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LTPP Specific Pavement Studies

Construction Report on
LTPP 340900,
SPS-9A Project,
Allentown, NJ, Summer of 1998

Report No. FHWA-TS-00-34-01

December 2000

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Long-Term Pavement Performance

LTPP NORTH ATLANTIC REGIONAL OFFICE
415 Lawrence Bell Drive, Suite 3 - Amherst, New York 14221 - 7805
Tel (716) 632-0804 - Fax (716) 632-4808 - www ITXSTANLEY com/NAROLTPP htm

January 24, 2001
File 620-50051 19/13 11 9

Federal Highway Administration, HRDI-13
Long Term Pavement Performance Team
6300 Georgetown Pike, Room F-209
McLean, Virginia 22101-2296

Attention: **Jack H. Springer**

Dear Mr Springer,

Reference: **Construction Report for LTPP SPS-9A Project 340900, Allentown, New Jersey, Summer of 1998**

Submitted herewith are two copies of the Construction Report on LTPP SPS-9A Project 340900, Highway I-195 at Allentown, New Jersey Basel Abukhater NARO's construction inspection representative prepared this report He was present during the paving of the eastbound overlay construction lanes, built in 1998

The project involved building three core sections, 340901, NJ DOT standard mix with AC-20, 370902, Superpave mix with PG 58-28, and 370903, Superpave alternative mix with PG 52-28 In addition, three NJ DOT supplemental sections were constructed, 370960, Superpave mix with PG 64-22, 370961, Superpave mix with PG 78-28, and 370962, NJ DOT standard mix with 10% RAP and AC-20

This report has two appendices the first one includes General Correspondence, Contract Agreements, Mix Design and JMF for the Test Sections, Inspection Reports, Rolling Straight Edge Reports, and the SPS Project Deviation Report, while the second appendix includes some Photographs

Should you need additional information please call

Sincerely,

Frank Meyer
LTPP NARO Principal Investigator

cc F Palise, NJ DOT (2 copies) L Rodriguez, FHWA-LTPP
G Rada, LTPP-TSSC (2 copies) B Abukhater LTPP NARO
File Copies (2 in Buffalo & 2 in Cambridge)

LTPP Specific Pavement Studies

Construction Report on LTPP 340900, SPS-9A Project Allentown, NJ, Summer of 1998

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Prepared by

Stantec Consulting
415 Lawrence Bell Drive, Suite 3
Amherst, New York 14221

Prepared for

Federal Highway Research Administration
Turner-Fairbank Highway Research Center
Office of Infrastructure R & D
6300 Georgetown Pike, Room HRDI-13
McLean, Virginia 22101-2296

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16 Abstract

This report provides a description of the construction of the SPS-9A experiment, Superpave™ asphalt binder study, field validation of the asphalt specifications and mix design, conducted as part of the Federal Highway Administration (FHWA) Long Term Pavement Performance (LTPP) program in Allentown, New Jersey The overlay construction of six asphalt concrete pavement test sections, in the East Bound lanes of I-195, started in April 1998 and was completed in June 1998 The construction started with milling of the top 76 mm then paving with a 76 mm HMAC base course Finally 63 5 mm of the surface layer was paved using the NJ standard mix with AC-20 for section 01, Superpave™ mix with PG 58-28 for section 02, and Superpave™ alternative mix with PG 52-28 for section 03 Superpave™ mix was also used in the paving of the surface layer of the NJ DOT supplemental sections where PG 64-22 was used for section 60 and PG 78-28 for section 61 while a 10% RAP aggregate mixture with AC-20 was used for the paving of the last supplemental section 62 This report contains a description of the milling operation, the paving operations, the equipment used by the contractor, the field sampling and testing operations during and after construction, the laboratory gyratory compacted samples preparation and testing, problems encountered during construction, specific site circumstances, deviations from the standard guidelines, and a summary of the initial data collection

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Superpave™, PG Grade Asphalt Cement, Gyratory Compaction, $N_{initial}$, N_{design}, N_{max}, Volumetrics, Monitoring, Survey, FWD, Profilometer™, MDS	

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Construction Report on LTPP 340900, SPS-9A Project, Allentown, NJ, Summer of 1998

I. Introduction

This report describes the construction of the SPS-9A Project, Superpave™ (SUperior PERforming asphalt PAVEments) asphalt binder study, at Allentown NJ Superpave™ is a mix design system which incorporates previous experience (Level I) and, through use of material test results of both binders and mixes, enables the designer to predict the performance of the pavement in terms of occurrence of rutting, fatigue cracking, and low temperature transverse cracking (Levels II and III) Superpave™ was developed by the Strategic Highway Research Program (SHRP) The SPS-9A experiment was developed by the Federal Highway Administration (FHWA) Long Term Pavement Performance (LTPP) Division in cooperation with federal, state, and provincial highway personnel The experiment design requires a minimum of 3 test sections to be constructed at each location of 32 projects in the experiment, as indicated by the unshaded cells in Table 1, representing specific combinations of average temperatures, temperature extremes, and moisture conditions Construction can include new construction, reconstruction or overlay The minimum three test sections should consist of section 01, agency's standard mix, section 02, Superpave™ design mix, and section 03, Superpave™ design mix with alternative binder with a grade either higher or lower than the required Superpave™ binder such that the performance characteristic of interest relative to the climate and pavement structure (either fatigue, low temperature or permanent deformation) may be expected to exhibit deterioration earlier in the service life of the pavement Since this is a material comparison study, the pavement structure and thickness should be the same for all the test sections Supplemental sections could be added to investigate additional experimental factors of specific agency interest

The objectives of the SPS-9A experiment are to observe the performance of Superpave™ mixes as well as comparable agency mixes, and to verify the asphalt binder selection procedure in SHRPBIND, which is a process for determining the environment (high and low temperatures) in which the pavement is constructed and will function Table 2 lists the projects at five locations in the LTPP North Atlantic (NA) region where the SPS-9A experiment is being implemented, and where the SHRPBIND was used to display the PG asphalt grades from a particular weather station location showing the 50% and 98% reliability based on the temperature records at each site Table 3 is another listing of these NA projects and the binder selection method used The agencies' participation in this experiment depends on the availability of equipment to fulfill the performance and volumetric testing requirements as summarized in Table 4

The New Jersey Department of Transportation (NJ DOT) Project, Figure 1, lies in the wet-freeze environmental area with a sand to silty sand subgrade/embankment material, 127 mm of granular subbase and 127 mm of granular base of coarse grained soil-aggregate mixture, 152 mm of HMAC binder course, and 76 mm of HMAC surface course, Figure 2 The east bound lanes involved building three LTPP core sections, 340901 NJ standard mix with AC-20 asphalt cement, 340902 Superpave™ mix with PG

58-28 asphalt cement, and 340903 Superpave™ alternative mix with PG 52-28 asphalt cement in the surface layer Three supplemental sections were also built in the east bound lanes, 340960 Superpave™ mix with PG 64-22, 340961 Superpave™ mix with PG 78-28 asphalt cement, and 340962 NJ DOT RAP mix with AC-20 asphalt cement in the surface layer The base layer was paved throughout the project with 25 mm maximum Superpave™ mix with PG 64-22

The project is built on the East Bound lanes of I-195, from old York road (exit 8) to west of Imlaystown-Hightstown road (exit 11), just 25 kilometers east of the city of Trenton and approximately 45 kilometers west of the ocean coast Figure 3 is a site location map showing the FHWA-LTPP NJ GPS and SPS test site locations I-195 is a four-lane median divided highway, functionally classified as rural principal arterial interstate The east bound six test sections are constructed adjacent to each other in series starting at the construction chainage of 17+200 at MP 9 6, and ending at 20+300 at MP 11 55 (construction stationing is in meters and increasing west to east) The LTPP station 0+00 of the first section 340901 is at construction station 17+352, and the LTPP station 5+00 of the last section 340962 is at construction station 20+204, Figure 4 and Table 5 Each monitoring section is 152 4 meters long and 3 7 meters wide The outer shoulders, adjacent to the test sections, are paved 3 7-meter wide shoulders The inner shoulders of I-195 are constructed with a paved width of 0 9 m

The project was built as part of the New Jersey Department of Transportation, Federal Project No NH-IM-195-8 (44) 0 "Resurfacing, Rte 195 Section 1L, 2H, 3L, 4J, 5C, 6E, & 7C" which begins in Hamilton township and runs easterly for a distance of 50 km through townships of Washington, Howell, Millstone, Upper Freehold, and Jackson in the counties of Mercer, Monmouth, and Ocean The project was advertised for bids in 1997 using NJ DOT standard contract administration and construction procedures The contract was awarded on June 27, 1997 to Trap Rock Industries, Inc of Kingston, NJ for the amount of $9,408,534 70

The first meeting was held at the NJ Department of Transportation in Trenton on Dec 14, 1994, with representatives from NJ DOT, FHWA, and the LTPP North Atlantic Regional Office (NARO), to discuss and plan the construction of the SPS-9A experiment A pre design meeting was held on May 8, 1996 at the NJ DOT Of particular focus in this meeting were the site layout, binder selection and specification, testing and sampling plans, sites instrumentation, and materials specifications The meeting was attended by NJ DOT, FHWA, NARO, SWK Pavement Engineering, and Bettigole Andrews & Clark Consulting Engineers A pre-construction planning meeting was held at the same location on October 1, 1997 to review and discuss in detail questions and concerns that the NJ DOT staff had regarding the construction, planning, sampling, testing, and monitoring of the SPS-9A experiment Also discussed in the meeting were the project special provisions, the QC/QA plan, and the LTPP laboratory testing protocols NJ DOT, FHWA NJ Division, Rutgers University, Trap Rock Industries, and LTPP NARO personnel attended the meeting The staff from NJ DOT Research and Materials and from LTPP NARO resumed the meeting on the afternoon of the same day to review the NJ data elements residing in the FHWA-LTPP database

Three Pre-paving meetings were held at the NJ DOT facilities on March 26, May 11, and June 15, 1996 to discuss the details of the project The meetings were attended by the contractor staff and by NJ DOT Construction, Maintenance, Traffic, Pavement

Management, Planning, Research and Materials, FHWA, and by the LTPP NARO representatives

On site and in charge of the construction work was Mr Jim Timpone, NJ DOT resident engineer and Mr Larry May NJ DOT project inspector Ms Mary Ellen Callahan and others from the NJ DOT Materials and Laboratory handled all the material sampling on site as well as the gyratory compaction and the laboratory testing required All the lab testing of the field samples and the gyratory compaction were performed the night of paving by the following three laboratories

- NJ DOT Regional Central Lab – Samples from sections 340901, 60, and 62
- The Contractor's Lab – Samples from sections 340903 and 61
- The FHWA Trailer Lab – Samples from section 340902

Testing of the constituent materials and of the laboratory mixed loose and gyratory compacted samples and on cores were performed at the NJ DOT Materials Testing Laboratory in Trenton NJ (LTPP Laboratory Assigned Code 3421) Additional testing will be performed by the FHWA Contractor Laboratory, Braun Intertec in Minneapolis MN (LTPP Laboratory Assigned Code 2711), and the Superpave Regional Test Center, pending finalizing the level III testing to be performed on gyratory samples and cores from the Superpave™ test sections

Trap Rock Industries Inc used asphalt from their batch asphalt plant in Florence, NJ The hauling distance between the SPS-9A sites and the plant is 23-25 kms and takes 20-25 minutes travel time This, three-ton, four cold bins, one RAP bin batch mix asphalt plant, was manufactured by Barber Greene model number Batch PAC The contractor provided the aggregates and CITGO Oil Co of Paulsboro NJ provided the AC-20 (PG 64-22) asphalt cement, used in the paving of all the base layer and the surface of sections 340901, 340960, and 340962 Suit-Kote of Cortland NY provided the Superpave™ PG grades, PG 58-28, used in the surface paving of section 340902, PG 52-28, used in the surface paving of section 340903, and PG 76-28, used in the surface paving of section 340961 All mix designs used in this project are included in Appendix A Photos of the asphalt plant taken on June 16, 1998 are included in Appendix B

The pavers used on site were CAT models AP 1050 and 3010, which were used to pave widths of 3 7 meters Two rollers were used on site for compaction, the main breakdown roller was a Double Drum Vibratory Caterpillar model CB-634C 12 9 tons gross weight, and the final roller was also a Double Drum Vibratory Caterpillar, 10 1 tons gross weight The milling equipment used on site was a CMI model PR-800 with a cutting head width of 2 2 meters

II. Project Details

East Bound LTPP Core Overlay Construction Layout

The three main LTPP SPS-9A LTPP core sections are laid in series starting with section 340901, Standard NJ DOT Class 1 mix design with AC-20 (PG 64-22) asphalt cement, with its beginning station 0+00 at construction station 17+352 followed by section 340903, Superpave™ alternative design with PG 52-28 asphalt cement, with its beginning station 0+00 at construction station 17+752 and finally section 340902, Superpave™ design with PG 58-28 asphalt cement, with its beginning station 0+00 at construction station 18+852 and its last station 5+00 at construction station 19+004 All

construction stations are in meters and increasing west to east, Figure 4 and Table 5 The two sampling areas before and after each section, each 76 2 meters long, were paved with the same design to be used for coring at six intervals, the first interval is A at 0 months right after paving and the next is B at 6 months, C at 12 months, D at 18 months, E at 24 months, and finally F at 48 months

East Bound NJ Supplemental Overlay Construction Layout

The three NJ DOT supplemental NJ sections are laid in series starting with section 340960, Superpave™ alternative design with PG 64-22 asphalt cement, with its beginning station 0+00 at construction station 19+252 followed by section 340961, Superpave™ alternative design with PG 78-28 asphalt cement, with its beginning station 0+00 at construction station 19+652 and finally section 340962, Standard NJ DOT mix design with AC-20 asphalt cement and 10% RAP, with its beginning station 0+00 at construction station 20+052 and its last station 5+00 at construction station 20+204 All construction stations are in meters and increase from east to west, Figure 4 and Table 5 The two sampling areas before and after each section, each 76 2 meters long, were paved with the same design to be used for coring at six intervals, the first interval is A at 0 months right after paving and the next is B at 6 months, C at 12 months, D at 18 months, E at 24 months, and finally F at 48 months

Field Materials Sampling and Testing

Locations for field material sampling and testing are summarized in Figures 5 through 7 for the core sections, and Figures 8 through 10 for the supplemental sections Seven stages of field material sampling and testing are required the first before construction or paving, on the existing pavement This stage involves first pushing auger probes in the shoulder to 6 m below the surface to check the depth to rigid layer (this activity was not performed since data is already available in the database from the GPS section 341011 which falls just west of the SPS-9A project) Then coring 305-mm cores, which are examined for stripping, and the core holes are used for collecting bulk and moisture samples from the unbound base, subbase, and subgrade layers The second stage of sampling and testing, performed during construction or paving, involves measuring the density, using the nuclear gauge, of the AC base and surface layers and collecting hot mix samples of the surface layer and constituent aggregate and asphalt cement for laboratory testing and preparing lab mixed gyratory samples Also this stage involves collecting combined aggregate sample and asphalt cement to be sent to the LTPP Materials Reference Library (MRL) for storage The first interval of coring, right after construction, referred to as interval A at time = 0 months, is also part of the second stage of sampling The third to seventh stages of sampling only require collecting 152-mm cores, from the sampling areas before and after each of the sections These are performed at specific intervals starting at interval B at time = 6 months, then interval C at time = 12 months, then interval D at time = 18 months, then interval E at time = 24 months, and finally interval F at time = 48 months The field-testing is summarized in Table 6 and the material sampling is summarized in Table 7, while Table 8 lists the asphalt, aggregate, and mix bulk sampling performed during construction for laboratory testing and for shipping to MRL

The sampling of the hot mix in the field from the paver and the subsequent handling and preparation of gyratory compacted specimens at the required compaction temperature can

pose problems There is a need for consistency in the temperature regime experienced by the mix until compaction, particularly for the 28 Gyratory Compacted Specimens (GCS), collected from the Superpave™ section 02, which are intended for performance testing The six Quality Control samples, each of about 6 to 6 5 kilograms, should be immediately placed into an insulated container and delivered to the laboratory for GCS compaction

Laboratory Materials Testing

The laboratory material testing plan for each of the subsurface unbound layers and the combined aggregate and asphalt cement is summarized in Table 9 The LTPP test designation and Protocol number for each test are listed and so is the number of tests per layer and material source or test or sample location For the AC surface layer, three main sets of samples are prepared and tested so that the aging characteristics of the binder and mix can be assessed The constituent aggregate and asphalt cement are used to prepare a lab mixed lab compacted set for comparison with the plant mixed lab compacted set and the plant mixed field compacted set (cores) The gyratory compactor is used for preparing the lab and field specimens using AASHTO TP4 procedure Three gyration levels are of interest, N_{ini} (initial number of gyrations), N_{des} (design number of gyrations), and N_{max} (maximum number of gyrations) The range of values for N_{ini}, N_{des}, and N_{max}, shown in Table 10A, are based on the appropriate traffic loading and environmental conditions The actual values for N_{ini}, N_{des}, and N_{max} for the NA region SPS-9A projects, including the NJ sites, are listed in Table 10B

For sections 01, 03, 60, 61, and 62, 9 lab mixed lab compacted gyratory specimens are required from each test section, 3 of which to be compacted at N_{max} and 6 at 7% air voids From the same sections, 6 plant mixed lab gyratory compacted specimens are required at N_{max} Also 1 lab mixed loose AC sample is kept for maximum specific gravity determination, and 2 plant mixed loose AC samples are collected for maximum specific gravity determination and extraction to determine the asphalt content and the extracted aggregate gradation The laboratory tests, LTPP test designation, LTPP protocol, number of tests per section, and the source of material or specimen are listed in Table 11

For the Superpave™ section 02, 40 lab mixed lab compacted gyratory specimens are required, 6 of which to be compacted at N_{max}, 2 at 3% air voids, and 32 at 7% air voids From the same section, 34 plant mixed lab gyratory compacted specimens are required, 6 to be compacted at N_{max}, 2 at 3% air voids, and 26 at 7% air voids Also 1 lab mixed loose AC sample is kept for maximum specific gravity determination, and 3 plant mixed loose AC samples are collected for maximum specific gravity determination and extraction to determine the asphalt content and the extracted aggregate gradation The laboratory tests, LTPP test designation, LTPP protocol, number of tests per section, and the source of material or specimen are listed in Table 12

The laboratory testing on the cores for all the sections and all the intervals are listed in Table 13 From each section at each interval 8, 152 mm diameter, cores are tested except for the Superpave™ section 02 at interval A, from which 34 cores were needed but only 18 were collected since the Superpave™ laboratory testing by the Superpave Regional Testing Center has not been finalized yet

In addition to the NJ DOT Materials Testing Laboratory in Trenton NJ (LTPP Laboratory Assigned Code 3421), some of the testing, especially the Resilient Modulus, Tensile Strength, and Creep Compliance will be performed by the FHWA-LTPP Contractor Laboratory, Braun Intertec in Minneapolis, MN (LTPP Laboratory Assigned Code 2711) and the Superpave Regional Test Center, the latter pending finalizing the level III testing to be performed on the gyratory samples and cores from the Superpave™ test section Table 14 lists the lab, field, and core samples from the project and the laboratory assigned for testing each sample

Table 15 lists the dates of all the field-testing and sampling activities before, during, and after construction at various periods Table 16 lists the actual dates as compared to the guidelines for the initial monitoring activities performed after construction of the SPS-9A sites Figure 11 is a schematic diagram of the sections with the paving information

III. Pre Construction Operations and Performance

Pre construction testing and sampling was done on December 1 and 2, 1997 Table 6 lists all the field testing, number of tests, and location designation which are performed on site before construction and Table 7 lists the material sampling of the different subsurface layers, number of samples, and sample numbers which were collected from the site Table 9 lists the laboratory testing to be performed on the collected samples by the NJ DOT laboratory

The site was initially marked during the first week of December 1997 following the guidelines for marking LTPP SPS sections Figures 12 and 13 show the paint marks used on the sections to identify the location of the beginning of each of the sections and at 30 5-m intervals

Profilometer™ testing was initially performed on December 13, 1997 The International Roughness Index (IRI) values of five runs and the average at the left, right, and both wheel paths for each of the six sections, before and after construction, are presented in Table 17 The site was also videoed on December 13, 1997

The Falling Weight Deflectometer (FWD) and Manual Distress Survey (MDS), including transverse Dipstick™ measurements, on the existing surface layer of the sections were performed on December 2 and 3, 1997 The MDS indicated that there were low, moderate, and high severity longitudinal and transverse cracks in all the sections Also some low, moderate, and high severity fatigue and block cracking as well as patching was observed in most of the sections Low severity bleeding was also noticed in sections 03, 60, and 62, and finally polished aggregate was observed in all the sections, Table 18 The rut depth values in the left and right wheel paths, as determined from the Dipstick™, before and after construction, are summarized in Table 19

IV. Construction

Table 20 lists all the dates of the construction activities for all the sections The milling operation started on April 29, 1998 with section 340901 followed by sections 340903, 340902, 340960, 340961, and finally 340962 The paving of the base course was performed in the same manner starting, with section 340901, in April 1998 followed by sections 340903, 340902, 340960, 340961, and finally 340962 The paving of the surface layer started during the night of June 17, 1998 with section 340901 followed by 340903 The following night, June 18, 1998, the paving resumed with section 340902

then 340960 followed by 340961, which passed the midnight hours and finally 340962 was paved during the early hours of June 19, 1998 Table 21 lists the dates, times, layer paved, thickness, number of times and value of the lay down temperature, air temperature, and weather condition during paving Figure 11 also shows the surface layer paving dates, times, and sample locations

Nuclear gauge densities were measured on the base and surface AC layers, the values are listed in Table 22 The construction guidelines require the use of the rod and level survey for taking elevation readings at a minimum of five locations (edge, outer wheel path, mid lane, inner wheel path, and inside edge of pavement) at longitudinal intervals no greater than 15 2 meters This condition is to ensure the conformity of the different layers to the design thickness and for comparison with other projects at varying locations The results of the rod and level surveys are listed in Table 23

Cores drilled from the sampling areas of each of the six sections, at interval A (time = 0 months), are recorded in Table 24 This table lists the thickness of the surface layer of each of the cores for comparison with the design thickness of 63 5 mm and the deviation from the construction guidelines, which require that the thickness be within 10 mm of design Table 25 is a summary of the thickness measurements from the rod and level survey and the cores at interval A and how much deviation from the design thickness exists

Surface Condition and Preparation - Milling

There was no surface preparation performed on any of the sections before or after the milling operation Manual Distress Survey (MDS) was performed on December 2 and 3, 1997 to identify the surface condition before milling and paving, Table 18 The MDS indicated that there were low, moderate, and high severity longitudinal and transverse cracks in all the sections Also some low, moderate, and high severity fatigue and block cracking as well as patching was observed in most of the sections Low severity bleeding was also noticed in sections 03, 60, and 62, and finally polished aggregate was observed in all the sections

The milling operation was performed by a subcontractor who used a ROTO-MILL Pavement Profiler model type PR-800 manufactured by CMI Corporation, Oklahoma City The milling operation started on April 29, 1998 with section 340901 and finished with section 340962 Each pass of the milling equipment was 2 2 meters wide The design called for removal of 76 mm of the existing pavement surface layer, which was all of the NJ HMAC surface mix The actual milling depth in the SPS-9A sections varied between an average depth of 38 to 96 mm No Manual Distress Survey (MDS) was performed after milling

AC Dense Graded Base Layer Paving - LTPP Core Sections

The base layer paving on the SPS-9A sections started in April 1998 in section 340901 and was completed with section 340962, Table 21 A tack coat of CSS-1H emulsion was applied, at the rate of 2 08 liters per square meter, on the milled surface prior to paving the base course A standard NJ DOT mix, with AC-20 asphalt cement, was used on all six sections (Job Mix Formula in Appendix A) The design thickness is 76 mm but the actual final thickness varied between an average thickness of 39 to 98 mm The guidelines of the SPS-9A experiment do not require sampling and testing of the base

layer as is required of the surface layer The only bulk samples of the HMAC base layer, collected on June 3, 1998, were shipped to the MRL for storage and future tests Three nuclear gauge density measurements were performed on the base layer of all the sections at 0 9 m offset from the edge of pavement, at station 30 m (1+00), 76 m (2+50), and 122 m (4+00), Figures 5-10 The results from these measurements are listed in Table 22

AC Dense Graded Surface Layer Paving, EB LTPP Core and EB NJ Supplemental Sections

The surface layer paving on the SPS-9A sections started on June 17, 1998 in section 340901 and was completed during the early hours of June 19, 1998 with section 340962 A tack coat of CSS-1H emulsion was applied, at the rate of 0 86 liters per square meter, on the surface of the base layer prior to paving the surface course

Surface layer overlay paving on the east bound lanes of the three main experiment SPS-9A sections with virgin material started on June 17, 1998 in section 340901 and was completed on June 18, 1998 with section 340902 The three SPS-9A supplemental sections in the eastbound lanes were paved starting with section 340960 on June 18, 1998 and completed on June 19, 1998 with the paving of section 340962 The SPS-9A guidelines require the construction of a minimum three sections that include a design based upon the highway agency's standard hot mix asphalt (HMA) mixture design, Superpave™, and using a Superpave™ mixture with a SHRP binder grade either higher or lower than required by the Superpave™ design method A standard NJ DOT mix, with AC-20 asphalt cement, was used in section 340901, a Superpave™ mix with PG 58-28 asphalt cement was used in section 340902, and a Superpave™ alternative mix with PG 52-28 asphalt cement was used in section 340903 On the supplemental sections, in the east bound lanes, a Superpave™ mix with PG 64-22 asphalt cement was used in section 340960, a Superpave™ mix with PG 76-28 asphalt cement was used in section 340961, and a standard NJ DOT mix with 10% RAP and AC-20 asphalt cement was used in section 340962 (Job Mix Formulas in Appendix A) The design thickness is 63 5 mm but the actual final thickness varied between an average thickness of 58 to 74 mm Table 21 lists the paving dates, lay down temperatures and the weather condition during paving

Test strips for each of the sections were placed and approved before paving was allowed to continue These test strips were used to establish a rolling pattern and were approved only if all specifications for gradation, binder percent, air voids, VMA, VFA, and field density were met

Bulk samples of the surface layer include hot mix field samples and constituent materials for quality control tests, Superpave™ materials and mixture tests, binder characterization, and shipment to the MRL for future tests For the purpose of binder and mix characterization tests, the SPS-9A experiments are classified into Main Study and Level III study The amount of Superpave™ level III performance tests defines the difference between the Main Study and Level III study projects, Table 4 From each of sections 340901, 340903, 340960, 340961, and 340962 9 laboratory mixed samples and 6 plant mixed samples are required to prepare gyratory compacted specimens for testing by the NJ DOT lab as indicated in Table 11 One loose lab mixed sample and two loose plant mix samples are also required for completion of the tests needed For the

Superpave™ section 340902, 40 laboratory mixed samples and 34 plant mixed samples are required to prepare gyratory compacted specimens for testing by the NJ DOT lab, the LTPP contractor lab Braun Intertec in Minneapolis MN (LTPP Performance Tests), and for storage at the MRL for future testing by the Superpave Regional Testing Center, as indicated in Table 12 One loose lab mixed sample and three loose plant mix samples are also required for completion of the tests needed

Three nuclear gauge density measurements were performed on the surface layer of all the sections at 0 9 m offset from the edge of pavement, at station 30 m (1+00), 76 m (2+50), and 122 m (4+00), Figures 5-10 The results from these measurements are listed in Table 22

Coring of the AC surface was performed at five intervals, the first at interval A, 0 months after construction, this was conducted on June 24, 1998 and the second at interval B, 6 months after construction, this was conducted on December 1 and 2, 1998 The results of the cores from interval A, in Table 24, indicate some thickness values outside the limits specified in the construction guidelines, mainly $\pm$ 10 mm for AC surface layer Also, the as-compacted thickness of the asphalt concrete layer in any test section shall be constructed to within $\pm$ 10 mm of the average value of the other test sections in the project Some deviations to this part of the guidelines were noticed

The thickness from the cores are not as accurate as the thickness from the rod and level for two reasons, first these cores are taken from the sampling areas before (station 0-) and after (station 5+) each section, second the measurements are done on site with a regular measuring tape or ruler Table 23 displays the thickness of the milled surface, the base layer, and the surface layer, as determined from the rod and level, while Table 24 displays the thickness of the surface layer, as determined from the cores, and how much the surface differs from the design Also Table 25 gives a summary of the surface layer thickness from the rod and level and the cores at interval A and how much each average differs from the design thickness Also indicated is the average combined thickness of every five sections and how that thickness compares to the value of the sixth section From the rod and level survey, the surface elevations from section 340901 and 340962 did not meet the requirements At interval A the cores from sections 340903 did not comply and had a difference of more than 11 mm from design and from the average of the other sections

Asphalt Cement and Aggregate Sampling

The asphalt plant was visited on June 16 and June 17, 1998 and pictures were taken throughout the plant site, Photos in Appendix B Three sets of samples were taken of the four PG grade asphalt cement (AC-20, PG 52-28, PG 58-28, and PG 76-28) and the three combined aggregate types used (Marshall Aggregate, Superpave™ Aggregate, and RAP Aggregate) The first set of samples was collected and sent to the MRL for storage, Table 8B The second set of samples was collected for the NJ DOT lab to be used in the SPS-9A laboratory testing of the constituent materials as described in Table 9 While the third set of samples was collected also for the NJ DOT lab for preparing the laboratory mixed samples that will be used to prepare the lab gyratory specimens for testing as listed in Tables 11 and 12 Table 7 lists all the asphalt and aggregate bulk sampling performed during construction and Table 8 separates the part to be used for testing as part of the SPS-9A experiment and the part for shipping to the MRL facility in Reno, Nevada

Deviations from the Construction Guidelines

The SPS-9A construction guidelines require consistency in layer thickness for each site The thickness of the surface layer should not deviate more than 10 mm from design and from the average value of the other test sections in the project Few deviations in the surface thickness were noted especially in sections 340901, 340903, and 340962, as presented in Table 25

The construction guidelines state that the finished surface of the overlay should be smooth and provide an excellent ride level As a target, the as-constructed surface should have a pro-rated profile index of less than 160-mm per km as measured by a California type Profilograph and evaluated following California Test 526 No such test was performed on the project and only the NJ DOT Rolling Straight Edge and the LTPP Profilometer™ were used to measure the profile, the results are displayed in Table 17

Also according to the Guidelines, deflection survey measurements were supposed to be performed 1-3 months after the construction is completed The deflection survey was delayed two weeks

V. Post Construction Operations and Initial Performance

After completion of the paving and after opening the road for traffic, it appears a vehicle leaked oil on the mat in the sampling area (5+) of section 340901 The damage was noticed on the morning of June 19, 1998 and pictures were taken of the area, as shown in photos 9 and 10 in Appendix B The damage started at a distance of 38 meters from the 5+00 of section 340901 and continued for 40-50 meters The photos were taken at the most severe damage, which was at a distance of 55 meters from the 5+00 location This damaged area was removed and replaced on July 15, 1998

All the sections were marked on June 24, 1998 as required in the guidelines Figures 12 and 13 show the paint marks used on the sections to identify the location of the beginning of each of the sections and at 30 5-m intervals

Profilometer™ testing was performed on August 5, 1998 The International Roughness Index (IRI) values of five runs and the average at the left, right, and both wheel paths for each of the six sections, before and after construction, are presented in Table 17 The site was also videoed on August 5, 1998

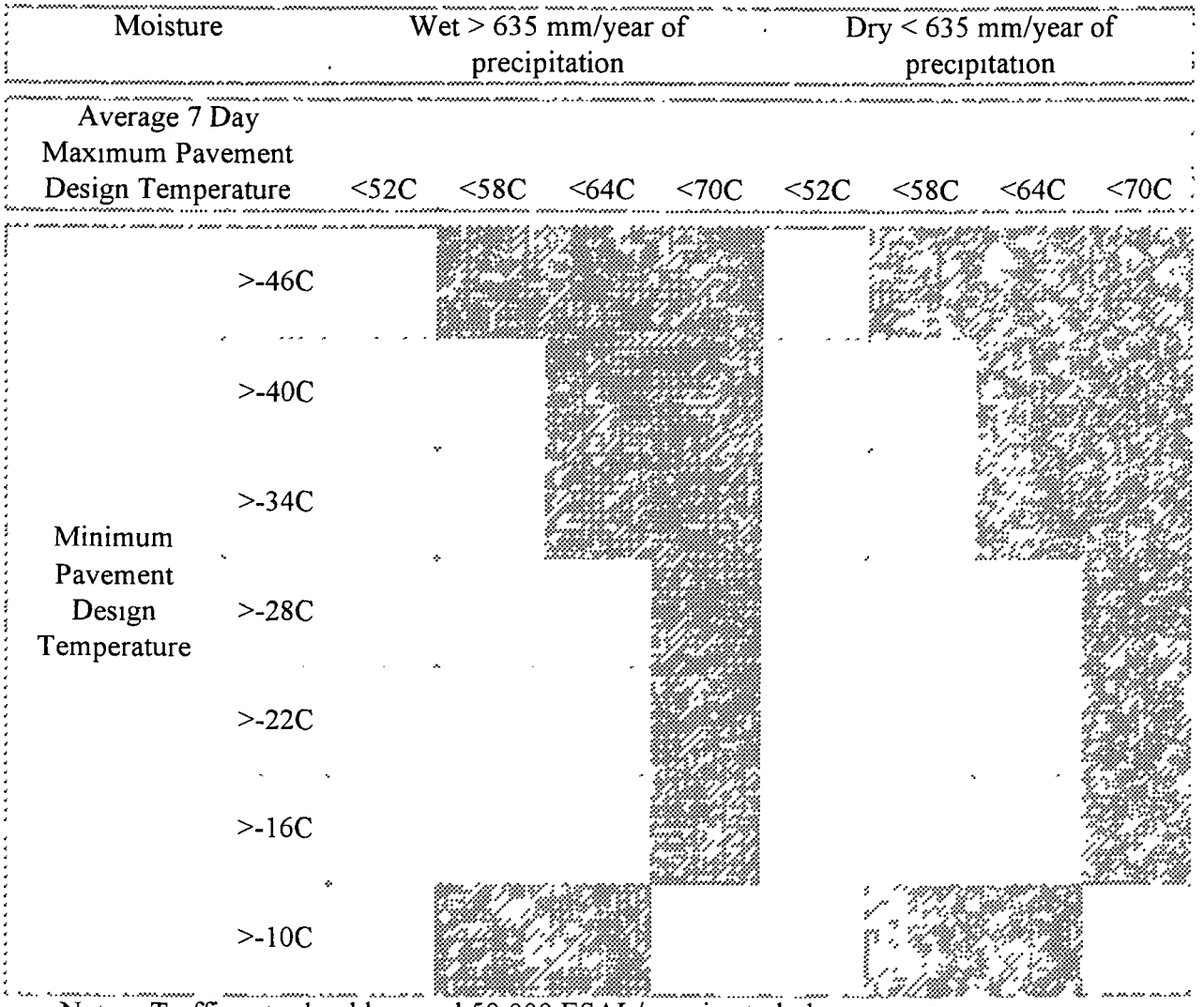
The Falling Weight Deflectometer FWD survey was performed on September 29, 30, and October 1, 1998 while the Manual Distress Survey MDS, including transverse Dipstick™ measurements, were performed on June 24 and 25, 1998 The MDS results are presented in Table 18, while the rut depth values in the left and right wheel paths, as determined from the Dipstick™ are summarized in Table 19

During the initial monitoring period, June 1998 to June 1999, the site was reported as having no obvious distresses, Table 18, except for the damage in the sampling area of section 340901 mentioned above

Weight-In-Motion (WIM) stations were installed on the project

The lanes were opened to traffic on the next day after paving, testing, and lane markings were completed

Table 1. Experimental Design for SPS-9A Experiments



Notes Traffic rate should exceed 50,000 ESAL/year in study lane
Total traffic for design (design life) is Agency choice
The average 7-day maximum pavement design temperature is the average of the highest daily pavement temperatures for the seven hottest consecutive days
The minimum pavement design temperature is the coldest pavement temperature of the year

Table 2. PG Asphalt Binders in SPS-9A Projects in the NA Region

Moisture		Wet > 635 mm/year of precipitation				
Average 7 Day Maximum Pavement Design Temperature		<52C	<58C	<64C	<70C	<76C
Minimum Pavement Design Temperature	>-46C	98%QE	98%ON			
	>-40C	**02-QE** 50%QE 50%ON	**02-ON**			
	>-34C	03-QE	03-ON			
	>-28C	03-NJ	**02-NJ** 98%NJ 98%CT	**02-CT**		61-NJ
	>-22C	50%CT	50%NJ	**02-NC** 03-CT 98%NC	03-NC	60-NC
	>-16C		50%NC			
	>-10C					

Notes Traffic rate should exceed 50,000 ESAL/year in study lane
Total traffic for design (design life) is Agency choice
The average 7-day maximum pavement design temperature is the average of the highest daily pavement temperatures for the seven hottest consecutive days
The minimum pavement design temperature is the coldest pavement temperature of the year
02-NJ Used in Superpave™ section 02
03-NJ Used in Alternative Superpave™ section 03
98%NJ SHRPBIND PG Asphalt 98% Reliability
50%NJ SHRPBIND PG Asphalt 50% Reliability

Table 3. Binder Selection for SPS-9A Experiments in the NA Region

Agency / SPS-9A ID	Weather Station Location	Lat. N / Long. W	SHRPBIND PG Asphalt 98% Reliab. / 50% Reliab.	PG Binder in Superpave™ Section 02	Binder in Agency Section 01	PG Binder in Alternative Superpave™ Section 03	Other Binders in Experiment
Connecticut / 090900	Colchester	41 55 / 72 37	58-28 / 52-22	PG 64-28	AC 20	PG 64-22	Same 3 with RAP
New Jersey / 340900	Highstown	40 27 / 74 57	58-28 / 58-22	PG 58-28	AC 20	PG 52-28	PG 64-22 PG 76-28P AC 20 RAP
North Carolina / 370900	Moncure	35 58 / 79 05	64-22 / 58-16	PG 64-22	AC 20	PG 70-22	PG 76-22 MG PG 76-22 SMA PG 76-22 SBR AC 20 PG 76-22 SBS PG 70-22
Ontario / 870900	Petawawa	45 95 / 77 32	58-46 / 52-40	PG 58-40	85/100 Pen Gr	PG 58-34	PG 58-28 PG 58-34P PG 58-40 M
Quebec / 890900 89A900	Shipshaw	48 45 / 71 22	52-46 / 52-40	PG 52-40	PG 52-34	PG 52-34	

Notes P Polymer Modified
M Marshal Design
RAP Recycled Asphalt Pavement
MG Superpave design with Multigrade PG 76-22
SMA SMA Mix with contractor choice of PG 76-22
SBR Superpave design with SBR modified PG 76-22
SBS Superpave design with SBS modified PG 76-22

Table 4. Summary of SPS-9A Testing

Project Type	Test Section	Time After Construction, months					
		0	6	12	18	24	48
Main Study	Agency	V	V	V	V	V	V
	LTPP Binder	S*	V	V	V	V	V
	Alternate LTPP Binder	V	V	V	V	V	V
Superpave™ Level III Sites	Agency	S		S		S	S
	LTPP Binder	S*		S		S	S
	Alternate LTPP Binder	S		S		S	S

Notes Testing Types V = volumetric and binder stiffness tests

S = Superpave™ Level III performance tests

S* - Superpave™ Level III testing at t=0 months will be performed on 3 sets of specimens, design mixture in the laboratory, plant mixture compacted in the laboratory, plant mixture compacted in the field (cores)

Table 5. Site Layout, SPS-9A Project 340900 on East Bound I-195

Construction Stations	Experiment Stations	Length (m)	New Construction AC Thickness mm	Old Construction AC and Base/Subbase Thickness mm	Remarks	Section ID
East Bound Overlay Construction LTPP Core Sections						
17+352 - 17+504	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Cut	**340901**
17+752 - 17+904	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Cut & Fill 0+00 - 2+70 Cut 2+70 - 5+00 Fill	**340903**
18+852 - 19+004	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Fill	**340902**
East Bound Overlay Construction NJ Supplemental Sections						
19+252 - 19+404	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Fill & Cut 0+00 - 1+00 Fill 1+00 - 5+00 Cut	**340960**
19+652 - 19+804	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Cut	**340961**
20+052 - 20+204	0+00 - 5+00	152 4	63 5 Top 76 Base	152 Binder 127 GB 127 GS Subgrade	Fill	**340962**

Notes
Top -AC Dense Graded Asphalt Concrete Surface Layer
Base -AC Dense Graded Asphalt Concrete Base Layer
Binder -AC Dense Graded Asphalt Concrete Binder Layer
GB -Granular Coarse Grained Soil-Aggregate Base Layer
SB -Granular Coarse Grained Soil-Aggregate Subbase Layer
Subgrade - Granular Sand to Silty Sand Subgrade Layer

Table 6. Scope of Field Testing

Layer	Test	Number of Tests / section	Location Designation
Pre Construction			
Depth to Rigid Layer**	Shoulder Auger Probes to 6 m or refusal	1	S01AXX*
Field Examination of Cores for Stripping***	LTPP	1	Station 5+25, 0 9 m offset, 305 mm cores for access to underlying layers
During Construction			
Asphalt Conc. Base In-Situ Density (Nuclear Gauge) Base Course	AASHTO T238-86 (backscatter)	3	T01AXX* - T03AXX* Station 1+00,2+50,4+00, 0 9 m from pavement edge
Post Construction			
Asphalt Concrete Surface In-Situ Density (Nuclear Gauge) Surface Course	AASHTO T238-86 (backscatter)	3	T04AXX* - T06AXX* Station 1+00,2+50,4+00, 0 9 m from pavement edge

Notes * XX last two digits of location identifiers is the section number (01, 02, 03, 60, 61, and 62) Stations are in feet

** Depth to Rigid Layer Test was not performed since data is available from the GPS section 341011

*** Field Examination of Cores for Stripping Test was only performed on cores from sections 340901, 340903, and 340962

Table 7. Scope of Material Sampling

Pre Construction

Layer	Section ID	Number of Samples / Section	Sample Number
Subgrade Bulk Sampling (10 kg per sample) + Moisture Content Samples	3409XX	 2 +2	 BS01AXX,BS02AXX +MS01AXX,MS02AXX
Unbound Subbase Bulk Sampling (25 kg per sample) + Moisture Content Samples	3409XX	 2 +2	 BG03AXX,BG04AXX +MG03AXX,MG04AXX
Unbound Base Bulk Sampling (25 kg per sample) + Moisture Content Samples	3409XX	 2 +2	 BG01AXX,BG02AXX +MG01AXX,MG02AXX

XX Section Numbers 01, 02, 03, 60, 61, and 62

During Construction

Layer	Section ID	Number of Samples / Section	Sample Number
Asphalt Concrete (Surface Layer) Bulk Sampling - 6/34*split off samples (to prepare plant mix gyratory samples)	3409XX	6/34*	BA01AXX-BA06AXX
Constituent Aggregate Bulk Sampling (for MRL, for laboratory testing, and to prepare lab mix gyratory samples)	3409XX	1	BU01AXX
Asphalt Cement Bulk Sampling (for MRL, for laboratory testing, and to prepare lab mix gyratory samples)	3409XX	1	BC01AXX

XX Section Numbers 01, 02, 03, 60, 61, and 62

* Six from each section except section 340902 where 34 samples are collected

Post Construction

Layer	Section ID	Number of Samples / Section	Sample Number
Asphalt Concrete (Surface Layer) Interval A Coring (0 months) 152 mm coring	3409XX	8/34*	CA01AXX- CA08/34AXX*
Interval B-F Coring (6-48 months) 152 mm coring	3409XX	8 X 5 intervals	CA01BXX-CA08FXX

