

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 1 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 1 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

PURPOSE: To Outline The General Phases Of Project Construction And To List The Various Letters, Forms, And Reports, That Are Required To Completely Document The Construction Process As Specified In The Plans, Specifications, And Contract Documents.

GENERAL: As each item of work is initiated and accomplished, complete and accurate records and/or reports will be developed in order to fully document quantities submitted for pay purposes and compliance with requirements set forth in the plans, specifications, and contract documents.

1. **AWARD OF CONTRACT:**

The Contract Award is not complete until the State Aid Engineer concurs in the award granted by the Board of Supervisors. On federal aid projects concurrence of the Executive Director of MDOT is also required. Any work accomplished prior to the State Aid Engineer's letter of concurrence cannot be measured for payment.

2. **PRECONSTRUCTION CONFERENCE:**

The Preconstruction conference should be scheduled, conducted and reported in accordance with S.O.P. No. SA II-1-37, Section 2.

3. **NOTICE TO PROCEED:**

The Notice to Proceed shall be issued in accordance with Subsection S-108.02 of the Standard Specifications. A copy of the NTP should be contained in the project files and a copy furnished the State Aid Engineer.

4. **BEGIN WORK:**

S.O.P. No. SA II-1-39 contains specific information for the development of a Project Diary. The County Engineer will complete and submit the First Construction Report.

5. **CLEARING AND GRUBBING:**

5.1. **Lump Sum:** No specific records or reports are required for this operation, however, adequate sketches, drawings, etc., should be placed in the Project File to document quantities allowed on progress estimates and compliance with siltation and erosion control requirements.

5.2. **Area Basis:** Channel changes, drainage easements, ROW easements, pits, etc., are normally cleared and grubbed on a per acre basis. These areas will be documented by sketches and computations for each area. All information will be placed in the Project File to substantiate pay quantities allowed.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 2 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 2 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

6. MINOR DRAINAGE STRUCTURES:

6.1. Notes: S.O.P. No. SA II-1-67 contains specific information concerning note preparation on minor drainage structures.

6.2. Records:

6.2.1. Pipe Culverts: Each joint of reinforced concrete pipe culvert will have a MDOT Inspector's stamp placed on it at the manufacturer's yard. Only pipe having the stamp may be incorporated into the project.

6.2.2. Corrugated Metal Pipe Culverts: Corrugated metal pipe will be inspected at the point of manufacture by a MDOT Inspector who will attach a metal seal to each acceptable length of pipe. If the pipe has a bituminous coating, a second seal will be attached signifying specification compliance of the bituminous material.

Test reports documenting specification compliance at the time of manufacture will be prepared by the MDOT Central Laboratory and forwarded to the County Engineer for the Project Files.

6.2.3. Concrete: Structural concrete will be proportioned, mixed, and placed as required by S.O.P. No. SA II-1-80 and the applicable sections of the Standard Specifications.

Cement will be sampled and tested as required by S.O.P.s No. SA II-3-5 and SA II-3-14.

Aggregates will be sampled, tested, inspected, and reported as required by S.O.P. No. SA II-3-10 and applicable sections of the Standard Specifications.

An evaluation of the materials will be made as outlined in S.O.P. No. SA II-3-11.

Reinforcing steel will be tested, accepted, and reported as outlined in S.O.P. No. SA II-3-15.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 3 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 3 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

7. EXCAVATION AND EMBANKMENT:

Excavation and embankment construction operations are initiated as soon as clearing and grubbing operations have been completed over a large enough area to permit efficient earth-moving operations. Normally, all minor drainage structures have also been installed and backfilled at the time earth-moving operations begin.

7.1. Records:

7.1.1. No special notes are required for this operation except slope stake notes which are covered in S.O.P. No. SA II-1-65. Field cross section data (See S.O.P. No. SA II-1-64) will also have been completed at this time.

7.1.2. It is not unusual to encounter areas of undercut during earth moving operations. Any undercut area, regardless of size, should be measured for pay purposes. Small areas (up to 100 cubic yards) may be measured directly; that is, Length X Width X Depth. Larger areas should be measured by taking original and final cross sections of the excavated area and computing the quantities of undercut and backfill by the Average End Area Method.

