000.

Anderson, David A., Mihai Marasteanu, James Mahoney and Jack E. Stephens, "Factors Affecting the Variability in the SHRP Binder Tests", The Transportation Research Board Presentation and Publication, 1999.

Dougan, Charles E., Jack E. Stephens, James Mahoney and Gilbert Hansen, "E* - DYNAMIC MODULUS Test Protocol - Problems and Solutions", Report Number CT-SPR-0003084-F-03-3, April 2003.

Mahoney, James and Jack E. Stephens, "Connecticut Superpave Gyratory Round Robin - 2003 Final Report", CAP Lab Report Number 2003-01, April 2003.

Mahoney, James and Jack E. Stephens, "Moisture Sensitivity for Hot Mix Asphalt Evaluation for Connecticut Department of Transportation Modified AASHTO T283 Method Versus the Strict AASHTO T283 Interpretation", Connecticut Department of Transportation, June 1999.

James Mahoney

Mahoney, James and Jack E. Stephens, "Superpave Implementation of Binder Testing", NETC Project. 96-1, September 1999.

Mahoney, James, Scott A. Zinke, Jack E. Stephens, et al, "Application of Infrared Thermographic Imaging to Bituminous Concrete Pavements", Final Report - Draft, Connecticut DOT Report Number 2229-F-03-04, July 2003.

Myers, Leslie A., James Mahoney and Jack E. Stephens, "Application of Infrared Thermographic Imaging to Bituminous Concrete Pavements", Interim Report, Connecticut Department of Transportation, August 2001.

Stephens, Jack E., James Mahoney and Charles Dougan, "Early Distress of Open-Graded Friction Course", NETC Proj. 97-4, August 1999.

Stephens, Jack E., James Mahoney and Cory Dippold, "Development of a Test to Measure the Tendency for a Hot-Mix Asphalt to Segregate", JHR99-274, February 2000.

Stephens, Jack E., James Mahoney and Cory Dippold, "Determination of PG Binder to Use in Hot Mix Containing RAP", Final Report, JHRAC Project Number 99-1, Report Number 00-278, April 2001.

AWARDS

E. Russell Johnston, Jr. Award, 1992. Excellence in Civil Engineering Award; Top ranked Junior Civil Engineering student.

Tau Beta Pi, National Engineering Honor Society, Inducted in 1992.

Chi Epsilon, National Civil Engineering Honor Society, Inducted in 1992.