XX Section Numbers 01, 02, 03, 60, 61, and 62

* Eight from each section except section 340902 where 34 cores are needed, but only 18 are collected at this stage while the 16, intended for the Superpave Regional Test Center, are postponed to a later stage

Table 8. Asphalt and Aggregate Bulk Material Sampling During Construction

A. Materials for Testing as Part of the SPS-9A Experiment

Material Description	Number of Samples	Quantity of Each Sample	Sample Location
Asphalt Cement Bulk Sampling	1 for each type of binder	19 liters	Asphalt Plant
Combined Coarse and Fine Aggregate Bulk Sampling	1 for each aggregate combination	400 kg	Asphalt Plant
HMAC Surface Layer Bulk Sampling - 6 or 34 split off samples (for GC Specimens) + 2 or 3 uncompacted samples	6 + 2 34 + 3 6 + 2	4700g + 2000g 4700-5700g+2000g 4700g + 2000g	340901/340903 340902 340960/340961/ 340962
Asphalt Cement and Constituent Aggregate Samples to prepare 9/40 GC Specimens and 1 uncompacted sample	9 + 1 40 + 1 9 + 1	4700g + 2000g 4700-5700g+2000g 4700g + 2000g	340901/340903 340902 340960/340961/ 340962

B. Materials for Shipping to the FHWA - LTPP Materials Reference Library

Material Description	Number of Samples	Quantity of Each Sample	Sample Location
Asphalt Cement Bulk Sampling	1 for each type of binder	19 liters	Asphalt Plant
Constituent Aggregate Bulk Sampling	10 for each aggregate combination	19 liter pails	Asphalt Plant
Lab Mix GC Specimen Plant Mix GC Specimen	20 20	5700 g 5700 g	340902 340902

Table 9. Field and Laboratory Material Testing

Test Type	LTPP Test Des.	LTPP Protocol	No. of Tests	Material Source /Test Location
Subgrade Layer				
Sieve Analysis	SS01	P51	12	BS01AXX,BS02AXX
Atterberg Limits	SS03	P43	12	BS01AXX,BS02AXX
Classification	SS04	P52	12	BS01AXX,BS02AXX
Natural Moisture Content	SS09	P49	12	MS01AXX,MS02AXX
Unbound Subbase/Base Layer				
Particle Size Analysis	UG01	P41	12	BG01AXX,BG02AXX
Sieve Analysis (washed)	UG02	P41	24	BG03AXX,BG04AXX BG01AXX,BG02AXX
Atterberg Limits	UG04	P43	24	BG03AXX,BG04AXX BG01AXX,BG02AXX
Classification	UG08	P47	24	BG03AXX,BG04AXX BG01AXX,BG02AXX
Natural Moisture Content	UG10	P49	24	MG03AXX,MG04AXX MG01AXX,MG02AXX
Asphalt Bound Layers				
Core Examination	AC01	P01	12	CA01AXX,CA02AXX
Aggregates				**VIRGIN - RAP**
Combined Aggregate Gradation	AG04	P14	4	BU01A01/02 - BU01A62
Specific Gravity of Coarse Agg	AG01	P11	4	BU01A01/02 - BU01A62
Specific Gravity of Fine Agg	AG02	P12	4	BU01A01/02 - BU01A62
Specific Gravity of Pass 200		A T100	4	BU01A01/02 - BU01A62
Coarse Agg Angularity		TM621	4	BU01A01/02 - BU01A62
Fine Agg Angularity		C1252	4	BU01A01/02 - BU01A62
Toughness		A T96	4	BU01A01/02 - BU01A62
Soundness		A T104	4	BU01A01/02 - BU01A62
Deleterious Material		A T112	4	BU01A01/02 - BU01A62
Clay Content		A T176	4	BU01A01/02 - BU01A62
Thin, Elongated Particles		D4791	4	BU01A01/02 - BU01A62
Asphalt Cement				**AC20/PG58-28/52-28/76-28**
Penetration @ 5°c		A T49	6*	BC01A01/02/03/61
Penetration @ 25°C, 46°C	AE02	P22	12*	BC01A01/02/03/61
Viscosity @ 60°C, 135°C	AE05	P25	24	BC01A01/02/03/61
Specific Gravity @ 16°C	AE03	P23	12	BC01A01/02/03/61
Dynamic Sheer @ 3 temps		A TP5	12	BC01A01/02/03/61
Brookfield Vis @ 135°C, 165°C		D4402	12	BC01A01/02/03/61
Rolling Thin Film (RTFOT)		A T240	Note	BC01A01/02/03/61
Dynamic Sheer on RTFOT Residue @ 3 temps		A TP5	12	BC01A01/02/03/61
Pressure Aging (PAV) of RTFOT Residue		A PP1	Note	BC01A01/02/03/61
Creep Stiffness of PAV Residue (2 temps) - 24h conditioning		A TP1	12	BC01A01/02/03/61
Creep Stiffness of PAV Residue (2 temps)		A TP1	12	BC01A01/02/03/61
Dynamic Sheer on PAV Residue (3 temps)		A TP5	12	BC01A01/02/03/61
Direct Tension on PAV Residue (2 temps)		A TP3	12	BC01A01/02/03/61

XX Section Numbers 01, 02, 03, 60, 61, and 62

Note Sufficient material should be conditioned for the required tests

A = AASHTO tests, C1252 & D4791 & D4402 are ASTM tests, TM621 is a PA DOT test

* Three penetration readings are required from each test

Table 10A. Superpave™ Gyratory Compaction Effort

	Average Design High Air Temperature											
Design ESALs (millions)	**< 39°C**			**39 - 40°C**			**41 - 42°C**			**43 - 44°C**		
	N_{ini}	N_{des}	N_{max}	N_{ini}	N_{des}	N_{max}	N_{ini}	N_{des}	N_{max}	N_{ini}	N_{des}	N_{max}
< 0.3	7	68	104	7	74	114	7	78	121	7	82	127
0.3 - 1	7	76	117	7	83	129	7	88	138	8	93	146
1 - 3	7	86	134	8	95	150	8	100	158	8	105	167
3 - 10	8	96	152	8	106	169	8	113	181	9	119	192
10 - 30	8	109	174	9	121	195	9	128	208	9	135	220
30 - 100	9	126	204	9	139	228	9	146	240	10	153	253
> 100	9	142	233	10	158	262	10	165	275	10	172	288

Table 10B. Superpave™ Gyratory Compaction Effort for the SPS-9A Projects in the NA Region

NARO Project Location	Air Temp. Highest / Mean 7 Day	Design ESALs (millions)	N_{ini}	N_{des}	N_{max}
Colchester - Connecticut 090900	34°C / 30°C	1 85	7	86	134
Allentown - New Jersey 340900	37°C / 33°C	25 00	8	109	174
Moncure - North Carolina 370900	39°C / 36°C	3 32	8	96	152
Petawawa - Ontario 870900	34°C / 30°C	2 65	7	86	134
Shipshaw - Quebec 890900 & 89A900	33°C / 29°C	0 50	7	76	117

Table 11. Level 1 Testing of LTPP Core (Sections 340901 and 340903) and Supplemental (Sections 340960, 340961, and 340962) Paver and Laboratory Prepared Mixes

Laboratory Test	LTPP Test Desig.	LTPP Protocol	No of Tests / Section	Source of Material (Specimen)
Lab Samples Mix Design Testing				
Gyratory Compaction at Design Asph Cont @ N_{max} (150 mm dia x 115 mm height specimen)		AASHTO TP4	3	NA01AXX-NA03AXX (LA01AXX-LA03AXX)
Gyratory Compaction @ 7% Air Voids (150 mm dia x 95 mm height specimen)		AASHTO TP4	6	NA04AXX-NA09AXX (LA04AXX-LA09AXX)
Bulk Specific Gravity	AC02	P02	9	LA01AXX-LA09AXX
Maximum Specific Gravity	AC03	P03	1	NA03AXX
Moisture Susceptibility	AC05	P05	1	LA04AXX-LA09AXX
Volumetric Calculations Volume % of Air Voids % Voids in Mineral Agg Voids Filled with Asph		AASHTO PP19	 3 3 3	 LA01AXX-LA03AXX LA01AXX-LA03AXX LA01AXX-LA03AXX
Field Samples Quality Control Related Testing				
Gyratory Compaction @ N_{max}		AASHTO TP4	6	BA01AXX-BA06AXX (DA01AXX-DA06AXX)
Bulk Specific Gravity	AC02	P02	6	DA01AXX-DA06AXX
Asphalt Content-Extraction	AC04	P04	2	BA01AXX, BA06AXX
Agg Gradation-Extracted	AG04	P14	2	BA01AXX, BA06AXX
Maximum Specific Gravity	AC03	P03	2	BA01AXX, BA06AXX
Volumetric Calculations Volume % of Air Voids % Voids in Mineral Agg Voids Filled with Asph		AASHTO PP19	 6 6 6	 DA01AXX-DA06AXX DA01AXX-DA06AXX DA01AXX-DA06AXX

$N_{Init} = 8$ $N_{Design} = 109$ $N_{Max} = 174$

XX represents sections 01, 03, 60, 61, and 62

Table 12. Level 3 Testing of Superpave™ Section 340902 Paver and Laboratory Prepared Mixes

Laboratory Test	LTPP Test Desig.	LTPP Protocol	No of Tests per Section	Source of Material (Specimen)
Lab Samples Mix Design Testing				
Gyratory Compaction at Design Asphalt Content @ N_{max}		AASHTO TP4	6	NA01A02-NA06A02 (LA01A02-LA06A02)
Gyratory Compaction @ 3% Air Voids		AASHTO TP4	2	NA07A02-NA08A02 (LA07A02-LA08A02)
Gyratory Compaction @ 7% Air Voids		AASHTO TP4	32	NA09A02-NA40A02 (LA09A02-LA40A02)
Bulk Specific Gravity	AC02	P02	15	LA01A02-LA06A02 LA09A02-LA14A02 LA07A02, LA15A02, LA38A02
Maximum Specific Gravity	AC03	P03	1	NA15A02
Moisture Susceptibility	AC05	P05	1	LA09A02-LA14A02
Volumetric Calculations				
Volume % of Air Voids		AASHTO	6	LA01A02-LA06A02
%Voids in Mineral Aggregate		PP19	6	LA01A02-LA06A02
Voids Filled with Asphalt			6	LA01A02-LA06A02
LTPP Performance Tests *				
Indirect Tensile Strength	AC07	P07	4	LA15A02-LA18A02
Resilient Modulus	AC07	P07	1	LA16A02-LA18A02
Creep Compliance	AC06	P06	4	LA19A02-LA22A02
Field Samples Quality Control Related Testing				
Gyratory Compaction @ N_{Max}		AASHTO TP4	6	BA02-04A02, BA31-33A02 DA02-04A02, DA31-33A02
Gyratory Compaction @ 3% Air Voids		AASHTO TP4	2	BA01A02, BA34A02 (DA01A02, DA34A02)
Gyratory Compaction @ 7% Air Voids		AASHTO TP4	26	BA05A02-BA30A02 (DA05A02-DA30A02)
Bulk Specific Gravity	AC02	P02	9	DA02A02-DA04A02 DA31A02-DA33A02 DA06A02, DA16A02, DA22A02
Asphalt Content - Extraction	AC04	P04	3	BA05A02, BA06A02, BA34A02
Agg Gradation - Extracted Agg	AG04	P14	3	BA05A02, BA06A02, BA34A02
Maximum Specific Gravity	AC03	P03	3	BA05A02, BA06A02, BA34A02
Volumetric Calculations				
Volume % of Air Voids		AASHTO	6	DA02-04A02, DA31-33A02
%Voids in Mineral Aggregate		PP19	6	DA02-04A02, DA31-33A02
Voids Filled with Asphalt			6	DA02-04A02, DA31-33A02
LTPP Performance Tests *				
Indirect Tensile Strength	AC07	P07	4	DA05,DA09,DA17,DA29A02
Resilient Modulus	AC07	P07	1	DA09A02,DA17A02,DA29A02
Creep Compliance	AC06	P06	4	DA15,DA16,DA18,DA30A02

$N_{Init} = 8$ $N_{Design} = 109$ $N_{Max} = 174$

* 100 mm diameter test specimen will be cored from the 152 mm diameter specimen

Superpave™ testing by the Superpave™ Regional Test Center is yet to be finalized

Meanwhile the gyratory compacted lab and field samples are to be sent to MRL for storage

Table 13. Laboratory Testing of Cores at All Intervals

Laboratory Test	LTPP Test D.	LTPP Protocol	Tests per Section	Source of Material (Specimen)
All Intervals Sections 01,03, 60, 61, & 62, Intervals B-F Section 02				
Core Examination / Thickness	AC01	P01	8	All Cores from All Sections
Bulk Specific Gravity	AC02	P02	8	All Cores from All Sections
Maximum Specific Gravity	AC03	P03	2	CA01tXX, CA08tXX
Asphalt Content - Extraction	AC04	P04	8	All Cores from All Sections
Agg Gradation - Extracted Agg	AG04	P14	2	CA01tXX, CA08tXX
Volumetric Calculations *				
Volume % of Air Voids		AASHTO	2	CA01tXX, CA08tXX
%Voids in Mineral Aggregate		PP19	2	CA01tXX, CA08tXX
Voids Filled with Asphalt			2	CA01tXX, CA08tXX
Recovered Asphalt Cement				
Abson Recovery	AE01	P21	8	All Cores from All Sections
Penetration @ 5°C		AASHTO T49	3***	Combined recovered AC from sec
Penetration @ 25°C, 46°C	AE02	P22	6***	Combined recovered AC from sec
Viscosity @ 60°C, 135°C	AE05	P25	12	Combined recovered AC from sec
Specific Gravity @ 16°C	AE03	P23	6	Combined recovered AC from sec
Dynamic Sheer @ 3 temps **		AASHTO TP5	6	Combined recovered AC from sec
Creep Stiffness @ 2 temps **		AASHTO TP1	6	Combined recovered AC from sec
Direct Tension @ 2 temps **		AASHTO TP3	6	Combined recovered AC from sec
Interval A Section 02				
Core Examination / Thickness	AC01	P01	18	All Cores from Section
Bulk Specific Gravity	AC02	P02	8	CA02,06,11,15,19,24,28,33A02
Maximum Specific Gravity	AC03	P03	2	CA11A02, CA24A02
Asphalt Content - Extraction	AC04	P04	8	CA02,06,11,15,19,24,28,33A02
Agg Gradation - Extracted Agg	AG04	P14	2	CA11A02, CA24A02
Volumetric Calculations *				
Volume % of Air Voids		AASHTO	2	CA11A02, CA24A02
%Voids in Mineral Aggregate		PP19	2	CA11A02, CA24A02
Voids Filled with Asphalt			2	CA11A02, CA24A02
Recovered Asphalt Cement				
Abson Recovery	AE01	P21	8	CA02,06,11,15,19,24,28,33A02
Penetration @ 5°C		AASHTO T49	3***	Combined recovered AC from sec
Penetration @ 25°C, 46°C	AE02	P22	6***	Combined recovered AC from sec
Viscosity @ 60°C, 135°C	AE05	P25	12	Combined recovered AC from sec
Specific Gravity @ 16°C	AE03	P23	6	Combined recovered AC from sec
Dynamic Sheer @ 3 temps **		AASHTO TP5	6	Combined recovered AC from sec
Creep Stiffness @ 2 temps **		AASHTO TP1	6	Combined recovered AC from sec
Direct Tension @ 2 temps **		AASHTO TP3	6	Combined recovered AC from sec
LTPP Performance Tests ****				
Indirect Tensile Strength	AC07	P07	4	CA07,CA16,CA21,CA31A02
Resilient Modulus	AC07	P07	1	CA16A02,CA21A02,CA31A02
Creep Compliance	AC06	P06	4	CA03,CA14,CA23,CA32A02

t = interval A(0 months), B(6 months), C(12 months), D(18 months), E(24 months), and F(48 months)

* Estimate maximum theoretical specific gravity using extracted AC content and aggregate effective S G determined during construction

** The test temperatures should be the same as those used for the tests on the RTFOT-PAV conditioned samples performed during the initial binder grading

*** Three penetration readings are required from each test

**** 100 mm diameter test specimen will be cored from the 152 mm diameter cores

Superpave™ testing by the Superpave™ Regional Test Center is yet to be finalized

Meanwhile 16 cores are to be collected at a later date XX=test section 01,02,03,60,61, and 62

Table 14. Lab, Field, and Core Superpave™ Samples Assigned Laboratory for Testing

Sample Type	NJ DOT Lab	LTPP Contractor Lab	Superpave Reg. Test Centre Lab	Remarks
Lab Samples	LA01A02 N_{max}	LA15A02 7%AV	LA07A02 3%AV	12 - **DOT** Lab
	LA02A02 N_{max}	LA16A02 7%AV	LA08A02 3%AV	8 - LCL Lab
	LA03A02 N_{max}	LA17A02 7%AV	LA23A02 7%AV	20 SRTC Lab
	LA04A02 N_{max}	LA18A02 7%AV	LA24A02 7%AV	**Total - 40 GCS**
	LA05A02 N_{max}	LA19A02 7%AV	LA25A02 7%AV	1 loose sample
	LA06A02 N_{max}	LA20A02 7%AV	LA26A02 7%AV	for **DOT** Lab
	LA09A02 7%AV	LA21A02 7%AV	LA27A02 7%AV	NA15A02
	LA10A02 7%AV	LA22A02 7%AV	LA28A02 7%AV	
	LA11A02 7%AV		LA29A02 7%AV	3 Bulk Specific
	LA12A02 7%AV		LA30A02 7%AV	Gravity by **DOT**
	LA13A02 7%AV		LA31A02 7%AV	before sending to
	LA14A02 7%AV		LA32A02 7%AV	other Labs
			LA33A02 7%AV	LA07,15,38A02
			LA34A02 7%AV	
			LA35A02 7%AV	Moisture
			LA36A02 7%AV	Susceptibility by
			LA37A02 7%AV	**DOT** Lab
			LA38A02 7%AV	LA09-14A02
			LA39A02 7%AV	**Total = 40 Lab**
			LA40A02 7%AV	**GCS + 1 Loose**
Field Samples	DA02A02 N_{max}	DA05A02 7%AV	DA01A02 3%AV	
	DA03A02 N_{max}	DA09A02 7%AV	DA06A02 7%AV	6 - **DOT** Lab
	DA04A02 N_{max}	DA15A02 7%AV	DA07A02 7%AV	8 - LCL Lab
	DA31A02 N_{max}	DA16A02 7%AV	DA08A02 7%AV	20 SRTC Lab
	DA32A02 N_{max}	DA17A02 7%AV	DA10A02 7%AV	**Total - 34 GCS**
	DA33A02 N_{max}	DA18A02 7%AV	DA11A02 7%AV	
		DA29A02 7%AV	DA12A02 7%AV	3 loose samples
		DA30A02 7%AV	DA13A02 7%AV	for **DOT** Lab
			DA14A02 7%AV	BA05,06,34A02
			DA19A02 7%AV	
			DA20A02 7%AV	3 Bulk Specific
			DA21A02 7%AV	Gravity by **DOT**
			DA22A02 7%AV	Lab before
			DA23A02 7%AV	sending to other
			DA24A02 7%AV	Labs
			DA25A02 7%AV	DA06,16,22A02
			DA26A02 7%AV	
			DA27A02 7%AV	**Total = 34 Field**
			DA28A02 7%AV	**GCS + 3 Loose**
			DA34A02 3%AV	
Cores	CA02A02	CA03A02	CA01A02*	8 - **DOT** Lab
	CA06A02	CA07A02	CA04A02*	2 - **DOT** (spare)
	CA11A02	CA14A02	CA08-10A02*	8 - LCL Lab
	CA15A02	CA16A02	CA12-13A02*	16 SRTC Lab*
	CA19A02	CA21A02	CA17-18A02*	**Total - 34 Cores**
	CA24A02	CA23A02	CA20A02*	Maximum
	CA28A02	CA31A02	CA22A02*	Specific Gravity
	CA33A02	CA32A02	CA26-27A02*	and Extraction -
	CA05A02 spare		CA29-30A02*	**DOT**
	CA25A02 spare		CA34A02*	CA11,24A02
Total	**12+6+10=28**	**8+8+8=24**	**20+20+16*=56**	**28+24+56=108**

* The 16 cores, intended for the Superpave Regional Test Centre, are postponed to a later stage

Table 15. Field Activities Pre, During, and Post Construction

		Pre Construction			During and Post Construction					
	Material Type - Traffic Direction	Subg./ Embank. Layers	Base/ Subbase Layers	Existing AC Surface	Milled AC Surface	AC Base Layer	AC Surface Layer 0 months	AC Surface Layer 6 months	AC Cement	Combined Aggreg. Material
In-Situ Density	Core - EB Supp - EB					98/06/15 98/06/17	98/06/17 98/06/18 98/06/18 98/06/19			
Shoulder Probe	Core - EB Supp - EB									
Bulk and Moisture Sampling	Core - EB Supp - EB	97/12/02 97/12/03	97/12/02 97/12/03			98/06/03 (section 340902) -	98/06/17 98/06/18 98/06/18 98/06/19		98/06/17 98/06/18	98/06/17 98/06/18
Video Recording	Core - EB Supp - EB			97/12/13 97/12/13			98/08/05 98/08/05			
Site Markings	Core - EB Supp - EB			97/12/02 97/12/03			98/06/24 98/06/24			
Profilo-meter Testing	Core - EB Supp - EB			97/12/13 97/12/13			98/08/05 98/08/05			
FWD Testing	Core - EB Supp - EB			97/12/02 97/12/03			98/09/29 98/09/30 98/09/30 98/10/01			
MDS and Dipstick™ Survey	Core - EB Supp - EB			97/12/02 97/12/03			98/06/24 98/06/24 98/06/25			
Coring	Core - EB Supp - EB			97/12/02 97/12/03			98/06/24 98/06/24	98/12/01 98/12/02		

Date format is in yy/mm/dd

Table 16. SPS-9A Guidelines vs. Actual Monitoring Measurement Dates

Measurement Type	Monitoring Period After Constructio n	Monitoring Date as per the Guidelines - Construction Finished Core (EB) - 18 June 98 Supp. (EB) - 19 June 98	Actual Monitoring Completion Date After Construction
Deflection	1-3 Months*	18 July - Sep 98 (Core/EB) 19 July - Sep 98 (Supp /EB)	30 Sep 98 (Core/EB)** 01 Oct 98 (Supp /EB)**
Profile	< 2 Months	Before 18 Aug 98 (Core/EB) 19 Aug 98 (Supp /EB)	05 Aug 98 (Core/EB) 05 Aug 98 (Supp /EB)
Distress Survey	< 6 Months	Before 18 Dec 98 (Core/EB) 19 Dec 98 (Supp /EB)	24 June 98 (Core/EB) 24 June 98 (Supp /EB)
Friction	3-12 Months	18 Sep 98-18 June 99 (Core/EB) 19 Sep 98-19 June 99 (Supp /EB)	03 March 99 (Core/EB) 03 March 99 (Supp /EB)

Note Date format is in dd mmm yy

* The LTPP Manual for FWD Testing, Version 2 0/February 1993, requires that FWD testing for SPS-9A be performed 3 to 6 months after construction is completed

** Two weeks delay, using the SPS-9A Guidelines, but meets requirements of the LTPP Manual for FWD Testing

Table 17. IRI Values from the Profilometer™ Survey, Before and After Construction

	Profilometer™ Survey Before Construction 13 Dec 97			Profilometer™ Survey After Construction 05 Aug 98			
Section ID	Left WP IRI of 5 Runs (m/km)	Right WP IRI of 5 Runs (m/km)	Both WPs IRI of 5 Runs (m/km)	Left WP IRI of 5 Runs (m/km)	Right WP IRI of 5 Runs (m/km)	Both WPs IRI of 5 Runs (m/km)	Section ID
East Bound Overlay Construction LTPP Core Sections							
340901	1 775	1 781	1 778	1 192	1 210	1 202	**340901**
340903	2 007	1 793	1 901	1 002	1 025	1 014	**340903**
340902	1 935	2 001	1 968	0 837	0 941	0 890	**340902**
East Bound Overlay Construction NJ Supplemental Sections							
340960	2 667	2 375	2 521	0 969	1 029	0 999	**340960**
340961	2 339	3 520	2 930	1 058	1 179	1 119	**340961**
340962	2 643	2 448	2 546	1 159	1 207	1 183	**340962**

Rolling Straight Edge reports are included in Appendix A

The construction guidelines state that the finished surface of the overlay should be smooth and provide an excellent ride level As a target, the as-constructed surface should have a pro-rated profile index of less than 160-mm per km as measured by a California type Profilograph and evaluated following California Test 526

Table 18. Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340901

Distress Type	Pre Construction 02 Dec 1997			Post Construction 24 Jun 1998		
Severity Level	**low**	**moderate**	**high**	**low**	**moderate**	**high**
Fatigue Cracking (square meters)	178 6	57 1	0	0	0	0
Block Cracking (square meters)	197 9	0	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	0	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	29 0	77 5	97 1	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	26	0	0	0	0	0
Length (meters)	14 8	0	0	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	0	0	0	0	0	0
Polished Aggregate (square meters)			563 9			0
Raveling (square meters)	0	0	0	0	0	0

Table 18 (Cont.). Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340903

Distress Type	Pre Construction 02 Dec 1997			Post Construction 24 Jun 1998		
Severity Level	**low**	**moderate**	**high**	**low**	**moderate**	**high**
Fatigue Cracking (square meters)	87 5	144 9	0	0	0	0
Block Cracking (square meters)	227 8	0	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	0	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	0	49 0	158 1	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	2	0	0	0	0	0
Length (meters)	1 2	0	0	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	20 4	0	0	0	0	0
Polished Aggregate (square meters)			543 8			0
Raveling (square meters)	0	0	0	0	0	0

Table 18 (Cont.). Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340902

Distress Type	Pre Construction 02 Dec 1997			Post Construction 24 Jun 1998		
Severity Level	**low**	**moderate**	**high**	**low**	**moderate**	**high**
Fatigue Cracking (square meters)	192.9	42.5	33.7	0	0	0
Block Cracking (square meters)	0	0	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	2.6	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	9.7	28.1	32.8	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	22	0	1	0	0	0
Length (meters)	16.4	0	0.5	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	0	3	0	0	0	0
(square meters)	0	0.3	0	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	0	0	0	0	0	0
Polished Aggregate (square meters)			564.0			0
Raveling (square meters)	0	0	0	0	0	0

Table 18 (Cont.). Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340960

Distress Type	Pre Construction 03 Dec 1997			Post Construction 24 Jun 1998		
Severity Level	**low**	**moderate**	**high**	**low**	**moderate**	**high**
Fatigue Cracking (square meters)	255 2	57 8	0	0	0	0
Block Cracking (square meters)	11 5	0	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	0	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	76 3	79 2	61 1	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	24	0	0	0	0	0
Length (meters)	14 4	0	0	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	6	3	1	0	0	0
(square meters)	0 9	0 8	0 1	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	16 9	0	0	0	0	0
Polished Aggregate (square meters)			545 3			0
Raveling (square meters)	0	0	0	0	0	0

Table 18 (Cont.). Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340961

Distress Type	Pre Construction 03 Dec 1997			Post Construction 25 Jun 1998		
Severity Level	**low**	**moderate**	**High**	**low**	**Moderate**	**high**
Fatigue Cracking (square meters)	117 4	67 4	0	0	0	0
Block Cracking (square meters)	19 0	215 2	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	0	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	57 7	105 5	66 8	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	35	20	3	0	0	0
Length (meters)	12 4	5 0	0 7	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	9	2	1	0	0	0
(square meters)	7 2	3 4	0 5	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	0	0	0	0	0	0
Polished Aggregate (square meters)			553 0			0
Raveling (square meters)	0	0	0	0	0	0

Table 18 (Cont.). Distress Survey of the SPS-9A Monitoring Sections, Before and After Construction

Section 340962

Distress Type	Pre Construction 03 Dec 1997			Post Construction 25 Jun 1998		
Severity Level	**low**	**moderate**	**high**	**low**	**moderate**	**high**
Fatigue Cracking (square meters)	88 8	22 5	0	0	0	0
Block Cracking (square meters)	337 6	56 4	0	0	0	0
Longitudinal Cracking (meters)						
Wheel Path	0	0	0	0	0	0
(length sealed)	0	0	0	0	0	0
Non Wheel Path	52 4	32 4	108 6	0	0	0
(length sealed)	0	0	0	0	0	0
Transverse Cracking						
Number of Cracks	0	0	0	0	0	0
Length (meters)	0	0	0	0	0	0
(length sealed m)	0	0	0	0	0	0
Patch/Patch Deterioration						
Number	5	0	0	0	0	0
(square meters)	6 6	0	0	0	0	0
Potholes						
Number	0	0	0	0	0	0
(square meters)	0	0	0	0	0	0
Bleeding (square meters)	6 0	0	0	0	0	0
Polished Aggregate (square meters)			551 4			0
Raveling (square meters)	0	0	0	0	0	0

Table 19. Rut Depth from the Dipstick™ Survey, Before and After Construction

	Before Construction 02-03 Dec 97		After Construction 24-25 Jun 98	
Section ID	**LWP** Avg Rut Depth (mm)	**RWP** Avg Rut Depth (mm)	**LWP** Avg Rut Depth (mm)	**RWP** Avg Rut Depth (mm)
East Bound Overlay Construction LTPP Core Sections				
340901	6 8 mm	3 2 mm	1 2 mm	0 4 mm
340903	8 6 mm	5 0 mm	2 2 mm	1 6 mm
340902	6 2 mm	3 7 mm	0 5 mm	0 4 mm
East Bound Overlay Construction NJ Supplemental Sections				
340960	8 6 mm	8 4 mm	0 8 mm	0 5 mm
340961	10 6 mm	9 1 mm	0 7 mm	0 4 mm
340962	8 5 mm	4 2 mm	0 9 mm	0 6 mm

Table 20. Dates of Construction of Layers

Section ID & Layer Thickness (mm)	AC Milling Operation dd mmm yy	AC Base Paving dd mmm yy	AC Surface Paving dd mmm yy
East Bound Overlay Construction LTPP Core Sections			
340901 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	17 Jun 98
340903 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	17 Jun 98
340902 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	18 Jun 98
East Bound Overlay Construction NJ Supplemental Sections			
340960 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	18 Jun 98
340961 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	18/19 Jun 98
340962 SUBGRADE 127 GRAVEL SUBBASE 127 GRAVEL BASE 152 EXISTING AC BINDER 76 OVERLAY AC BASE 63 5 OVERLAY AC SURFACE	April – June 98	April – June 98	19 Jun 98

Table 21. Paving Dates, Times, Locations, Thickness, Temperature and Weather Conditions

Date dd mmm yy	Time	Section ID	AC Layer	Thick (mm)	# / Average Laydown Temps. °C	Air Temp °C	Weather
April – June 98		340901	Base	76			
April – June 98		340903	Base	76			
April – June 98		340902	Base	76			
April – June 98		340960	Base	76			
April – June 98		340961	Base	76			
April – June 98		340962	Base	76			
17 Jun 98	2008-2042	340901	Surface	63 5	7* / 140	24	Night
17 Jun 98	2125-2200	340903	Surface	63 5	5* / 144	24	Heavy Rain 2140-2215
18 Jun 98	1957-2032	340902	Surface	63 5	7* / 144	24	Night
18 Jun 98	2145-2224	340960	Surface	63 5	7* / 143	24	Night
18/19 Jun 98	2340-0006	340961	Surface	63 5	8* / 157	24	Night
19 Jun 98	0131-0204	340962	Surface	63 5	8* / 139	24	Night

* Number of times laydown temperature was measured while paving and the range of temperatures (min-max)
Refer to Figure 11 for more details on the paving of the surface layer

Table 22. SPS-9A Nuclear Gauge In Situ Densities

Section ID	Offset (m)	Density kg/m^3 (Station 30)*	Density kg/m^3 (Station 76)*	Density kg/m^3 (Station 122)*	Max. Density kg/m^3 (Rice)
East Bound Overlay Construction LTPP Core Sections					
340901 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2502	2360	2605	2743
63 5 OVERLAY AC	0 9	2522	2504	2530	2715
SURFACE					
340903 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2552	2536	2565	2743
63 5 OVERLAY AC	0 9	2457	2417	2448	2715
SURFACE					
340902 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2573	2566	2557	2743
63 5 OVERLAY AC	0 9	2475	2480	2473	2693
SURFACE					
East Bound Overlay Construction NJ Supplemental Sections					
340960 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2547	2517	2550	2743
63 5 OVERLAY AC	0 9	2440	2435	2433	2693
SURFACE					
340961 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2523	2467	2344	2743
63 5 OVERLAY AC	0 9	2421	2470	2470	2693
SURFACE					
340962 SUBGRADE					
127 GRAVEL SUBBASE					
127 GRAVEL BASE					
152 EXISTING AC BINDER					
76 OVERLAY AC BASE	0 9	2525	2531	2448	2743
63 5 OVERLAY AC	0 9	2504	2462	2443	2693
SURFACE					

Notes * Stations at which densities were measured are 30, 76, and 122 m from the start of the section
Densities were measured in the Back Scatter Method
Troxler 4640-B Density Gauge was used for the Surface and Base layers

Table 23. Layer Thicknesses from Rod and Level Elevations

	340901				340903				340902			
	Spec H	76 2mm	76 2mm	63 5mm	Spec H	76 2mm	76 2mm	63 5mm	Spec H	76 2mm	76 2mm	63 5mm
location	Stat m	Milled	Base	Surface	Stat m	Milled	Base	Surface	Stat m	Milled	Base	Surface
EOP	0-02	85 0	90 0	63 0	0-12	90 0	85 0	69 0	0-07	95 0	95 0	72 0
OWP		60 0	80 0	57 0		65 0	70 0	71 0		75 0	85 0	65 0
MID		70 0	90 0	49 0		65 0	75 0	70 0		70 0	75 0	60 0
IWP		60 0	80 0	54 0		55 0	70 0	68 0		75 0	75 0	65 0
CL		70 0	80 0	59 0		55 0	55 0	70 0		85 0	85 0	56 0
EOP	0+13	75 0	85 0	61 0	0+08	80 0	80 0	69 0	0+08	80 0	85 0	62 0
OWP		60 0	75 0	54 0		70 0	80 0	71 0		75 0	80 0	58 0
MID		65 0	65 0	61 0		65 0	80 0	67 0		60 0	70 0	56 0
IWP		55 0	80 0	46 0		60 0	80 0	68 0		65 0	65 0	60 0
CL		65 0	75 0	58 0		70 0	75 0	70 0		75 0	80 0	55 0
EOP	0+28	95 0	95 0	66 0	0+28	65 0	65 0	72 0	0+28	55 0	60 0	66 0
OWP		75 0	85 0	63 0		65 0	65 0	73 0		45 0	50 0	64 0
MID		75 0	90 0	60 0		75 0	80 0	68 0		60 0	60 0	71 0
IWP		60 0	85 0	57 0		70 0	70 0	81 0		55 0	65 0	72 0
CL		85 0	90 0	54 0		80 0	80 0	75 0		60 0	60 0	67 0
EOP	0+33	75 0	75 0	52 0								
OWP		60 0	70 0	44 0								
MID		70 0	70 0	43 0								
IWP		60 0	65 0	54 0								
CL		60 0	70 0	50 0								
EOP	0+52 5	70 0	75 0	52 0	0+48	80 0	80 0	71 0	0+48	40 0	40 0	68 0
OWP		60 0	70 0	51 0		80 0	75 0	70 0		55 0	50 0	64 0
MID		65 0	75 0	51 0		80 0	80 0	68 0		45 0	40 0	60 0
IWP		60 0	85 0	55 0		75 0	80 0	66 0		50 0	50 0	71 0
CL		70 0	80 0	53 0		75 0	80 0	68 0		65 0	67 0	70 0
EOP	0+68	75 0	80 0	49 0	0+68	100 0	100 0	66 0	0+68	50 0	50 0	59 0
OWP		60 0	70 0	40 0		90 0	85 0	67 0		50 0	50 0	71 0
MID		75 0	75 0	55 0		70 0	70 0	68 0		50 0	45 0	66 0
IWP		55 0	70 0	50 0		75 0	80 0	71 0		50 0	60 0	74 0
CL		65 0	70 0	60 0		90 0	90 0	69 0		65 0	75 0	76 0
EOP	0+88	75 0	80 0	51 0	0+88	85 0	80 0	67 0	0+88	60 0	60 0	70 0
OWP		65 0	60 0	59 0		80 0	90 0	66 0		55 0	60 0	71 0
MID		55 0	45 0	68 0		75 0	75 0	68 0		55 0	55 0	69 0
IWP		70 0	55 0	64 0		65 0	80 0	63 0		50 0	55 0	62 0
CL		50 0	55 0	74 0		80 0	80 0	68 0		75 0	75 0	63 0
EOP	1+08	75 0	85 0	82 0	1+08	90 0	90 0	64 0	1+08	70 0	60 0	65 0
OWP		75 0	75 0	86 0		90 0	90 0	65 0		50 0	50 0	65 0
MID		75 0	70 0	85 0		85 0	90 0	64 0		65 0	65 0	64 0
IWP		60 0	45 0	84 0		95 0	90 0	67 0		65 0	70 0	62 0
CL		70 0	75 0	64 0		115 0	110 0	70 0		60 0	65 0	63 0
EOP	1+28	70 0	75 0	57 0	1+28	80 0	80 0	63 0	1+28	70 0	80 0	62 0
OWP		60 0	70 0	57 0		95 0	100 0	64 0		55 0	55 0	65 0
MID		70 0	75 0	60 0		100 0	100 0	66 0		55 0	55 0	62 0
IWP		70 0	85 0	61 0		95 0	100 0	67 0		70 0	65 0	61 0
CL		70 0	75 0	67 0		75 0	80 0	68 0		70 0	65 0	63 0
EOP	1+48	65 0	70 0	61 0	1+48	105 0	100 0	68 0	1+48	55 0	60 0	75 0
OWP		70 0	60 0	68 0		95 0	100 0	62 0		35 0	55 0	70 0
MID		55 0	50 0	62 0		80 0	85 0	63 0		50 0	65 0	64 0
IWP		70 0	75 0	50 0		90 0	100 0	60 0		50 0	60 0	59 0
CL		70 0	80 0	53 0		80 0	90 0	65 0		50 0	50 0	67 0
EOP	1+68	65 0	75 0	46 0	1+68	100 0	105 0	69 0	1+68	55 0	55 0	64 0
OWP		70 0	85 0	44 0		80 0	90 0	70 0		50 0	45 0	60 0
MID		65 0	75 0	53 0		90 0	90 0	67 0		50 0	55 0	61 0
IWP		60 0	70 0	53 0		80 0	85 0	67 0		55 0	60 0	62 0
CL		75 0	80 0	61 0		75 0	80 0	69 0		65 0	60 0	63 0
AVG		67 5	74 4	58 0		80 5	83 8	67 9		59 8	62 3	64 8
MIN		50 0	45 0	40 0		55 0	55 0	60 0		35 0	40 0	55 0
MAX		95 0	95 0	86 0		115 0	110 0	81 0		95 0	95 0	76 0
DEV		8 4	10 8	10 1		13 0	11 2	3 5		11 9	12 4	5 0

Table 23(Cont.). Layer Thicknesses from Rod and Level Elevations

	340960				340961				340962			
	Spec H	76 2mm	76 2mm	63 5mm	Spec H	76 2mm	76 2mm	63 5mm	Spec H	76 2mm	76 2mm	63 5mm
location	Stat m	Milled	Base	Surface	Stat m	Milled	Base	Surface	Stat m	Milled	Base	Surface
EOP	0-12	70 0	60 0	63 0	0-02	100 0	105 0	59 0	0-12	50 0	55 0	93 0
OWP		60 0	55 0	66 0		95 0	100 0	62 0		40 0	50 0	81 0
MID		50 0	45 0	65 0		105 0	95 0	78 0		25 0	35 0	76 0
IWP		40 0	40 0	62 0		90 0	90 0	79 0		35 0	50 0	67 0
CL		40 0	40 0	63 0		105 0	100 0	77 0		65 0	65 0	66 0
EOP	0+08	70 0	65 0	60 0	0+13	105 0	105 0	60 0	0+08	50 0	50 0	76 0
OWP		40 0	40 0	61 0		95 0	90 0	71 0		40 0	50 0	75 0
MID		55 0	50 0	60 0		115 0	95 0	76 0		60 0	55 0	70 0
IWP		55 0	45 0	60 0		100 0	100 0	70 0		45 0	50 0	73 0
CL		60 0	55 0	62 0		95 0	100 0	70 0		45 0	40 0	71 0
EOP	0+28	60 0	55 0	65 0	0+28	110 0	110 0	65 0	0+28	50 0	50 0	72 0
OWP		40 0	40 0	64 0		85 0	85 0	76 0		50 0	60 0	73 0
MID		60 0	40 0	64 0		95 0	85 0	71 0		50 0	45 0	77 0
IWP		45 0	40 0	62 0		85 0	90 0	69 0		55 0	55 0	75 0
CL		55 0	55 0	65 0		95 0	100 0	75 0		60 0	60 0	76 0
EOP	0+48	65 0	60 0	65 0	0+43	105 0	105 0	77 0				
OWP		55 0	45 0	66 0		85 0	100 0	61 0				
MID		55 0	50 0	65 0		100 0	100 0	71 0				
IWP		50 0	45 0	63 0		90 0	105 0	66 0				
CL		55 0	55 0	63 0		100 0	95 0	71 0				
EOP	0+68	40 0	35 0	70 0	0+58	115 0	120 0	72 0	0+48	50 0	55 0	73 0
OWP		45 0	50 0	69 0		95 0	115 0	64 0		50 0	30 0	72 0
MID		40 0	50 0	68 0		115 0	120 0	68 0		30 0	25 0	74 0
IWP		40 0	50 0	66 0		75 0	105 0	65 0		30 0	40 0	75 0
CL		40 0	45 0	69 0		100 0	95 0	75 0		45 0	45 0	76 0
EOP	0+83	60 0	65 0	68 0	0+73	105 0	105 0	58 0	0+68	45 0	45 0	73 0
OWP		40 0	50 0	65 0		90 0	115 0	62 0		40 0	25 0	75 0
MID		50 0	50 0	67 0		95 0	100 0	68 0		30 0	15 0	74 0
IWP		40 0	50 0	69 0		90 0	105 0	64 0		35 0	45 0	73 0
CL		60 0	65 0	70 0		110 0	110 0	67 0		35 0	35 0	70 0
EOP	0+98	60 0	55 0	70 0	0+88	110 0	105 0	74 0	0+88	40 0	40 0	66 0
OWP		55 0	50 0	61 0		80 0	95 0	70 0		25 0	35 0	69 0
MID		60 0	55 0	62 0		100 0	90 0	75 0		25 0	50 0	68 0
IWP		50 0	50 0	62 0		95 0	100 0	70 0		45 0	55 0	68 0
CL		55 0	60 0	61 0		100 0	100 0	71 0		25 0	30 0	69 0
EOP	1+13	40 0	40 0	55 0	1+03	110 0	115 0	67 0	1+08	30 0	35 0	74 0
OWP		45 0	30 0	59 0		100 0	95 0	76 0		30 0	40 0	73 0
MID		50 0	55 0	54 0		95 0	85 0	74 0		20 0	10 0	73 0
IWP		40 0	50 0	62 0		90 0	85 0	79 0		20 0	20 0	72 0
CL		60 0	65 0	59 0		90 0	95 0	74 0		25 0	30 0	71 0
EOP	1+28	70 0	70 0	60 0	1+18	110 0	110 0	82 0	1+28	45 0	45 0	70 0
OWP		55 0	60 0	67 0		100 0	105 0	83 0		25 0	20 0	69 0
MID		50 0	50 0	61 0		100 0	100 0	81 0		25 0	15 0	72 0
IWP		55 0	60 0	62 0		90 0	100 0	70 0		25 0	25 0	73 0
CL		55 0	60 0	60 0		105 0	110 0	68 0		25 0	30 0	75 0
EOP	1+43	75 0	70 0	62 0	1+33	100 0	105 0	67 0	1+48	30 0	30 0	78 0
OWP		60 0	55 0	64 0		80 0	85 0	74 0		45 0	35 0	77 0
MID		70 0	65 0	63 0		100 0	95 0	88 0		35 0	15 0	76 0
IWP		75 0	70 0	64 0		70 0	80 0	83 0		45 0	40 0	76 0
CL		65 0	65 0	65 0		85 0	80 0	86 0		40 0	40 0	77 0
EOP	1+58	85 0	80 0	73 0	1+48	90 0	90 0	72 0	1+68	40 0	40 0	79 0
OWP		55 0	55 0	80 0		80 0	75 0	74 0		25 0	30 0	77 0
MID		50 0	55 0	82 0		85 0	65 0	82 0		25 0	30 0	77 0
IWP		40 0	50 0	85 0		75 0	70 0	76 0		25 0	35 0	76 0
CL		55 0	60 0	82 0		95 0	90 0	75 0		45 0	45 0	79 0
AVG		53 9	53 2	65 1		96 0	97 6	72 0		37 9	39 0	73 8
MIN		40 0	30 0	54 0		70 0	65 0	58 0		20 0	10 0	66 0
MAX		85 0	80 0	85 0		115 0	120 0	88 0		65 0	65 0	93 0
DEV		10 9	9 9	6 1		10 5	11 6	6 8		11 6	13 1	4 4