7.2. Reports: During embankment formation it is important to remember the density requirements of S.O.P. No. SA II-3-5. (Federally Funded Projects require Independent Assurance Samples as outlined in S.O.P. No. SA II-3-6.)

8. FINISH GRADING:

When rough grading operations have been completed, subgrade blue tops will be set. S.O.P. No. SA II-1-69 gives specific details covering this construction phase.

9. EROSION CONTROL:

9.1. Records: Detailed notes covering the application of all erosion control items will be developed during this operation. Notes will be:

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 4 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 4 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

- (1) Area: Application areas should be set up for each side of road and be uniform in size. Three (3) acre blocks are considered optimum.
- (2) Fertilizers: Notes shall be developed showing amounts and types of fertilizers and/or agricultural lime placed on each application area.
- (3) Seeding: These notes will show amount and type mixture of seeds placed in each block.
- (4) Cover: These notes will show amount (weight) of mulch placed on each block and amount of emulsion (if used) sprayed to anchor straw.
- (5) Erosion Control Fabric: These notes will show location of fabric, amount placed, and sketch of area covered.

9.2. Solid Sod: Areas which receive solid sod will be sketched out; fertilizer application notes, and special construction practices explained.

9.3. Paved Ditches: In addition to filling out the Daily report of concrete placed, notes will be kept of each daily pour; sketches made; and any special construction problem noted.

10. SUBGRADE PREPARATION:

Subgrade preparation will be performed as set out in Section S-205 of the Standard Specifications. No specific notes are required; however, undercut areas will be measured as provided under Subsection 7.1.2 of this S.O.P. and density requirements will be as specified in Subsection S-205.02 of the Standard Specifications.

11. MATERIAL PITS:

11.1. Contractor-Furnished Pits: Subsection S-107.23 of the Standard Specifications outlines the requirements for complying with the Mississippi Surface Mining and Reclamation Act. A copy of the clearance letter from the Department of Archives and History must be forwarded to State Aid.

12. BASE STRUCTURE:

12.1. General: The base structure consists of both the sub-base and base material placed in the required thicknesses on the prepared subgrade. The procedure for determining the required thickness and/or type of base structure is outlined in S.O.P. No. SA II-1-32 and in the MDOT Roadway Design Manual, Chapter XIII, current edition.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 5 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 5 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

12.2. Base Structure Types:

12.2.1. All Granular Material (Unstabilized): This type base structure is developed from native materials which require little or no additional materials to meet requirements specified in the Standard Specifications.

12.2.1.1. Placement of Materials: The placement of these materials is specified under Section S-304 in the Standard Specifications and S.O.P. No. SA II-1-45.

12.2.1.2. Mix, Shape, and Compact: This operation will be performed as specified in Section S-310 in the Standard Specifications.

12.2.1.3. Sampling and Testing: Sampling and Testing will be performed as specified in S.O.P. No. SA II-3-5 and SA II-3-6 as applicable.

12.2.2. All Granular Material (Stabilized): In addition to the requirements of Subsection 12.2.1 above, the placement, manipulation, sampling, and testing will be as set out Section S-310 of the Standard Specifications. Documentation of stabilizer quantities will be as specified in S.O.P. No. SA II-1-45.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 6 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 6 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

12.2.3. Chemically Treated Base Course-Untreated Granular Material Subbase:

- 12.2.3.1. General: This type structure is normally developed by incorporating chemical additives (cement, fly ash, etc.) into the base course layer of pit run granular materials. All types of chemically treated layers require a mix design to be developed by the MDOT Central Laboratory or other approved laboratory. It is essential that the requirements of this mix design be strictly followed in order that the required strengths be developed. Samples of materials for developing the mix design will be taken and submitted as set out in S.O.P. No. SA II-3-5.
- 12.2.3.2. Mix, Shape, and Compact: Notes will be developed and placed in the project file showing lengths of mixing sections, weights of chemical additive incorporated into the mixing section, time of the first addition of water (if applicable), time section was completed, and any remarks pertinent to the construction of the section. Job control samples of water, chemical additive, etc., will be taken as set out in S.O.P.'s No. SA II-3-5 and SA II-3-6, as applicable.
- 12.2.3.3. Sampling and Testing: In addition to the requirements stated above, field densities and proctor densities will be taken on the processed material as prescribed by S.O.P.'s No. SA II-3-5 and SA II-3-6, as applicable.
- 12.2.3.4. Curing: Curing, and protection while curing, will be performed as specified under the applicable subsections of Section S-300 of the Standard Specifications.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 7 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 7 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

