

FROM: HQ AFCESA/CES
139 Barnes Drive, Suite 1
Tyndall AFB, FL 32403-5319

SUBJECT: Engineering Technical Letter (ETL) 97-3: Base Course Proof Rolling Requirements

1. Purpose. This ETL provides requirements for proof rolling of airfield Type A traffic areas and the center 22.9 meters (75 feet) of medium-, heavy-, and modified heavy-load airfield runways.

2. Application: All Air Force organizations with pavement construction responsibility.

2.1. Authority: AFJMAN 32-1014, *Pavement Design for Airfields*.

2.2. Effective Date: Immediately. Remains in effect until AFJMAN 32-1014 and the applicable guide specification (CEGS 02233) are revised, or until expiration.

2.3. Expiration: Five years from date of issue.

2.4. Ultimate Recipients:

- Base Civil Engineers responsible for design, construction, maintenance, and repair of pavements.
- CoE and Navy offices responsible for design and construction of Air Force pavements.

3. Referenced Publications:

- Corps of Engineers Guide Specification (CEGS) 02233, *Graded Crushed Aggregate Base Course*

4.0. Requirements.

4.1. Purpose of Proof Rolling. Proof rolling aggregate base courses of flexible airfield pavements after compaction to the specified 100 percent CE-55 density accomplishes two objectives: (1) it locates any soft spots in the pavement structure before placing the final pavement surface; and (2) it increases the density of the base course. By locating soft spots early, proof rolling avoids costly repairs after the asphalt concrete surface has been placed, or (worse) after aircraft operations have begun. Also, previous studies have shown conclusively that military aircraft traffic can densify aggregate base courses to over 100 percent CE-55 density. Proof rolling prevents this densification of the base course under military aircraft and resultant surface rutting.

4.2. Previous Requirements. CEGS 02233 required proof rolling of aggregate base courses in Type A traffic areas and in the center 22.9-meter (75-foot) width of runways for medium load, heavy load, and modified heavy load airfields. Proof rolling consisted of 30 coverages of the proof roller over these areas after they were compacted to the specified density (100 percent of CE-55). The required proof roller was a rubber-tired roller ballasted to 30,000 pounds (13,608 kilograms) per tire with a tire inflation pressure of 150 pounds per square inch (psi)(1034 kilopascals (kPa)). Typical commercial models have four wheels abreast and a gross load of 60 tons (54,430 kilograms).

4.3. Recent Developments. Contractors cannot purchase 150 psi tires for commercial proof rollers because the last manufacturer ceased production. Used tires are increasingly scarce. However, a recent study conducted for the Air Force by the USAE Waterways Experiment Station validated proof rolling and demonstrated 125 psi (862 kPa) tires effectively detected soft spots in the pavement. Compaction in the base course with this reduced tire pressure will not be as great as achieved by the 150 psi tire, but the difference should have only a minor effect on potential pavement surface deformations.

4.4. Revised Requirements. Accomplish proof rolling of aggregate base courses in accordance with paragraph 4.2, with the following exception:

- Tire inflation pressure must be not less than 125 psi.

If any pavement proof rolled in accordance with this ETL develops rutting that could be due to densification of the base course, promptly notify the point of contact for this ETL

5. Point of Contact: Mr. Jim Greene, HQ AFCESA/CESC, DSN 523-6334, commercial (904) 283-6334 or INTERNET greenej@afcesa.af.mil.

William G. Schauz, Colonel, USAF
Director of Technical Support

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