Table 24. Core Thickness from the Field Material Sampling and Testing Forms

	Before Section Stations 0-				After Section Stations 5+				Design
Section ID	Station m	Offset m	Core #	Surface Thickness	Station m	Offset m	Core #	Surface Thickness	Surface Thickness
Interval A 0 months									(±10)mm
340901	0-58 5	1 1	CA01A01	58 4	5+14 0	0 6	CA05A01	50 8	63 5
	0-57 0	0 6	CA02A01	58 4	5+15 5	1 1	CA06A01	50 8	(53 5-73 5)
	0-55 5	1 1	CA03A01	53 3	5+17 0	0 6	CA07A01	53 3	
	0-54 0	0 6	CA04A01	55 9	5+18 5	1 1	CA08A01	53 3	
			Average	56 5			Average	52 1	
							Avg All	54 3	
340903	0-58 5	1 1	CA01A03	53 3	5+14 0	0 6	CA05A03	50 8	63 5
	0-57 0	0 6	CA02A03	50 8	5+15 5	1 1	CA06A03	53 3	(53 5-73 5)
	0-55 5	1 1	CA03A03	50 8	5+17 0	0 6	CA07A03	53 3	
	0-54 0	0 6	CA04A03	48 3	5+18 5	1 1	CA08A03	53 3	
			Average	50 8			Average	52 7	
							Avg All	51 7	
340902	0-57 0	0 6	CA02A02	66 0	5+13 5	1 1	CA05A02	61 0	63 5
	0-55 5	1 1	CA03A02	66 0	5+15 0	0 6	CA06A02	63 5	(53 5-73 5)
	0-57 0	2 4	CA11A02	66 0	5+16 5	1 1	CA07A02	63 5	
	0-52 5	2 4	CA14A02	66 0	5+13 5	2 4	CA23A02	61 0	
	0-51 0	2 4	CA15A02	63 5	5+15 0	2 4	CA24A02	63 5	
	0-49 5	2 4	CA16A02	63 5	5+16 5	2 4	CA25A02	63 5	
	0-45 0	2 4	CA19A02	66 0	5+21 0	2 4	CA28A02	63 5	
	0-42 0	2 4	CA21A02	63 5	5+25 5	2 4	CA31A02	61 0	
					5+27 0	2 4	CA32A02	61 0	
					5+28 5	2 4	CA33A02	63 5	
			Average	65 1			Average	62 5	
							Avg All	63 6	
340960	0-58 5	1 1	CA01A60	68 6	5+14 0	0 6	CA05A60	63 5	63 5
	0-57 0	0 6	CA02A60	71 1	5+15 5	1 1	CA06A60	63 5	(53 5-73 5)
	0-55 5	1 1	CA03A60	71 1	5+17 0	0 6	CA07A60	63 5	
	0-54 0	0 6	CA04A60	73 7	5+18 5	1 1	CA08A60	63 5	
			Average	71 1			Average	63 5	
							Avg All	67 3	
340961	0-58 5	1 1	CA01A61	68 6	5+14 0	1 1	CA05A61	63 5	63 5
	0-57 0	0 6	CA02A61	66 0	5+15 5	0 6	CA06A61	63 5	(53 5-73 5)
	0-55 5	1 1	CA03A61	66 0	5+17 0	1 1	CA07A61	61 0	
	0-54 0	0 6	CA04A61	66 0	5+18 5	0 6	CA08A61	61 0	
			Average	66 7			Average	62 3	
							Avg All	64 5	
340962	0-58 5	1 1	CA01A62	71 1	5+14 0	0 6	CA05A62	63 5	63 5
	0-57 0	0 6	CA02A62	71 1	5+15 5	1 1	CA06A62	58 4	(53 5-73 5)
	0-55 5	1 1	CA03A62	71 1	5+17 0	0 6	CA07A62	55 9	
	0-54 0	0 6	CA04A62	76 2	5+18 5	1 1	CA08A62	63 5	
			Average	72 4			Average	60 3	
							Avg All	66 4	

Note
The SPS-9A construction guidelines require consistency in layer thickness for each site The thickness of the surface layer should not deviate more than 10 mm from design

Table 25. Summary of Surface Layer Average Thickness from Rod and Level Survey and Cores

Section ID	Surf. Elev. Thickness (other sections)	Diff. from Design = 63 5 mm (from other test sections)	Int. A Cores Surf. Thickness (other sections)	Diff. from Design = 63 5 mm (from other test sections)
East Bound Overlay Construction Core Sections				
340901 (average 03, 02, 60, 61, and 62)	58 0 (68 7)	-5 5 (-10 7*)	54 3 (62 7)	-9 2 (-8 4)
340903 (average 01, 02, 60, 61, and 62)	67 9 (66 7)	+4 4 (+1 2)	51 7 (63 2)	-11 8* (-11 5*)
340902 (average 01, 03, 60, 61, and 62)	64 8 (67 4)	+1 3 (-2 6)	63 6 (60 8)	+0 1 (+2 8)
East Bound Overlay Construction Supplemental Sections				
340960 (average 01, 03, 02, 61, and 62)	65 1 (67 3)	+1 6 (-2 2)	67 3 (60 1)	+3 8 (+7 2)
340961 (average 01, 03, 02, 60, and 62)	72 0 (65 9)	+8 5 (+6 1)	64 5 (60 7)	+1 0 (+3 8)
340962 (average 01, 03, 02, 60, and 61)	73 8 (65 6)	+10 3* (+8 2)	66 4 (60 3)	+2 9 (+6 1)

Thickness is in millimeters

The SPS-9A construction guidelines require consistency in layer thickness for each site The elevations of the surface layer should not deviate more than 10 mm from design or the average value of the other test sections in the project

* Indicates an asphalt concrete surface layer compacted thickness that exceed the allowable limit of $\pm$ 10 mm of the design or the average value of the other test sections in the same project