12.2.4. Plant Mix Bituminous Base Course:

12.2.4.1. General: This type base structure will be designed or approved by the MDOT Central Laboratory or other State Aid Approved Laboratory and manufactured and placed in accordance with the requirements specified in Section S-400 of the Standard Specifications.

12.2.4.2. Records: Report No. TMD-004-SA, Asphalt Paving Inspectors Daily Report, will be completed for each days placement of material on the road.

Report No. TMD-005-SA (MDOT Form TMD-005) will be completed for each days work by the laboratory inspector at the plant.

Tickets will be written for each load of material leaving the plant and will be collected by the inspector on the road. Extreme care should be exercised in this operation as ticket quantities are normally used to develop final pay quantities.

12.2.4.3. Sampling and Testing: Section S-401 of the Standard Specifications and S.O.P. No. SA II-3-5 contain specific requirements for the sampling and testing of hot bituminous mixtures.

13. PAVING OPERATIONS:

Paving operations are normally initiated immediately following the completion of base operations. Normally, prime operations are considered to be part of the base construction, but due to the similarity of record keeping it will be covered under this Section of this S.O.P.. Specific instructions are contained in Section S-408 of the Standard Specifications and S.O.P. No. SA II-1-90.

13.1 Prime: This operation consists of the placing of a liquid asphalt seal course over a completed base course. Its purpose is primarily to seal moisture into the completed base course and to provide an interlock between the base course and the pavement structure. The prime course may be either "cut-back" asphalt, normally emulsified asphalt or an "inverted" type of asphalt emulsion.

OFFICE OF STATE AID ROAD CONSTRUCTION STANDARD OPERATING PROCEDURES			S.O.P. NO. SA II-1-73 Page 8 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 8 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

13.1.1. Construction Requirements:

- 13.1.1.1. General: The surface on which prime is to be placed should be smooth and unyielding. It should be free from loose material and slightly moist. A dry dusty surface will not allow the prime to penetrate and therefore the moisture seal desired will not be accomplished. One method of assuring the proper moisture content is to spray the surface lightly with water and then apply the prime coat just as the color of the base surface begins to turn light again.
- 13.1.1.2. Records: Form SA-724 will be completed for all prime coats applied. When prime is designated as a pay item, Form SA-724 will be used to determine pay quantities and to document the application rate.
- 13.1.1.3. Construction Practice: Prior to beginning prime operations the inspector should assure himself that the Contractor's distributor is in good working order; has a current calibration chart; a calibrated rule which will accurately measure the liquid level in the distributor; and an armored thermometer to measure the temperature of the liquid asphalt. Do not allow the use of a distributor which does not meet all these requirements.

Asphalt temperature and liquid level must be measured before and after each "shot" application. Make sure the distributor tank is reasonably level before checking liquid level. Experience has shown that the meter on the distributor tank IS NOT sufficiently accurate to measure applied gallons. ALWAYS USE THE CALIBRATED RULE for measuring liquid level in the distributor.

All information should be entered on Form SA-724 and submitted to State Aid with the final estimate.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 9 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 9 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

13.1.1.4. Sampling and Testing: Sampling and Testing will be performed as set out in S.O.P. No. SA II-3-5.

Extreme care should be exercised when taking samples. Every effort should be made to secure a clean representative sample since the material on the road is generally in place before the test results become available.

13.2. Double or Triple Bituminous Surface Treatment:

13.2.1. General: This type surface structure is formed by applying two/three applications of liquid asphalt and two/three applications of aggregate in accordance with the requirements of Section S-410 of the Standard Specifications. Asphalt and aggregate will meet the requirements of Section S-702 and Section S-703 of the Standard Specifications.