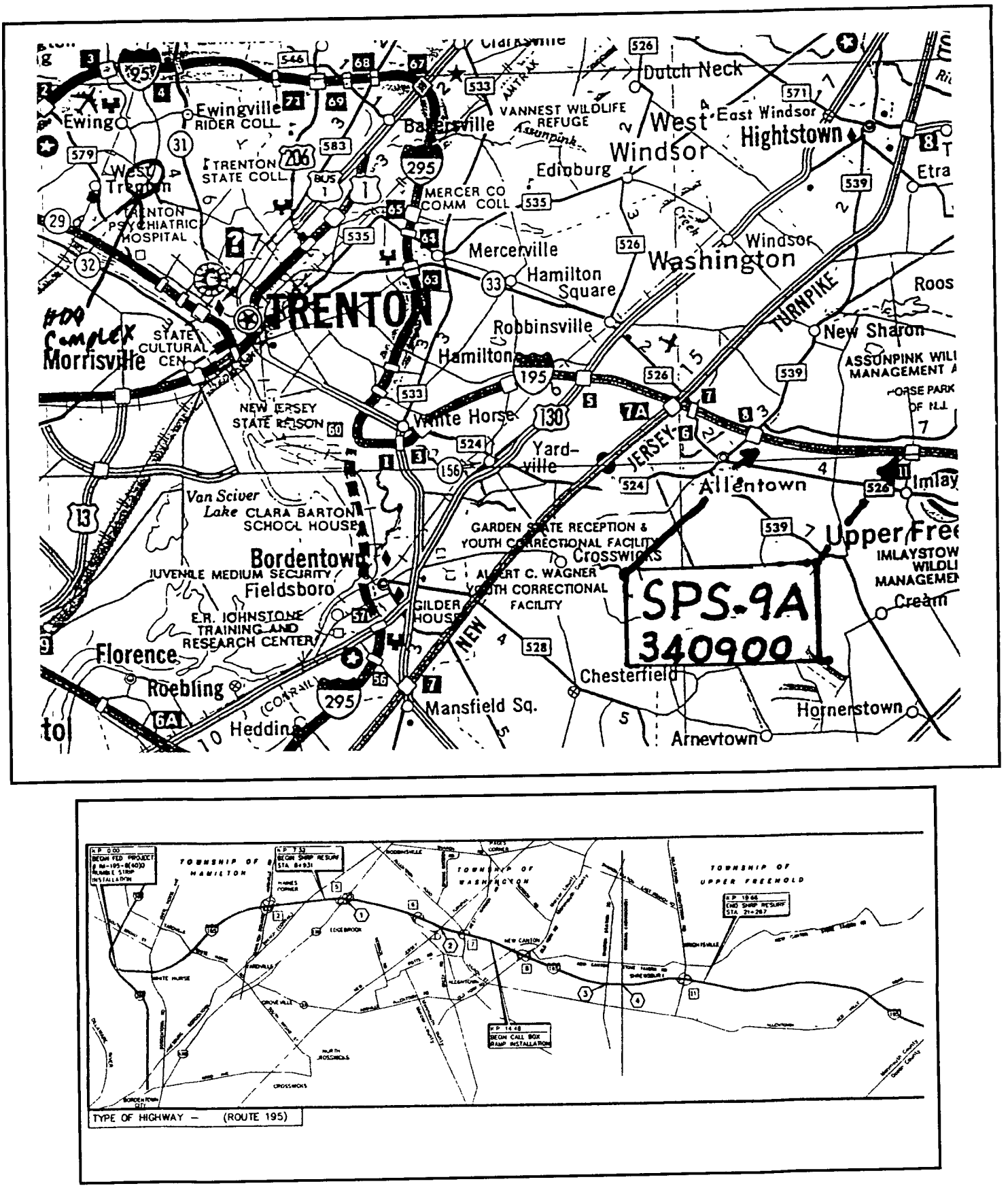


Figure 1. Site Location Maps - NJ SPS-9A Project 340900

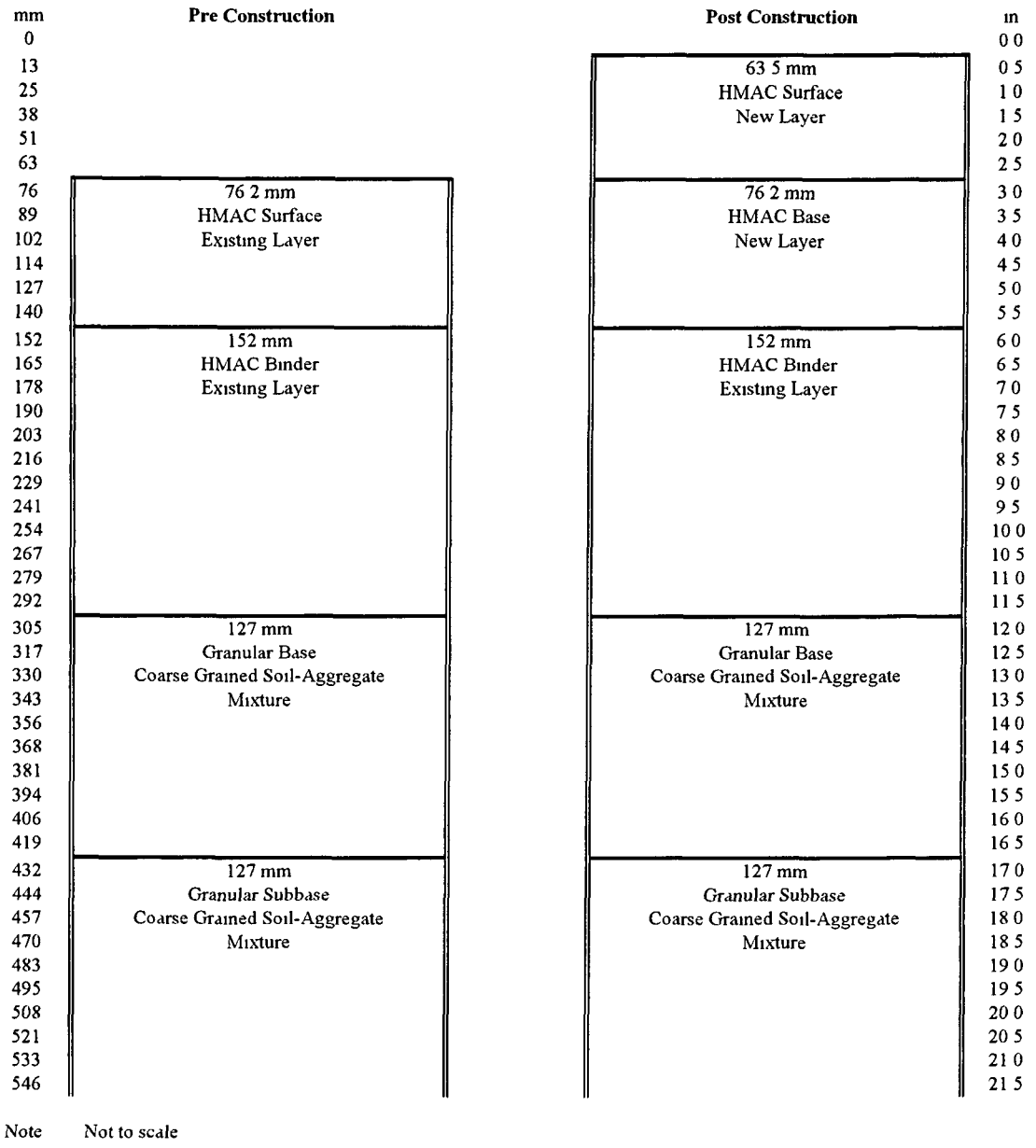


Figure 2 Pavement Structure Before and After Construction

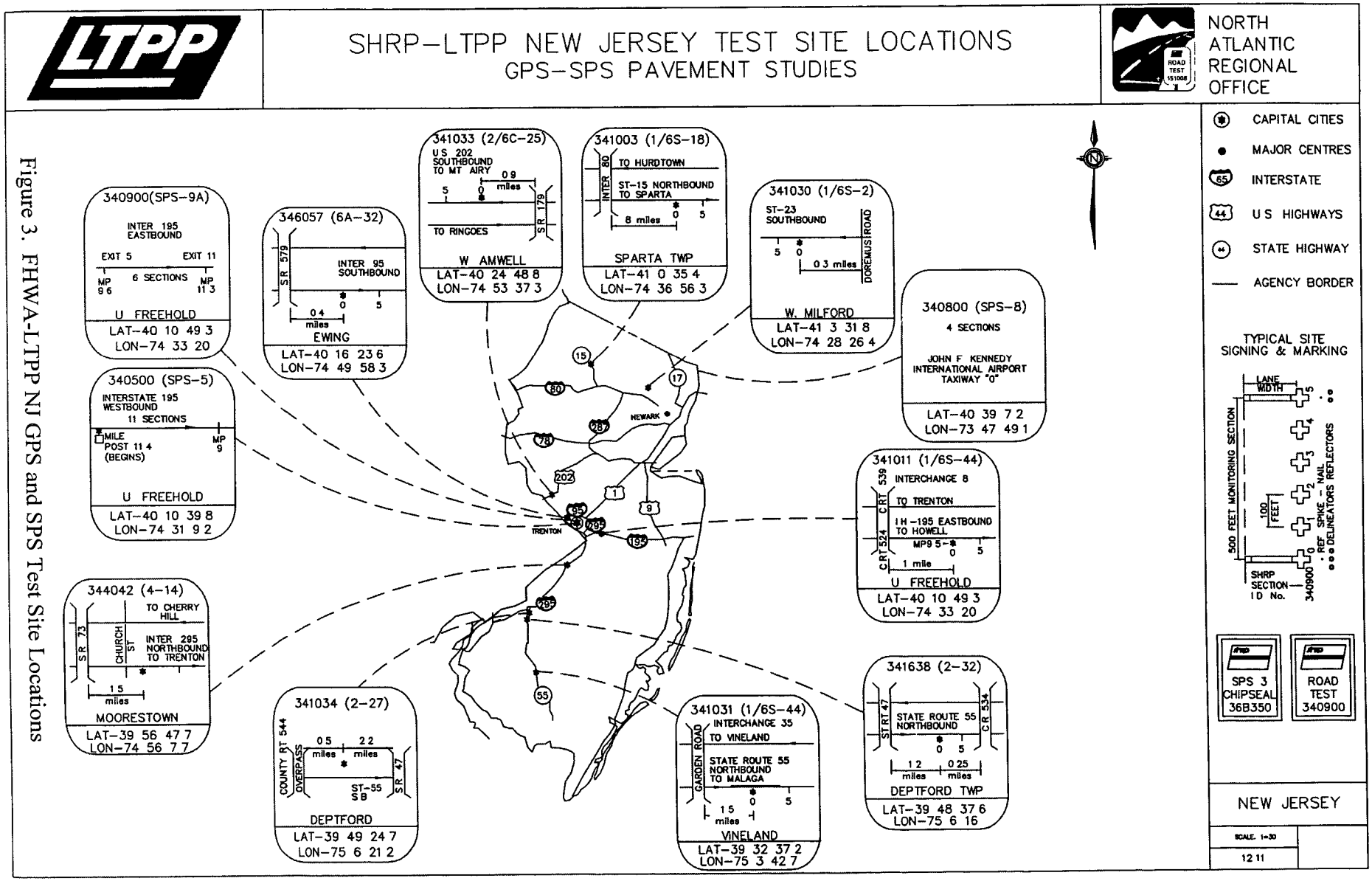


Figure 3. FHWA-LTPP NJ GPS and SPS Test Site Locations

NEWJ.dwg PLOTDATE JAN 02/01

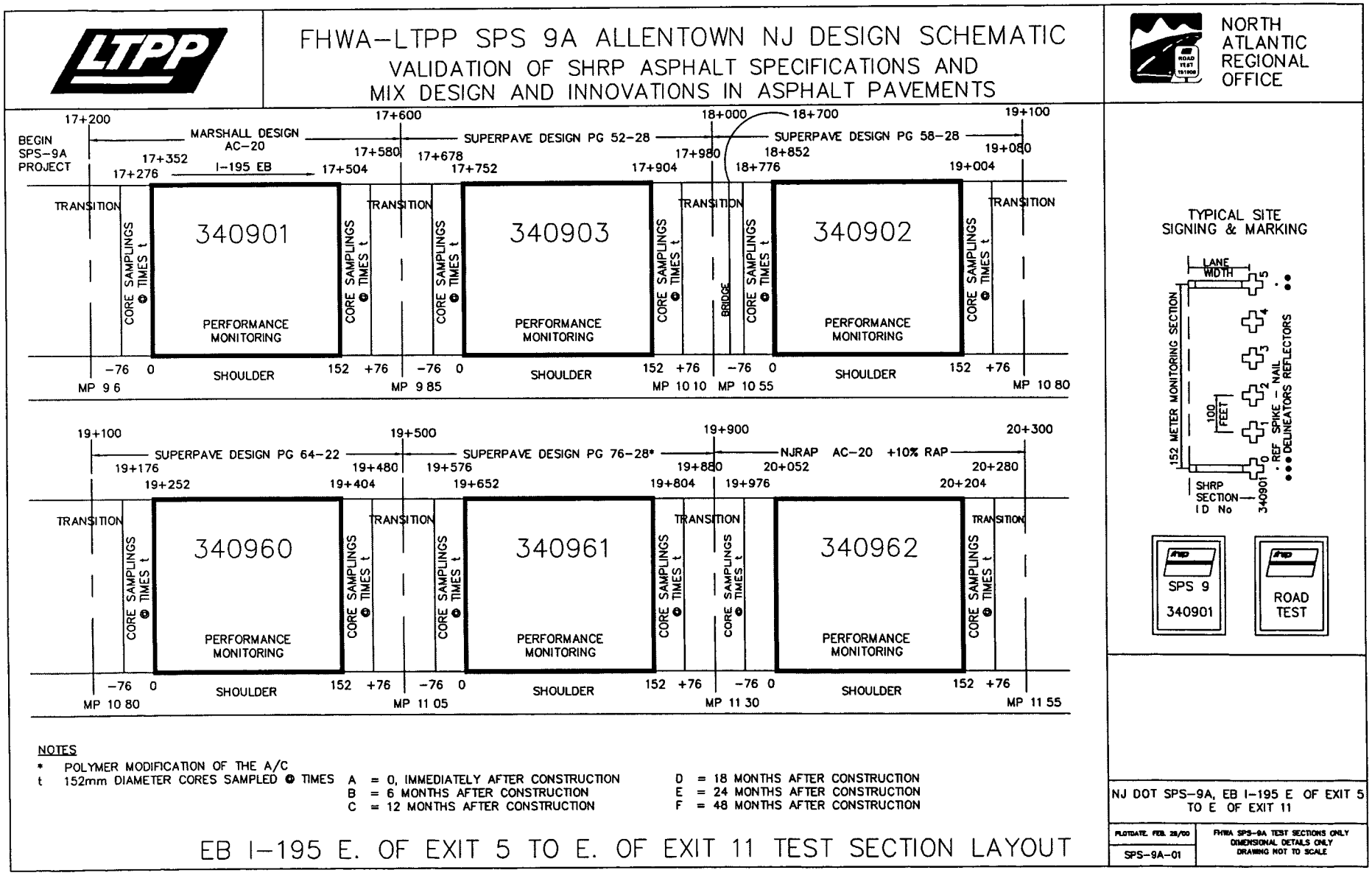


Figure 4. Layout of SPS-9A Test Sections

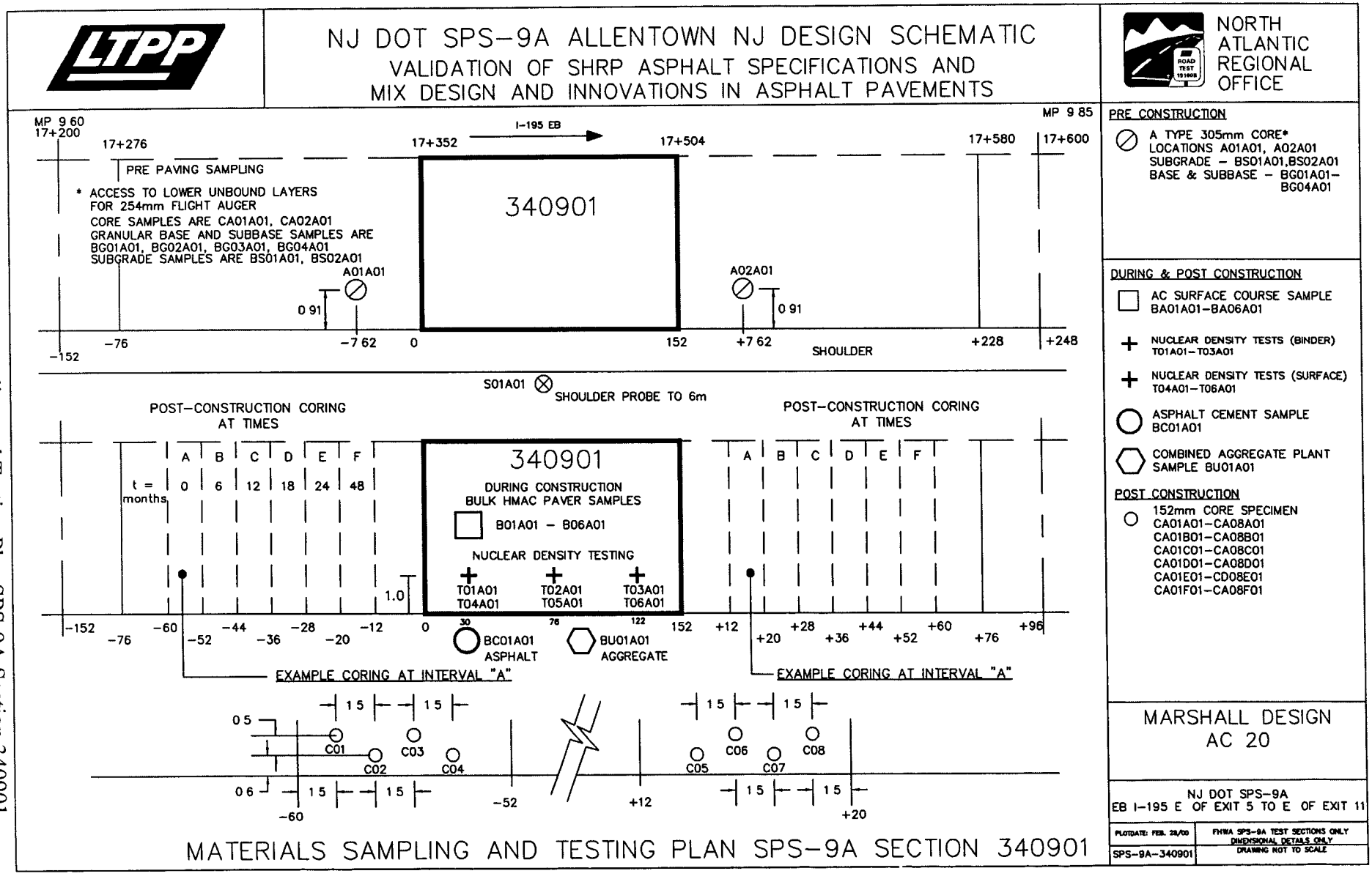


Figure 5. Materials Sampling and Testing Plan SPS-9A Section 340901

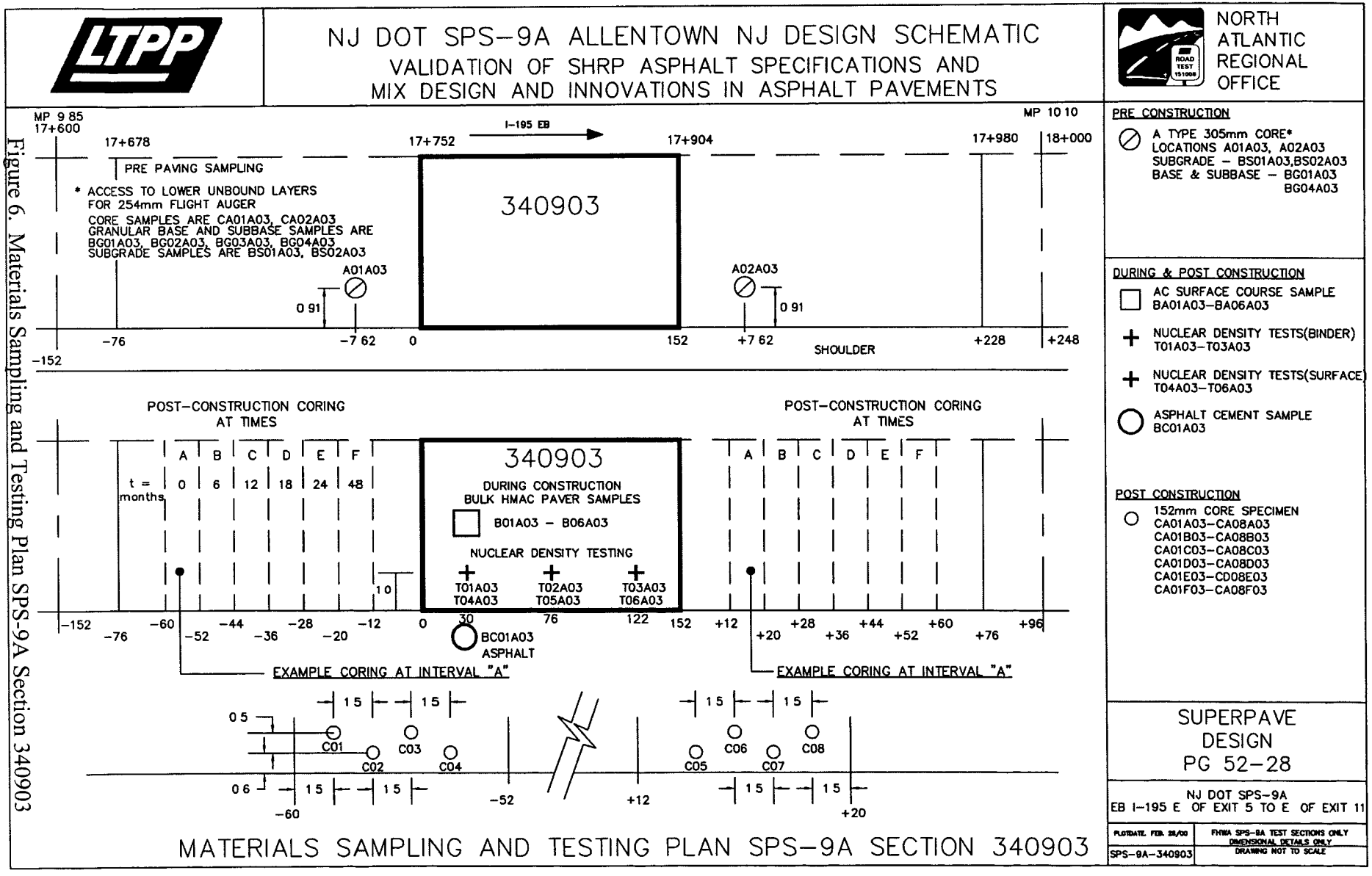


Figure 6. Materials Sampling and Testing Plan SPS-9A Section 340903

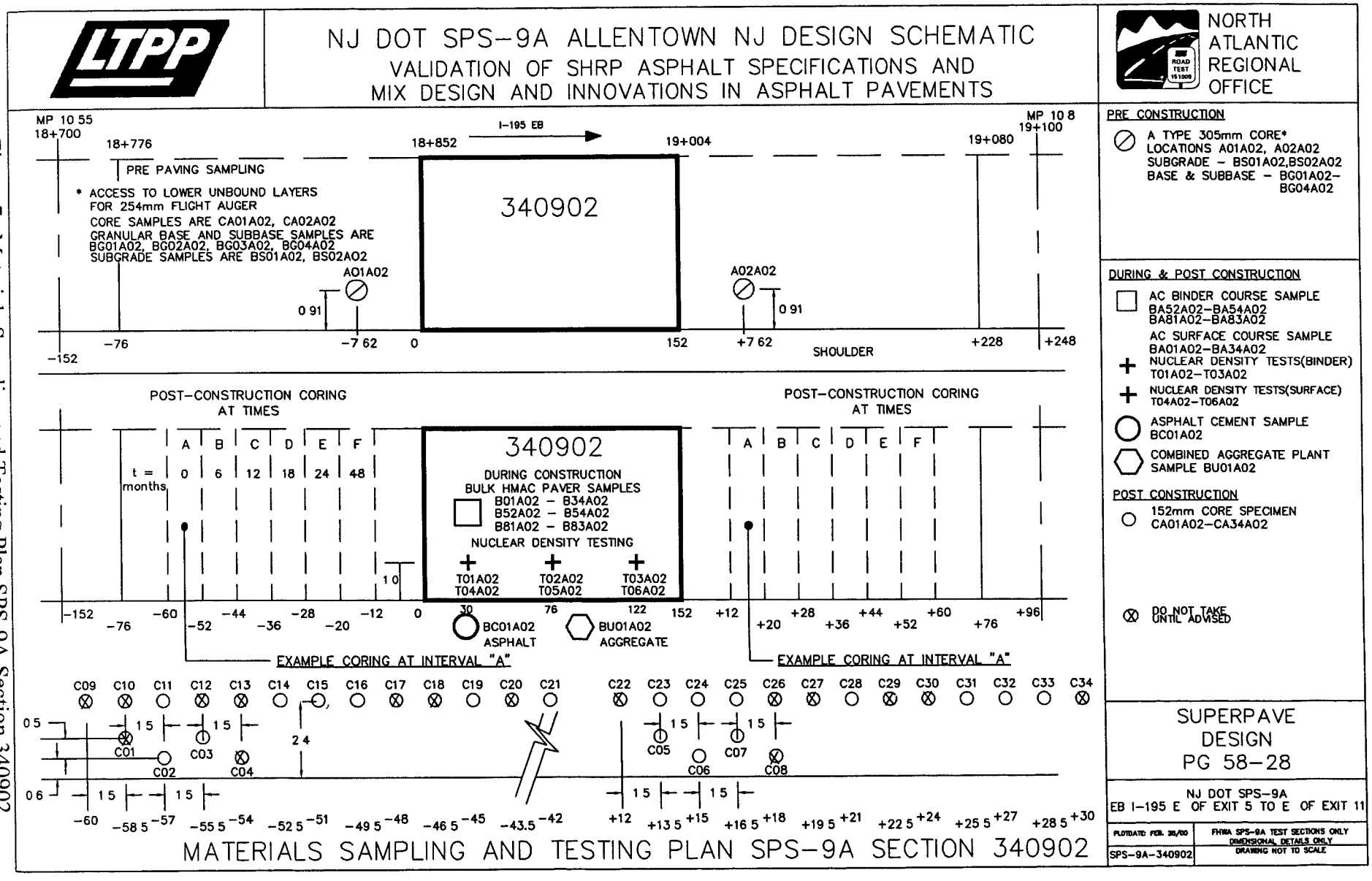


Figure 7. Materials Sampling and Testing Plan SPS-9A Section 340902

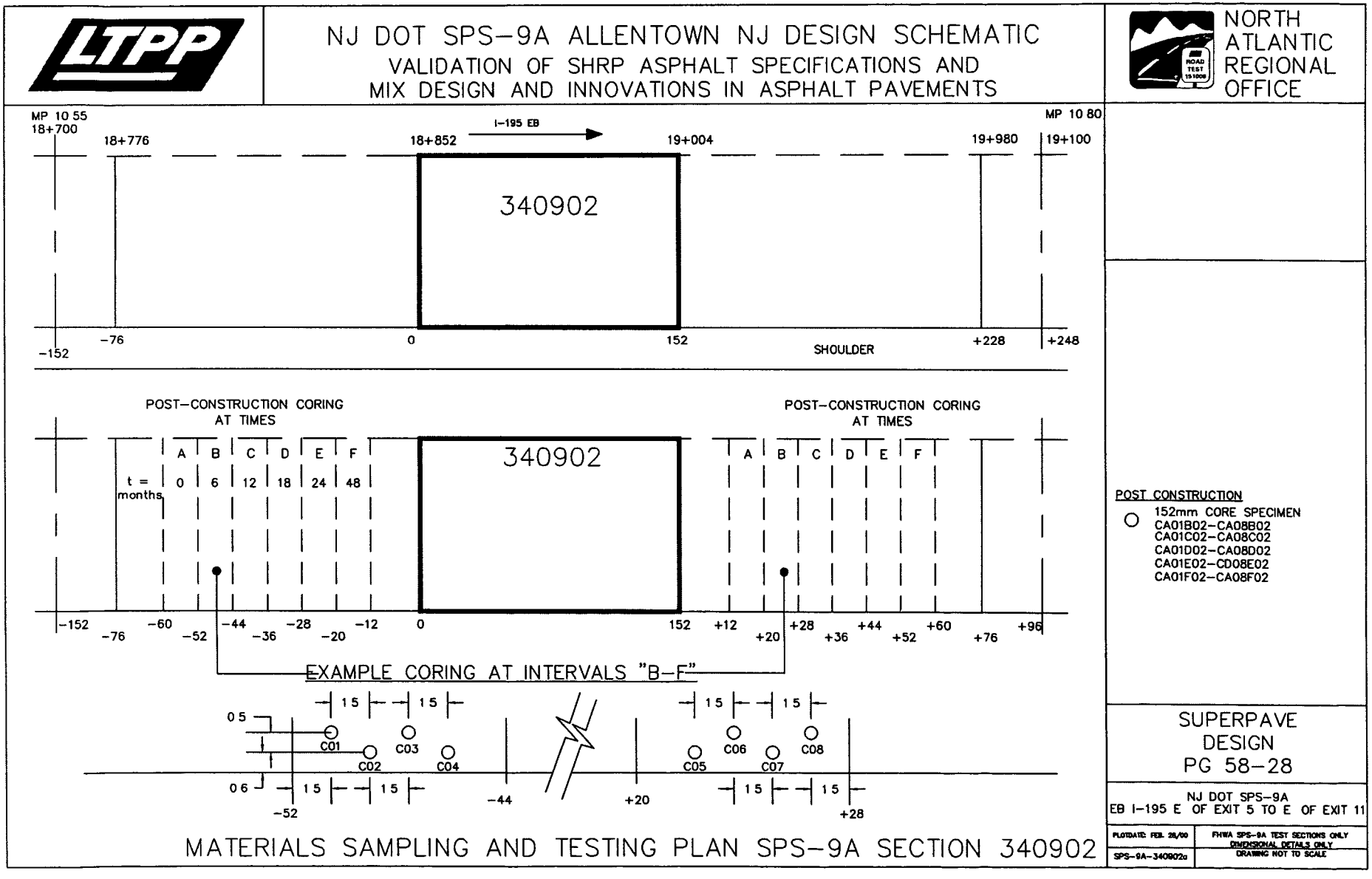


Figure 7A. Materials Sampling and Testing Plan SPS-9A Section 340902

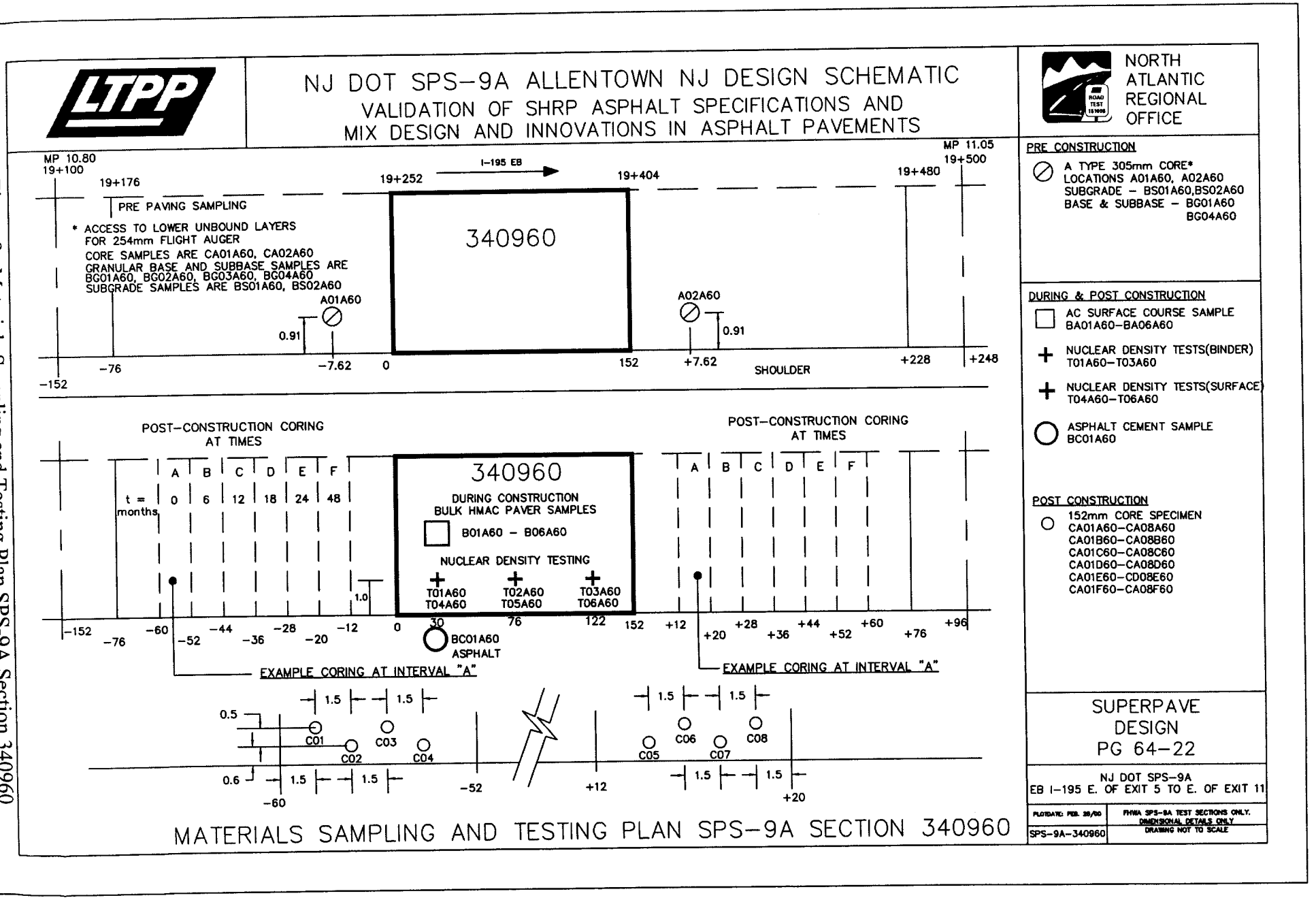


Figure 8. Materials Sampling and Testing Plan SPS-9A Section 340960

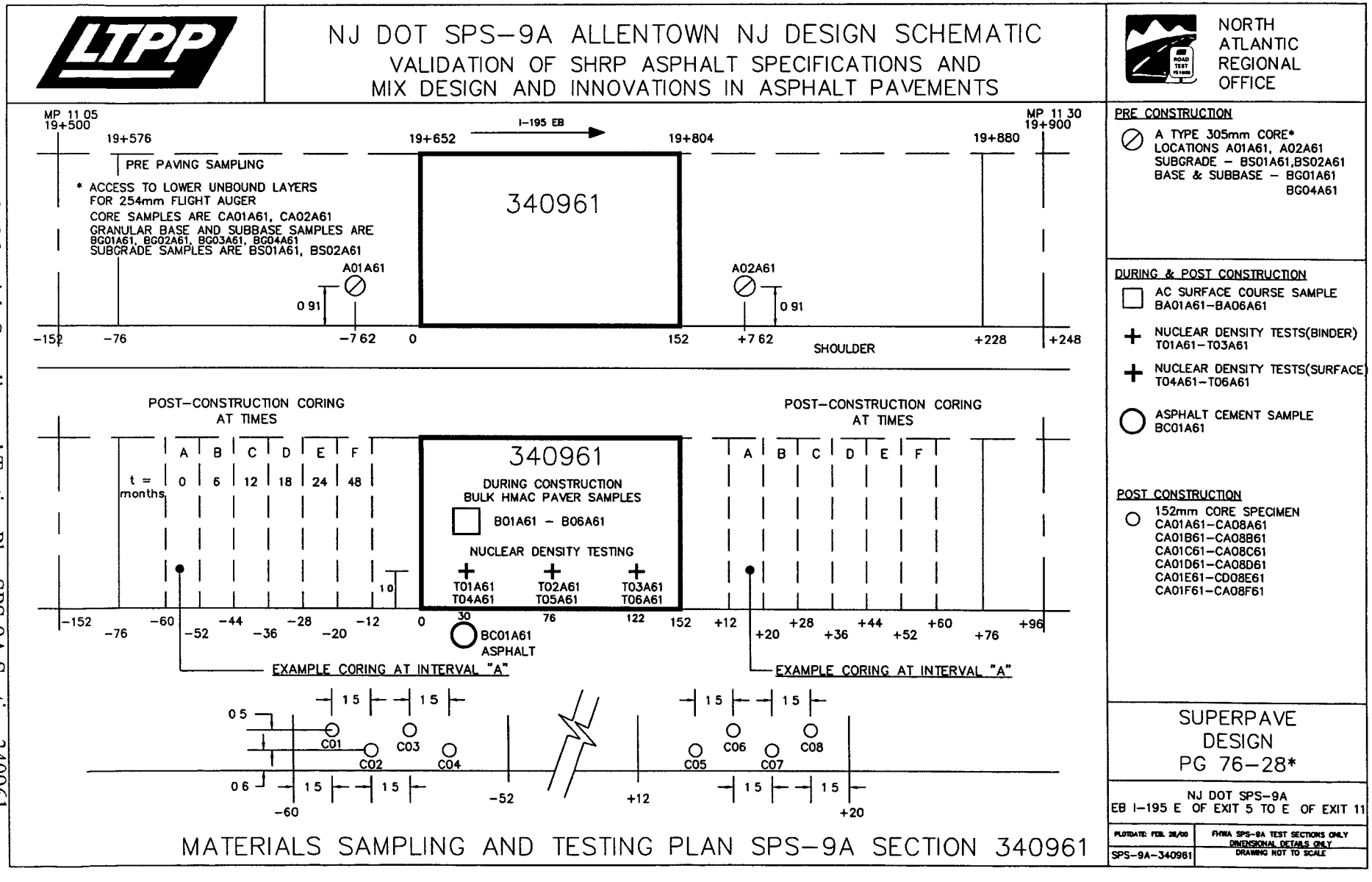


Figure 9. Materials Sampling and Testing Plan SPS-9A Section 340961

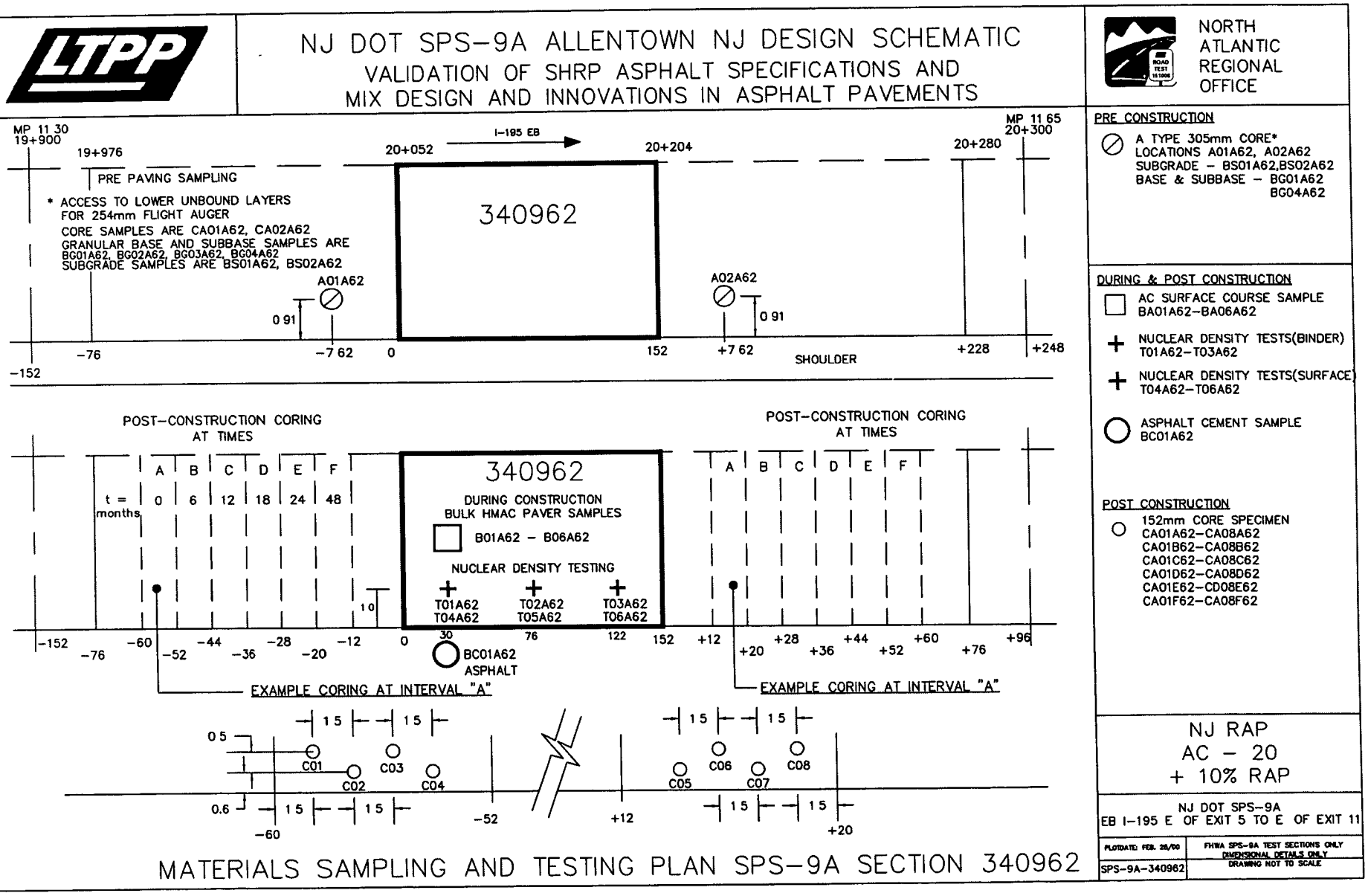


Figure 10. Materials Sampling and Testing Plan SPS-9A Section 340962

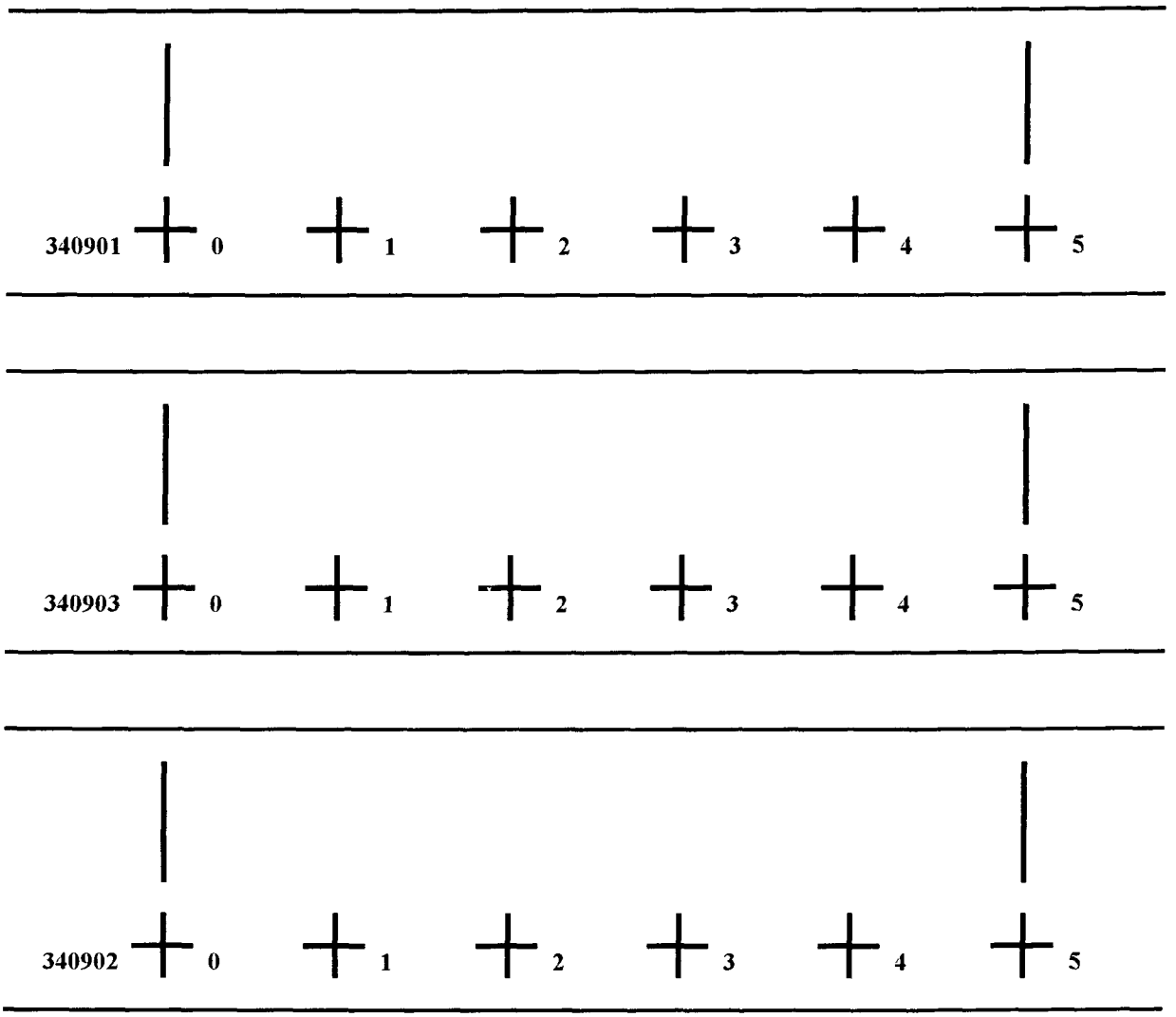
EB Inside Shoulder	340901			340903			340902		
non SPS EB lane	I-195 East Bound Traffic Direction			==========→					
SPS EB lane **Jun.17** → Paving Date	63 5 mm NJ Marshall design with AC-20 BA01A01-BA06A01		**6/17** →	63 5 mm Alt Superpave™ design + PG 52-28 BA01A03-BA06A03		**6/18** →	63 5 mm Superpave™ design with PG 58-28 BA01A02-BA34A02		Thickness Type of Pavement **<Bulk Samples**
EB Outside Shoulder	17+352	17+504		17+752	17+904		18+852	19+004	Const Stations
	0+00	5+00		0+00	5+00		0+00	5+00	Exper Stations
	2008	2042		2125	2200		1957	2032	SPS Pav Time

EB Inside Shoulder	340960			340961			340962		
non SPS EB lane	I-195 East Bound Traffic Direction			==========→					
SPS EB lane **Jun 18** → Paving Date	63 5 mm NJ Supplemental Superpave™ with PG 64-22 BA01A60-BA06A60		**6/18** →	63 5 mm NJ Supplemental Superpave™ with PG 76-28 BA01A61-BA06A61		**6/19** →	63 5 mm NJ Supplemental 10% RAP Marshall design with AC-20 BA01A62-BA06A62		Thickness Type of Pavement **<Bulk Samples**
EB Outside Shoulder	2145	2224		2340	0006		0131	0204	SPS Pav Time
	0+00	5+00		0+00	5+00		0+00	5+00	Exper Stations
	19+252	19+404		19+652	19+804		20+052	20+204	Const Stations

Not to scale

Refer to Table 21 for more details on the paving of the Base and surface layers

Figure 11 Surface Layer Type, Paving Dates, Paving Times, and Bulk Sample Locations



Not to scale

Figure 12 I-195 East Bound SPS-9A LTPP Core Test Sections Site Marking Plan After Construction

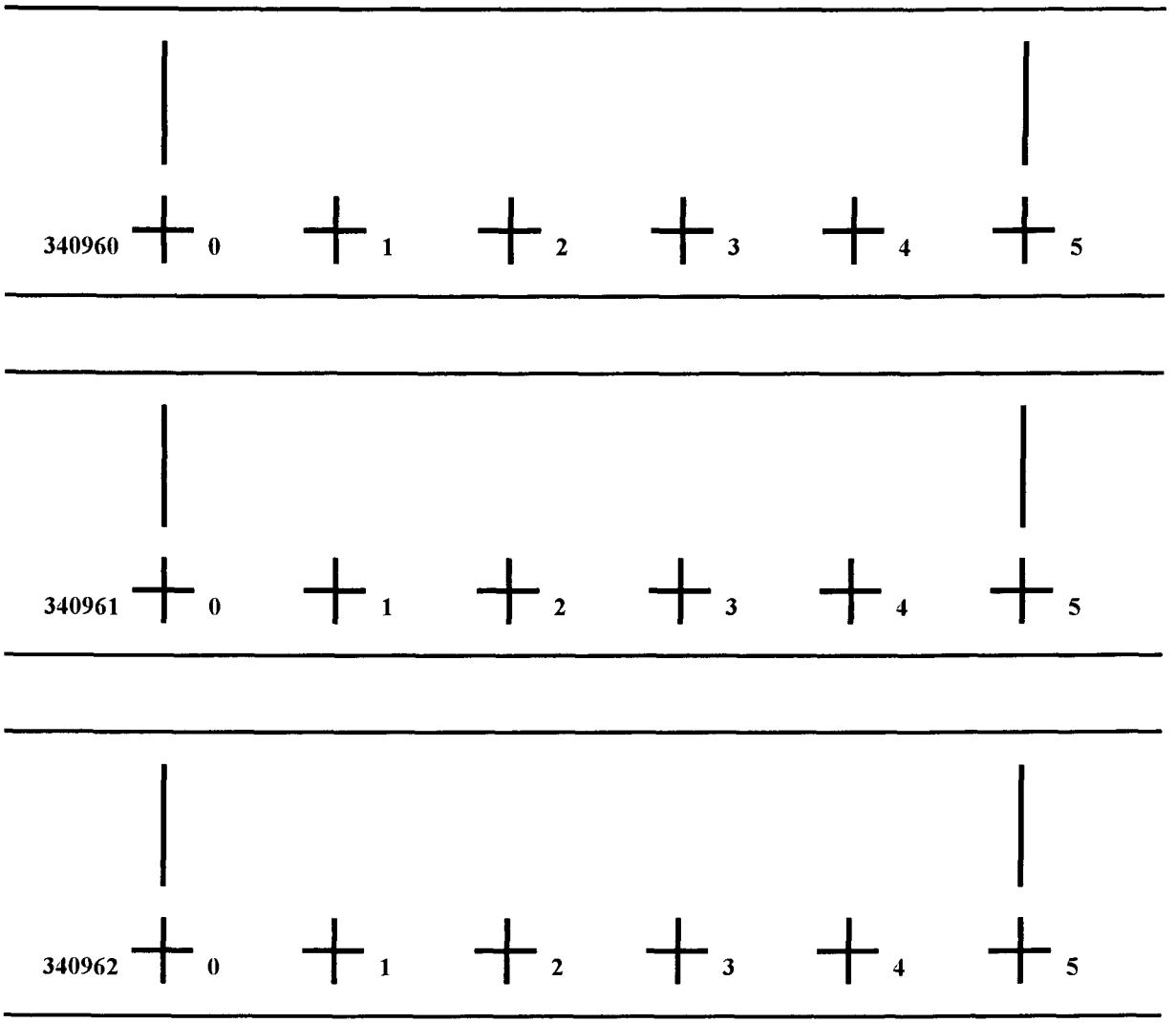


Figure 13 I-195 East Bound SPS-9A NJ Supplemental Test Sections Site Marking Plan After Construction

APPENDIX A

Correspondence, Contract Agreements, Mix Design, Job Mix Formulas, Binder Evaluation, Inspection Reports, Rolling Straight Edge Reports, and SPS Project Deviation Report

Correspondence	A1-A50
Notice of Award and Notice to Proceed	A51-A56
Mix Design and Job Mix Formulas	A57-A68
Binder Evaluation	A69-A72
Inspection Reports	A73-A102
Rolling Straight Edge Reports	A103-A105
LTPP SPS Project Deviation Report	A106-A110

U.S. Department of Transportation
Federal Highway Administration

Memorandum

6300 Georgetown Pike
McLean, Virginia 22101

Subject: ACTION: Specific Pavement Study (SPS-9) New Jersey Approval and Allocation of Incentive Funds

Date: AUG 30 1993

From: Acting Director, Office of Engineering and Highway Operations Research and Development

Reply to Attn of: HNR-40

To: Mr. John G. Bestgen, Jr.
Regional Federal Highway Administrator (HEO-01)
Albany, New York

We have received a nomination from the New Jersey Department of Transportation (DOT) for an SPS-9 site on the eastbound lane of I-195 near milepost 9. The proposed SPS-9 site will be adjacent to the previously approved SPS-5 site. The SPS-9 nomination has been reviewed and is approved for incorporation into the Long-Term Pavement Performance (LTPP) study. Information obtained from these experiments at the same location will contribute significantly to achieving the goals of the LTPP Program.

It should be noted that revisions to the SPS-9 experiment are in process. This project is considered a Tier 1 level of the revised experiment which is essentially the same as the original SHRP SPS-9 Experiment. Also, the availability of some equipment, developed in the Asphalt Program of the Strategic Highway Research Program, is unknown at this time. The LTPP program will provide technical assistance and whatever specialized equipment that are available during the mix design and actual pavement construction. It is anticipated that SHRP equipment will be available for mix design and construction control for the scheduled fall 1994 construction date of this project. To ensure the successful completion of the project, frequent communications with the LTPP program personnel will be needed as plans and specifications are developed as well as when actual construction is initiated.

The inclusion of this site into the LTPP program allows New Jersey DOT to be eligible for special incentive funds for reimbursement of certain expenses associated with the SPS experiment. This memorandum authorizes the obligation of a total of $30,000 of appropriation code 380 funds subject to the following:

1. New Jersey DOT's continued agreement to conform to all of the design and participation requirements of the experiments.

2. Funds are to be used for reimbursement of costs associated with the SPS site for; (a) the purchase and/or installation of weigh-in-motion and/or automated vehicle classification equipment; (b) conventional sampling and materials testing; and/or (c) traffic control expenditures that are incurred as part of this data collection activity.

The Federal share for the first $30,000 of the above work is 100 percent. Costs in excess of $30,000 may be eligible for reimbursement as part of the regular Federal-aid construction and/or research programs. The appropriation code 380 and the Fiscal Management Information System and regular Federal-aid procedures are to be used to track expenditures. By copy of this memorandum, we are requesting the Program Analysis Division (HFS-30) to increase New Jersey's obligation limit by $30,000 for the 380 program. These 380 funds do not lapse but are expected to be used within 5 years of this authorization.

New Jersey DOT's participation in the SPS-5 and SPS-9 experiments are greatly appreciated. The interest, cooperation, and assistance of the FHWA Region 1 and the New Jersey Division staff in the LTPP program is also appreciated.

Upon receipt of this memorandum, it is expected that the New Jersey Division office will officially notify the New Jersey DOT of this allotment and establish the appropriate accounts. Any questions concerning the requirements or this allocation should be directed to Mr. Monte Symons at (703) 285-2730. Question related to the project status, testing, and/or coordination should be directed to either Mr. Symons or Mr. Ivan Pecnik, LTPP North Atlantic Regional Engineer. Mr. Pecnik can be reached at (716) 631-5205.

Byron N. Lord

Byron N. Lord

cc: Mr. Ivan Pecnik

LONG TERM PAVEMENT PERFORMANCE
North Atlantic Region
415 Lawrence Bell Dr., Unit 3, Amherst, New York 14221
Tel (716) 631-5205 Fax (716) 632-4808

IVAN J. PECNIK, P.E.
LTPP Regional Engineer

Mr. Frank Palise
Regional Materials Engineer
New Jersey Department of Transportation
Route 79 and Daniels Way
Freehold, New Jersey 07728

September 7, 1993

RE: Nomination for SPS-9 Test Site I-195 E.B.L.
Old York Road To Imlaystown

Dear Frank:

I am pleased to advise that we have now received written confirmation of the acceptance of your October 29, 1992 proposal to utilize portions of I-195, E.B.L. - Old York Road to Imlaystown for the eventual establishment of a SPS-9 test site.

The FHWA Division Office will be in touch with you to officially notify you of the acceptance on their behalf and to establish appropriate reimbursement accounts, procedures and policies.

As you are aware, revisions to the SPS-9 experiment are in process. This project is considered a Tier 1 level of the revised experiment which is essentially the same as the original SHRP SPS-9 experiment. Also the availability of some equipment, developed in the SHRP Asphalt program, is unknown at this time. It is anticipated however that SHRP equipment will be available for mix design and construction control for the anticipated fall 1994 construction date of this project. The LTPP program will provide technical assistance and whatever specialized equipment that are available during the mix design and actual pavement construction.

Frequent communication, co-ordination and interaction with LTPP program personnel will be needed as plans and specifications are developed and when actual construction is initiated.

This Regional Office will keep you informed of the experiment status and program developments as soon as we become aware of the same.

The participation by New Jersey in the SPS-9 program is greatly appreciated and we look forward to a successful implementation.

Sincerely,

I.J. Pecnik P.E.
LTPP Regional Engineer, NA

IP/tf

c.c. P. Teng - FHWA/LTPP
Administrator - FHWA, Region 1
Administrator - FHWA, N.J. Division
NARO

ORIGINAL

JAN 09 1995

Job #
File # A-113.119

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: MEMORANDUM FOR RECORD

FROM: Frank Palise
Regional Materials Engineer
Region 3

Frank Palise

PHONE: 908/308-4022

DATE: December 28, 1994

SUBJECT: SPS-9 Planning Meeting

On December 14, 1994, at 9 a.m., a preliminary planning meeting for the renomination, design, and construction of an SPS-9A superpave validation project was held. This meeting was held at the Bureau of Geotechnical Engineering's conference room in Thiokol, building #8.

The following were in attendance:

NAME	UNIT	PHONE
Frank Palise	Reg. 3 Mat'ls	908-308-4022
Caroline Trueman	Reg. 3 Design	609-530-2506
Kathy Petros	FHWA	609-989-2273
Eid Montagy	Geotechnical	609-530-3755
Nicholas Vitillo	Research	609-292-4758
Jack Mansfield	Geotechnical	609-530-3755
Andy Kuchtyak	Specifications	609-530-2701
Kathy Zummo	Specifications	609-530-2707
Bill Phang	N. A. Reg. Office	716-632-0804
Gabe Cimini	N. A. Reg. Office	716-632-0804

The following was discussed:

1. This project will be located in the eastbound lanes of I-195 between milepost 8.6 and 11.7. The surface course must be at least 2 1/2" in thickness with the binder course 2 - 2 1/2" thick.

Each test site will consist of a 500 foot monitoring section and 500 foot transitor section (see attached) - a total of five sites will be constructed consisting of:

* Agency Mix (I-4 Modified)
* Superpave
* Superpave + PG
* I-4 Modified with Polymer
* I-4 Modified with Rubber

2. The specifics as to when we'll develop and verify the superpave mix designs will be worked out by the Bureau of Materials.

3. Andy Kuchtyak will contact G. Sellner to confirm that the Office of Special Projects will handle the design of this project.

   Note: Subsequent to this meeting Andy confirmed that Mr. Sellner's unit will handle the project but will probably use a consultant.

4. It was agreed that this project must be awarded by January, 1996 so that construction can be completed before the "Great Adventure" tourist season.

5. Bill Phang of PMS advised us that this project will need the inclusion of instrumentation to monitor pavement and air temperatures. At least three thermocouples at two locations will be required. Bill will send us a copy of the specifications for this equipment, so that we can include them in the contract documents.

   Bill also emphasized the need for us to periodically gather the temperature data that is gathered at the site. Since George Kuziw's unit is already at this location maintaining a WIM site, it was suggested that his unit be assigned this task. Frank Palise will check with George

6. Nomination forms were provided by PMS Bill Phang asked that they be completed ASAP. Frank Palise will coordinate this.

7. The FHWA's superpave demonstration mobile laboratory is available for stationing on this project if we request it soon. Kathy Petros of the FHWA Division office will coordinate this request.

8. Bill Phang reported that the Materials Sampling and Testing Guidelines for SPS-9A projects is still being developed. He will send them out as soon as they are completed

9. The GPS site that currently exists in this section will be changed to a GPS 6B site.

df

c Those In Attendance
K. Afferton
D. Wolfe
H. Justus
G. Kuziw
G. Sellner
E. Connolly
File

ORIGINAL

FEB 20 1995

FILE # 13.11.9

State of New Jersey

DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625-0600

CHRISTINE TODD WHITMAN
Governor

FRANK J. WILSON
Commissioner

February 14, 1995

William A. Phang
LTPP Program Manager
415 Lawrence Bell Drive
Suite 3
Amherst, New York 14221

Dear Mr. Phang

I have received your FAX memorandum dated February 2, 1995 Relative to the SPS-9A nomination, I am attaching the completed nomination forms for your review and disposition.

Relative to our needs, I must hold off until I can touch base with the members of our SHRP Implementation committee at our next meeting scheduled for February 23, 1995. However, until then, the only pressing need that I see is the lack of CD ROM hardware to read the databases the LTPP program is developing A note from your organization emphasizing the use of this type of equipment would help justify our efforts to purchase such equipment.

Sincerely,

Frank Palise

Frank Palise
Regional Materials Engineer

df
c D Wolfe
J Mansfield
File

SHEET A. SPS-9A CANDIDATE PROJECT NOMINATION AND INFORMATION

STATE New Jersey SHRP SECTION NO. _____

GENERAL PROJECT INFORMATION

PROJECT LOCATION

ROUTE NUMBER I-195

ROUTE SIGNING [X] Interstate [ ] U.S. [ ] State [ ] County

Other _____

PROJECT LOCATION Start Milepost 5.0 End Milepost 12.195

Start Station _____ End Station _____

DIRECTION OF TRAVEL [ ] North B. [ ] South B. [ ] West B. [X] East B.

PROJECT LOCATION DESCRIPTION Eastbound, from east of Rt. 130 (exit 5) to just east of Imlaystown - Hightstown Road (exit 11)

COUNTY Monmouth

HIGHWAY AGENCY DISTRICT NUMBER 3

ENVIRONMENTAL CONDITIONS

AVERAGE 7-DAY MAXIMUM PAVEMENT DESIGN TEMPERATURE		MINIMUM PAVEMENT DESIGN TEMPERATURE		MOISTURE (Annual Precipitation)	
< 52C (126F)	[ ]	> -46C (-51F)	[ ]		
< 58C (136F)	[x]	> -40C (-40F)	[ ]	< 625 mm (25 inches)	[ ]
< 64C (147F)	[ ]	> -34C (-29F)	[ ]		
< 70C (158F)	[ ]	> -28C (-18F)	[ ]	> 625 mm (25 inches)	[x]
		> -22C (-8F)	[x]		
		> -16C (3F)	[ ]		
		> -10C (14F)	[ ]		

SIGNIFICANT DATES

LATEST DATE OF APPROVAL NOTIFICATION FROM FHWA LTPP _____

CONTRACT LETTING DATE January, 1996

ESTIMATED CONSTRUCTION START DATE April, 1996

ESTIMATED DATE TEST SECTIONS OPENED TO TRAFFIC June, 1996

ESTIMATED CONSTRUCTION COMPLETION DATE June, 1996

SHEET A. SPS-9 CANDIDATE PROJECT NOMINATION AND INFORMATION FORI (Continued)

PROJECT DESCRIPTION

PROJECT TYPE [ ] New Route [x] Resurfacing Flexible [ ] Resurfacing Rigid

Other With 2 inches of milling

FACILITY [ ] Divided [ ] Undivided NUMBER OF LANES (One Way)

DESIGN TRAFFIC DATA

ANNUAL AVERAGE DAILY TRAFFIC (TWO DIRECTIONS)	30,000
% HEAVY TRUCKS AND COMBINATIONS (OF AADT)	16% H, 37.5% Total Trucks
EST. 18K ESAL RATE IN STUDY LANE (1,000 ESAL/YR)	1934
TOTAL DESIGN 18K ESAL APPLICATIONS IN DESIGN LANE	39,000,000
DESIGN PERIOD (Years)	20

SHEET B. SPS-9 CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE New Jersey SHRP SECTION NO._____

AGENCY'S PAVEMENT STRUCTURE DESIGN FOR SITE

LAYER[1] NO.	LAYER[2] DESCRIPTION CODE	MATERIAL TYPE[3] CLASS CODE	THICKNESS[4] (mm)	STRUCTURAL[5] COEFFICIENT
1	SUBGRADE (7)	57 to 59	—	5.5
2	06	26	5.0	0.08
3	05	26	5.0	0.11
4	04	28	6.0	0.34
5	03	01	3.0*	0.22
6	04	28	3.0	0.44
7	03	01	2.5	0.44
8				0.
9				0.

* 2 inches to be removed by milling

STRUCTURAL DESIGN METHOD

[ ] 1972 AASHTO [ ] 1986 AASHTO [ ] 1993 AASHTO [x] Modified AASHTO

Other 1972 AASHTO modified by Asphalt Institute existing pavement strength evaluation.

AASHTO DESIGN RELIABILITY FACTORS R% - S_o -

OUTSIDE SHOULDER TYPE

[ ] Turf [ ] Granular [x] Asphalt Concrete [ ] Surface Treatment

[ ] PCC [ ] Curb and Gutter Other_____

OUTSIDE SHOULDER WIDTH (Feet) 12

SUBSURFACE EDGE DRAINS [ ] Yes [x] No

NOTES

1. Layer 1 is the natural occurring subgrade soil. The pavement surface will have the largest assigned layer number.
2. Layer description codes:

Surface Layer:	03	Base Layer:	05	Subgrade:	07
Subsurface HMAC:	04	Subbase Layer:	06	Embankment (Fill):	11

3. Refer to Tables A-1 through A-4 for material class codes.
4. If subgrade depth to a rigid layer is known, enter this depth for subgrade thickness, otherwise leave subgrade layer thickness blank.
5. Enter AASHTO structural layer coefficient value, as appropriately modified, used in pavement design or typical coefficient used by agency for this material. For the subgrade, enter either AASHTO soil support value or resilient modulus value (psi) used in design.

SHEET C. SPS-9A CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

STATE New Jersey SHRP SECTION NO. _____

TEST SECTION LAYOUT

TO BE DETERMINED DURING PROJECT DESIGN.

NUMBER OF TEST SECTIONS ENTIRELY ON: FILL _____ CUT _____

SHORTEST TRANSITION BETWEEN CONSECUTIVE TEST SECTIONS (meters) _____

VERTICAL GRADE (Avg %) (+ upgrade; - downgrade) _____

HORIZONTAL CURVATURE (Degrees)___ [ ] Tangent

COMMENTS ON DEVIATIONS FROM DESIRED SITE LOCATION CRITERIA _____

OTHER SHRP TEST SECTIONS

DOES AGENCY DESIGN CONFORM TO GPS-1, GPS-2, GPS-6 OR GPS-7 PROJECT CRITERIA? [x] YES [ ] NO

DISTANCE TO NEAREST GPS TEST SECTION ON SAME ROUTE (Miles) 0

TEST SECTION NUMBER OF NEAREST GPS SECTION 341011

ARE OTHER SPS SECTIONS LOCATED ON SAME PROJECT? [X] YES * [ ] NO

IF YES: [ ] SPS-1 [x] SPS-5 [ ] SPS-6 [ ] OTHER

*The SPS-5 is located in the adjacent west bound lane.

SUPPLEMENTAL TEST SECTIONS

IF SUPPLEMENTAL EXPERIMENTAL TEST SECTIONS ARE PROPOSED, COMPLETE THE FOLLOWING:

TOTAL NUMBER OF SUPPLEMENTAL TEST SECTIONS 1

FACTORS TO BE INVESTIGATED The performance of the Superpave mix designed at a higher PG grade of asphalt cement, specifically PG grade 76-28

Copy to GC ORIGINAL

FEB 23 1995

13.11.9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

FILE

MEMORANDUM

TO: Memorandum of Record

FROM: Frank Palise
Regional Materials Engineer
Region 3

PHONE: 908/308-4022

DATE: February 22, 1995

SUBJECT: Revision to Minutes of the SPS-9 Planning Meeting

Based on conversations with Executive Director Daniel J. Wolfe and Project Engineer Eileen Connolly, item #1 of the memorandum for record of the subject meeting, dated December 28, 1994, is revised as follows:

"This project will be located in the east bound lanes of I-195 between milepost 5.0 and 12.195. The surface course must be at least 2 1/2" in thickness with the binder course 2 to 2 1/2" thick.

Each test site will consist of a 500 foot monitoring section and a 500 foot transition section (see attached). A total of four sites will be constructed consisting of.

- Agency Mix (I-4 Modified)
- Superpave (PG grade 58-28)
- Superpave (PG grade 64-28)
- Superpave (PG grade 76-28)"

df

c C. Trueman	A. Kuchtyak	K. Afferton	E. Connolly
K. Petros	K. Zummo	D. Wolfe	
E. Montagy	B. Phang	H. Justus	
N. Vitillo	G. Cimini	G. Kuziw	
J. Mansfield	File	G. Sellner	

PAVEMENT
MANAGEMENT
SYSTEMS

March 7, 1995
50451010-12.11

Mr. Frank Palise
Regional Materials Engineer
New Jersey Department of Transportation
100 Daniels Way
Freehold, New Jersey 07728-2668

RE: SPS-9A Nomination

Dear Mr. Palise:

Thank you for your SPS-9A nomination of February 14, 1995. Before the nomination is forwarded to FHWA for acceptance, it would be useful to review the factors to be investigated in the main experiment and in supplemental sections.

According to the recommendations on the PG binder for the Hightstown area of New Jersey based on weather data with 98% reliability (page B-18 of Appendix B of the Experimental Design and Research Plan for Experiment SPS-9A, dated September 1994, copy enclosed), PG 58-22 binder should be used in the Superpave mix for this location, (I-195 EB between mileposts 5.0 and 12.195). The binder in the adjacent Superpave mix test section should be assigned to test rutting. An overlay should not be utilized to test low temperature cracking because of reflection cracking. For examination of rutting, as is indicated on page 8 of the Guidelines, copy enclosed, the high temperature component of the binder designation should be **decreased** by one grade while the low temperature component remains unchanged. For this location then the appropriate binder to examine rutting would be PG 52-22.

For the fourth test section, a state supplemental, the objective or factor to be examined is performance of a "higher grade of asphalt cement, specifically PG 76-28". In view of the above comments, and perhaps because there may not be a supply of PG 76-28 available, please review this factor and make changes as you see fit.

I am forwarding enclosed "An Industry Discussion on Superpave Implementation" NAPA Special Report 174, January 1995. There are a number of valuable suggestions to examine other factors contained therein which you may find useful in your review.

415 LAWRENCE BELL DRIVE
UNIT #3
AMHERST, N Y 14221
TEL (716) 632-0804
FAX (716) 632-4808

Should you need further information on this matter, please give me a call at (716) 632-0804.

Yours Sincerely,

William A. Phang
Program Manger
Pavement Management Systems Limited

WAP/tf

enclosure

C.C. I.J. Pecnik, w/o enclosure
B. Abukhater, w/o enclosure

SUPERPAVE DETERMINATION OF ASPHALT BINDER GRADE

Weather Database Used in SUPERPAVE Software

						AIR TEMP				50% RELIABILITY							98% RELIABILITY						
						LOW		HIGH		TEMPERATURES				BINDER GRADE			TEMPERATURES				BINDER GRADE		
ST	COUNTY_ID	STATION	LONG	LAT	ELEV	AVG	STD	AVG	STD	MAX AIR	MAX PVT	MIN AIR	MIN PVT	PG	HT	LT	MAX AIR	MAX PVT	MIN AIR	MIN PVT	PG	HT	LT
NH	MERRIMACK	FRANKLIN	71.67	43.45	119	-27	4	32	2	32	51	-27	-21	PG	52	-22	36	55	-35	-28	PG	58	-28
NH	MERRIMACK	FRANKLIN FALLS DAM	71 65	43 47	131	-26	8	31	3	31	50	-26	-21	PG	52	-22	37	56	-42	-34	PG	58	-34
NH	GRAFTON	GRAFTON	71 95	43 57	253	-32	3	30	2	30	49	-32	-26	PG	52	-28	34	53	-38	-31	PG	58	-34
NH	CHESHIRE	KEENE	72 27	42 92	146	-28	4	32	2	32	52	-28	-22	PG	52	-22	36	55	-36	-29	PG	58	-34
NH	BELKNAP	LAKEPORT	71 47	43 55	171	-25	3	31	2	31	50	-25	-20	PG	52	-22	35	54	-31	-25	PG	58	-28
NH	COOS	LANCASTER	71 58	44 48	278	-34	5	29	2	29	48	-34	-28	PG	52	-28	33	52	-44	-36	PG	58	-40
NH	GRAFTON	LEBANON FAA AIRPORT	72 32	43 63	171	-29	3	31	2	31	50	-29	-23	PG	52	-28	35	54	-35	-28	PG	58	-28
NH	HILLSBOROUGH	MANCHESTER	71 47	43 00	52	-26	4	31	2	31	51	-26	-21	PG	52	-22	35	54	-34	-28	PG	58	-28
NH	HILLSBOROUGH	MASSABESIC LAKE	71 40	42 98	76	-27	4	31	2	31	51	-27	-21	PG	52	-22	35	54	-35	-28	PG	58	-28
NH	SCOTTS GRAFT	MONROE 5 NNE	72 00	44 32	201	-32	4	29	2	29	48	-32	-26	PG	52	-28	33	52	-40	-33	PG	58	-34
NH	MERRIMACK	MOUNT SUNAPEE	72 08	43 33	387	-26	3	29	2	29	49	-26	-21	PG	52	-22	33	52	-32	-26	PG	58	-28
NH	COOS	MOUNT WASHINGTON	71 30	44 27	1909	-37	3	16	1	16	36	-37	-30	PG	<40	-34	18	38	-43	-35	PG	<40	-40
NH	HILLSBOROUGH	NASHUA 2 NNW	71 48	42 78	40	-26	3	32	2	32	52	-26	-21	PG	52	-22	36	55	-32	-26	PG	58	-28
NH	COOS	NORTH STRATFORD	71 63	44 75	278	-35	2	30	2	30	49	-35	-28	PG	52	-28	34	53	-39	-32	PG	58	-34
NH	HILLSBOROUGH	PETERBORO 2 S	71 95	42 85	311	-26	3	29	2	29	49	-26	-21	PG	52	-22	33	52	-32	-26	PG	58	-28
NH	COOS	PINKHAM NOTCH	71 25	44 27	613	-28	3	27	2	27	46	-28	-22	PG	52	-22	31	50	-34	-28	PG	52	-28
NH	GRAFTON	PLYMOUTH	71 65	43 78	201	-28	3	30	1	30	49	-28	-22	PG	52	-22	32	51	-34	-28	PG	52	-28
NH	CHESHIRE	SURRY MOUNTAIN LAKE	72 32	43 00	168	-29	3	31	2	31	51	-29	-23	PG	52	-28	35	54	-35	-28	PG	58	-28
NH	ROCKINGHAM	WINDHAM 3 NW	71 33	42 82	67	-27	4	32	2	32	52	-27	-21	PG	52	-22	36	55	-35	-28	PG	58	-28
NH	GRAFTON	WOODSTOCK	71 68	43 98	220	-28	3	30	2	30	49	-28	-22	PG	52	-22	34	53	-34	-28	PG	58	-28
NJ	ATLANTIC	ATLANTIC CITY WSO AP	74 57	39 45	43	-18	3	32	2	32	52	-18	-14	PG	58	-16	38	56	-24	-19	PG	58	-22
NJ	ATLANTIC	ATLANTIC CITY	74 43	39 38	3	-12	3	30	2	30	51	-12	-9	PG	52	-10	34	54	-18	-14	PG	58	-16
NJ	CAMDEN	AUDUBON	75 08	39 88	12	-16	3	33	2	33	53	-16	-12	PG	58	-16	37	57	-22	-17	PG	58	-22
NJ	BURLINGTON	BURLINGTON	74 87	40 08	3	-14	3	34	2	34	54	-14	-10	PG	58	-16	38	58	-20	-15	PG	64	-16
NJ	ESSEX	CANOE BROOK	74 35	40 75	55	-22	4	33	2	33	53	-22	-17	PG	58	-22	37	57	-30	-24	PG	58	-28
NJ	CAPE MAY	CAPE MAY 2 NW	74 93	38 95	6	-13	3	31	2	31	52	-13	-9	PG	52	-10	35	55	-19	-15	PG	58	-16
NJ	PASSAIC	CHARLOTTEBURG RESERVO	74 43	41 03	232	-22	4	32	2	32	52	-22	-17	PG	58	-22	36	56	-30	-24	PG	58	-28
NJ	BURLINGTON	CHATSWORTH	74 53	39 82	30	-18	4	33	2	33	53	-18	-14	PG	58	-16	37	57	-26	-21	PG	58	-22
NJ	UNION	CRANFORD	74 30	40 65	24	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	UNION	ELIZABETH	74 23	40 67	12	-17	3	34	2	34	54	-17	-13	PG	58	-16	38	58	-23	-18	PG	58	-22
NJ	ESSEX	ESSEX FELLS SERV BLDG	74 28	40 83	107	-19	3	33	2	33	53	-19	-15	PG	58	-16	37	57	-25	-20	PG	58	-22
NJ	HUNTERDON	FLEMINGTON	74 87	40 50	55	-20	4	34	2	34	54	-20	-15	PG	58	-16	38	58	-28	-22	PG	58	-22
NJ	GLOUCESTER	GLASSBORO	75 12	39 70	40	-17	3	33	2	33	53	-17	-13	PG	58	-16	37	57	-23	-18	PG	58	-22
NJ	ATLANTIC	HAMMONTON 2 NNE	74 80	39 65	28	-17	3	34	2	34	54	-17	-13	PG	58	-16	38	58	-23	-18	PG	64	-22
NJ	SUSSEX	HIGH POINT PARK	74 67	41 30	430	-22	4	29	2	29	49	-22	-17	PG	52	-22	33	53	-30	-24	PG	58	-28
NJ	MERCER	HIGHTSTOWN 2 W	74 57	40 27	30	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	HUDSON	JERSEY CITY	74 05	40 73	43	-15	3	31	2	31	51	-15	-11	PG	52	-16	35	55	-21	-16	PG	58	-16
NJ		LAYTON 3 NW	74 85	41 25	143	-24	4	33	2	33	53	-24	-19	PG	58	-22	37	57	-32	-26	PG	58	-28
NJ	PASSAIC	LITTLE FALLS	74 23	40 86	46	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	MORRIS	LONG VALLEY	74 78	40 78	168	-22	4	32	2	32	52	-22	-17	PG	58	-22	36	56	-30	-24	PG	58	-28
NJ	CUMBERLAND	MILLVILLE FAA AIRPORT	75 07	39 37	21	-17	3	33	1	33	53	-17	-13	PG	58	-16	35	55	-23	-18	PG	58	-22
NJ	BURLINGTON	MOORESTOWN	74 97	39 97	15	-17	3	33	2	33	53	-17	-13	PG	58	-16	37	57	-23	-18	PG	58	-22
NJ	MORRIS	MORRIS PLAINS 1 W	74 50	40 83	122	-20	3	32	2	32	52	-20	-15	PG	58	-16	36	56	-26	-21	PG	58	-22
NJ	ESSEX	NEWARK WSO AP	74 17	40 70	9	-16	3	33	2	33	53	-16	-12	PG	58	-16	37	57	-22	-17	PG	58	-22
NJ	MIDDLESEX	NEW BRUNSWICK 3 SE	74 43	40 47	28	-18	4	32	2	32	52	-18	-14	PG	58	-16	36	56	-26	-21	PG	58	-22
NJ	MIDDLESEX	NEW BRUNSWICK EXP STN	74 43	40 47	28	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	SUSSEX	NEWTON ST PAUL'S ABBEY	74 80	41.03	183	-23	4	32	2	32	52	-23	-18	PG	58	-22	36	56	-31	-25	PG	58	-28
NJ	PASSAIC	PATERSON	74 15	40 90	30	-16	3	34	2	34	54	-16	-12	PG	58	-16	38	58	-22	-17	PG	58	-22
NJ	BURLINGTON	PEMBERTON 3 S	74 70	39 93	15	-19	4	33	1	33	53	-19	-15	PG	58	-16	35	55	-27	-21	PG	58	-22
NJ	WARREN	PHILLIPSBURG	75 18	40 68	55	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	UNION	PLAINFIELD	74 40	40 60	28	-18	3	33	2	33	53	-18	-14	PG	58	-16	37	57	-24	-19	PG	58	-22
NJ	CUMBERLAND	SEABROOK FARMS	75 23	39 50	28	-16	5	33	1	33	53	-16	-12	PG	58	-16	35	55	-26	-21	PG	58	-22
NJ	CUMBERLAND	SHILOH	75 30	39 47	37	-16	3	33	1	33	53	-16	-12	PG	58	-16	35	55	-22	-17	PG	58	-22
NJ	SOMERSET	SOMERVILLE 3 NW	74 63	40 60	49	-19	3	33	2	33	53	-19	-15	PG	58	-16	37	57	-25	-20	PG	58	-22
NJ	SUSSEX	SUSSEX 1 SE	74 60	41 20	119	-23	4	32	2	32	52	-23	-18	PG	52	-22	36	56	-31	-25	PG	58	-28

consecutive days. The minimum pavement design temperature is calculated from the coldest air temperature of the year [1]. Appendix B provides a listing of weather stations and data used for selection of asphalt binder grade. The weather station closest to the project site should be used for determining the environmental regime within which the project falls. The column designated by MAX PVT in Appendix B is to be used for the average 7-day maximum pavement design temperature and column MIN PVT is to be used for the minimum pavement design temperature.

Site specific environmental data are necessary. Moisture and other environmental conditions will be determined using existing local weather station data, corrected to the location of the project. Pavements will be instrumented to obtain pavement temperature and air temperature.

Pavement Structural Factors

Test pavements may be built either as new construction or as a part of rehabilitated existing rigid or flexible pavement using asphalt overlays. Pavement structural factors (subgrade, subbase, base, binder and surface) are not controlled as a multi-level design factor in the SPS-9A experiment. The type and thickness of the pavement sections will be designed using each state's pavement design procedure (AASHTO, etc.), including proper consideration for drainage. The subgrade may be either fine or coarse-grained material. The base may be either a granular or stabilized type. It should be noted that SUPERPAVE™ cannot predict thermal and fatigue cracking for overlays at this time, and its performance predictions are limited to rutting for overlays. Therefore, the preference is for new pavement or rehabilitated pavements with significant asphalt concrete thickness (100 mm (4 inches) or more).

Asphalt-Aggregate Mixture Design Factors

The SHRP binder specification will be strictly adhered to for one test section, i.e. the performance grade will be selected for that site based on temperature data having a 98 % reliability. The other SUPERPAVE™ test section will use a SHRP binder to investigate the sensitivity of performance grade selection for that site by choosing a grade that will theoretically result in earlier occurrence of pavement distress (either thermal cracking or rutting), if the assumptions in the SUPERPAVE™ system are correct. This alternate SHRP binder selection will be based on the following:

1. The participating agency shall choose the distress type that the binder will be selected to minimize or prevent. If the agency desires to examine both distresses, then an additional test section will be constructed and included as a SPS-9A core test section.

---

[1] Determination of the minimum pavement temperature has been modified from the original published in SHRP Report A-648A at the recommendation of the Binder ETG. This change is incorporated in Appendix B both in the text describing the determination of temperatures for the binder selection as well as in the Temperature versus Performance Grade table.

2. - If the agency selects:

Thermal Cracking - Low temperature grade component is increased by two grade levels and the high grade remains the same. (e.g. PG 58-34 may be required for the site so the alternate binder would be a PG 58-22 to examine thermal cracking)

Rutting - High temperature grade component decreases by one grade and low temperature grade remains the same. (e.g. PG 64-28 may be required for the site so the alternate binder would be PG 58-28 to examine rutting)

The agency asphalt mix components will be selected based on those materials meeting the agency's existing specification criteria. Only asphalt, modified asphalt, and aggregates meeting the SHRP specification and mixture design criteria presented in SHRP-A-379 "SUPERPAVE™ Mix Design System Manual of Specifications, Test Methods, and Practices," as adopted and revised by AASHTO, will be used for the SHRP mixtures. The same aggregate gradation and asphalt content must be used for the SUPERPAVE™ and SUPERPAVE™ alternate binder mixtures. Asphalt, modified asphalt, and/or aggregates not meeting the SHRP specification and mixture design criteria, or considered borderline, may be used in the agency sections or supplemental test sections, but should not be used in the SHRP mixtures. Asphalt, modified asphalt or aggregates meeting the SHRP specification and mixture design criteria may be required to be shipped from other sources and used for the SHRP mixtures.

The mixture design is a controlled multi-level factor in this experiment. Part of each test site will include an asphalt-aggregate mixture designed by the state's current procedure (Marshall, Hveem, experience, etc.). The other two test sections will contain mixtures designed using the SUPERPAVE™ system. SPS-9A investigates the SHRP binder specification by evaluating different performance grades at a site and monitoring volumetric and stiffness changes over time.

The limited availability of SHRP mix equipment makes it necessary to concentrate on Level I mix designs for the majority of SPS-9A test sites. Some basic relationships (density and asphalt binder stiffness changes) are examined for all test sections. Most projects (approximately 24) would use the Level I (volumetric) mix design. As the advanced SUPERPAVE™ testing equipment and procedures become available, limited Level II and Level III designs will be considered. A subset of 8 test sites is planned to be designed using SUPERPAVE™ Level III requirements.

Sampling and Testing

A program of site materials characterization will be performed for each SPS-9A project; on the existing pavements when the project is part of rehabilitation or periodically during construction of new pavement. This will include field sampling and laboratory testing of recovered pavement materials to determine the engineering properties of these materials.

Copy to TH/KH

ORIGINAL

New Jersey
Department of Transportation
Region III Headquarters • 100 Daniels Way • Freehold, New Jersey 07728-2668
Christine Todd Whitman, Governor
Frank J. Wilson, Commissioner

April 12, 1995

APR 17 1995
JOB #
FILE # 10.11.13.11.9

William A. Phang
LTPP Program Manager
415 Lawrence Bell Drive
Suite 3
Amherst, New York 14221

RE SPS 9A Nomination

Dear Mr. Phang:

As promised, attached is the revised Sheet C of our SPS 9A nomination previously submitted. As noted we are adding two supplemental sections instead of one for a total of 5 test sections.

Agency Mix (I-4 Modified)
Superpave (PG grade 52-22)
Superpave (PG grade 58-22)
Superpave (PG grade 64-22)
Superpave (PG grade 76-22)

If you have any questions please call me at 908-308-4022.

Sincerely,

Frank Palise
Regional Materials Engineer
Region #3

SHEET C. SPS-9A CANDIDATE PROJECT NOMINATION AND INFORMATION FORM

"REVISED"

STATE New Jersey SHRP SECTION NO._____

TEST SECTION LAYOUT

TO BE DETERMINED DURING PROJECT DESIGN.

NUMBER OF TEST SECTIONS ENTIRELY ON: FILL_____ CUT _____

SHORTEST TRANSITION BETWEEN CONSECUTIVE TEST SECTIONS (meters) _____

VERTICAL GRADE (Avg %) (+ upgrade; - downgrade) ___

HORIZONTAL CURVATURE (Degrees)___ [ ] Tangent

COMMENTS ON DEVIATIONS FROM DESIRED SITE LOCATION CRITERIA_____

OTHER SHRP TEST SECTIONS

DOES AGENCY DESIGN CONFORM TO GPS-1, GPS-2, (GPS-6) OR GPS-7 PROJECT CRITERIA? [X] YES [ ] NO

DISTANCE TO NEAREST GPS TEST SECTION ON SAME ROUTE (Miles) 0

TEST SECTION NUMBER OF NEAREST GPS SECTION 341011

ARE OTHER SPS SECTIONS LOCATED ON SAME PROJECT? [X] YES [ ] NO

IF YES: [ ] SPS-1 [X] SPS-5 [ ] SPS-6 [ ] OTHER

* The SPS-5 is located in the adjacent west bond lane - previously constructed in summer of 1992.

SUPPLEMENTAL TEST SECTIONS

IF SUPPLEMENTAL EXPERIMENTAL TEST SECTIONS ARE PROPOSED, COMPLETE THE FOLLOWING:

TOTAL NUMBER OF SUPPLEMENTAL TEST SECTIONS 2

FACTORS TO BE INVESTIGATED _____

Besides the agency mix, the PG 52 & 58 grade sections, we plan to construct a PG grade 64-22 and 76-22 test section. The PG grade 64-22 section is intended to validate our belief in New Jersey that the PG 64 grade is more appropriate than the PG 58 grade specified by SHRP protocol. The PG 76 grade is intended to force the contractor to provide a mix with a polymer modified AC.

PAVEMENT MANAGEMENT SYSTEMS

MEMORANDUM

TO	Ivan Pecnik	**DATE**	April 19, 1995
FROM	Bill Phang	**PROJECT**	50451010
SUBJECT	NJ DOT SPS-9A Nomination Review	**FILE**	13.11.9

The nomination for this NJ DOT SPS-9A project was updated on April 12, 1995.

The project is an overlay of eastbound I-195 from east of Rte. 130 (exit 5) to just east of Imlaystown-Hightstown Road (exit 11).

In addition to the three SPS-9A test sections, NJ DOT proposes to construct two supplemental test sections using two different PG asphalt grades, one of which is intended to be polymer modified.

The current pavement condition shows some low severity alligator cracking. The eastbound lanes at this location supports a GPS test section (341011). An SPS-5 project was constructed in the westbound lanes in 1992.

The NJ DOT recognizes that the thickness of the overlay has to be greater than 63.5mm, and has no problem with this requirement.

The acceptance of this nomination is recommended. A response is expected within the next few weeks.

CC: B. Abukhater
G. Cimini

415 Lawrence Bell Drive - Suite 3, Amherst, New York, 14221 [716] 632-0804 Fax [716] 632-4808

LONG TERM PAVEMENT PERFORMANCE
North Atlantic Region
415 Lawrence Bell Dr., Unit 3, Amherst, New York 14221
Tel (716) 631-5205 Fax (716) 632-4808

IVAN J. PECNIK, P.E.
LTPP Regional Engineer

ORIGINAL

LTPP 13.11.9

MEMORANDUM

TO: M. Symons - FHWA, McLean

FROM: I.J. Pecnik P.E.
LTPP Regional Engineer, NA

DATE: April 25, 1995

SUBJECT: SPS-9A Nomination, NJ DOT

COPIES TO: G. Rada, PCS/Law, w/attachments
F. Palise, NJ DOT, w/o attachments
Regional Administrator - FHWA Region 1 - Albany, w/o attachments
Division Administrator - FHWA, NJ Division, w/o attachments
NARO, w/o attachments

Transmitted for your consideration review and/or approval, please find herewith the following documents supporting NJ DOT's nomination of any LTPP SPS-9A experiment on Eastbound I-195, from just East of Route 130 (exit 5) to just East of Imlaystown-Hightstown Road (exit 11), Monmouth County, District 3.

Documents consist of:

- Nomination Forms A-1 through A-4 as prepared by NJ DOT.
- Site location map (general) as prepared by NJ DOT.
- Nomination review and comment memo, Phang to Pecnik dated April 19, 1995.

This project is scheduled for the 1996 construction season. This office recommends acceptance of this nomination for the LTPP SPS-9A experimental program.

This nomination supersedes any previously submitted nomination forms for SPS-9A in NJ.

From: Monte Symons (MSYMONS)
To: IPECNIK
Date: Wednesday, June 21, 1995 2:36 pm
Subject: SPS Project Approvals

Sorry for the delay in getting this out!

The following are approvals for the projects that the NA RCO has submitted:

1. NJ SPS-9A project nomination on I-195 in Monmouth County is approved for inclusion into the LTPP experiment. This project is eligible for $30,000 incentive funds which transferral may be delayed until after Oct 1, 1995.

2. NC SPS-9A project nomination on US-1 in Lee and Chatham counties is approved for inclusion in the LTPP experiment. Since the State proposes SHRP binder grades that are different from the environmental requirements at the site and limited incentive are available, no incentive funds will be given for this project.

If you have any question concerning these projects please call.

LONG TERM PAVEMENT PERFORMANCE
North Atlantic Region
415 Lawrence Bell Drive, Unit 3, Amherst, New York 14221
Tel. (716) 631-5205 Fax (716) 632-0804

IVAN J. PECNIK, P.E.
LTPP Regional Engineer

Mr. Frank Palise
Regional Materials Engineer
New Jersey Department of Transportation
Route 79 and Daniels Way
Freehold, New Jersey 07728

June 22, 1995

RE: SPS-9A Nomination; EB I-195 E. of Exit 5 to E. of Exit 11
Monmouth Co. District 3

Dear Frank:

We have been advised that your nomination of the above noted project for inclusion in the LTPP SPS-9A experiment has been approved.

It is anticipated that release of $30,000 in incentive funds for which this project is eligible will be delayed until after October 01, 1995.

This Regional office will be in contact with you concerning project details and co-ordination as those needs develop.

We are pleased and appreciative of New Jersey's active participation in this important LTPP experiment.

As always, please contact this office should you have any questions or concerns.

Sincerely,

I.J. Pecnik P.E.
LTPP Regional Engineer, NA

C.C. Regional Administrator - FHWA Region 1 - Albany
Division Administrator - FHWA New Jersey Division
M. Symons, FHWA, LTPP
NARO

New Jersey
Department of Transportation
Region III Headquarters • 100 Daniels Way • Freehold, New Jersey 07728-2668
Christine Todd Whitman, Governor
Frank J. Wilson, Commissioner

February 15, 1996

FEB 21 1996
FILE #

Mr. William Phang
Pavement Management Systems, Ltd.
Suite #3
415 Lawrence Bell Drive
Amherst, New York 14221

Dear Bill:

As requested in your fax transmittal dated 1-30-96 I am forwarding the following information relative to our SPS-9A project here in New Jersey.

1. The plans for this project will be in the metric system.

2. The length of the test sections will be dependent upon the preferred size of the asphalt cement loads that will be used by the refinery supplying the bituminous concrete producer. We are in the process of obtaining this information from the refineries in our area. We will contact you as soon as we have an answer.

3 The latest materials sampling and testing guidelines in my possession are the final draft of the experiment SPS-9A SuperPave Asphalt Binder study dated June, 1995. It is my understanding that SWK Pavement Engineering of Bernardsvill, New Jersey will be sending us the September, 1995 version of these guidelines.

4. Final pavement thickness recommendations will be made after we conduct our FWD testing on the project site sometime in March of 1996.

5. We probably will be placing two layers of the SuperPave mix on the test sections, however, we are open to any recommendations that you may have.

6. The exact station numbers of each SuperPave test section will be established after the FWD testing is completed.

7. We are also looking for guidance relative to the specification language for the PG grades of asphalt cement. It is possible that the refinery supplying the PG grade asphalt cement for this project could possibly have an AC-20 in their inventory that would meet PG grades 52, 58, and 64. Is this a desirable outcome? If it is not, do you have any suggestions as to how we can ensure that the various PG grades are produced so that they meet the center of each grade's specification?

8. It is expected that the same maximum size aggregate will be used in both the leveling and surface courses.

In closing, I would like to confirm our agreement to hold a meeting of all the parties involved with the design of this project and Pavement Management Systems sometime shortly after we receive our FWD data and prepare our preliminary plans. I anticipate that the meeting will be scheduled sometime in April.

Sincerely,

Frank Palise
Regional Materials Engineer

Bettigole Andrews & Clark, Inc
Consulting Engineers

310 Main Street
Toms River, NJ 08753
908-349-3446
Fax 908-286-4938

Offices:
New Jersey
New York
New Hampshire
Connecticut
Massachusetts
Pennsylvania
Florida

May 14, 1996

MINUTES OF MEETING

PROJECT: NJDOT SPS-9A, Route I-195
Federal Project No. IM-195-8(40)0

DATE: May 8, 1996

PLACE: NJDOT - Building 1

ATTENDEES:			
	William Mullowney	-	NJDOT - OSP
	William Phang	-	Pavement Management Systems (PMS)
	Edward Lesswing	-	Pavement Management Systems (PMS)
	Basel Abukhater	-	Pavement Management Systems (PMS)
	Thomas Van	-	FHWA
	Nicholas Vitillo	-	NJDOT - Research
	Frank Palise	-	NJDOT - SHRP
	Eileen Connolly	-	NJDOT - Materials
	Eid Mortagy	-	NJDOT - Geotechnical
	George Chang	-	SWK Pavement Engineering (SWK)
	Geoff Rowe	-	SWK Pavement Engineering (SWK)
	Steven Amos	-	Bettigole Andrews & Clark, Inc. (BA&C)
	William Skorton	-	Bettigole Andrews & Clark, Inc (BA&C)

PURPOSE OF MEETING. To Discuss Design, Construction and Testing Requirements Necessary to Meet SPS 9A Requirements

Mr. Frank Palise opened the meeting with introductions and a brief discussion of the purpose of the meeting. Mr. William Phang of PMS then began discussing the LTPP Program and the specific requirements for this project.

The following items were discussed:

1. FHWA - LTPP Program only requires the testing of the surface course. Discussions ensued concerning testing of the other layers (binder course). Though it is not required, it was recommended to perform Superpave testing on the binder course as well as the surface course.

2. The minimum lift thickness for this project is 2½". SWK must evaluate their pavement recommendation to consider this requirement.

3. The exact locations of the test sections must be finalized

PRECONSTRUCTION SAMPLING NEEDS

1. Two (2) cores will be required for each site. It was noted that the NJDOT would like to obtain these cores early - Fall, 1996. Eileen Connolly will coordinate with PMS and Nick Vitillo to allow for the non-destructive testing of site at the same time.

2. No density testing will be required due to the proposed milling of the surface course.

3. No test pits will be required prior to construction.

4. Temporary benchmarks will be required throughout each test section so that elevations can be obtained during construction. BA&C indicated that these can be provided to NJDOT since they will be established during design.

5. Once finalized the locations of the test sections should be staked out in the field.

6. No 6 m deep borings will be required in the shoulder areas to determine if bedrock exists. The results from the westbound project will be used to satisfy this requirement.

MIX DESIGN REQUIREMENTS

1. Mix design will be the Contractor's responsibility. They will be submitting various mix designs which will be sent to NJDOT for approval. It is the intent of this project for the mix design to be submitted early and agreed upon during the winter months prior to Spring, 1997 construction. The Contractor will be required to work on the mix designs in close coordination with the NJDOT, Bureau of Materials. Ms. Eileen Connolly will be the main NJDOT contact.

2. No recycled asphalt pavement or glass will be allowed in the SHRP pavement sections.

3. Figure 2 of Pavement Management Systems, "Sampling and Testing Plans" dated 4/23/96 outlines the 5 mixes required for the SHRP sections. Test Section Number 4 should be revised to be a PG 64-22, not PG 64-28.

4. The NJDOT will require the contractor to have a lab at the asphalt plant equipped with a gyratory compactor.

5. Pavement Management Systems will need compaction curves for each mix design.

6. Moisture sensitivity testing will be performed on 4" cores taken from the center of the 6" gyratory specimens.

7. The standard NJDOT Marshall mix will also have gyratory samples taken for comparison purposes with the other SHRP sections.

8. NJDOT will be required to specify the grade of asphalt material needed to the refiner so as not to obtain the same mixes in different SHRP sections. The specific grades required will be included in the specifications for the Contractor.

9. All SHRP sections shall be constructed in the travel lane.

10. The base course using (PG 64-22) should be the same under all test sections and also in the passing lane adjacent to the test sections. Jack Mansfield requested that a 25mm Superpave mix be used for the base course.

11. In the passing lane and shoulder adjacent to the test sections the surface course will be a 19mm Superpave mix design using PG 58-28.

12. The aggregate gradation in the Superpave test sections should all be the same. The mix design is to be done using PG 58-28 and the same design is to be used for the remaining Superpave test sections.

QUALITY CONTROL, SAMPLING AND TESTING REQUIREMENTS

1. Cores will be taken at each test section as outlined in Figures 3 - 7 of PMS "Testing and Sampling Plans", 4/23/96.

2. Testing of aggregate material will be done at the NJDOT Lab in Trenton.

3. Samples of the asphalt cement and aggregate will be collected at the plant and shipped to the Materials Reference Library. Also included in the shipment will be the NJDOT mix sample.

4. The binder course using (PG 64-22) will also have a sample taken for the Material Reference Library.

5. Quality Control samples will be taken at the paving site and brought back to the plant for compaction and testing.

6. Tables 18 and 19 of the PMS, "Testing and Sampling Plans" 4/23/96 outline the quality control testing for the test sections.

7. The NCAT Ignition method may be used for quality control testing in place of extractions for composition.

CONSTRUCTION REQUIREMENTS

1. Temperature monitoring equipment for both the air and pavement should be constructed in or near the pavement test sections. A CR 10 recording device will be contained in a box at the edge of the pavement to record the temperature data. It was discussed that this equipment should be placed near the weigh in motion site currently in place near Milepost 10.5.

2. Long life traffic stripes are to be used on this project to mark the test sections.

3. Six (6) project signs should be used to designate the Superpave sections.

4. A 40 ton transition section prior to placing each test section should be used to provide uniformity in mix temperature and composition.

5. Survey elevations should be taken at each test section just after milling, after placement of the binder course and after placing the final surface course.

MISCELLANEOUS ITEMS

1. SWK will review their draft report of the pavement design and update it to reflect a 20 year pavement life.

It is assumed that these minutes accurately reflect the events of the field meeting unless we are notified within ten (10) days of distribution.

Respectfully Submitted,

William H. Skorton, P.E.
BETTIGOLE ANDREWS & CLARK, INC.

mz
c: All Attendees

PAVEMENT
MANAGEMENT
SYSTEMS

June 5, 1996
50451140-8.02

Mr. Aramis Lopez
Federal Highway Research Administration
LTPP, HNR-40
Turner Fairbanks Research Center
6300 Georgetown Pike Room F215
McLean, Virginia 22101-2296

RE: AC Content of Asphalt Concrete Mixes - AC04/P04

Dear Mr. Lopez:

The LTPP Protocol for determination of the asphalt binder content of asphalt concrete mixes is Test AC04/P04. The specified solvent is Trichloroethane. Alternatively, a technical grade of Trichloroethylene can be utilized. Separation of the dissolved asphalt binder in solution from the aggregate particles is by centrifuge. For environmental and health safety reasons, many agencies have discontinued use of these solvents and have switched to use of degreaser type organic emulsifiers. As well, there is now the development of determination of asphalt binder content by ignition and burning-off of the asphalt from the aggregate.

There is a need to recognize these changes in the practice of agency laboratories and to modify the P04 Protocol, the data sheets and the database accordingly. The NJ DOT is moving towards the ignition method.

Yours Sincerely,

William A. Phang
Principal Investigator
Pavement Management Systems Limited

C.C. I.J. Pecnik, P.E., RE NARO
M. Reinhardt, RE, SRO
E. Lesswing, NARO
B. Abukhater, NARO
R. Ingberg, RE, NCRO
C. Berge, RE, WRO
G. Rada, PCS/Law

415 LAWRENCE BELL DRIVE
UNIT #3
AMHERST, N Y 14221
TEL (716) 632-0804
FAX (716) 632-4808

PMS™ PAVEMENT MANAGEMENT SYSTEMS

June 21, 1996
50451110-12.11

Mr. Frank Palise
Regional Materials Engineer
Quality Management Services
New Jersey Department of Transportation
1035 Parkway Ave., CN 600
Trenton, New Jersey 08625-0600

RE: SHRP Signs

Dear Mr. Palise:

Please find enclosed 12 SHRP signs to be used in conjunction with the marking and signing guidelines for your upcoming SPS-9A project. Extra's have been included.

Should you have any questions or require further information, please do not hesitate to contact me.

Yours Sincerely,

Edward P Lesswing

Edward P. Lesswing
Project Engineer
Pavement Management Systems Limited

EL/tf

enclosure

C.C. W.A. Phang, D.Eng., NARO

415 LAWRENCE BELL DRIVE
UNIT #3
AMHERST N Y 14221
TEL (716) 632-0804
FAX (716) 632-4808

COPY

FILE # 15119

E MAIL

From: Aramis Lopez
To: IPECNIK
Date: 7/24/96 10:55am
Subject: New Jersey SPS-9A Instrumentation

Hi Ivan, reference is made to Bill Phang's letter in which Maintenance Weather Stations (MWSs) to be installed by the New Jersey DOT at SPS-9A project sites throughout the state are proposed as an alternative to the LTPP SPS-9A instrumentation developed last year.

We (PCS/Law and I) have reviewed the information transmitted by Bill with his letter and have determined that the proposed MWSs only measure surface temperature and the temperature 17 inches below the surface of the pavement. They do not measure the temperature profile in the bound surface layer as required by the LTPP SPS-9A instrumentation plan. Accordingly, it is our opinion that the proposed alternative is not a viable one and thus would recommend against it.

On the other hand, the climatic data collected by these MWSs could be quite valuable and, with some manipulation, could comply with the LTPP Automated Weather Station (AWS) data requirements. The data would have to be compatible with the AWS format, frequency and medium, but this should be relatively easy to do. Making the data compatible would allow the North Atlantic RCOC to use the AWS programs (AWSScan, AWSCheck, and IMS filters), without changes to the software, to process and upload the data to the LTPP IMS. Brandt Henderson of the North Atlantic RCOC is quite familiar with the AWS data and their collection, and thus would be able to provide the New Jersey DOT with the necessary information.

In summary, we recommend **against using the MWSs as a substitute to the LTPP SPS-9A instrumentation**, but would ask that the North Atlantic RCOC explore the possibility of collecting climatic (AWS) data at the New Jersey SPS-9A project sites using the MWSs.

Should you have any questions or would like to discuss the above matters further, please do not hesitate to contact me.

PS Please share this information with Bill.

Aramis.....

CC: MSYMONS

PAVEMENT
MANAGEMENT
SYSTEMS

July 30, 1996
50451231-13.11.9

Mr. Frank Palise
Regional Materials Engineer
Quality Management Services
New Jersey Department of Transportation
1035 Parkway Ave., CN 600
Trenton, New Jersey 08625-0600

RE: SPS-9A Instrumentation

Dear Mr. Palise:

You inquired whether the instrumentation used in NJ Maintenance Weather Stations (MWS's) could be substituted for the instrumentation developed for the SPS-9A experiment. It is the opinion of the FHWA-LTPP Division that this option is not viable, as it would not provide all of the information needed to verify the SPS-9A binder selection process. Please see the attached E-Mail message to Ivan Pecnik dated 7/24/96.

As stated in the message however, this office has been asked to acquire some MWS data outputs and to determine how compatible it is to the Automated Weather Station (AWS) data format utilized by the Long Term Pavement Performance (LTPP) program.

Mr. Brandt Henderson of this office will contact you to follow-up on this request.

Yours Sincerely,

William A. Phang
Principal Investigator
Pavement Management Systems Limited

WAP/tf

C.C. I.J. Pecnik, P.E., RE NARO
E. Lesswing, NARO
B. Abukhater, NARO
B. Henderson, NARO

415 LAWRENCE BELL DRIVE
UNIT #3
AMHERST, N Y 14221
TEL (716) 632-0804
FAX (716) 632-4808

ITX Stanley

TECHNICAL MEMORANDUM

TO: LTPP Contacts - CT, NJ, QE, NC

FROM: Bill Phang

DATE: 19 September 1996

REFERENCE: **SPS-9A MATERIALS TESTING AT LCL AND SRTC**
FILE: 50451231-13.9

Please be advised that the costs of sampling, packaging, shipping and testing of materials for the SPS-9A project are the responsibility of the agency, except as noted below:-

The Materials Research Library (MRL) in Reno, NV will supply special containers for asphalt samples and will pay the shipping charges both ways.

The LTPP Contractor Laboratory (LCL), Law Engineering, Atlanta, GA will carry out the laboratory testing and the FHWA-LTPP Division will pay the testing costs. The state agency will pay for shipping the materials and samples to Law Engineering, Inc. attn.: Mr. Richard Boudreau, 396 Plasters Ave., NE, Atlanta, GA 30324, telephone (404)817-0242, fax (404) 872-5927.

The Superpave Regional Test Center (SRTC) for the LTPP North Atlantic Region is at Penn State University. Please contact Dr. David Anderson, Penn State University, Research Office Building, University Park, PA 16802, telephone (814)863-1912, fax (814)865-3039 to arrange for Superpave testing. Agencies also pay for shipping costs.

North Carolina DOT has arranged for Superpave testing with the SRTC operated by NCAT at Auburn.

Should you have any questions, please all me at (716)632-0804 or speak to Mr. Ivan Pecnik at (716)631-5205.

Sincerely,
ITX Stanley Ltd.
Pavement Management Systems Division

William A. Phang
LTPP Principal Investigator

cc: I.J. Pecnik, P.E., RE-NARO
E. Lesswing, NARO
B. Abukhater, NARO

BA

COPY

From: Thomas Van
To: FHRD.FHRD2.IPECNIK
Date: 1/9/97 9:44am
Subject: SPS-9A Project – 13.11 9

Hi Ivan:

This message is for whomever is coordinating the SPS-9A project on I-195 in New Jersey.

New Jersey DOT is nearing the final stages of design and approvals for this project and should be ready to bid in about two months. I am not sure of the construction schedule but it looks like late summer. This project has had a myriad of problems to resolve from bridge clearances to wetlands that delayed completion of the plans and specifications.

It is my understanding that there is a great deal of coordination with your office that needs to be done to insure the sampling and testing gets done correctly. I have contact Frank Palise at NJDOT about this issue. He will be coordinating the LTPP activities and provide an interface with the project management of the project.

Can you contact Frank Palise at NJDOT (609) 530-5954 about coordinating the activities on this project?

If you need any more information or if I can help in any way please contact me at (609) 637-4232. I will be at the SHRP Coordinator's meeting next week in Washington and will probably see you there.

Thank you for your assistance.

CC: GCORINO

13.11.9
EL
BH

New Jersey Department of Transportation

1035 Parkway Avenue. CN600, Trenton. New Jersey 08625-0600

FAX MEMORANDUM

Please deliver the following

To:	Bill Phang	Phone:	(716) 632-0804
Location:	ITX Stanley	FAX#:	(716) 632-4808
From:	Nicholas Vitillo	Phone:	(609) 530-5966
Office:	Bureau of Quality Management Services	FAX#:	(609) 530-5972
Date:	9/16/1997		Total number of pages: 3 (including Cover Sheet)

Bill.
The attached is the agenda for the Oct. 1, 1997 meeting on SPS 9A in New Jersey. The meeting will be held in Training Room A in the Engineering and Operations Building.

In addition to the agenda, Eileen Connolly asked if you planned to develop a sampling plan as you did with the SPS 5 project?

Brandt Henderson had promised me a copy of all the data for a GPS 2 site in NJ so that I could use it as a template to request data for a Rutgers University project on using Neural networks to analyze LTPP data. If it is possible can you please bring that with you on Oct. 1, 1997. I would like to get started on the project.

If you need any audio visual aids for the Oct. 1 meeting please let me know. If you have any other needs or questions, please let me know.

LTPP SPS 9A Meeting Agneda
Oct 1, 1997

NARO:

Pre-Construction Field Activities

1) Layout Test Sections with Pavement Markings

2) Coring and Field Sampling

3) Shoulder Auger Probe

4) Establish TBM's and Baseline Levels

5) Request sample containers from MRL

During Construction Field Activities

6) Collect Bulk Samples of Mixes for DOT, MRL, and LTPP. Laydown Temperatures

7) Nuclear Density Tests

8) Levels to establish Layer Thicknesses

9) Gyratory Compaction of Surface Course Specimen (field lab?)

10) Collect Construction Field Sheet Data

Post construction Field Activities

11) Pavement Markings and Signs for Test Sections

12) Take Interval A Cores, Cores at Times B through F
13) WIM Start-up and Calibration

14) FWD Testing & MDS

IS) Profilometer Testing

16) Laboratory Testing (Tracking Tables)

17) Samples shipped to MRL & LTPP Lab

18) Construction Data Sheets completion

Bureau of Materials:

Bureau of Construction:

Bureau of Maintenance

Others:

ITX Stanley

28 October 1997
File: 504513-13.11.9

Principal Engineer - Materials
New Jersey Dept. of Transportation
1035 Parkway Ave., CN 607
Trenton, New Jersey 08625

Attention: Ms. Mary Ellen Callahan

Dear Ms. Callahan:

Reference: LTPP Protocols

This is a follow-up to our letter of October 23, 1997.

The following protocols (attached sheet) are noted in the Materials Sampling and Testing Plans prepared for Project 340900, I-195 EB, Allentown, NJ.

A copy of each protocol is enclosed for your information.

Should you need additional information please advise.

Sincerely,

ITX Stanley Ltd
Pavement Management Systems Division

Ed Lesswing

Ed Lesswing
LTPP Co-Principal Investigator

Enclosure

cc: F. Palise, NJ DOT, w/o enclosure
W.A. Phang, P.I.-NARO, w/o enclosure
B. Abukhater, NARO, w/o enclosure

Laboratory Test	*LTPP Test*	*LTPP Protocol*
Sieve Analysis	SS01	P51
Atterburg Limits	SS03	P43
Classification	SS04	P52
Natural Moisture Content	SS09	P49
Particle Size Analysis	UG01	P41
Sieve Analysis (washed)	UG02	P41
Atterburg Limits	UG04	P43
Classification	UG08	P47
Natural Moisture Content	UG10	P49
Combined Aggregate Gradation	AG04	P14
Specific Gravity of Co. Agg.	AG01	P11
Specific Gravity of Fine Agg.	AG02	P12
Penetration @ 25 deg., 46 deg. C	AE02	P22
Viscosity @ 60 deg., 135 deg. C	AE05	P25
Specific Gravity @ 16 deg. C	AE03	P23
Moisture Susceptibility	AC05	P05
Bulk Specific Gravity	AC02	P02
Maximum Specific Gravity	AC03	P03
Asphalt Content (Extraction)	AC04	P04
Aggregate Gradation (Extracted Agg.)	AG04	P14
Creep Compliance	AC06	P06
Indirect Tensile Strength	AC07	P07
Resilient Modulus	AC07	P07
Core Examination/Thickness	AC01	P01
Abson Recovery	AE01	P21

ITX Stanley

19 November 1997
File: 50451319-13.11.9

Supervising Engineer
New Jersey Dept. of Transportation
1035 Parkway Ave., CN-600
Trenton, New Jersey 08625-0600

Attention: Mr. Frank Palise

Dear Mr. Palise:

Reference: Revised SPS-9A Materials Sampling and Testing Plans
Project 340900, I-195 EB, Allentown, NJ

Enclosed are revisions to portions of the Materials Sampling and Testing Plans for the SPS-9A Project 340900, I-195 EB, Allentown, NJ. The revisions are as follows:

- ◊ ***Figure 2*** It is indicated that Section 340962 contains 10% RAP
- ◊ ***Figures 3-8*** Subbase sample numbers are noted
- ◊ ***Table 1*** The depth to be removed by milling was revised
- ◊ ***Table 2*** Field examination of cores for stripping was added
- ◊ ***Tables 2A, 3, 12A and 13*** Sample numbers for both base and subbase are shown

These revisions apply to the plans you received on May 15, 1997.

Should you need additional information please advise.

Sincerely,

ITX Stanley Ltd
Pavement Management Systems Division

Ed Lesswing
LTPP Co-Principal Investigator

cc B Bellinger FHWA-LTPP w/encl G Rada, PCS/Law w/encl
W A Phang P I -NARO w/encl B Abukhater NARO w/encl
V Lip NARO w/encl

[redacted]

TO: Those Interested Parties Listed Below

ATTN: MARY ELLEN CALLAHAN

FROM: James Timpone
Resident Engineer

PHONE: (609) - 208 - 1139

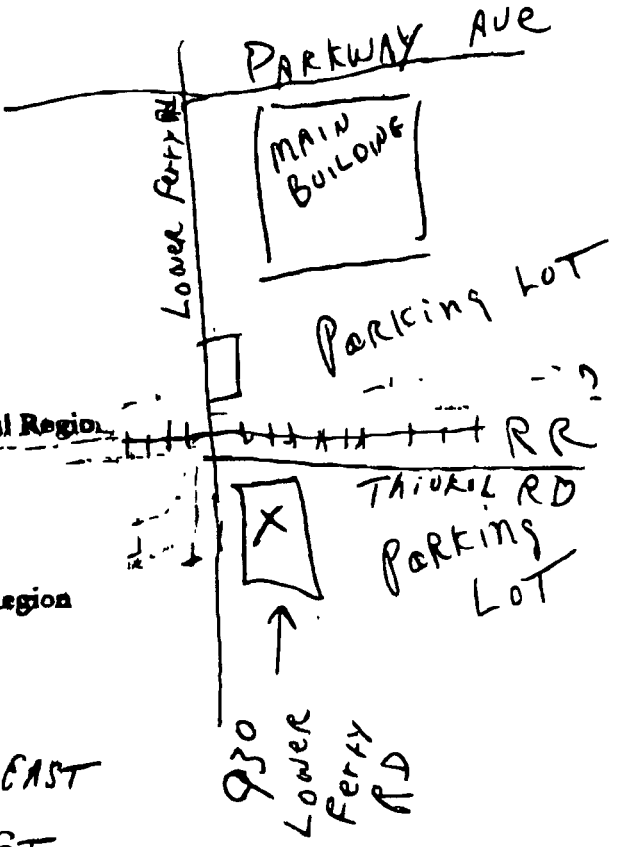
DATE: March 20, 1998

SUBJECT: Route 195, Sections 1L, 2H, 3L, 4J, 5C, 6R & 7C
Fed. Proj. No. NH-IM-195-8(44)0
Pre-paving Meeting -- Bituminous

A pre-paving meeting for the above referenced project will be held on Thursday, March 26, 1998 at 10:00 AM. The meeting will be held at the project field office located at 524 Monmouth Road (Rt. 537), Clarksburg, N.J. The office is in the Peterbuilt Truck Dealership Building at the intersection of Rt. 537 and Exit 16 of Rt. 195.

Topics of discussion will be:

- Superpave requirements
- Other material requirements
- Equipment
- Manpower
- Weather Constraints
- Testing
- Traffic Control
- Other related topics



c: Eugene Blasko, Regional Construction Engineer, Central Region
Thomas Dowd, Field Manager
Robert Kulvicki, Project Manager
Amy Fox, FHWA
Eileen Connoly, Director, Bureau of Materials
Sal Noto, Regional Materials Engineer, Central Region
Dave Majoros, Supr -- Trap Rock Industries
FILE

Meeting: RT 195 Exit 16 E - 537 EAST
PETERBILT Bldg on LEFT

ITX Stanley

TECHNICAL MEMORANDUM

TO: File

FROM: Basel Abukhater

DATE: 31 March, 1998

REFERENCE: NJ SPS-9A 340900 Pre Paving Meeting
FILE: 83-045-319

A pre paving meeting was held at the NJDOT SPS-9A Field Office on Thursday March 26, 1998 at 10:00 AM. The meeting was attended by personnel from the NJDOT Residency, QMS, Materials, Construction Engineering, and Central Region Materials. Also present were the FHWA, the contractor Trap Rock Industries, and the ITXSL/NARO representative, see attachment.

The meeting was chaired by the NJDOT Resident Engineer James Timpone. Jim indicated that a NJDOT superpave pilot experiment will be incorporated in the construction in addition to the LTPP SPS-9A experiment and the regular NJDOT standard mix. Dave Majoros of Trap Rock Industries started by giving a rough schedule of the construction activities and approximate dates of paving. Monday March 30, 1998 was supposed to be the starting date of construction, where the outside shoulder will be excavated and reconstructed, starting east of exit 7, with 88 mm of the binder layer to be followed at a later date by 62 mm of surface paving. The binder layer on the outside shoulder throughout the project site will be ready within two weeks of the March 30 start date.

The next stage will be the left or fast lane, which will be night work similar to all activities on the main line. First, 75 mm will be milled from the surface of the existing road followed by placing 75 mm of the superpave binder asphalt mix to be followed at a later date by 62 mm of surface paving. The following stage will be the right lane where the SPS-9A experimental sections will be constructed. When all the binder layer paving, throughout the project site, is completed, the surface paving will commence. The main concern was that all six SPS-9A sections will be paved on the same night. This will require more than one lab and more than one crew to arrange for the sampling of the hot mix to be moved to each of the labs to prepare the six gyratory samples per section. The hot mix have to be stored in insulated containers till they get to the lab where only a maximum of 30 minutes of heating the mix is allowed before the compaction. It was agreed that the NJDOT lab, the contractor lab, and the FHWA trailer will be responsible for preparing these samples. Thomas Van from the FHWA is making the arrangement for the FHWA trailer to be available from Mid April to help in the training, mix design verification, and the gyratory sample preparation.

Basel Abukhater from ITX Stanley Limited, the FHWA - LTPP North Atlantic Regional Office (NARO) indicated that in addition to the six plant mix samples, required from each of the six sections, an additional 28 samples are required from section 340902. These additional samples did not have to be compacted in the same night but can be compacted at a later date after reheating to the desired

temperature. Mr. Abukhater also explained the other sampling requirements for the MRL facility for storage and the constituent material sampling for testing by the NJDOT lab and for mixing at the lab for preparing the lab mixed lab prepared samples.

Since everybody will be busy during the paving operation, the sampling at the plant will be arranged ahead of time. The elevation measurements will be taken by the NJDOT staff at four different stages, before milling, after milling, after binder layer paving, and finally after surface layer paving. These need only be taken in the monitoring sections. Nuclear gauge density measurements will be taken the following night after the night of paving. The first stage of coring at interval A, 0 months, will be performed by the contractor the following night after the paving night.

The NJDOT staff had the impression that the requirement was to use the same grade of asphalt cement in the shoulder lane and the left lane adjacent to the SPS-9A sections as is being used in the Superpave section 340902, which is PG 58-28. After discussion with Bill Phang of ITXSL-NARO, it was conveyed to the NJDOT that no such requirement exist and they can use the PG grade they feel appropriate.

In the afternoon of the same day, another meeting was held at the Bureau of Materials Engineering and Testing facilities attended by Thomas Van FHWA, Frank Palise, Nick Vitillo, Mary Ellen Callahan NJDOT, and Basel Abukhater ITXSL/NARO to go over the details of the sampling procedure, the containers needed, the personnel required on site and in the labs the night of paving, and the coordination of all the activities during the construction of the SPS-9A sections. A copy of the NC SPS-9A Material Collection, Distribution and Testing Work Plan, the NC SPS-8 sequence of events and collection and distribution of materials and specimens, the CT SPS-9A QC/QA Plan, and the CT SPS-9A daily production summary and lab results were distributed to the attendees.

Early that morning Mary Ellen Callahan was given a copy of directive M-6, guidelines for sample receipt and processing (L01-L06), directive M-15, shipment of materials to the FHWA Laboratory Materials Testing Contractor, Braun Intertec, in Minneapolis MN, instructions on preparing the boxes for shipment of the samples to the LTPP Contractor Lab, and the MRL containers required to be ordered before the beginning of the paving.

Attachment

cc. Bill Phang
Ed Lesswing
Basel Abukhater
Brandt Henderson
Scott MacDonald
Alfred Lip
Gabe Cimini

FAX TRANSMITTAL

Long-Term Pavement Performance

LTPP North Atlantic Regional Office - 415 Lawrence Bell Drive, Suite 3 - Amherst, New York 14221 - 7805
Tel (716) 632-0804 - Fax (716) 632-4808 - www ITXSTANLEY com/NAROLTPP htm

To:	Materials Reference Library	**Fax No.**	(702) 329-5098
Attention:	Doug Frith	**Date:**	March 31, 1998
Reference:	Shipping Containers to NJ DOT	1 page(s) total including cover sheet.	
	FILE: 83-045-319	Original will **NOT** follow by mail.	
Sender:	Basel Abukhater	**Fax No.** **Phone No.**	(519) 622-2580 (519) 622-3005

NJ DOT will be starting their SPS-9A construction early May 1998. They have asked us to get in touch with you to ship them the necessary containers for sampling the aggregate and asphalt cement material as soon as possible.