13.2.2. Construction Requirements:

13.2.2.1. Liquid Asphalt: Field construction requirements will be as specified in Subsection 13.1-Prime above, Section S-410 of the Standard Specifications, and S.O.P.'s No. SA II-1-91 and SA II-1-92.

13.2.2.2. Aggregate: In addition to the requirements of Section S-410 of the Standard Specifications the following information has been found to be helpful.

- (1) Make sure the aggregate is clean and reasonably dry.
- (2) Before allowing the distributor to begin spraying, make sure all aggregate trucks are at the work site - Not in Transit.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 10 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 10 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

- (3) Have aggregate spreader follow immediately behind the distributor when asphalt cement is used. When emulsified asphalt is used aggregate should not be spread until the asphalt "breaks." Accurate timing of aggregate placement is essential to the success of the surface treatment operation.
- (4) Make sure rollers follow the aggregate spreader closely in order to seat the aggregate in the asphalt. All thin spots in the aggregate should be corrected by hand spreading before the roller passes.
- (5) Always completely finish a section before allowing the distributor to begin spraying a new section.
- (6) Always require the distributor to begin and end the "shot" on paper. This will prevent rough joints and "fat" joints.
- (7) Make sure that brooms travel at a constant rate of speed and have a sweeping core that is not unduly worn.
- (8) Before placing the second application of asphalt make sure the roadway surface is clean, free from debris, and dry.

13.2.3. Records and Reports: All information should be entered on Form SA-724 placed in the project file and submitted to State Aid with the final estimate to document pay quantities and application rates. Be sure to use temperature conversion factors to determine application rates and job quantities. The distributor record, converted to 60°F, is the quantity that will be used for pay purposes. The tanker invoices WILL NOT be acceptable.

Trucks hauling aggregate will be measured as specified in S.O.P. No. SA II-1-45 and tickets will be written at the stockpile and received by the inspector at the spreader. Only those tickets received by the inspector at the spreader will be counted for payment.

OFFICE OF STATE AID ROAD CONSTRUCTION			S.O.P. NO. SA II-1-73
STANDARD OPERATING PROCEDURES			Page 11 of 11
Subject: S.O.P. CONSTRUCTION PRACTICE, RECORDS AND REPORTS			Distribution A, B, C, D, E
EFFECTIVE July 1, 2005	ISSUED July 1, 2005	SUPERSEDES Page 11 of 11 S.O.P. NO. SA II-1-73 EFFECTIVE: October 15, 2001	APPROVED J. Brooks Miller, Sr. STATE AID ENGINEER

13.2.4. Sampling and Testing: Sampling and testing will be performed as specified in S.O.P. No. SA II-3-5 and Subsection 13.1.1.4. of this S.O.P.

13.3. Hot Plant Mixed Surface Course: Sections S-401 and S-403 of the Standard Specifications contain specific requirements concerning the manufacture and placement of hot plant mixed bituminous pavement.

13.3.1. Records: Records required under Subsection 12.2.4.2. of this S.O.P. are also required to document surface courses.

13.3.2. Sampling and Testing: Sections S-401 and S-403 of the Standard Specifications and S.O.P. No. SA II-3-5 contain specific requirements for the sampling and testing of hot plant mixed bituminous mixtures.

14. TRAFFIC MARKINGS:

14.1. General: Sections S-619, S-620 and S-621 of the Standard Specifications contain specific requirements for the placement of traffic markings.

14.2. Records: Field notes will be developed showing application rates of paint and beads per roadway mile. These notes will be used to develop final pay quantities and will be retained in the project file.

14.3. Sampling and Testing: Manufacturers certification is required for pavement marking materials and beads. County Engineer or his representative must assure that lot numbers on containers match those recorded on the certificate.

15. FINAL INSPECTION:

After all work is complete and all maintenance periods required by the Standard Specifications have expired, the County Engineer will request a Final Inspection. This request will be on a standard form provided by State Aid and entitled "County Engineer's Request For Final Inspection".