The following lists the material to be sampled, required quantity, and type of containers that are needed for this job:

Combined Aggregate (Uncoated)	30-19 litre (5 gal.) pails	Polyethylene pails and covers
Asphalt Cement Binder	12-19 litre (5 gal.) pails	Special Epoxy line metal pails and covers

These 42 pails should go to the following name and address:

Ms. Mary Ellen Callahan
NJDOT - Bureau of Materials Engineering and Testing
930 Lower Ferry Road
Trenton, NJ 08625-0607

Phone (609) 530-6366
Fax (609) 530-5158

Any questions please call at (519) 622-3005 or fax (519) 622-2580.

cc: M.E. Callahan NJDOT F. Palise NJDOT B. Phang NARO E. Lesswing NARO

ITX Stanley

TECHNICAL MEMORANDUM

TO: Ed Lesswing/Bill Phang

FROM: Basel Abukhater

DATE: 14 May, 1998

REFERENCE: NJ SPS-9A 340900 Pre Surface Paving Meeting
FILE: 83-045-319

A pre surface paving meeting was held at the NJDOT Bureau of Materials Engineering and Testing facilities on Monday May 11, 1998 at 1:00 PM. The meeting was attended by Thomas Van FHWA/NJ, Carl Gordon (FHWA Trailer), Martin VarArsdale, Kevin Isler, Mary Ellen Callahan NJDOT, and Basel Abukhater ITXSL/NARO to go over the details of the sampling procedure, the containers needed, the personnel required on site and in the labs the night of paving, and the coordination of all the activities during the construction of the SPS-9A sections. The different samples, quantities, and laboratory testing requirements were discussed in details, going over the tracking tables prepared by the NARO staff earlier. Few changes have to be made to these tables (attached), these tables are:

1, 2, 2A (page2/3), 4, 5, 5A, 6, 9, 15, 24, and the three pages of notes at the end of the package.

The main reason for these changes are that the design ESALs is 25 million and not 39 million, thus the Nini, Ndes, and Nmax will change to 8, 109, and 174 respectively. Also the AC-20 used in sections 01 and 62 is the same as PG 64-22 used in section 60. Thus only 4 types of the binder are used throughout the project. Also the layer below the surface is called the HMAC base layer and not binder layer. A copy of the special provisions and construction plans are attached. Thomas Van of the FHWA/NJ office will be calling Aramis Lopez and Monte Simons to check on the use of trichloroethylene for extraction and the possibility of using another solvent. The HMAC base layer is already in place at the SPS-9A sections and, although I mentioned it in the last meeting, no samples were collected from section 02 and no MDS was done on the milled surface before paving. Mary Ellen will arrange to collect the HMAC base samples when the contractor paves using the 25mm size superpave mix to be sent to MRL. The surface paving is expected to proceed the week of June 8 and I will probably be there the week of June 1 to prepare for the two nights of paving, testing, sampling, site markings, and coring.

Attachments

cc. Brandt Henderson (w/o attachments)

ITX Stanley

TECHNICAL MEMORANDUM

TO: File

FROM: Basel Abukhater

DATE: 8 July, 1998

REFERENCE: NJ SPS-9A 340900 Final Pre Paving Meeting, Construction, Lab Results, MDS, Dipstick, and Field Sampling and Testing Reports
FILE: 83-045-419

A final pre paving meeting was held at the NJDOT Bureau of Materials Engineering and Testing facilities on Monday June 15, 1998 at 1:00 PM. The meeting was attended by personnel from the NJDOT Residency, QMS, Materials, Construction Engineering, and Central Region Materials. Also present were the NJ FHWA, the FHWA Trailer staff, the contractor Trap Rock Industries, and the ITXSL/NARO representatives, **Attachment A**.

The schedule was submitted by the contractor in which he proposed to pave the area where the first two sections 340901 and 340902 on the night of June 17 and finish with the remaining four sections on the night of June 18. Three labs will be involved with receiving the HMAC bulk samples for gyratory compaction, the DOT lab, the contractor lab, and the FHWA Trailer. On the first night the DOT lab will receive the samples from sections 340901 and the contractor lab will receive the samples from section 340903. On the second night the FHWA Trailer will receive the samples from section 340902, including the additional samples for performance testing, the DOT lab will receive the samples from sections 340960 and 340962, and the contractor lab will receive the samples from section 340961. The lane will be closed at 7:00 PM and should be opened to traffic at 6:00 AM the following morning.

On Tuesday June 16 the asphalt plant was visited twice by the DOT and ITXSL staff, first in the afternoon when pictures were taken and later in the evening when production started were the combined aggregate sample of the Superpave mix were collected as well as the asphalt cement of the AC-20 (PG 64-22), both for sending to MRL, for laboratory testing, and for preparing the lab mixed lab compacted gyratory samples.

On Wednesday June 17 the asphalt plant was visited again in the evening before heading to the site for paving. Combined aggregate samples of the Standard mix and the RAP mix were collected as well as the asphalt cement of the PG 64-28, both for sending to MRL, for laboratory testing, and for preparing the lab mixed lab compacted gyratory samples. The last sampling at the plant was completed in the evening of Thursday June 18 with collecting the asphalt cement samples PG 58-28 and PG 76-28.

During both paving nights, site activities started at 7:00 PM with getting the nuclear gauge densities of the HMAC base course, marking the 0 and 5 locations of each of the sections and the sampling locations

1+00 and 4+00 of each section as well as the 76 meters before and after each section which will be used for coring during the 48 months after construction.

The post construction field testing and sampling were performed on the night of Wednesday June 24, 1998. The activities that night started at 7:00 PM with marking the sites, checking for any distresses, coring, and finally dipstick measurements.

The following are lab results, reports, MDS, and dipstick data that was collected during these two weeks at the NJ SPS-9A site:

1. **Attachment B** - Pre Construction Lab Results. (Originals to GC, Copies to AL and BA)

2. **Attachment C** - During Construction Lab Results (not complete). (For now I will keep but send a copy to AL to file in Buffalo and when the tests are complete I will send again to GC and AL)

3. **Attachment D** - MRL Operations Form-1, June 19, 1998 (4 pages), NJ have copies to send to MRL with the shipment and by mail. (Copy to AL)

4. **Attachment E** - During Construction Field Materials Sampling and Testing Report, June 15-19, 1998 (116 pages), NJ have copies to send to Braun Intertec with the shipment and by mail. (Originals to GC, Copies to AL and BA)

5. **Attachment F** - Post Construction Field Materials Sampling and Testing Report, June 24, 1998 (37 pages), NJ have copies to send to Braun Intertec with the shipment and by mail. (Originals to GC, Copies to AL and BA)

6. **Attachment G** - MDS and Dipstick sheets, June 24-25, 1998. (Originals to SM, Copies to AL and BA)

7. **Attachment H** - Mix Design, Job Mix Formula, Binder Evaluation, DOT Bituminous Concrete Lot Data, Asphalt Plant Inspection Daily Report, and HMAC Base Course Rolling Straight Edge Rideability Report. (Copy to AL)

Attachments

cc. Bill Phang w/o attachments
Frank Meyer w/o attachments
Brandt Henderson w/o attachments
Alfred Lip w/ attachments
Gabe Cimini w/ attachments

TECHNICAL MEMORANDUM

Long-Term Pavement Performance

LTPP NORTH ATLANTIC REGIONAL OFFICE
415 Lawrence Bell Drive, Suite 3 - Amherst, New York 14221 - 7805
Tel (716) 632-0804 - Fax (716) 632-4808 - www ITXSTANLEY com/NAROLTPP htm

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To: LAW/PCS

Attention: Jonathon Groeger

Date: 31 August 1998

From: Basel Abukhater

Reference: **IMS-2 Form**
FILE: 83-045-431-8.00

Please find enclosed one executed IMS-2 form for your processing. This is for the addition of the following laboratories:

Trap Rock Industries
P.O. Box 419
Kingston, NJ 08528
ph. 609/924-0300

Gutierrez-Palmenberg, Inc.
2922 West Clarendon Ave.
Phoenix, AZ 85017
ph. 202/366-0859

Trap Rock Industries is contracted by the NJ Department of Transportation which will be performing laboratory tests on samples taken from the NJ SPS-9A projects. The number assigned to this lab is 3431.

Gutierrez-Palmenberg, Inc. is the FHWA trailer lab. The number assigned to this lab is 3411.

If you have any questions, please contact me at 716/632-0804.

Basel Abukhater

Basel Abukhater
LTPP-NARO Special Projects

Copies A Lopez, FHWA-LTPP, w/o enclosure
G Rada, LAW/PCS, w/o enclosure
G Cimini, ITXSL-NARO, w/o enclosure
B Ostrom, FHWA-LTPP, w/o enclosure
W A Phang, P I -ITXSL-NARO, w/o enclosure
F Meyer, ITXSL-NARO, w/o enclosure

State of New Jersey

DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625-0600

CHRISTINE TODD WHITMAN
Governor

JOHN J. HALEY JR.
Commissioner

July 2, 1997

Rt. 195 Sec. 1L, 2H, 3L, 4J, 5C, 6E, & 7C
DP#97118, Fed. Proj. #NH-IM-195-8(44)0

Trap Rock Industries, Inc.
River Road P.O. Box 419
Kingston, NJ 08528

Attention: **Joseph M. Stavola, President**

Dear Sir:

The Commissioner of Transportation, John J. Haley, Jr., acting pursuant to N.J.S.A. 27:7-30, awarded the contract for the project designated Rt. 195 Sec. 1L, 2H, 3L, 4J, 5C, 6E, & 7C to your firm on June 27, 1997. The contract amount is $9,408,534.70. As stated in subsection 103.02 of the Standard Specifications, this award is not binding upon the State until the contract has been executed by the Commissioner. Furthermore, no work shall be performed on account of the proposed contract until you have been notified that the contract has been executed by the Commissioner.

Consistent with subsection 103.02 of the Standard Specifications, this award is being made to your firm since you were the lowest responsible bidder whose proposal conformed in all respects to the requirements set forth in the contract documents. Pursuant to subsection 101.04 of the Standard Specifications, all the contract documents which formed the basis of your bid were in writing. In submitting your proposal to the Department of Transportation, you agreed to carry out and complete the project as specified and delineated in these contract documents at the price per unit of measure bid for each scheduled item of work.

The contract (Form DC-81) must be signed and witnessed. **PLEASE DO NOT DATE THE CONTRACT**. The contract will be dated at the time it is signed by the Commissioner. A properly signed and sealed corporate resolution verifying the authority of the officers to sign the contract for the corporation must be attached with the contract.

July 2, 1997

Rt. 195 Sec. 1L, 2H, 3L, 4J, 5C, 6E, & 7C
DP#97118, Fed. Proj. #NH-IM-195-8(44)0

Performance and payment bonds must be issued by surety companies listed in the current U.S. Treasury Circular 570 ("Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds"). All surety companies must be licensed to transact surety business in the State of New Jersey. In the event the penal sum of the bond exceeds the limitations prescribed in Circular 570, two or more listed surety companies may be accepted, jointly and severally, as co-sureties on the contract, as long as the penal sum of the bond does not exceed the prescribed limitations of their aggregate qualifying power. Re-insurance treaties will not be accepted on this Department's projects.

The performance and payment bonds must be signed by the authorized officers of the corporation and the corporate seal must be affixed. They must be signed by each surety company, witnessed and accompanied by both a certification as to authorization of the Attorney-in-Fact to bind each surety company and a true and correct statement of the financial condition of each surety company. All names must be typed or printed below the signature on the bonds. The bonds must bear the dates on which they are issued and signed.

You may request from the Department the five sets of Supplementary Specifications and free set(s) of plans specified in subsection 105.03.

Be advised that, pursuant to subsection 103.06 of the Standard Specifications, you must return the fully executed contract, Payment Bond and Performance Bond to this office **WITHIN TEN STATE BUSINESS DAYS OF THE DATE OF THE AWARD**. If you intend to escrow bid documents for the Claims Review Board option pursuant to Section 103.06 of the supplemental specifications, please phone our office for a blank custody agreement form at (609) 530-2095.

July 2, 1997

Rt. 195 Sec. 1L, 2H, 3L, 4J, 5C, 6E, & 7C
DP#97118, Fed. Proj. #NH-IM-195-8(44)0

Page 3

If you do not intend to escrow bid documents, please state this below by signing in the space provided and return this letter with the executed contract, corporate resolution, payment and performance bonds. If this project is a Design and Build type, an escrow agreement is required and is enclosed.

Very truly yours,

Jacob P. Isler, Jr., Manager
Bureau of Construction Services
Procurement

DK/rp

c: R. Bersch, S. Marchant, J. Jackson, M. DeCello, F. Battaglia, K. McDonald, H. Justus, G. Gronroos, A. Scharle, D. Brown, J. Tenaglia, M. Kusek, J. Canepari, R. Wagner, H. Capers, R. Stout, FHWA, R. Crum, E. Blasko

I do not intend to escrow bid documents for the Claims Review Board option per Sec. 103.06 of the specifications.

Signature _____

State of New Jersey

DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625-0600

CHRISTINE TODD WHITMAN
Governor

JOHN J. HALEY JR.
Commissioner

Rt. 195 Section 1L, 2H, 3L, 4J
5C, 6E & 7C
Federal Proj. No. NH-IM195-8(44)0
DP#97118

July 21, 1997

Trap Rock Industries, Inc.
River Road
Kingston, New Jersey 08528
ATTN: Joseph M. Stavola

NOTICE TO PROCEED

Dear Sir:

Attached is a conformed copy of the Contract and Bond on the above indicated project. The contract was executed by the Commissioner of Transportation on July 17, 1997.

This constitutes your Notice to Proceed with the work of this contract in accordance with the provisions of Subsection 108.03 of the specifications. Estimate certificates for this project shall be dated the 25th of each month with first estimate date August 25, 1997. Enclosed is your proposal bond which was submitted with your bid.

All further communications in reference to the performance of this project shall be directed to:

Mr. Eugene Blasko
Department of Transportation
100 Daniels Way
Freehold, New Jersey 07728
Phone: 908-308-4074

Sincerely,

Primitivo Cruz
Bureau of Construction Services

c: Messrs. R. Bersch, W. Mading, M. Kusek, R. Wagner
E. Blasko, File Copy

IN WITNESS WHEREOF, the parties have caused this instrument to be signed, attested to and sealed.

Attest:

Jacqueline Davis
Secretary
July 17, 1997
New Jersey Department of Transportation

Department of Transportation
of the State of New Jersey

Russell A Tay by
State Transportation Engineer 7/17/97
Date

Witness or attest:

William H Stavola
Secretary

WILLIAM H STAVOLA
SECRETARY

(Also print or type name)

Trap Rock Industries, Inc.

Joseph M. Stavola
Authorized Officer

Title of Officer

JOSEPH M. STAVOLA
PRESIDENT

(Also print or type name)

AFFIX SEAL IF A CORPORATION

New Jersey Department of Transportation
Bituminous Concrete Mix Design

LB-325

MASTER COPY	Verification Plug Serial # R304487B, R304487B-10R, R304487D, R304487D-10R
Mix I-4 Heavy Duty and 10% RAP	**Type of Plant** Fully Automated and Drum Mix
Producer Trap Rock Industries Inc.	**Plant Location** Kingston, NJ

Job Mix Formula (Total percent passing each sieve)	Job Mix Formula Amended - Date & Sieve

Sieve Size	I-4 Heavy Duty and 10% RAP		Lot No.	Date	Lot No.	Date
	Formula	Average of 5	Formula	Average of 5	Formula	Average of 5
2" (50mm)						
1 ½" (37 5mm)						
1" (25 0mm)	100	100				
3/4" (19 0mm)	98	95 - 100				
½" (12 5mm)	90	75 - 95				
3/8" (9 5 mm)						
No 4 (4 75mm)	49	35 - 65				
No 8 (2 36mm)	35 0	31 0 - 39 0				
No. 16 (1 18mm)	27	15 - 35				
No 30 (600 um)	20	10 - 30				
No 50 (300 um)	12	8 - 25				
No 100 (150 um)						
No 200 (75 um)	5 7	4 3 - 7 1				
* Asphalt Content	4.8 **	4.35 - 5.25				

* Percent Asphalt Cement based on the total weight of mixture

BIN PULLS					
	PERCENT				COMPONENTS - PRODUCER AND LOCATION
Bin / Feeder 5	Vir B	10%	Vir D	10%	Reclaimed Asphalt Pavement
Bin / Feeder 4	12 4	12 4	11 4	10 3	Trap Rock Industries Inc - Kingston, NJ
Bin / Feeder 3	25.7	25 8	46 6	42 0	Trap Rock Industries Inc - Kingston, NJ
Bin / Feeder 2	27 6	27 8	32 4	29 1	Trap Rock Industries Inc - Kingston, NJ
Bin / Feeder 1	29 5	29 7	4 8	4 3	Trap Rock Industries Inc - Kingston, NJ / Clayton Sand, Jackson, NJ
Filler					
Asphalt Content PG 64-22	4.8	**4.3	4.8	**4.3	Chevron, Perth Amboy, NJ

Design Maximum Specific Gravity: 2.645 NOTE: Rice method utilized for determining voids

Approximate Cold Feed Proportions: Vir B -1 St. 12%, #8 St. 49%, #10 St. 34%, Sand 5% 10% RAP, -1 St. 11%, #8 St. 44%, #10 St. 31%, Sand 5%

Drum Vir. -1 St. 12%, #8 St. 49%, #10 St. 34%, Sand 5% 10% RAP -1 St. 11%, #8 St. 44%, #10 St. 31%, Sand 5%, Washed

CRITERIA - ORIGINAL MIX DESIGN	
STABILITY - LBS	2520
FLOW VALUE - 0.01"	12.0
AIR VOIDS - PERCENT	4.0
VMA - PERCENT	15.9
WT./SQ. YD. 1" THICK / KsqM per mm	118.8/NA
MIX DESIGNED BY	M. Jopko
DATE APPROVED	4-22-96

** Design Target 4.8% = 4.3% Virgin + 0.5% Reclaimed

DISTRIBUTION
Bureau of Materials - Central File
Bituminous Laboratory
Producer
Regional Materials File
Plant Copy
Engineering Staff File

Signed GLEN R. GIBBS JUN.02 1998
Principal Engineer

New Jersey Department of Transportation
Producers Analysis of Materials and Job Mix Formula

Producer/Loc. →	Trap Rock Ind /Kingston	Date: →	02/20/98
Plant Identification.	DRUM	Nom Sieve Size:	19 mm
Asphalt Grade:	PG 64-22	Dsgn EASL's (millions):	25
Compaction Temp:	142 c	Design Temperature:	38 C
Mixing Temp:	150 c	Depth From Surface	less thn 100mm
Gyrations: N Initial	8	Plant Type:	DRUM
N Design	109	Producer Mix ID #:	TRI-3
N Max	174	NJDOT Serial #	

Bin #/Agg Size	Batch %	Components - Producer and Location
4	19.0	TRAP ROCK - TRAP ROCK INDUSTRIES, KINGSTON NJ
3	30 0	TRAP ROCK - TRAP ROCK INDUSTRIES, KINGSTON NJ
2	25 0	TRAP ROCK - TRAP ROCK INDUSTRIES, KINGSTON NJ
1	26.0	WASHED SAND - CLAYTON SAND CO. JACKSON NJ
filler	0.0	
% AC	4 7	CHEVRON OIL CO PERTH AMBOY

Tests Performed	Value	Specification Criteria Min	Specification Criteria Max	Test Specs	Sieve Size Millimeters	JMF	Specification Min-max	Restricted Zone
Sand Equivalence	100	45		D2419	25	100.0	100	
% Flat and Elongated Particles	0.8	-	10	D4791	19	98.2	90-100	
% Fine Aggregate Angularity	49.9	45	-	TP-33	12.5	86.0	90 max	
% Coarse Aggregate Angularity	100	95/90	-	PA#621	9.5	77.3		
% Air Voids (Va)	4	4	4	T-166/T-209	4.75	77.8		
% VMA	15.2	13.5		NJWS-1	2.36	44.1	23-49	34.6-34.6
% VFA	73.6	65	75	NJWS-1	1.18	29.5		22.3-28.3
Dust/Asphalt Ratio	1	0.6	1.2	NJWS-1	0.60	21.1		16.7-20.7
Max. Specific Gravity (Gmm)	2.694	-	-	T-168	0.30	14.5		13.7-13.7
Bulk Specific Gravity (Gmb)	2.622	-	-	T-209	0 150	10.1		
% Gmm @ Nini	84.6	-	89	TP-4	0 075	6.0	2-8	
% Gmm @ Nmax	97.3	-	98	TP-4		4 6		
Eff. Sp. Gravity of Blend (Gse)	2.927	-	-	LB-251 b				
Sp. Gravity of Binder (Gb)	1.03	-	-	T-228	% AC	4 7		
S G. of Aggregate Blend (Gsb)	2.905	-	-	T84/T85				
Moisture Sensitivity	85.92	80%	-	T-283				

Prepared by: MICHAEL JOPKO
Submitted by: MICHAEL JOPKO
Signature:
Title TECHNICIAN
Representing TRAP ROCK INDUSTRIES

NJDOT Approval
Name
Title
Signature
Date
Region

BATCH PLANT

Bin - 4 - 18.1
3 - 28.6
2 - ~~25.8~~ 21.3
1 - ~~27.8~~ 27.3

AC - 4.7

NEW JERSEY DEPARTMENT OF TRANSPORTATION
PRODUCER'S ANALYSIS OF MATERIALS AND JOB MIX FORMULA

DATE 1/15/98

PRODUCER TRI, TRI, STA-SEAL PLANT LOCATION KINGSTON, COLUMBUS, FLORENCE

PROJECT

CONTRACTOR

MIX NUMBER 19MM COURSE BATCH SIZE DRUM

VERIFICATION MARSHALL PLUG - LABORATORY SERIAL NO. GT. 2.694

JOB MIX FORMULA				
	%	POUNDS	KG	
	Drum			
# -1	21.0	420	190.5	TRAP ROCK – TRAP ROCK INDUSTRIES, KINSTON NJ
# 8	44.8	896	406.4	" " "
# 10	25.7	514	233.1	" " "
SAND	3.8	76	34.5	WASHED SAND – CLAYTON SAND CO. JACKSON NJ
	0.0	0	0.0	
ASPHALT CEMENT	4.7	84	38.1	CHEVRONOIL CO. PERTH AMBOY NJ PG 64-22
PI BIN 1			REQUIRED: NON - PLASTIC	

MARSHALL	DESIGN		REQUIREMENTS	
	STD	METRIC	MINIMUM	MAXIMUM
STABILITY	0	0.0		
FLOW				
AIR VOIDS (%)	4.0			
VMA (%)	15.2		13	
VFA (%)	73.6		65	75
GT	2.679			
LBS/YDS/IN.	161.4	2.586 KG /M(3) /MM		

PREPARED BY: MICHAEL JOPKO	SUBMITTED BY: MICHAEL JOPKO
SIGNATURE	SINGATURE
TITLE TECHNICIAN	TITLE TECHNICIAN
REPRESENTING (COMPANY) TRAP ROCK INDUSTRIES	REPRESENTING (COMPANY) TRAP ROCK INDUSTRIES DATE OF INITIAL SUBMISSION FOR CALENDAR YEAR 1998

COMPLIES	DATE	SIGNATURE OF PROJECT ENGINEER	MATERIALS REGION NO.
DOES NOT COMPLY			BUREAU OF INS,PL,PRO

BIN GRADATIONS

SIEVE SIZE	BIN NO. 5 0.0%		BIN NO. 4 0.0%		BIN NO. 3 0.0%		BIN NO. 2 0.0%		BIN NO. 1 0.0%		FILLER 0.0%		THEOR COMB	SPEC	
	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH		MIN.	MAX.
50.0															
37.5															
25.0		0.0		0.0		0.0		0.0		0.0		0.0	0.0	100	100
19.0		0.0		0.0		0.0		0.0		0.0		0.0	0.0	90	100
12.5		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
9.5		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
4.75		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
2.36		0.0		0.0		0.0		0.0		0.0		0.0	0.0	23	49
1.18		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
.600		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
.300		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
.150		0.0		0.0		0.0		0.0		0.0		0.0	0.0		
.075		0.0		0.0		0.0		0.0		0.0		0.0	0.0	2	8.0

STOCKPILE GRADATIONS

SIEVE SIZE	SIZE NO. # -1 PERCENT 22.0%		SIZE NO. # 8 PERCENT 47.0%		SIZE NO. # 10 PERCENT 27.0%		SIZE NO. SAND PERCENT 4.0%		SIZE NO. RAP PERCENT 0.0%		FILLER PERCENT 0.0%		THEOR COMB	SPEC	
	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH	% PASS	% BATCH		MIN.	MAX.
50.0															
37.5															
25.0	100.0	22.0	100.0	47.0	100.0	27.0	100.0	4.0	100.0	0.0		0.0	100.0	100	100
19.0	92.0	20.2	100.0	47.0	100.0	27.0	100.0	4.0	100.0	0.0		0.0	98.2	90	100
12.5	35.0	7.7	100.0	47.0	100.0	27.0	100.0	4.0	100.0	0.0		0.0	85.7		
9.5	18.5	4.1	92.0	43.2	100.0	27.0	100.0	4.0	93.0	0.0		0.0	78.3		
4.75	5.6	1.2	27.0	12.7	100.0	27.0	98.6	3.9	64.0	0.0		0.0	44.8		
2.36	2.0	0.4	7.2	3.4	81.0	21.9	94.7	3.8	50.0	0.0		0.0	29.5	23	49
1.18	1.8	0.4	4.5	2.1	58.0	15.7	78.2	3.1	45.0	0.0		0.0	21.3		
.600	1.6	0.4	2.2	1.0	41.0	11.1	50.7	2.0	35.0	0.0		0.0	14.5		
.300	1.5	0.3	1.8	0.8	32.0	8.6	18.0	0.7	20.7	0.0		0.0	10.4		
.150	1.4	0.3	1.6	0.8	19.0	5.1	2.0	0.1	12.0	0.0		0.0	6.3		
.075	0.5	0.1	1.5	0.7	14.2	3.8	0.3	0.0	7.0	0.0		0.0	4.6	2	8.0

* RAP CONTAINS 5.0% AC

Project Worksheet

Workbook Name:	19MMMIX.XLS
Project Name:	RT-195 SECTIONS 1L,2H,3L,4J,5C,6E & 7C
Technician:	MICHAEL JOPKO + DAVE ANDREWS
Date:	21/15/98

Design Temperature	38	°C	Nom. Sieve Size:	19.0	mm
Design ESAL's (millions):	25.0		Asphalt Grade:	PG 64-22	
Depth from Surface:	75	mm	Compaction Temp:	142	°C
			Mixture Temp:	150	°C

	Blend Identifiers
Blend 1:	4.2
Blend 2:	4.7
Blend 3	5.2
Blend 4:	5.7

	From Table VI-13	Manual Entry
N Initial:	8	
N Design:	109	
N Max.	174	

Workbook Type

- ○ *Trial Aggregate Blends*
- ◉ Varying %AC Analysis

Specimen Diameter

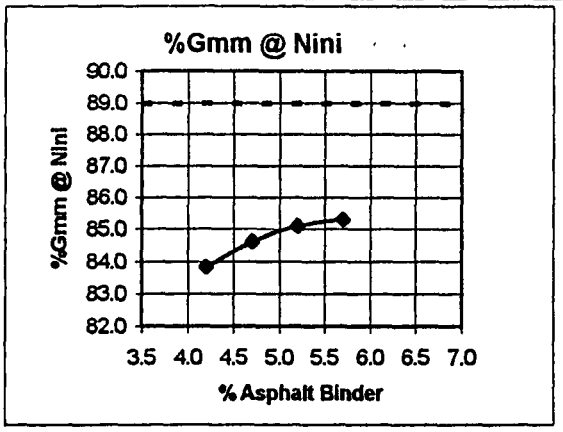
- ○ 100mm
- ◉ 150mm

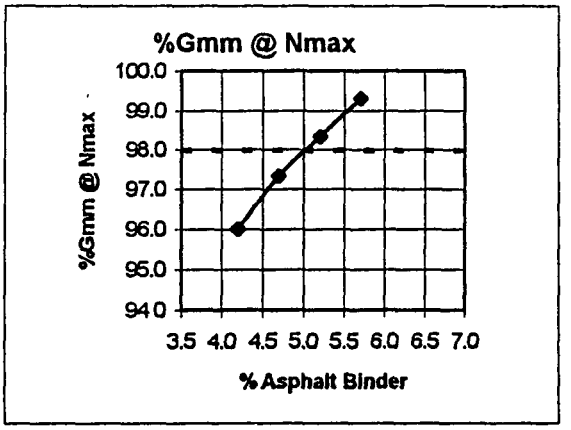
Mixture Summary Report for Varying %AC Analysis

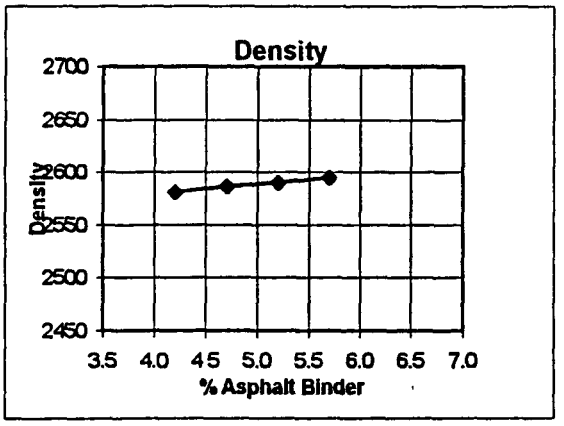
Project Name:	RT-195 SECTIONS 1L,2H,3L,4J,	**N Initial:**	8
Workbook Name:	19MMMIX.XLS	**N Design:**	109
Technician:	MICHAEL JOPKO + DAVE ANDI	**N Max:**	174
Date:	21/15/98	**Nom. Sieve Size:**	19 mm
Asphalt Grade:	PG 64-22	**Compaction Temperature:**	142 °C
		Mixture Temperature:	150°C
Design ESAL's (millions):	25	**Depth from Surface (mm):**	75
Design Temperature:	38°C	**Mold Size:**	150 mm

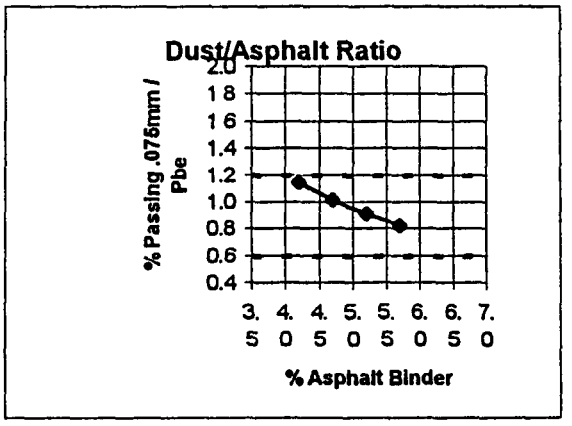
Property	Results				Criteria
	4.2	4.7	5.2	5.7	
%AC	4.2	4.7	5.2	5.7	
%Air Voids (V_a)	5.0	4.0	3.1	2.1	4.0 %
%VMA	14.9	15.2	15.5	15.8	13.0 % Min.
%VFA	66.4	73.6	80.2	87.0	65.0 % Min. 75.0 % Max.
Dust/Asphalt Ratio	1.1	1.0	0.9	0.8	0.6-1.2 %
Max. Specific Gravity (G_{mm})	2.717	2.694	2.672	2.649	
Bulk Specific Gravity (G_{mb})	2.609	2.622	2.628	2.631	
$\%G_{mm}$ @ N_{ini}	83.8	84.6	85.1	85.3	89.0 % Max.
$\%G_{mm}$ @ N_{max}	96.0	97.3	98.3	99.3	98.0 % Max.
Effective Sp. Gravity of Blend (G_{se})	2.927	2.927	2.928	2.927	—
Sp. Gravity of Binder (G_b)	1.030	1.030	1.030	1.030	—
Sp. Gravity of Aggregate (Gs_b)	2.905	2.905	2.905	2.905	—

Project Name: RT-195 SECTIONS 1L,2H,3L,4J,5C,6E **N Initial:** 8
Workbook Name: 19MMMIX.XLS **N Design:** 109
Technician: MICHAEL JOPKO + DAVE ANDREWS **N Max:** 174
Date: 21/15/98
Asphalt Grade: PG 64-22 **Design Temperature:** 38°C
Compaction Temp: 142°C **Design ESAL's (millions):** 25



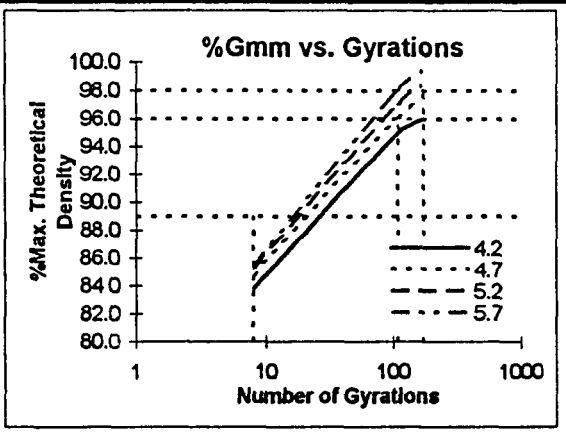


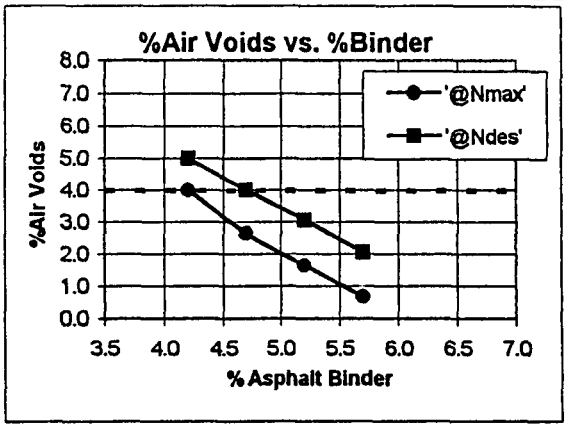


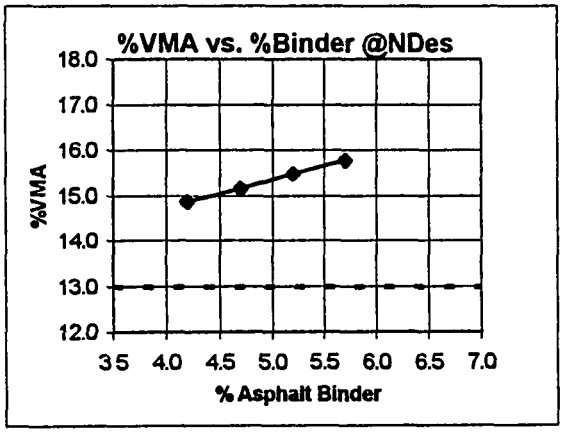


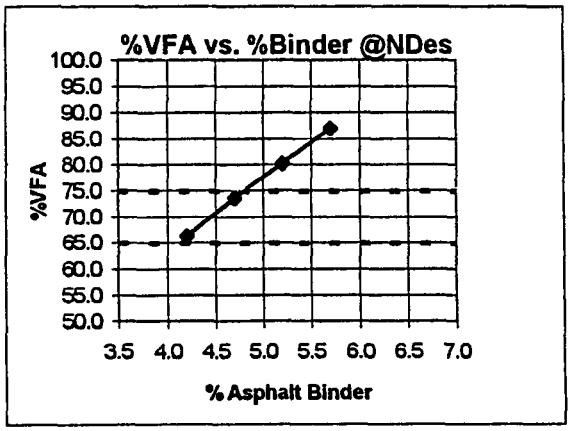
Blend	%AC	%Gmm @ NInitial	%Gmm @ NMax	Unit Wt. (kg/m^3) NDesign	Dust/Asph Ratio
4.2	4.2	83.8	96.0	2581	1.1
4.7	4.7	84.6	97.3	2586	1.0
5.2	5.2	85.1	98.3	2590	0.9
5.7	5.7	85.3	99.3	2595	0.8

Project Name:	RT-195 SECTIONS 1L,2H,3L,4J,5C,6E **N Initial:** 8
Workbook Name:	19MMMIX.XLS **N Design:** 109
Technician:	MICHAEL JOPKO + DAVE ANDREWS **N Max:** 174
Date:	21/15/98 **Nom. Sieve Size:** 19mm
Asphalt Grade:	PG 64-22 **Design Temperature:** 38°C
Compaction Temp:	142°C **Design ESAL's (millions):** 25









Blend	%AC	Air Voids @ NMax	Air Voids @ NDesign	%VMA NDesign	%VFA @ NDesign
4.2	4.2	4.0	5.0	14.9	66.4
4.7	4.7	2.7	4.0	15.2	73.6
5.2	5.2	1.7	3.1	15.5	80.2
5.7	5.7	0.7	2.1	15.8	87.0

Summary Report

Project Name:	RT-195 SECTIONS 1L,2H,3L,4J,5C,6E & 7C	**N Initial:**	8
Workbook Name:	19MMMIX.XLS	**N Design:**	109
Technician:	MICHAEL JOPKO + DAVE ANDREWS	**N Max:**	174
Date:	21/15/98	**Nom. Sieve Size:**	19mm
Asphalt Grade:	PG 64-22	**Design Temperature:**	38°C
Compaction Temp:	142°C	**Design ESAL's (millions):**	25

Blend	%AC	%Gmm @ N = 8 (corrected)	%Gmm @ N = 109 (corrected)	%Gmm @ N = 174 (corrected)	%Air Voids @ NDesign	%VMA @ NDesign
4.2	4.2	83.8	95.0	96.0	5.0	14.9
4.7	4.7	84.6	96.0	97.3	4.0	15.2
5.2	5.2	85.1	96.9	98.3	3.1	15.5
5.7	5.7	85.3	97.9	99.3	2.1	15.8

Blend	Estimated %AC @ 4% Va	Estimated %Gmm @ N = 8 (89% Max)	Estimated %Gmm @ N = 109	Estimated %Gmm @ N = 174 (98% Max)	Estimated %VMA @ NDesign (13 % Min)	Estimated %VFA @ NDesign (65-75%)
4.2	4.6	84.8	96.0	97.0	14.7	72.7
4.7	4.7	84.6	96.0	97.3	15.2	73.6
5.2	4.8	84.2	96.0	97.4	15.6	74.3
5.7	4.9	83.4	96.0	97.4	16.0	75.0

	4.2	4.7	5.2	5.7
Ag. Bulk Specific Gravity (Gsb):	2.905	2.905	2.905	2.905
Percent Binder by wt. of mix (Pbi):	4.2	4.7	5.2	5.7
Percent Aggregate (Ps):	95.8	95.3	94.8	94.3
Specific Gravity of Binder (Gb):	1.030	1.030	1.030	1.030
Fines (%Passing 0.075mm Sieve):	4.5	4.5	4.5	4.5
Effective Specific Gravity (Gse):	2.927	2.927	2.928	2.927
Effective % Binder (Pbe):	3.9	4.4	4.9	5.4
Dust Proportion (0.6-1.2%):	1.1	1.0	0.9	0.8

V3 01

Worksheet for Calculation of Max. Theoretical Specific Gravity @ Varying %AC's

Specific Gravity of Blended Aggregate (Individual Constituent)							
	Type of Agg. Material	# - 1	# 8	# 10	SAND		
P	% of Material in Blend	22.0	47.0	27.0	4.0		
G	Sp. Gr. of Mat. (Bulk)	2.923	2.918	2.908	2.650		
	Factor(P/G)	7.527	16.107	9.285	1.509		
S	Sum of Factors	34.428					
Gsb	Sp. Gr. of Blended Agg. (100/S)	2.905					

Calculation of Effective Specific Gravity from Tested Mix					
	Sample No. for Tested Mix	1A	1B	1C	Average
Pb	% A.C. in Test Mix	4.7	4.7	4.7	4.700
Gmm	Max. Sp. Gr. (Rice)	2.690	2.698	2.695	2.694
Gb	Sp. Gr. of Binder				1.030
Vb	Vol. of Binder (Pb/Gb)				4.563
Ps	% Agg. in Mix (100 - Pb)				95.300
A	Factor (Gmm x Ps)				256.770
B	Factor (Gmm x Vb)				12.295
C	Factor (100 - B)				87.705
Gse	Eff. Sp. Gr. of Agg. (A/C)				2.928

Calculation of Max. Sp. Gr. of Mixes Containing % A.C. Other Than Tested Mix							
Mix No.	% A.C. (Pb)	S.G. of Binder (Gb)	Volume of Binder (Vb) = (Pb/Gb)	%Agg. in Mix (Ps) = (100 - Pb)	Vol. of Agg.(Vs) =(Ps/Gse)	Total Volume (Vt) = (Vb + Vs)	Theo. S.G. Mix (Gmm) = (100/Vt)
1A	4.2	1.030	4.078	95.8	32.723	36.800	2.717
1B	4.7	1.030	4.563	95.3	32.552	37.115	2.694
1C	5.2	1.030	5.049	94.8	32.381	37.430	2.672
1D	5.7	1.030	5.534	94.3	32.210	37.744	2.649
Design	4.7	1.030	4.563	95.3	32.552	37.115	2.694

Aggregate Gradation Trials

Project Name: RT- 195 SECTIONS 1L,2H,3L,4J,5C,6E & 7C
Technician: MICHAEL JOPKO + DAVE ANDREWS
Date: 1/6/98

Filename: 19MMGRAD XLS
Description: GRAD FOR VIRGIN, 10% 15% AND 20% RAP
Nominal Sieve Size: 19 mm

	Blend 1	Blend 2	Blend 3	Blend 4	Blend 5
# -1	22 0	23 4			
# 8	47 0	41 4			
# 10	27 0	22 2			
SAND	4 0	3 0			
RAP		10 0			
	100 00	100 00	0 00	0 00	0 00

Sieve Size	Blend 1	Blend 2	Blend 3	Blend 4	Blend 5
25.00	100 0	100 0	0.0	0 0	0 0
19.00	98 2	98.1	0.0	0 0	0 0
12.50	85 7	84 8	0 0	0 0	0 0
9.50	78 3	76 9	0 0	0 0	0 0
4.75	44 9	44 0	0 0	0 0	0 0
2.36	29 5	29 3	0 0	0 0	0 0
1.18	21 3	21 7	0 0	0 0	0 0
0.60	14 5	15 4	0 0	0.0	0 0
0.30	10 5	10 8	0 0	0 0	0 0
0.150	6 3	6 5	0 0	0 0	0 0
0.075	4 7	4 6	0 0	0 0	0 0

						Specs
Gsb	2 882	2 880				
Gsa	2 942	2.940				
% Absorption	0 65	0 63				
Sand Equiv.	100 0	100 0				45% min.
%Flat and Elongated Particles	0 8	0 8				10% max
%Fine Ag. Ang.	48 9	48 0				45% min
%Course Agg. Ang. (1 or more)	100 0	100 0				95% min
%Course Agg. Ang. (2 or more)	100 0	100 0				90% min
Va (assumed)	4.0	4 0	4 0	4 0	4 0	
Pb (assumed)	5 0	5 0	5 0	5 0	5 0	
Gse (est.)	2 930	2.928				
Ws	2.446	2.445				
Vba (est.)	0 014	0 014				
Vbe (est.)	0.090	0 090	0 090	0 090	0.090	
Pbi (est.)	4 2	4 2				

Stockpiles							
# -1	# 8	# 10	SAND	RAP			
100 0	100 0	100 0	100 0	100 0			
92 0	100 0	100.0	100 0	100 0			
35 0	100 0	100 0	100 0	100 0			
18 5	92 0	100 0	100 0	93 0			
5 6	27 0	100 0	98 6	64 0			
2 0	7.2	81 0	94 7	50 0			
1.8	4 5	58 0	78.2	42 0			
1 6	2 2	41.0	50 7	35 0			
1 5	1 8	32 0	18 0	20 7			
1 4	1 6	19 0	2 0	12 0			
0 5	1 5	14 2	0 3	7 0			

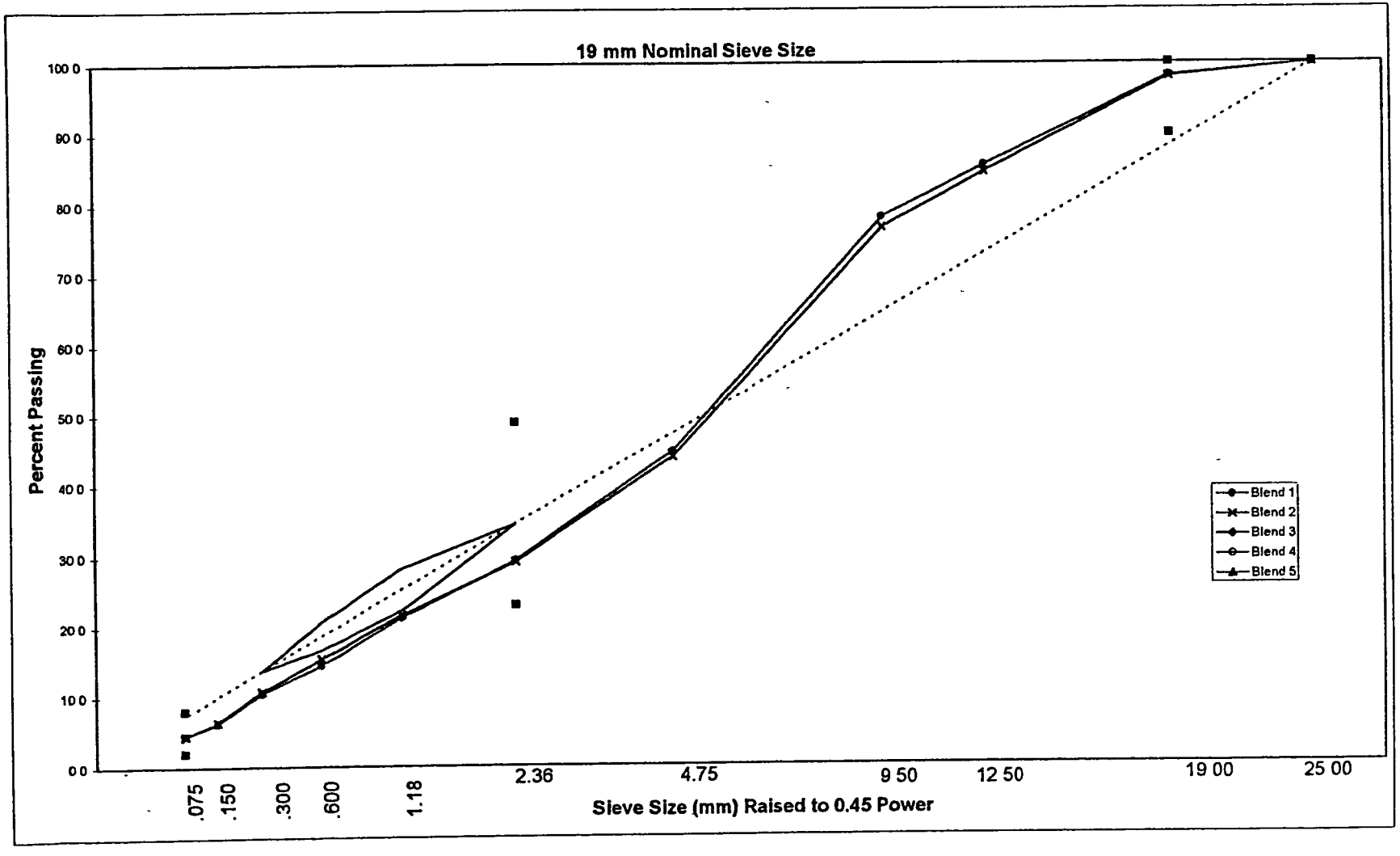
2 900	2 890	2.890	2 650	2.850			
2.967	2 951	2 945	2 690	2 900			
0 50	0.70	0.70	0 50	0 50			
		100 0	100 0				
0 8							
		50 9	43 0	43 0			
100 0	100 0						
100 0	100 0						

Absorption Multiplier	0 80
Gb	1 030
Traffic (million ESAL's)	25 0
Depth from Surface (mm)	75 0

Aggregate Gradation Trials

Project Name: RT- 195 SECTIONS 1L,2H,3L,4J,5C,6E & 7C
Technician: MICHAEL JOPKO + DAVE ANDREWS
Date: 1/6/98

Filename: 19MMGRAD XLS
Description: GRAD FOR VIRGIN, 10% 15% AND 20% RAP
Nominal Sieve Size: 19 mm



SUPERPAVE BINDER EVALUATION

CITGO Asphalt Refining Company
4 Paradise Road at the Delaware River
P.O. Box 249
Paulsboro, NJ 08066
(609) 224-7420 (phone)
(609) 224-7401 (phone)
(609) 224-7289 (fax)

Asphalt Grade :	PG 64-22	**Facility:**	CITGO Asphalt Refinery
Date Sampled:	6/2/98	**Address:**	Paradise Road, NJ, 08066
Lot No:	7	**Volume:**	6,372,262
Date Tested:	6/2/98	**Tank No:**	109

Test	Method	Specifications	Test Results	
Unaged Asphalt				
Specific Gravity @ 15°C (60°F)	AASHTO T228	Report	1.027	
Specific Gravity @ 25°C (77°F)	AASHTO T228	Report	1.021	
API Gravity	CALCULATED	Report	8.2	
LBS./Gal.	ASTM TABLE 8	Report	8.556	
Flash Point, °C	AASHTO T48	> 230°C	286	
Viscosity (Brookfield) @ 135°C, Pa-s	ASTM D4402	< 3 Pa-s	0.447	
Viscosity (Brookfield) @ 165°C, Pa-s	ASTM D4402	Report	0.125	
Phase Angle δ	AASHTO TP5	Report	84.7	
Dynamic Shear, 10 rad/sec G*/ sin δ @ T °C, kPa	AASHTO TP5	> 1.00 kPa	1.327	
		64°C		
RTFO Aged Residue	AASHTO T240			
Mass Change, %	AASHTO T240	< 1.0 wt %	D 13	
Dynamic Shear, 10 rad/sec G*/ sin δ @ T °C, kPa	AASHTO TP5	> 2.20 kPa	3.174	
		64°C		
PAV Aged Residue @ 100°C	AASHTO PP1			
Dynamic Shear, 10 rad/sec G*sin δ @ T °C, kPa	AASHTO TP5	< 5000 kPa	4633	
		25°C		
Creep Stiffness and m-value, 60 sec @ T °C	AASHTO TP1	< 300 MPa / > 0.300	S	m
		-12°C	149.0	0.364
This binder classifies as a			PG 64-22	
Mix Design:				
Compaction Temp,	MAX/MIN	162/156C		
	MAX/MIN	149/144C		

Laboratory Technician
AASHTO Accredited Lab # 1494

THIS MATERIAL CONFORMS TO THE SPECIFICATIONS SET FORTH IN AASHTO MP-1 AND IS A NEAT ASPHALT.

C. Douglas Brown
C. DOUGLAS BROWN
MANAGER - QUALITY CONTROL

SUIT-KOTE

1911 Lorings Crossing Road
Cortland NY 13045

CERTIFICATION FOR PG 52-28		Date of Report 6-17-98
Job:	Trap Rock Ind.	Date Received 6-15-98
		Date Sampled 6-15-98

ORIGINAL BINDER				
Flash Point, 230C min.		230+		AASHTO T44
Brookfield Viscosity Pa.s, 3.0 max.		237.500		AASHTO TP-48
DSR, kPa 1.0 kPa min.	52	1 8588		AASHTO TP-5

RTFO RESIDUE				
Mass Loss, 1.0% max.		0 09		AASHTO T240
DSR, kPa 2.2 kPa min.	52	3.9062		AASHTO TP-5

PAV RESIDUE				
DSR, kPa max. 5000 kPa max.	16	2602 80		AASHTO TP-5
BBR m-0.300 min. S-300.0 max.	-18	m 0.378	S 142.000	AASHTO TP-1

FOR LABORATORY DESIGN ONLY
Recommended mixing temperature: 311F-322F
Recommended compaction temperature: 289F-300F

FOR FIELD USE ONLY
Recommended mixing temperature: <350F
Recommended compaction temperature: *see note 1

Note 1 : Field compaction temperatures may exceed or fall below the lab compaction temperatures Adjustment of field compaction temperatures may be necessary based on the compactibility of the mix and field compaccion requirements

PG 52-28

Lot 14, Tank 70; 6,000 gallons
PG 52-28
AASHTO T228 S.G. @ 77F = 1.0201
@ 60F = 1.0261(8.5475 #/Gal)

Signed _____
Title_Lab Technician_____

SUIT-KOTE

1911 Lorings Crossing Road
Cortland NY 13045

CERTIFICATION FOR PG 58-28

Job: Trap Rock Ind.

Date of Report 6/18/98
Date Received 6/16/98
Date Sampled 6/16/98

ORIGINAL BINDER			
Flash Point, 230C min.		230+	AASHTO T44
Brookfield Viscosity Pa.s, 3.0 max.		0.850	AASHTO TP-48
DSR, kPa 1.0 kPa min.	58	2.0565	AASHTO TP-5
RTFO RESIDUE			
Mass Loss, 1.0% max.		0.05	AASHTO T240
DSR, kPa 2.2 kPa min.	58	4.1547	AASHTO TP-5
PAV RESIDUE			
DSR, kPa max. 5000 kPa max.	19	1258.80	AASHTO TP-5
BBR		m	S
m-0.300 min. S-300.0 max.	-18	0.312	214.000
			AASHTO TP-1

FOR LABORATORY DESIGN ONLY

Recommended mixing temperature: 311F-322F
Recommended compaction temperature: 289F-300F

FOR FIELD USE ONLY

Recommended mixing temperature: <340F
Recommended compaction temperature: *see note 1

Note 1 : Field compaction temperatures may exceed or fall below the lab compaction temperatures. Adjustment of field compaction temperatures may be necessary based on the compactibility of the mix and field compaction requirements.

PG 58-28

Lot 16; Tank 70, 6,000 gallons
PG 58-28
AASHTO T228 S.G. @ 77F = 1.0250
@ 60F = 1.0311 (8.589 #/Gal)

Signed Rodney L. Harvey
Title_Lab Technician

SUIT-KOTE

1911 Lorings Crossing Road
Cortland NY 13045

CERTIFICATION FOR PG 76-28P		Date of Report 6/18/98
Job:	Trap Rock Ind.	Date Received 6/16/98
		Date Sampled 6/18/98

ORIGINAL BINDER				
Flash Point, 230C min.		230+		AASHTO T44
Brookfield Viscosity Pa.s, 3.0 max.		3.675		AASHTO TP-48
DSR, kPa 1.0 kPa min.	76	2.0275		AASHTO TP-5
RTFO RESIDUE				
Mass Loss, 1.0% max.		0.08		AASHTO T240
DSR, kPa 2.2 kPa min.	76	3.1268		AASHTO TP-5
PAV RESIDUE				
DSR, kPa max. 5000 kPa max.	28	1031.40		AASHTO TP-5
BBR m-0.300 min. S-300.0 max.	-18	m 0.308	S 202.000	AASHTO TP-1

FOR LABORATORY DESIGN ONLY
Recommended mixing temperature: 330F-340F
Recommended compaction temperature: 305F-315F

FOR FIELD USE ONLY
Recommended mixing temperature: <350F
Recommended compaction temperature: *see note 1

Note 1 : Field compaction temperatures may exceed or fall below the lab compaction temperatures. Adjustment of field compaction temperatures may be necessary based on the compactibility of the mix and field compaccion requirements.

PG 76-28P

Lot 15; Tank 82; 6,000 gallons
PG 76-28P asphalt
AASHTO T228 S.G. @ 77F = 1.0262
@ 60F = 1.0323 (8.5993 #/Gal)

Signed Audrey L Harvey
Title Lab Technician

Form LB-295 8/98

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection
Daily Report No 2

PROJECT: Rt. 195 Sec. 1C
PRODUCER: Stq-Serv

CONTRACTOR: TRI
LOCATION: FLORENCE

DATE: 6-17-98
MIX NO : 19MM

Lot Sample No.	1B					
Sample Weight	12090					
A–Sample Wgt (Corr. For Moist)	12990					
B– Total After * (Includes Filter Ring)	12551					
C –Filter Before	220					
D–Agg. Wgt. (B-C)	12331					
E–Ash	71					
F–Corr. Wgt (D + E)	12402					
G–Bitumin Wgt (A-F)	588					
H–% Bitumin (G – A) x 100			4.53			
SIEVE SIZE						
50 mm						
37.5 mm						
25.0 mm	0	0	100			
19.0 mm	608	4.9	949			
12.5 mm	1680	13.5	81.4			
9.5 mm	774	6.2	75.2			
4.75 mm	4535	36.6	38.6			
2.36 mm	1278	10.3	28.3			
1.18 mm	987	7.9	20.4			
600 µm	590	4.9	15.7			
300 µm	595	4.8	10.9			
150 µm						
75 µm	80.9	6.5	4.4			
75 µm	54.6	4.4				
Total Agg Wgt.						
Wt Before Wash	12303					
Wt After Wash	11982					
Loss	321					

CALCULATION FOR MINUS NO 75 µm

Sample No	1B	
Filter Ring–After	248	
Filter Ring–Before	220	
Fines Ret. In Ring **	28	
Wash Loss **	321	
Fines In Pan **	126	
Ash **	71	
Total -75 µm	546	

MARSHALL TEST

Molding Temp. Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	12257	
Wgt SSD	12266	
Wgt. in Water	7554	
Loss	4712	
Bulk S G	2.601	
Max. Theo. S.G	2.715	
Air Voids - %	4.2	
Solids - %	95.8	

ASH TEST

Date Run	
Sample No	14792
Vol of Extr (V1)	9344
Vol Used	5449
Vol. Remain (V2)	2715
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & %
E = g [V1 -(V1 - V2)]
g = .546

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with NJDOT Specifications and Procedures to the best of my knowledge.

SIGNED: _____
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS. NJDOT B-4
AASHTO — T245, T209, T166

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: Sta-Seal

PLANT LOCATION: Florence

Mix Size & Seal No. 19mm

% AC Abs. .21 (From Design)

DATE: 6-17-98

BINDER: PG-64-22

JOB Rt. 195 Sec. 1C

Producer Mix ID #

Plant Identification

Plant Type (batch or drum) Batch

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
Lot	%	Sp Gr of	Max	Plug Sp Gr	Specimen Height			% Gmm (max density)			Properties @ N design									
No	AC	Asphalt	Sp Gr.	@ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
	▼	Gb ▼	Gmm ▼	Gmb,max ▼	(mm) ▼	(mm) ▼	(mm) ▼	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ▼	V/P
1B	4.53	1.030	2.715	2.643	115.7	117.4	131.9	97.3	95.9	85.3	4.1	2,604	38.4	4.32	4.19	10.9	15.0	72.7	4.4	1.0
								less than 98%		less than 89%	3-5						13.5 MIN	68.6 / 78.6		

Specimen Wts at Nmax

Sub Lot Number	In Air	In Water	SSD	Gmb @Nmax	
	AA	BB	CC	AA/(CC-BB)	
	grams	grams	grams		
1B	5243.7	3265.5	5249.2	2.643	1983.7

see back

Technician(s) signature Billy Young

print

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection / Daily Report No: 2

PROJECT: Route 195-IL CONTRACTOR: TRI DATE: 6.17.98
PRODUCER: STA-SEAL LOCATION: Florence MIX NO: I4-HD

Lot Sample No	I4 HD SEC 1					
Sample Weight	12915					
A–Sample Wgt (Corr. For Moist)	12915					
B– Total After * (Includes Filter Ring)	1248.4					
C –Filter Before	219					
D–Agg. Wgt (B-C)	12265					
E–Ash	71					
F–Corr Wgt (D + E)	1233.6					
G–Bitumin Wgt (A-F)	57.9					
H–% Bitumin (G – A) x 100			4.48			
SIEVE SIZE						
50 mm						
37.5 mm						
25.0 mm	0	0	100			
19.0 mm	12.9	1.0	99.0			
12.5 mm	109.1	8.8	90.2			
9.5 mm	94.5	7.7	82.5			
4.75 mm	399.5	32.4	50.1			
2.36 mm	158.7	12.9	37.2			
1.18 mm	118.7	9.6	27.6			
600 µm	77.8	6.3	21.3			
300 µm	83.9	6.8	14.5			
150 µm						
75 µm	101.8	8.3	6.2			
75 µm	76.7	6.2				
Total Agg. Wgt						
Wt Before Wash	1224.4					
Wt After Wash	1163.8					
Loss	60.6					

CALCULATION FOR MINUS NO 75 µm

Sample No.		
Filter Ring–After	240	
Filter Ring–Before	219	
Fines Ret. In Ring **	21	
Wash Loss **	606	
Fines In Pan **	69	
Ash **	71	
Total -75 µm	767	

MARSHALL TEST

Molding Temp. Marshall °C		
Height - mm		
Dial Reading	260	
Stability KN	1235	
Flow - mm	9	
Wgt. in Air	12655	
Wgt. SSD	12663	
Wgt. in Water	7834	
Loss	4829	
Bulk S G	2.621	
Max. Theo. S G.	2.774	
Air Voids - %	3.8	
Solids - %	96.2	

ASH TEST

Date Run	
Sample No	
Vol. of Extr. (V1)	
Vol Used	
Vol. Remain (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & %
E = g [V1 -(V1 - V2)]
g = 5.46 %

MOISTURE CONTENT

Wet Weight	1500.0	gm
Dry Weight	1498.2	gm
Moisture Loss	1.8	gm
Moisture Content	0.1	%

I certify that the above were sampled by me, and that all operations were performed in accordance with NJDOT Specifications and Procedures to the best of my knowledge.

SIGNED: Bill Young
Dept. of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS. NJDOT B-4
AASHTO — T245, T209, T166

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

I4 -HD VIRGIN
SEC 1

Customer
Not found

Job
ROUTE 195

Cust# 00001
Job# 095
Truck# 20
Mix# 46
Name I-4 MOD.#R402422
Operator VD
Ticket# 8959

Time	Agg T	AGG 4	AGG 3	AGG 2	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		571	2160	3503	5446			269		5714
7:15:08	30	580	2170	3540	5530	5530	1	265	265	5795
7:15:44	10	570	2140	3500	5510	5510	-1	272	272	11577
7:16:31	0	530	2160	3450	5470	5470	1	266	266	17313
7:17:19	10	560	2180	3540	5370	5370	-4	272	272	22955
7:18:07	20	630	2170	3480	5430	5430	-2	267	267	28652
7:18:55	10	560	2140	3480	5440	5440	-2	270	270	34362
7:19:43	20	600	2130	3540	5530	5530	-1	267	267	40159

Agg Tare Asp Tare

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
5	100.21	7:20:24 pm Jun 17, 1998	F	20.00

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection Daily Report No 2

PROJECT: Rt. 195 Sec. 1L CONTRACTOR: T.B.I DATE: 6-17-98
PRODUCER: Sta-Seal LOCATION: Florence MIX NO: 19mm Sec. 3 PG-52-28

Lot Sample No.						
Sample Weight						
A–Sample Wgt (Corr For Moist)	1255.2					
B– Total After * (Includes Filter Ring)	1215.4					
C -Filter Before	22.2					
D–Agg. Wgt (B-C)	1193.2					
E–Ash	6.8					
F–Corr. Wgt (D + E)	1200.0					
G–Bitumin Wgt. (A-F)	55.2					
H–% Bitumin (G - A) x 100	4.40					
SIEVE SIZE						
50 mm						
37.5 mm						
25.0 mm	—	—	100			
19.0 mm	52.6	4.4	95.6			
12.5 mm	126.6	10.6	85.0			
9.5 mm	65.2	5.4	79.6			
4.75 mm	449.6	37.5	42.1			
2.36 mm	163.5	13.6	28.5			
1.18 mm	86.4	7.2	21.3			
600 µm	60.2	5.0	16.3			
300 µm	62.8	5.2	11.1			
150 µm						
75 µm	79.4	6.6	4.5			
75 µm	53.7	4.5				
Total Agg. Wgt						
Wt. Before Wash	1191.7					
Wt. After Wash	1150.5					
Loss	41.2					

CALCULATION FOR MINUS NO 75 µm

Sample No		
Filter Ring–After	23.7	
Filter Ring–Before	22.2	
Fines Ret. In Ring **	1.5	
Wash Loss **	41.2	
Fines In Pan **	4.2	
Ash **	6.8	
Total -75 µm	53.7	

MARSHALL TEST

Molding Temp. Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	1293.0	
Wgt. SSD	1293.8	
Wgt in Water	797.8	
Loss	496.0	
Bulk S G	2.607	
Max. Theo. S.G.	2.702	
Air Voids - %	3.5	
Solids - %	96.5	

ASH TEST

Date Run	
Sample No	
Vol of Extr (V1)	
Vol Used	
Vol Remain. (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & %
E = g [V1 - (V1 - V2)]
g = 546 %

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge.

SIGNED: Bill Young
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO — T245, T209, T166

A-77

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

19 MM PG-52-28

SEC 3

Customer
Not found

Job
ROUTE 195
MIX#1

Cust# 00001
Job# 095
Truck# 20
Mix# 195
Name 19 MM
Operator VD
Ticket# 8969

Time	Agg T	AGG 3	AGG 2	AGG 4	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		1729	3149	4011	5457			257		5714
8:35:12	10	1750	3150	4000	5500	5500	0	260	260	5760
8:35:47	10	1750	3180	3980	5420	5420	0	255	255	11435
8:36:40	0	1720	3140	4040	5380	5380	-2	257	257	17072
8:37:28	0	1740	3120	4030	5600	5600	-4	253	253	22925
8:38:17	10	1710	3140	3990	5460	5460	-2	259	259	28644
8:39:05	0	1740	3140	4030	5440	5440	1	258	258	34342
8:39:52	0	1720	3180	3980	5490	5490	-1	255	255	40087

Agg Tare Asp Tare

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
2	40.25	8:40:33 pm Jun 17, 1998	F	20.04

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: STA-SEAL

PLANT LOCATION: FLORENCE

Mix Size & Seal No: 19mm Sec. 3

% AC Abs. 0.21 (From Design)

DATE: 6-17-98

BINDER: PG-52-28

JOB 195/1L

Producer Mix ID #

Plant Identification

Plant Type (batch or drum) Batch

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
Lot	%	Sp Gr of	Max	Plug Sp Gr	Specimen Height			% Gmm (max density)			Properties @ N design									
No	AC	Asphalt	Sp Gr	@ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
	▼	Gb ▼	Gmm ▼	Gmb,max ▼	(mm) ▼	(mm) ▼	(mm) ▼	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ▼	V/P
	4.40	1.030	2.702	2.643	114.9	116.6	130.7	97.8	96.4	86.0	3.6	2.605	38.4	4.19	4.07	10.6	14.2	74.6	4.5	1.1
								less than 98%		less than 89%	3-5						13.5 min	68.6 to 78.6		

Specimen Wts at Nmax

S.S Lot Number	In Air	In Water	SSD	Gmb @Nmax
	AA	BB	CC	AA*CC-BB)
	grams	grams	grams	
	5225.4	3253.0	5229.8	2.643

A-79

* see back

Technician(s) signature Bill Young

print Bill Young

Form LB-295 8/98

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection
Daily Report No 3

PROJECT: Rt. 195 Sec. 1L
PRODUCER: STA-SEAL
CONTRACTOR: T.R.I.
LOCATION: FLORENCE
DATE: 6-18-98
MIX NO : 19mm Sec 2

Lot Sample No	19MM Sec. 2		
Sample Weight			
A–Sample Wgt (Corr. For Moist)	1260.0		
B– Total After * (Includes Filter Ring)	1216.0		
C –Filter Before	21.8		
D–Agg. Wgt. (B-C)	1194.2		
E –Ash	6.9		
F –Corr. Wgt. (D + E)	1201.1		
G–Bitumin Wgt (A-F)	58.9		
H–% Bitumin (G – A) x 100	4.67		
SIEVE SIZE			
50 mm			
37.5 mm			
25.0 mm			100
19.0 mm	26.2	2.2	97.8
12.5 mm	134.6	11.2	86.6
9.5 mm	53.2	4.4	82.2
4.75 mm	468.7	39.0	43.2
2.36 mm	149.9	12.5	30.7
1.18 mm	104.0	8.7	22.0
600 µm	67.8	5.6	16.4
300 µm	66.8	5.6	10.8
150 µm			
75 µm	74.4	6.2	4.6
75 µm	55.5	4.6	
Total Agg. Wgt.			
Wt Before Wash	1193.0		
Wt. After Wash	1150.6		
Loss	42.4		

CALCULATION FOR MINUS NO 75 µm #6-58-28

Sample No		
Filter Ring–After	23.0	
Filter Ring–Before	21.8	
Fines Ret. In Ring **	1.2	
Wash Loss **	42.4	
Fines In Pan **	5.0	
Ash **	6.9	
Total -75 µm	55.5	

MARSHALL TEST

Molding Temp. Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	1271.4	
Wgt SSD	1272.6	
Wgt in Water	782.3	
Loss	490.3	
Bulk S.G	2.593	
Max. Theo. S.G	2.713	
Air Voids - %	4.4	
Solids - %	95.6	

ASH TEST

Date Run	
Sample No	
Vol of Extr (V1)	
Vol Used	
Vol Remain (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & % E = g [V1 -(V1 - V2)]

g "% %

MOISTURE CONTENT

Wet Weight	1501.0	gm
Dry Weight	1499.0	gm
Moisture Loss	2.0	gm
Moisture Content	0.1	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge.

SIGNED: Bill Jennings
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO — T245, T209, T166

19 MM
Sec. 2
PG-58-28

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

Customer
Not found

Job
ROUTE 195
MIX#2
Sec. 2

Cust# 00001
Job# 095
Truck# 20
Mix# 195
Name 19 MM
Operator VD
Ticket# 8998

Time	Agg T	AGG 3	AGG 2	AGG 4	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		1686	3063	3926	5457			257		5714
6:53:50	0	1670	3070	3930	5510	5510	2	253	253	5763
6:54:25	0	1680	3070	3960	5450	5450	1	258	258	11471
6:55:13	0	1700	3070	3910	5470	5470	-2	255	255	17196
6:56:01	0	1670	3070	3930	5440	5440	-2	260	260	22896
6:56:49	0	1690	3020	3930	5420	5420	-3	259	259	28575
6:57:37	0	1650	3090	3940	5480	5480	0	258	258	34313
6:58:25	10	1710	3070	3930	5570	5570	2	255	255	40138
Agg Tare		Asp Tare								

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
2	40.10	6:59:06 pm Jun 18, 1998	F	20.07

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: STA-SEAL

PLANT LOCATION: FLORENCE

Mix Size & Seal No: 19mm Sec. 2

-% AC Abs. .21 (From Design)

DATE: 6-18-98

BINDER PG 58-28

JOB Rt. 195 Sec. 1L

Producer Mix ID # 19mm

Plant Identification

Plant Type (batch or drum) BATCH

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
					Specimen Height			% Gmm (max density)			Properties @ N design									
Lot No	% A.C	Sp Gr of Asphalt	Max Sp Gr	Plug Sp Gr @ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
	▼	Gb ▼	Gmm ▼	Gmb,max	(mm) ▼	(mm) ▼	(mm) ▼	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ▼	V/P
	4.67	1.030	2.713	2.649	113.6	115.2	128.4	92.6	96.2	86.4	3.8	2.610	38.3	4.46	4.33	11.3	15.1	74.8	4.6	1.1
								less than 98%		less than 89%	3-5						13.5 MIN	68.6 to 78.6		

* see back

Specimen Wts at Nmax

S.S Lot Number	In Air	In Water	SSD	Gmb @ Nmax
	AA	BB	CC	AA/(CC-BB)
	grams	grams	grams	
	5172.6	3224.9	5178	2649
			1952.9	

Technician(s) signature Bill Young

print Bill YOUNG

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection
Daily Report No 3

PROJECT: Rt. 195 Sec 1C
PRODUCER: STA-SEAL
CONTRACTOR: T.R.I.
LOCATION: FLORENCE
DATE: 6-18-98
MIX NO · 19mm Sec. 60
PG-64-22

Lot Sample No.	19mm Sec. 60					
Sample Weight	1272.0					
A–Sample Wgt (Corr For Moist)	1272.0					
B– Total After * (Includes Filter Ring)	1229.4					
C –Filter Before	21.8					
D–Agg Wgt (B-C)	1207.6					
E–Ash	6.9					
F–Corr Wgt (D + E)	1214.5					
G–Bitumin Wgt (A-F)	57.5					
H–% Bitumin (G – A) x 100			4.52			
SIEVE SIZE						
50 mm						
37.5 mm						
25.0 mm	0	0	100			
19.0 mm	257	2.1	97.8			
12.5 mm	1171	9.6	88.2			
9.5 mm	924	7.6	80.6			
4.75 mm	4666	36.8	43.8			
2.36 mm	1570	12.9	30.9			
1.18 mm	1014	8.3	22.6			
600 µm	68.9	5.7	16.9			
300 µm	71.9	5.9	11.0			
150 µm						
75 µm	74.1	6.1	4.9			
75 µm	59.4	4.9				
Total Agg Wgt						
Wt Before Wash	1205.6					
Wt. After Wash	1160.2					
Loss	45.4					

CALCULATION FOR MINUS NO 75 µm

Sample No	Sec. 60	
Filter Ring–After	23.8	
Filter Ring–Before	21.8	
Fines Ret. In Ring **	2.0	
Wash Loss **	45.4	
Fines In Pan **	5.1	
Ash **	6.9	
Total -75 µm	59.4	

MARSHALL TEST

Molding Temp Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	12536	
Wgt SSD	12548	
Wgt in Water	7665	
Loss	4883	
Bulk S G	2.567	
Max Theo S G	2.719	
Air Voids - %	5.9	
Solids - %	94.4	

ASH TEST

Date Run	
Sample No.	
Vol of Extr (V1)	
Vol Used	
Vol Remain (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt of Ash & %
E = g [V1 -(V1 - V2)]
g", .546%

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge.

SIGNED: Bill Young
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO – T245, T209, T166

19 mm
Sec. 60
PG-64-22

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

stomer
)t found

Job
ROUTE 195

Cust# 00001
Job# 095
Truck# 20
Mix# 195
Name 19 MM
Operator VD
Ticket# 9012

Time	Agg T	AGG 3	AGG 2	AGG 4	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		1686	3063	3926	5457			257		5714
3:41:52	0	1630	3120	3950	5420	5420	1	254	254	5674
3:42:28	10	1690	3060	3910	5450	5450	0	256	256	11380
3:43:16	0	1700	3060	3910	5490	5490	-3	258	258	17128
3:44:03	0	1670	3060	3930	5450	5450	2	261	261	22839
3:44:52	0	1710	3070	3920	5490	5490	-3	256	256	28585
3:45:40	0	1700	3030	3920	5390	5390	-4	258	258	34233
3:46:27	0	1710	3120	3900	5490	5490	-1	261	261	39984
Tare		Asp Tare								

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
16	320.28	8:47:09 pm Jun 18, 1998	F	19.99

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: Sta-Seal

PLANT LOCATION: Florence

Mix Size & Seal No: 19mm Sec. 60

-% AC Abs. From Design: ____

DATE: 6-18-98

BINDER: PG64-22

JOB: Rt. 195 Sec. 1L

Producer Mix ID #: ____

Plant Identification: ____

Plant Type (batch or drum): BATCH

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
Lot	%	Sp Gr of	Max	Plug Sp Gr	Specimen Height			% Gmm (max density)			Properties @ N design									
No	AC	Asphalt	Sp Gr	@ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
	▼	Gb ▼	Gmm ▼	Gmb,max ▼	(mm) ▼	(mm) ▼	(mm) ▼	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ▼	V/P
	1030	452	2719	2640	1177	1194	1329	971	957	860	4.3	2602	384	431	418	109	152	717	4.9	114
								less than 98%		less than 89%										

Specimen Wts at Nmax

Sub Lot Number	In Air	In Water	SSD	Gmb @Nmax
	AA	BB	CC	AA*CC-BB*
	grams	grams	grams	
	5382.2	3320.2	5425	

A-85

* see back

Technician(s) signature: Bill Young R. Crocket

print: Bill Young R. Crocket

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection Daily Report No 3

PROJECT: Rt. 195 Sec. 1L CONTRACTOR: T.R.I. DATE: 6-18-98
PRODUCER: STA-SEAL LOCATION: FLORENCE MIX NO : 19mm Sec. 61

Lot Sample No.	19mm Sec. 61 (P67 6-28)					
Sample Weight						
A–Sample Wgt (Corr For Moist)	1328.8					
B– Total After * (Includes Filter Ring)	1281.4					
C –Filter Before	21.0					
D–Agg. Wgt. (B-C)	1260.4					
E–Ash	7.3					
F–Corr Wgt (D + E)	1267.7					
G–Bitumin Wgt. (A-F)	61.1					
H–% Bitumin (G – A) x 100	4.60					
SIEVE SIZE						
50 mm						
37.5 mm						
25 0 mm	—	—	100			
19 0 mm	60.0	4.7	95.3			
12 5 mm	106.1	8.4	86.9			
9 5 mm	63.5	5.0	81.9			
4 75 mm	485.9	38.3	43.6			
2 36 mm	174.4	13.8	29.8			
1.18 mm	102.4	8.1	21.7			
600 µm	63.5	5.0	16.7			
300 µm	68.3	5.4	11.3			
150 µm						
75 µm	74.8	5.9	5.4			
75 µm	68.8	5.4				
Total Agg. Wgt						
Wt. Before Wash	1256.8					
Wt After Wash	1202.5					
Loss	54.3					

CALCULATION FOR MINUS NO 75 µm 16-76-28

Sample No.	Sec. 61	
Filter Ring–After	24.6	
Filter Ring–Before	21.0	
Fines Ret. In Ring **	3.6	
Wash Loss **	54.3	
Fines In Pan **	3.6	
Ash **	7.3	
Total -75 µm	68.8	

MARSHALL TEST

Molding Temp Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	1261.0	
Wgt SSD	1262.4	
Wgt in Water	775.9	
Loss	486.5	
Bulk S G	2.592	
Max. Theo S G	2670	
Air Voids - %	2.9	
Solids - %	97.1	

ASH TEST

Date Run	
Sample No.	
Vol of Extr (V1)	
Vol Used	
Vol Remain (V2)	
Wgt Dish & Ash	
Wgt. Dish Only	
Wgt Ash	

Total Wgt of Ash & %
E =g [V1 -(V1 - V2)]
g" .546%

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge

SIGNED: Bill Young
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO — T245, T209, T166

19mm
Sec 61
P6-76-28

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

Customer
Not found

Job
ROUTE 195
MIX #3

Cust# 00001
Job# 095
Truck# 20
Mix# 195
Name 19 MM
Operator VD
Ticket# 9027

Time	Agg T	AGG 3	AGG 2	AGG 4	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		1686	3063	3926	5457			257		5714
10:29:23	0	1690	3110	3890	5540	5540	3	257	257	5797
10:29:59	0	1650	3040	3920	5550	5550	2	257	257	11604
10:30:47	0	1680	3090	3920	5380	5380	-3	258	258	17242
10:31:35	-10	1690	3030	3930	5430	5430	4	259	259	22931
10:32:23	-10	1720	3060	3920	5500	5500	3	257	257	28688
10:33:11	0	1690	3050	3940	5450	5450	4	257	257	34395
10:33:59	0	1720	3040	3910	5450	5450	4	257	257	40102

Agg Tare Asp Tare

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
31	620.65	10:34:40 pm Jun 18, 1998	F	20.05

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: Sta-Seal

PLANT LOCATION: Florence

Mix Size & Seal No: 19mm Sec. 61

% AC Abs. .21 (From Design)

DATE: 6-18-98

BINDER: PG 76-28

JOB: Rt. 195

Producer Mix ID #: 19mm

Plant Identification:

Plant Type (batch or drum): BATCH

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
Lot	%	Sp Gr of	Max	Plug Sp Gr	Specimen Height			% Gmm (max density)			Properties @ N design									
No	AC	Asphalt	Sp Gr	@ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
	▼	Gb ▼	Gmm ▼	Gmb,max ▼	(mm) ▼	(mm) ▼	(mm) ▼	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ▼	V/P
Sec 61	4.60	1.026	2.670	2.598	121.0	123.0	136.5	97.3	95.7	86.3	4.3	2.555	39.1	4.39	4.28	10.9	15.2	71.7	5.4	1.2
								less than 98%		less than 89%	3-5						13.5 Min	68.6 to 78.6		

Specimen Wts at Nmax

Sub Lot Number	In Air	In Water	SSD	Gmb @Nmax
	AA	BB	CC	AA*CC-BB)
	grams	grams	grams	
	5366.9	3309.4	5375.0	2.598
			2065.6	

* see back

Technician(s) signature: Billy Young

print:

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Plant Inspection
Daily Report No 3

PROJECT: Rt. 195 Sec. 1L CONTRACTOR: T. R. I. DATE: 6-18-98
PRODUCER: STA-SEAL LOCATION: FLORENCE MIX NO I4HD 10% RAP SEC. 62

Lot Sample No.	I4HD Sec 62 4/02 RAP					
Sample Weight						
A–Sample Wgt (Corr. For Moist)	1271.3					
B– Total After * (Includes Filter Ring)	1230.1					
C –Filter Before	22.3					
D–Agg. Wgt. (B-C)	1207.8					
E–Ash	6.9					
F–Corr Wgt (D + E)	1214.7					
G–Bitumin Wgt. (A-F)	56.6					
H–% Bitumin (G - A) x 100	4.45					
SIEVE SIZE						
50 mm						
37.5 mm						
25.0 mm	—	—	100			
19.0 mm	33.8	2.8	97.1			
12.5 mm	105.8	8.7	88.4			
9.5 mm	89.1	7.3	81.1			
4.75 mm	393.0	32.4	48.7			
2.36 mm	170.2	14.0	34.7			
1.18 mm	105.5	8.7	26.0			
600 µm	77.0	6.3	19.7			
300 µm	84.1	6.9	12.8			
150 µm						
75 µm	90.0	7.4	5.4			
75 µm	66.2	5.4				
Total Agg. Wgt.						
Wt Before Wash	1206.1					
Wt After Wash	1156.1					
Loss	50.0					

CALCULATION FOR MINUS NO 75 µm

Sample No	Sec 62	
Filter Ring–After		
Filter Ring–Before	24.0	
Fines Ret. In Ring **	22.3	
Wash Loss **	1.7	
Fines In Pan **	5.0.0	
Ash **	7.6	
Total -75 µm	6.9 =	66.2

MARSHALL TEST

Molding Temp Marshall °C		
Height - mm		
Dial Reading	270	
Stability KN	12.79	
Flow - mm	10	
Wgt in Air	1298.4	
Wgt SSD	1299.8	
Wgt in Water	798.4	
Loss	501.4	
Bulk S G	2.589	
Max. Theo S G	2685	
Air Voids - %	3.6	
Solids - %	96.4	

ASH TEST

Date Run	
Sample No.	
Vol of Extr (V1)	
Vol Used	
Vol Remain (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & %
E = g [V1 - (V1 - V2)]
g", 546 %

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge.

SIGNED Bill Young
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO — T245, T209, T166

I4 MD 10 & RAP
Sec. 62
A(-20 (PG 6422)

STA-SEAL
P O BOX 419 609-924-0300
KINGSTON NJ 08528
FLORENCE PLANT 609-298-7625

Customer
Not found

Job
ROUTE 195

Cust# 00001
Job# 095
Truck# 20
Mix# 47
Name I-4 MOD.#R402422 10%
Operator VD
Ticket# 9043

Time	Agg T	AGG 4	AGG 3	AGG 2	AGG 1	Agg Total	Asp T	ASP A	Asp Total	Batch Total
Target		571	2309	3874	5474			240		5714
12:27:48	0	540	2330	3830	5510	5510	0	242	242	5752
12:28:23	0	550	2330	3900	5420	5420	0	236	236	11408
12:30:09	0	610	2310	3880	5480	5480	-6	242	242	17130
12:30:56	10	560	2340	3840	5500	5500	-1	238	238	22868
12:31:44	10	560	2300	3890	5450	5450	0	242	242	28560
12:32:32	10	570	2290	3860	5470	5470	0	240	240	34270
12:33:20	0	550	2240	3850	5510	5510	0	241	241	40021
Agg Tare		Asp Tare								

Cost/Ton	Percent Tax	Load Cost	Amount Tax	Dest Charge	Total Cost

Load#	Job Total	Time & Date	Fob/Del Location	TOTAL
3	60.13	12:34:02 am Jun 19, 1998	F	20.01

Form LB-295 8/96

NEW JERSEY DEPARTMENT OF TRANSPORTATION
Bureau Of Materials Engineering and Testing
EXTRACTION & MARSHALL TEST FOR COMPLIANCE

Daily Report No _____

DATE: 6-18-98

PROJECT: R-195 Sec. 1C — CONTRACTOR: TR 1

PRODUCER: STA-Sec 1 — LOCATION: Florence

MIX NO 19 mm (67-22)

Lot Sample No.	1C - 19 mm		
Sample Weight	12957		
A–Sample Wgt (Corr For Moist)	1258.7		
B– Total After * (Includes Filter Ring)	12532		
C–Filter Before	211		
D–Agg Wgt (B-C)	12321		
E–Ash	71		
F–Corr Wgt (D + E)	12392		
G–Bitumin Wgt. (A-F)	59.5		
H–% Bitumin (G - A) x 100		4.52	
SIEVE SIZE			
50 mm			
37.5 mm			
25.0 mm	—	—	100
19.0 mm	719	58	94.1
12.5 mm	111.6	9.0	85.1
9.5 mm	59.6	4.8	80.3
4.75 mm	460.8	37.2	43.1
2.36 mm	177.1	14.3	28.8
1.18 mm	98.0	7.9	20.9
600 µm	69.1	5.6	15.3
300 µm 45.8	48.9	3.7	11.6
150 µm			
75 µm	81.9	6.6	5.0
75 µm	62.1	5.0	
Total Agg Wgt	1237.9	99.9	
Wt Before Wash	1230.6		
Wt. After Wash	1183.3		
Loss	47.3		

CALCULATION FOR MINUS NO 75 µm

Sample No	1C	
Filter Ring–After	226	
Filter Ring–Before	211	
Fines Ret In Ring **	15	
Wash Loss **	473	
Fines In Pan **	62	
Ash **	71	
Total -75 µm	621	

MARSHALL TEST

Molding Temp. Marshall °C		
Height - mm		
Dial Reading		
Stability KN		
Flow - mm		
Wgt in Air	1254.9	
Wgt SSD	1256.0	
Wgt in Water	768.0	
Loss	488.0	
Bulk S G	2.572	
Max Theo. S.G.	2.706	
Air Voids - %	5.0	
Solids - %	95.0	

ASH TEST

Date Run	
Sample No.	
Vol of Extr (V1)	
Vol Used	
Vol Remain (V2)	
Wgt Dish & Ash	
Wgt Dish Only	
Wgt Ash	

Total Wgt. of Ash & %
E = g [V1 -(V1 - V2)]
g" 5.46 %

MOISTURE CONTENT

Wet Weight	gm
Dry Weight	gm
Moisture Loss	gm
Moisture Content	%

I certify that the above were sampled by me, and that all operations were performed in accordance with N J D O T Specifications and Procedures to the best of my knowledge.

SIGNED: Bill Jennings
Dept of Transportation Representative(s)

COPIES TO: Laboratory
Regional Materials Office
Batching Plant Laboratory File

TEST METHODS: NJDOT B-4
AASHTO — T245, T209, T166

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BUREAU OF MATERIALS ENGINEERING AND TESTING

GYRATORY COMPACTION WORKSHEET

Production

PRODUCER: Sta-Seal

PLANT LOCATION: Florence

Mix Size & Seal No 19mm Superpave

% AC Abs. .21 (From Design)

DATE: 6-18-98

BINDER: PG64-22

JOB Rt. 195 Sec. 1L

Producer Mix ID # 19mm

Plant Identification

Plant Type (batch or drum) BATCH

Compaction Criteria Gyrations @		
N ini	N des	N max
8	109	174

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W
Lot	%	Sp Gr of	Max	Plug Sp Gr	Specimen Height			% Gmm (max density)			Properties @ N design									
No	AC	Asphalt	Sp Gr	@ Nmax	@ N max	@ N des	@ N ini	@ N max	@ N des	@ N ini	% Voids	Gmb, plug	Tot Vol	Eff AC	Vol of AC	% AC by vol	% VMA	% VFA	% Passing	#200/AC
1	↓	Gb ↓	Gmm ↓	Gmb,max ↓	(mm) ↓	(mm) ↓	(mm) ↓	(E/D)*100	I*(F/G)	I*(F/H)	100-J	D*J/100	100/M	B-(%AC abs)	P/C	R*100/N	L+S	S*100/T	#200 ↓	V/P
1C	4.52	1.030	2.706	2.636	117.0	118.5	132.5	97.4	96.2	86.0	3.8	2.603	38.4	4.31	4.18	10.9	14.7	74.1	5.0	1.2
								less than 98%		less than 89%	3-5						13.5 MIN.	68.6 to 78.6		

Billy Young

LB-64

NEW JERSEY DEPARTMENT OF TRANSPORTATION
DAILY REPORT - ASPHALT PLANT INSPECTION

DAILY REPORT NO 2

DATE 6-17-98

OFFICIAL NAME OF JOB Rt. 195 Sec. 1C CONTRACTOR T.R.I.

PLANT Sta-Seal LOCATION Florence

TIME ARRIVED 5:30p BEGAN OPERATION 6:30p LAST LOAD 1205 TIME DEPARTED 2:00

MIX #	SERIAL NUMBER	TOTAL MEGAGRAMS SHIPPED	TOTAL TRUCK LOADS
I4 HD-Sec. 1	R304487	260.56	13
19mm Sec. 3 (52-28)	NA	259.91	13
19mm Normal	NA	300.51	15

BIN PULLS	MIX # %	MIX # %	PRODUCER OF MATERIALS & LOCATIONS	MIX # %	PRODUCER OF MATERIALS & LOCATIONS
BIN 6	HD	19mm PG (52-28)		19mm	
BIN 5		Sec. 3			
BIN 4	10.0	13.1	T.R.I, KINGSTON	13.1	
BIN 3	27.8	31.1	" "	31.1	
BIN 2	23.5	25.8	" "	25.8	
BIN 1	34.0	25.5	" " / Clayton, Jackson	25.5	
FILLER					
ASPH. CEM.	4.7	4.5*	Citgo - Paulsboro	4.5	

THE FOLLOWING SAMPLES WERE TESTED FOR ACCEPTANCE

MIX & LOT	I4 HD, Sec. 1	19mm Sec. 3	19mm Normal				
SEAL #	—	—	—				

THE FOLLOWING SAMPLES WERE TAKEN AND FORWARDED TO THE LABORATORY

SAMPLE #	TYPE & SIZE OF MATERIAL	TAKEN FROM	QUANTITY REPRESENTED	SEAL NO.	PRODUCER AND LOCATION

THE FOLLOWING TRUCKS WERE CHECKED FOR SCALE WEIGHTS

TRUCK CHECKED NAME & NUMBER	TIME	TARE WEIGHT	GROSS WEIGHT	NET BATCH	CHECK ON TARE, GROSS OR NET BATCH

THE FOLLOWING TEMPERATURES WERE TAKEN FROM TRUCKS

LOAD NO. Sec 1	#1	#5	#7	#9	#11	Sec 3	#1	#2	#5	#8	#19
TEMPERATURE I9-HD	300	315	300	300	295	19mm	310	310	305	315	310
TIME											
LOAD NO. 19mm	#2	#6									
TEMPERATURE Normal	310	310									
TIME											

ASPHALT CEMENT DELIVERIES TODAY

TYPE OF MATERIAL	LOT NUMBER	TANK NUMBER	QUANTITY	PRODUCER AND LOCATION
PG 64-22	7	109	2	Citgo - Paulsboro
PG 52-28*	14	70	1	Sui-Koote, Cortland N.Y.

I CERTIFY THAT THE ABOVE MATERIALS WERE SAMPLED BY ME AND THAT THE TEST ACCEPTANCE WAS PERFORMED BY ME AND ALL OPERATIONS WERE PERFORMED IN ACCORDANCE OF N.J.D.O.T. SPECIFICATIONS AND PROCEDURES TO THE BEST OF MY KNOWLEDGE. COMPLETE TEST RESULTS ARE ON FILE IN THE REGIONAL MATERIALS OFFICE. SAMPLE RESULTS WILL BE FORWARDED TO THE RESIDENT ENGINEER ON A LB-256 LOT DATA FORM.

*PG-52-28

SIGNED Bill Young
NJDOT Representative

I CERTIFY THAT THE TOTAL MEGAGRAMS SHIPPED AND TOTAL TRUCK LOADS REPORTED ARE ACCURATE TO THE BEST OF MY KNOWLEDGE.

REMARKS

SIGNED _____
Supplier Representative

COPIES TO: REGIONAL MATERIALS FILE ____ RES. ENGR. ____ PLANT ____

L3-64 Page 1 of 2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
DAILY REPORT - ASPHALT PLANT INSPECTION

DAILY REPORT NO 39

DATE 6-18-98

OFFICIAL NAME OF JOB Rt. 195 Sec. 1C CONTRACTOR T.R.I.

PLANT Sta-Seq LOCATION Florence

TIME ARRIVED 5:30p BEGAN OPERATION 6.30p LAST LOAD _____ TIME DEPARTED _____

MIX #	SERIAL NUMBER	TOTAL MEGAGRAMS SHIPPED	TOTAL TRUCK LOADS
I4-HD W/ RAP Sec 62	R304487B-10R	281.16	14
19 MM Sec. 2 (PG58-28)	NA	281.08	14
19 MM Sec 60 (PG64-22)	NA	301.51	15

BIN PULLS	MIX # %	MIX # %	PRODUCER OF MATERIALS & LOCATIONS	MIX # %	PRODUCER OF MATERIALS & LOCATIONS
BIN 6	I4-HD	19 mm (PG58-28)		19mm (PG64-22)	
BIN 5	10% RAP	Sec. 2		Sec. 60	
BIN 4	10.0	13.1	T.R.I., KINGSTON	13.1	
BIN 3	29.8	31.1	" "	31.1	
BIN 2	23.5	25.8	" "	25.8	
BIN 1	32.0	25.5	" " / CLAYTON, JACKSON	25.5	
FILLER					
ASPH. CEM.	4.7	4.5*	CITGO - PAULSBORO	4.5	*

THE FOLLOWING SAMPLES WERE TESTED FOR ACCEPTANCE

MIX & LOT							
MIX & LOT	19mm Sec 2	19mm Sec 60	19mm Sec 61	I4HD-Sec 62	IC-19 mm		
SEAL #	PG-58-28	PG-64-22	PG-76-28	10% RAP	~~20~~		

THE FOLLOWING SAMPLES WERE TAKEN AND FORWARDED TO THE LABORATORY

SAMPLE #	TYPE & SIZE OF MATERIAL	TAKEN FROM	QUANTITY REPRESENTED	SEAL NO.	PRODUCER AND LOCATION

THE FOLLOWING TRUCKS WERE CHECKED FOR SCALE WEIGHTS

TRUCK CHECKED NAME & NUMBER	TIME	TARE WEIGHT	GROSS WEIGHT	NET BATCH	CHECK ON TARE, GROSS OR NET BATCH

THE FOLLOWING TEMPERATURES WERE TAKEN FROM TRUCKS

LOAD NO. (PG 58-28)	#1	2	3	4	8	13	(PG 64-22)	#1	#2	#3
TEMPERATURE SEC 2	280	295	290	285	285	285	SEC 60	295	295	300
TIME										
LOAD NO.	#5	#7	#10	#13	(PG76-28)	#1	#2	#5	#8	#11
TEMPERATURE	300	305	300	300	Sec. 61	320	325	330	335	335
TIME										

See page 2

ASPHALT CEMENT DELIVERIES TODAY

TYPE OF MATERIAL	LOT NUMBER	TANK NUMBER	QUANTITY	PRODUCER AND LOCATION
PG-58-28	16	70	1	Sun Koch, Cortland N.Y. *
PG-76-28	15	82	1	" " *
PG-64-22	7	109	1	" " *

I CERTIFY THAT THE ABOVE MATERIALS WERE SAMPLED BY ME AND THAT THE TEST ACCEPTANCE WAS PERFORMED BY ME AND ALL OPERATIONS WERE PERFORMED IN ACCORDANCE OF N.J.D.O.T. SPECIFICATIONS AND PROCEDURES TO THE BEST OF MY KNOWLEDGE. COMPLETE TEST RESULTS ARE ON FILE IN THE REGIONAL MATERIALS OFFICE. SAMPLE RESULTS WILL BE FORWARDED TO THE RESIDENT ENGINEER ON A J.B.-334 LOT DATA FORM.

SIGNED Bill Young
NJDOT Representative

I CERTIFY THAT THE TOTAL MEGAGRAMS SHIPPED AND TOTAL TRUCK LOADS REPORTED ARE ACCURATE TO THE BEST OF MY KNOWLEDGE.

SIGNED _____
Supplier Representative

REMARKS

COPIES TO: REGIONAL MATERIALS FILE ____ RES. ENGR. ____ PLANT ____

LB-44 Page 2 of 2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
DAILY REPORT - ASPHALT PLANT INSPECTION

DAILY REPORT NO 30

DATE 6-18-98

OFFICIAL NAME OF JOB Rt. 195 Sec. 1C CONTRACTOR T.R.I.

PLANT Stg-Seal LOCATION Florence

TIME ARRIVED 5:30p BEGAN OPERATION 6 30p LAST LOAD 5:15 TIME DEPARTED 6:00

MIX #	SERIAL NUMBER	TOTAL MEGAGRAMS SHIPPED	TOTAL TRUCK LOADS
19 mm Sec. 61 (PG 76-28)	NA	282.39	14
19mm Normal	NA	451.71	24

BIN PULLS	MIX # %	MIX # %	PRODUCER OF MATERIALS & LOCATIONS	MIX # %	PRODUCER OF MATERIALS & LOCATIONS
BIN 6	19mm Sec 61			19mm	
BIN 5	(PG 76-28)			Normal	
BIN 4		13.1	T.R.I, KINGSTON	13.1	
BIN 3		31.1	" "	31.1	
BIN 2		25.8	" "	25.8	
BIN 1		25.5	" " /Clayton Jackson	25.5	
FILLER					
ASPH. CEM.		4.5 X	C1760 - PAULSBORO →	4.5	

THE FOLLOWING SAMPLES WERE TESTED FOR ACCEPTANCE

MIX & LOT							
SEAL #							

THE FOLLOWING SAMPLES WERE TAKEN AND FORWARDED TO THE LABORATORY

SAMPLE #	TYPE & SIZE OF MATERIAL	TAKEN FROM	QUANTITY REPRESENTED	SEAL NO.	PRODUCER AND LOCATION

THE FOLLOWING TRUCKS WERE CHECKED FOR SCALE WEIGHTS

TRUCK CHECKED NAME & NUMBER	TIME	TARE WEIGHT	GROSS WEIGHT	NET BATCH	CHECK ON TARE, GROSS OR NET BATCH

THE FOLLOWING TEMPERATURES WERE TAKEN FROM TRUCKS

LOAD NO. (Sec. 61)	#14	(I44 DN)	#1	#3	#7	#12	(19mm	#1	#4	#9
TEMPERATURE (PG 76-28)		Sec. 62)	310	305	300	300	Normal)	300	305	300
TIME										
LOAD NO.	#14									
TEMPERATURE	300									
TIME										

ASPHALT CEMENT DELIVERIES TODAY

TYPE OF MATERIAL	LOT NUMBER	TANK NUMBER	QUANTITY	PRODUCER AND LOCATION

I CERTIFY THAT THE ABOVE MATERIALS WERE SAMPLED BY ME AND THAT THE TEST ACCEPTANCE WAS PERFORMED BY ME AND ALL OPERATIONS WERE PERFORMED IN ACCORDANCE OF N.J.D.O.T. SPECIFICATIONS AND PROCEDURES TO THE BEST OF MY KNOWLEDGE. COMPLETE TEST RESULTS ARE ON FILE IN THE REGIONAL MATERIALS OFFICE. SAMPLE RESULTS WILL BE FORWARDED TO THE RESIDENT ENGINEER ON A LB-254 LOT DATA FORM.

SIGNED Bill Young
NJDOT Representative

I CERTIFY THAT THE TOTAL MEGAGRAMS SHIPPED AND TOTAL TRUCK LOADS REPORTED ARE ACCURATE TO THE BEST OF MY KNOWLEDGE.

REMARKS

SIGNED _____
Supplier Representative

COPIES TO: REGIONAL MATERIALS FILE ____ RES. ENGR. ____ PLANT ____

Form LB-256

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE - LOT DATA

Serial No.	N/A
Type of Mix	9mm
Lot No.	1

PRODUCER Sta-Seal LOCATION Florence

LOT: STARTED 6-16-98 (Date) ENDED 6-18-98 (Date) EXACT SIZE 1415.7t (Megagrams)

PROJECT SHIPPED TO	CONTRACTOR	MEGAGRAMS SHIPPED
1. Rt. 195 Sec. 1L	Trap Rock	1415.7t
2.		
3.		
4.		
	TOTAL	1415.7t

LOT PORTION	A	B	C	D	E	3 SAMPLES AVERAGE	RANGE	JOB MIX REQUIREMENTS for 3 samples MINIMUM	MAXIMUM	RANGE
Date Sampled	6-16	6-17	6-18							
* Project Shipped To	1	1	1							
Inspector's Report No.	1	2	3							
Technician's Name	Jopko	Jopko	Jopko							
Inspector's Name	Young	Young	Young							

SIEVE SIZE PASSING	COMPOSITION ANALYSIS								
50.0mm (2") %									
37.5mm (1 1/2") %									
25.0mm (1") %	100	100	100			100		100	
19.0mm (3/4") %	95	95	94			95		90	100
12.5mm (1/2") %	88	81	85			85			90
9.5mm (3/8") %	82	75	80			79			
4.75mm (No.4) %	43	39	43			42			
2.36mm (No.8) %	29.0	28.5	29.0			29.0		23	49
1.18mm (No.16) %	21	20	21			21			
600µm (No.30) %	16	16	15			16			
300µm (No.50) %	11	11	12			11			
150µm (No.100) %									
75µm (No.200) %	4.8	4.4	5.0			4.7		2	8
Asphalt %	4.62	4.53	4.50			4.55		4.25	5.15
TEST PROPERTY	**MARSHAL TEST RESULTS**							**MINIMUM**	**MAXIMUM**
Dust to Binder Ratio	1.1	1.0	1.2			1.1		0.6/1.2	
VMA/VFF	15.9/69.8	15.0/72.7	14.7/74.1			15.2/72.2		13.5/68.6	—/78.6
Air Voids %	4.8	4.1	3.8			4.2			

* IDENTIFY PROJECT BY LINE NUMBER

Lot (conforms) (fails to conform) with job mix requirements.

REMARKS: ~~LAB~~

Lab
Region South File
Resident Engineer (s)
Contractor (s)
Plant

Prepared by: Bill Young (Materials Technician) 6/18/98 (Date)

Approved by: (Regional Materials Engineer) (Date)

Form LB-256 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE – LOT DATA

Mix No	I-4HD
~~Lot No~~	SEC - 1
Serial No	

PRODUCER STA-SEAL LOCATION FLORENCE

LOT: STARTED 6-17-98 (Date) ENDED 6-17-98 (Date) EXACT SIZE 260.56 (Tons)

	PROJECT SHIPPED TO	CONTRACTOR	TONS–SHIPPED
1.	Rt 195 Sec. 1L	T.R.I	260.56
2.			
3.			
4.			
TOTAL			260.56

LOT PORTION	A	B	C	D	E	___ SAMPLES AVG	___ SAMPLES RANGE	JOB MIX REQUIREMENTS for ___ samples MIN	MAX	RANGE
Date Sampled	6-17									
* Project Shipped To	1									
Inspector's Report No	2									
Technician Name	Jopko									
Inspector's Name	Young Crock									

SIEVE SIZE PASSING		COMPOSITION ANALYSIS							DESIGN		
2" ~~75mm~~	%										
1½"	%										
1" 25mm	%	100							100		
¾" 19mm	%	99							98		
½" 12.5mm	%	90							90		
3/8" 9.5mm	%	83									
No. 4 4.75mm	%	50							49		
No. 8 2.36mm	%	370							35.0		
No. 16 1.18mm	%	28							28		
No. 30 .600mm	%	21							20		
No. 50 .300mm	%	15							12		
No. 100	%										
No. 200 .075mm	%	62							5.8		
Asphalt	%	4 50							4.8		

TEST PROPERTY	MARSHALL TEST RESULTS						MIN	MAX.
Stability, lbs /kN	1235						1500/6.7	
Flow, .01"	9						6	16
Air Voids, %	38							

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB
CenReg
Reg Eng
T.R.I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Rich Young, Engineering Aide Materials 6/17/98 (Date)

Approved by ___, Regional Materials Engineer Date

Form LB-256 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE – LOT DATA

Mix No	19 mm (5228)
Lot No	Sgr 3
Serial No	

PRODUCER STA-SEAL LOCATION FLORENCE

LOT: STARTED 6-17-98 (Date) ENDED 6-17-98 (Date) EXACT SIZE 259.91 (Tons)

	PROJECT SHIPPED TO	CONTRACTOR	TONS-SHIPPED
1	R+195 Sgr IL	T.R.I	259.91
2.			
3.			
4			

TOTAL 259.91

LOT PORTION	A	B	C	D	E	____ SAMPLES AVG	____ SAMPLES RANGE	JOB MIX REQUIREMENTS for ____ samples MIN	MAX	RANGE
Date Sampled	6-17									
* Project Shipped To	1									
Inspector's Report No	2									
Technician Name	Jake									
Inspector's Name	~~YOUNG~~ CROCCA									

SIEVE SIZE PASSING		COMPOSITION ANALYSIS									
2"	%								DESIGN		
1½"	%										
1" 25 mm	%	100							100		
¾" 19 mm	%	96							98		
½" 12.5 mm	%	85							86		
3/8" 9.5 mm	%	80							78		
No 4 4.75 mm	%	42							44		
No. 8 2.36 mm	%	28.5							29.5		
No. 16 1.18 mm	%	21							21		
No. 30 .600 mm	%	16							15		
No. 50 .300 mm	%	11							10		
No. 100	%										
No. 200 .075 mm	%	4.5							4.6		
Asphalt	%	4.40							4.7		

TEST PROPERTY		MARSHALL TEST RESULTS							MIN	MAX.
DUST to BINDER Ratio		1.1							0.6/1.2	
~~Flow, .01"~~ VMA/VFA		14.2/74.6							13.5/68.6	—/78.6
Air Voids,	%	3.6								

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB
C. Reg
Res Eng
T.R.I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Bill Young, Engineering Aide Materials 6/17/98 (Date)

Approved by ____, Regional Materials Engineer Date

Form LB-256 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE – LOT DATA

Mix No 19mm (58-28)
Lot No Sec 2
Serial No

PRODUCER STA-SEAL LOCATION Florence

LOT STARTED 6-18-98 Date ENDED 6-18 98 Date EXACT SIZE 281 08 Tons

	PROJECT SHIPPED TO	CONTRACTOR	TONS–SHIPPED
1	R+195 Sec. 1L	T R. I	28108
2.			
3.			
4.			

TOTAL 281.08

LOT PORTION	A	B	C	D	E	____ SAMPLES AVG	____ SAMPLES RANGE	JOB MIX REQUIREMENTS for ____ samples MIN	MAX	RANGE
Date Sampled	6-18-98									
* Project Shipped To	1									
Inspector's Report No	3									
Technician Name	Ipko									
Inspector's Name	Young/Crockett									

SIEVE SIZE PASSING		COMPOSITION ANALYSIS									
2"	%								DESIGN		
1½"	%										
1" 25 mm	%	100							100		
¾" 19 mm	%	98							98		
½" 12.5 mm	%	87							86		
3/8" 9.5 mm	%	82							78		
No. 4 4.75 mm	%	43							44		
No. 8 2.36 mm	%	30.5							29.5		
No. 16 1.18 mm	%	22							21		
No. 30 .600 mm	%	16							15		
No. 50 .300 mm	%	11							10		
No. 100	%										
No 200 .075 mm	%	4.6							4.6		
Asphalt	%	4.67							4.7		

TEST PROPERTY	MARSHALL TEST RESULTS							MIN.	MAX.
~~Stability, lbs~~ DUST to Binder Ratio	1.1							0.6/1.2	
~~Flow, .01"~~ VMA/VFA	15.1/74.8							13.5/68.6	—/78.6
Air Voids, %	3.8								

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB RESULTS C.R.S. T R I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Billy Young Engineering Aide Material 6/18/98 Date

Approved by ____ Regional Materials Engineer Date

Form LB-256 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE – LOT DATA

Mix No	19 mm (64-22)
Lot No	Sec 60
Serial No	

PRODUCER Sta-Seal LOCATION Florence

LOT STARTED 6-18-98 (Date) ENDED 6-18-98 (Date) EXACT SIZE 301.51 (Tons)

	PROJECT SHIPPED TO	CONTRACTOR	TONS–SHIPPED
1	R+195 Sec. 1L	T R. I	301.51
2			
3.			
4.			

TOTAL 301.51

LOT PORTION	A	B	C	D	F	____ SAMPLES AVG	____ SAMPLES RANGE	JOB MIX REQUIREMENTS for ____ samples MIN	MAX	RANGE
Date Sampled	6-18-98									
* Project Shipped To	1									
Inspector's Report No	3									
Technician Name	Topko									
Inspector's Name	Young/Crockett									

SIEVE SIZE PASSING		COMPOSITION ANALYSIS									
2"	%								DESIGN		
1½"	%										
1" 25mm	%	100							100		
¾" 19mm	%	98							98		
½" 12.5mm	%	88							86		
3/8" 9.5mm	%	81							78		
No. 4 4.75mm	%	44							44		
No. 8 2.36mm	%	31.0							29.5		
No. 16 1.18mm	%	23							21		
No. 30 .600mm	%	17							15		
No. 50 .300mm	%	11							10		
No. 100	%										
No. 200 .075mm	%	4.9							4.6		
Asphalt	%	4.52							4.7		

TEST PROPERTY		MARSHALL TEST RESULTS						MIN	MAX
~~Stability, lbs~~ Dust to Binder Ratio		1.1						0.6/1.2	
~~Flow, 01"~~ VMA/VFA		15.2/71.7						13.5/68.6	—/78.6
Air Voids,	%	4.3							

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB
C.Reg
Resels
T.R.I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Bill C Young Engineering Aide Materials 6/18/98 Date

Approved by _____ Regional Materials Engineer Date

Form LB-256 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE - LOT DATA

Mix No	19mm (76-28)
Lot No	S&R 61
Serial No	

PRODUCER STA-Seal LOCATION FLORENCE

LOT STARTED 6-18-98 (Date) ENDED 6-18-98 (Date) EXACT SIZE 282.39 (Tons)

	PROJECT SHIPPED TO	CONTRACTOR	TONS-SHIPPED
1	Rt 195 Sec 1L	T.R.I	282.39
2			
3.			
4.			
	TOTAL		282.39

LOT PORTION	A	B	C	D	E	____ SAMPLES AVG	____ SAMPLES RANGE	JOB MIX REQUIREMENTS for ____ samples MIN	MAX	RANGE
Date Sampled	6/18/98									
* Project Shipped To	1									
Inspector's Report No	3									
Technician Name	Jopko/Williams									
Inspector's Name	Young/Crockell									

SIEVE SIZE PASSING		COMPOSITION ANALYSIS									
2"	%								DESIGN		
1½"	%										
1" 25mm	%	100							100		
¾" 19mm	%	95							98		
½" 12.5mm	%	87							86		
3/8" 9.5mm	%	82							78		
No. 4 4.75mm	%	44							44		
No. 8 2.36mm	%	30.0							29.5		
No. 16 1.18mm	%	22							21		
No 30 .600mm	%	17							15		
No 50 .300mm	%	11							10		
No. 100	%										
No. 200 0.075mm	%	5.4							4.6		
Asphalt	%	4.60							4.7		

TEST PROPERTY		MARSHALL TEST RESULTS						MIN.	MAX.
DUST to BINDER ~~Stability, lbs~~ RATIO		1.2						06/1.2	
~~Flow, .01"~~ VMA/VFA		15.2/71.7						13.5/68.6	—/78.6
Air Voids,	%	4.3							

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB
Rec
RESEN
T.R.I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Rick Young Engineering Aide Materials 6-18-98 Date

Approved by _____ Regional Materials Engineer Date

~~Form LB-156~~ 1/89

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BITUMINOUS CONCRETE – LOT DATA

Mix No	I-4 BID 10 RAP
Lot No	Sec 62
Serial No	

PRODUCER STA-SEAL LOCATION FLORENCE

LOT STARTED 6-18-98 Date ENDED 6-18-98 Date EXACT SIZE 281.16 Tons

	PROJECT SHIPPED TO	CONTRACTOR	TONS–SHIPPED
1	R+195 SB IL	T R.I	281.16
2			
3.			
4.			

TOTAL 281.16

LOT PORTION	A	B	C	D	E	____ SAMPLES AVG	____ SAMPLES RANGE	JOB MIX REQUIREMENTS for ____ samples MIN	MAX	RANGE
Date Sampled	6-18-98									
* Project Shipped To	1									
Inspector's Report No	3									
Technician Name	Johnson Mims									
Inspector's Name	Young/Corbett									

SIEVE SIZE PASSING	COMPOSITION ANALYSIS									
2" %								DESIGN		
1½" %										
1" 25 mm %	100							100		
¾" 19 mm %	97							98		
½" 12.5 mm %	88							90		
3/8" 9.5 mm %	81							———		
No. 4 4.75 mm %	44							49		
No. 8 2.36 mm %	34.5							35.0		
No. 16 1.18 mm %	26							27		
No 30 .600 mm %	20							20		
No 50 .300 mm %	13							12		
No. 100 %								———		
No. 200 .075 mm %	5.4							5.7		
Asphalt %	4.45							4.8		

TEST PROPERTY	MARSHALL TEST RESULTS						MIN.	MAX.
~~Flow~~ Stability ~~Stability, lbs~~ KN	12.79						6.7	
~~Flow, 01"~~ FLOW .01"	10						6	16
Air Voids, %	3.6							

* IDENTIFY PROJECT BY LINE NUMBER

REMARKS:

LAB
DESIGN
REG C
T.R.I

Lot (conforms) (fails to conform) with job mix requirements.

Prepared by Billy Young 6/18/98
Engineering Aide/Materials Date

Approved by _____
Regional Materials Engineer Date

LB-515

ROLLING STRAIGHT EDGE REPORT

Page 1 of 1
Report # 2

Project: Route 195 Section 1L
Bit. Lot #: 19 & 25 mm PCC Lot # LMC Lot #:
Location: begin station 17 + 200 metric station
Conducted By: j. panico - d. bole - j. rosidivio - j. abbott - g. gibbs
Date: june 1, 1998
Date Calibrated: june 1, 1998 By Whom: dave bole

Lane Left			Lane Left		
Left Path Meas.	No. of Feet	High/Low	Right Path Meas.	No. of Feet	High/Low
25 mm			148	3	low
18	2	low	1242	1	high
900	1	low	1986	1	high
1049	2	low	2087	2	high
1597	2	low	2097	3	low
1602	1	high	2863	2	low
1649	1	high	3113	5	low
1889	2	low	3182	1	high
2526	2	high	4590	1	low
			6554	3	high
19 mm					
2655	1	high			
2665	1	low			
2675	1	low			
3099	5	low			
3164	1	low			
3169	3	high			
4580	8	low			
4595	1	high			
4935	3	low			
total feet		6863	total feet		6863
minus		333	minus		333
total		6530	total		6530
Total Defects	37		Total Defects	22	

% Defective = Total Defects/Total Length Tested : % Defective = Total Defects/Total Length Tested

	Total Length	13060			Total Length
% Defective	0.45%		% Defective		

Resident Engineer - Jim Timpone
Route 195 Team File

Safety provided to station 1[illegible] + 250.

John L. Panico

LR-315

ROLLING STRAIGHT EDGE REPORT

Project: Route 195 Section 1L
Report # 6
Bit. Lot #: 19 MM 6 SHRP PCC Lot # LMC Lot #:
Location: Station 17 + 190 to 18 + 740 17+190 to 18+740 STATIONS IN METRIC
Conducted By: J. Panico, J. Rosidivito, J. Abbott
Date: June 18, 1998
Date Calibrated: June 10, 1998 By Whom: J. Panico, J. Abbott

Lane Right Path Meas.	Right No. of Feet	Right High/Low	Lane Meas.	Lane No. of Feet	Lane High/Low		
52	5	low					
72	1	high					
100	10	low					
902	1	low					
Total Defects	17		Total Defects				
% Defective = Total Defects/Total Length Tested			% Defective = Total Defects/Total Length Tested				
	Total Length	4719				Total Length	
% Defective	0.36%		% Defective				

Distribution:
Bureau of Materials
Resident Engineer - J. Timpone
Regional Material's Office
Project Materials Office
Supervising Const. Engineer

For safety reasons, only right wheel path (right lane) was tested.

John L. Panico

LB-513

ROLLING STRAIGHT EDGE REPORT

Page 1 of 1
Report # 7

Project: Route 195 Section 1L
Bit. Lot #: 19 MM & SHLD PCC Lot # LMC Lot #:
Location: Station 18 + 695 to 20 + 400 18+695 TO 20+400 STATIONS IN METRIC
Conducted By: J. Panico, J. Rosalivito, J. Abbott
Date: June 19, 1998
Date Calibrated: June 10, 1998 By Whom: J. Panico, J. Abbott

Lane Right Path Meas.	Right No. of Feet	Right High/Low	Lane Meas.	Lane No. of Feet	Lane High/Low
3736	2	low			
3924	1	high			
3754	2	high			
4820	2	low			
5014	1	low			
5019	1	low			
Total Defects	9		Total Defects		

% Defective = Total Defects/Total Length Tested % Defective = Total Defects/Total Length Tested

Total Length 5593

% Defective 0.16%

Distribution:
Bureau of Materials
Resident Engineer - J. Timpone
Regional Material's Office
Project Materials Office
Supervising Const. Engineer

For safety reasons, only right wheel path (right lane) was tested.

John L. Panico

LTPP SPS Project Deviation Report Project Summary Sheet	State Code 34 Project Code 0900

Project Classification Information	
SPS Experiment Number 9A	State or Province NJ
LTPP Region:	☒ North Atlantic ☐ North Central ☐ Southern ☐ Western
Climate Zone:	☐ Dry-Freeze ☐ Dry-No Freeze ☒ Wet-Freeze ☐ Wet-No Freeze
Subgrade Classification	☐ Fine Grain ☒ Coarse Grain ☐ Active (SPS-8 Only)
Project Experiment Classification Designation (SPS 1, 2 and 8)	
Construction Start Date: APRIL 1998	Construction End Date JUNE 1998

Deviation Summary	
Site Location Deviations	☒ No Deviations ☐ Minor Deviations ☐ Significant Deviations
Construction Deviations	☐ No Deviations ☒ Minor Deviations ☐ Significant Deviations

Data Collection and Processing Status Summary	
Inventory Data (SPS 5,6,7,9)	☒ Complete Submission ☐ Incomplete ☐ Data Not Available ☐ NA
Materials Data.	☐ All Scheduled Samples Obtained and Tested ☒ Incomplete/No Test Data
Construction Data:	☒ All Required Data Obtained ☐ Incomplete/Missing Data Elements
Historical Traffic Data:	☒ All Required Historical Estimates Submitted (SPS 5,6,7,9) ☐ Required Estimates Not Submitted ☐ NA
Traffic Monitoring Equipment:	☒ WIM Installed On-Site ☐ AVC Installed On-Site ☐ ATR Installed On-Site ☐ No Equipment Installed
Traffic Monitoring: ☒ Preferred ☐ Continuous ☐ Minimum ☐ Below Minimum ☐ Site Related	
Traffic Monitoring Data	☒ Monitoring Data Submitted ☐ No Monitoring Data Submitted
FWD Measurements	☒ Preconstruction Tests Performed ☐ Construction Tests Performed ☒ Post-construction Tests Performed
Profile Measurements:	☒ Preconstruction Tests Performed ☒ Post-construction Tests Performed
Distress Measurements:	☒ Preconstruction Tests Performed ☒ Post-construction Tests Performed
Maint. & Rehab. Data:	☒ Complete Submission ☐ Incomplete ☐ Data Not Available ☐ NA

Report Status	
Materials Sampling and Test Plan	☐ Document Prepared ☒ Final Submitted to FHWA
Construction Report:	☐ Document Prepared ☒ Final Submitted to FHWA
AWS: (SPS 1, 2, & 8)	☐ AWS Installed ☐ AWS Installation Report Submitted to FHWA ☐ NA

 Preparer BASEL ABUKHATER STANTEC/CTPP-NARO Date 12/20/2000

LTPP SPS Project Deviation Report Site Location Guidelines Deviations	State Code 34 Project Code 0900

☒ Comments Pertain to All Test Sections on Project
☐ Comments Pertain Only to Section(s) (Specify) _____

Site Location Guideline Deviation Comments

NO DEVIATIONS

 Preparer BASEL ABUKHATER
STANTEC / LTPP - NARO Date 12/20/2000

LTPP SPS Project Deviation Report **Construction Guidelines Deviations**	State Code 34 Project Code 0900

☐ Comments Pertain to All Test Sections on Project
☒ Comments Pertain Only to Section(s) (Specify) 340901, 340903, 340962

Construction Guidelines Deviation Comments

- The SPS-9A construction guidelines require consistency in layer thickness for each site. The thickness of the surface layer should not deviate more than 10 mm from design and from the average value of the other test sections in the project. Few deviations in the surface thickness were noted in sections 340901, 340903, and 340962.

 Preparer BASEL ABU KHATER STANTEC / LTPP-NARO Date 12/20/2000

LTPP SPS Project Deviation Report **Data Collection and** **Materials Sampling and Testing Deviations**	State Code 34 Project Code 0900

☒ Comments Pertain to All Test Sections on Project
☐ Comments Pertain Only to Section(s) (Specify) _____

Data Collection & Material Sampling and Testing Deviation Comments

- The construction guidelines state that the finished surface of the overlay should be smooth and provide excellent ride level. As a target, the as-constructed surface should have a pro-rated profile index of less than 160-mm per km as measured by a California type Profilograph and evaluated following California test 526. No such test was performed on the project and only the NJ DoT Rolling Straight Edge and the LTPP Profilometer were used to measure the profile.

- The deflection survey measurements were supposed to be performed 1-3 months after the construction is completed the deflection survey was delayed two weeks beyond the 3-month limit.

 Preparer BASEL ABUKHATER STANTEC / CTPP-NARO Date 12/20/2000

LTPP SPS Project Deviation Report Other Deviations	State Code 34 Project Code 0900

☒ Comments Pertain to All Test Sections on Project
☐ Comments Pertain Only to Section(s) (Specify) _____

Other Deviation Comments

NO OTHER DEVIATIONS

Page 5 of 5 Preparer BASEL ABUKHATER
STANTEC / LTPP-NARO Date 12/20/2000

APPENDIX B

Photographs

Photo 1 - Placing of tack coat on the HMAC base layer

Photo 2 – Night paving and sampling of the HMAC surface layer

Photo 3 - Night coring of the overlay material

Photo 4 – Combined aggregate sampling at the asphalt plant

Photo 5 - Pavement markings at the beginning of section 340901

Photo 6 - Pavement markings at the beginning of section 340902

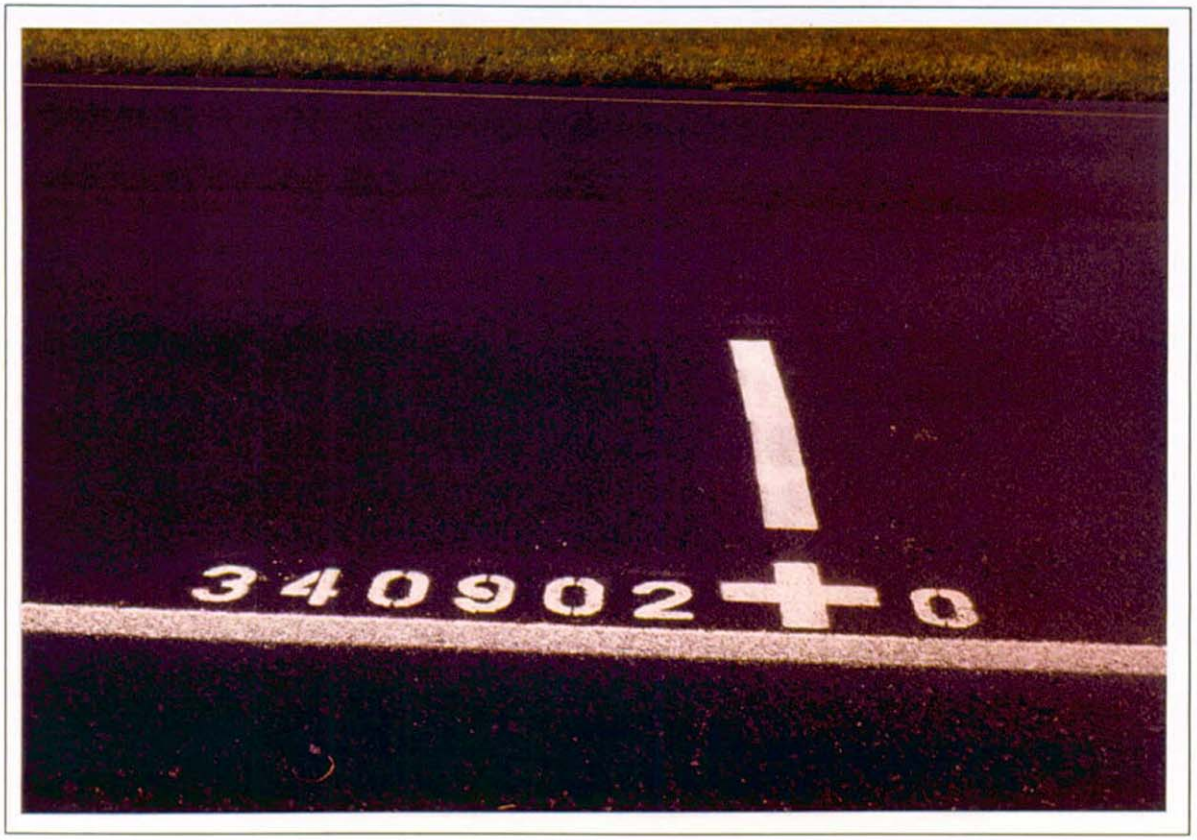


Photo 7 - Pavement markings at station 0+00 of section 340902

Photo 8 - Pavement markings at station 5+00 of section 340902

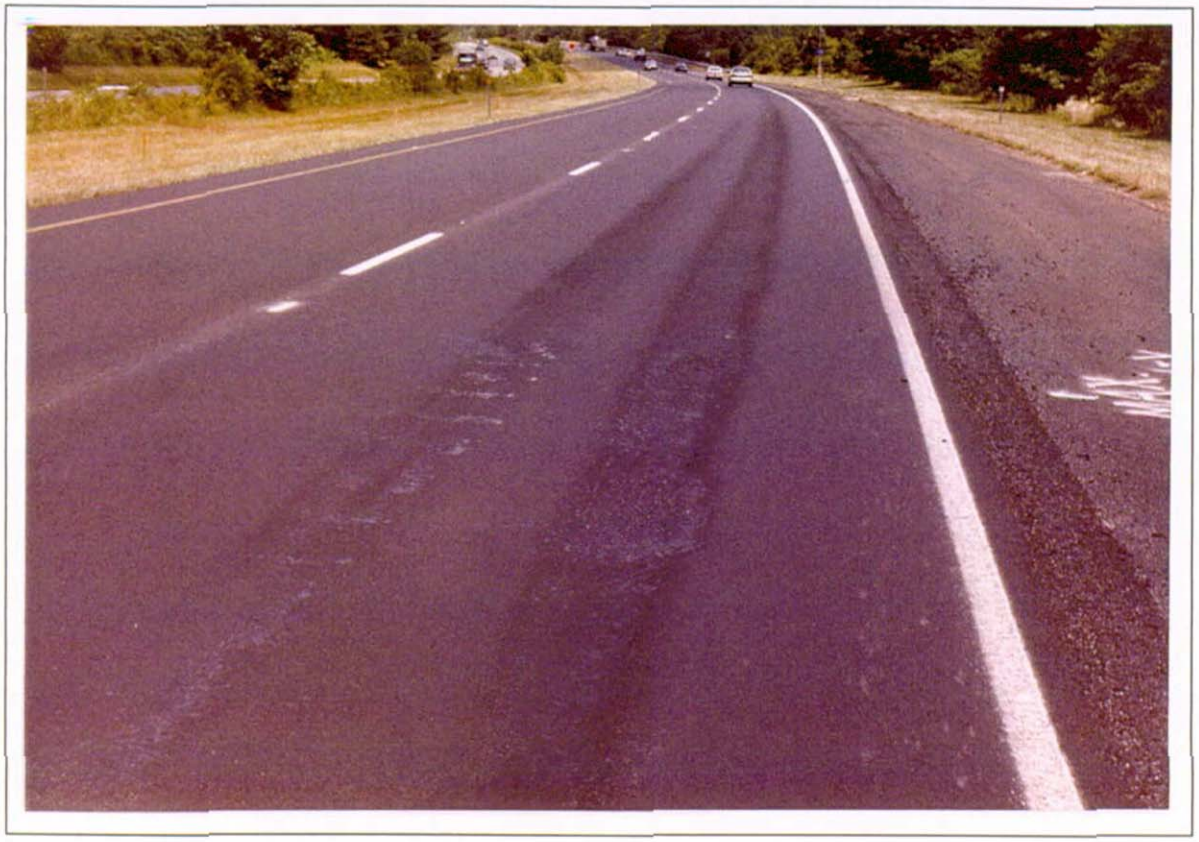


Photo 9 – Pavement damage, 55 meters after location 5+00 of section 340901

Photo 10 - Pavement damage, 55 meters after location 5+00 of section 340901

Photo 11 – Trap Rock Industries' Sta-Seal's Barber Greene batch asphalt plant at Florence, NJ

Photo 12 - Trap Rock Industries' Sta-Seal's Barber Greene batch asphalt plant at Florence, NJ

Photo 13 - Trap Rock Industries' Sta-Seal's Barber Greene batch asphalt plant at Florence, NJ

Photo 14 - Trap Rock Industries' Sta-Seal's Barber Greene batch asphalt plant at Florence, NJ