

## Procedure for Documenting Acceptability of Equipment in California Tunnels

(Revised 8/28/09)

Title 8, Section 8425(a)(1) & (a)(2) of the Tunnel Safety Orders require that:

**(a) (1) Before any electrical equipment or services are installed or used in places classified as Gassy or Extrahazardous, they shall be permissible, approved, or in accordance with Title 8, Electrical Safety Orders and acceptable to the Division.**

**EXCEPTION: In tunnels where the classification is based on toxic gas(es) which does not present a fire or explosive hazard, the provisions which address a source of ignition shall not be applied.**

**(a)(2) Before any internal combustion engine is permitted to enter any place classified as Gassy or Extrahazardous, the internal combustion engine shall be of an approved, permissible safe design acceptable to the Division.**

The following procedures are recommended when an Employer wishes to develop documentation to certify that a piece of equipment is safe to use (i.e., “acceptable to the Division”) in a California tunnel classified as gassy or extrahazardous. It is also recommended that these procedures be followed when selecting equipment to be used in non-gassy or potentially-gassy tunnels, where there is a substantial probability that the tunnel will be re-classified as gassy or extrahazardous.

1. If the equipment is already certified by MSHA as permissible, or by Underwriter’s Laboratories, or by the Canadian Standards Association, as meeting the standards for Class I, Division II or Class I, Division I locations (whichever is appropriate), the Division shall inspect the equipment and determine if it has been maintained per the Manufacturer’s requirements. The Division shall then evaluate whether the equipment is “acceptable to the Division” for the environment in which it will be used. See T8CCR 2540.1 for the definitions of Hazardous Locations.

If the equipment is certified by any other agencies the Mining and Tunneling Unit of CalOSHA shall additionally make an attempt to determine the test and evaluation procedures used and whether the certification process of that agency yields valid results.

2. If the equipment is not formally certified as permissible or acceptable by a certifying agency, an Employer may utilize the services of one or more Professional Engineers who are certified in California who have the experience and qualifications to recommend modifications to the equipment and to make an evaluation of the suitability of a piece of equipment to safely work in either a Class I, Division II or Class I, Division I location (whichever is appropriate).

The safety certification process should cover at least four areas: electrical safety, engine safety, exhaust safety, and excavation safety. Normally, an experienced Electrical Engineer would specify how to modify the lighting, horn, alarms, exhaust and wiring components of the equipment. Then, a Mechanical or other engineer would specify how to insure safety in the engine compartment (including use of a water jacket or high-temperature engine shutdown) and in the exhaust system (including use of a water bath or catalytic converter with spark-arresting capability). Finally, someone would need to certify whether the excavation process is safe (including the use of water sprays on the bit(s), additional air flow at the face, or gas sensors which shut the system down when flammable gas reaches a certain concentration).

MSHA standards for certification as permissible should be referenced when guidance is needed.

Once the work is completed, the Engineer(s) would then perform an inspection of the equipment and certify, in writing, that it meets the necessary requirements for use in the particular Hazardous Location. This written document should itemize the regulations and policies the engineer followed for each of the four categories of spark generation (electrical--engine--exhaust--excavation) to determine the suitability of the equipment for the intended environment. Normally, the Division would participate in the final inspection of the equipment, with the Engineer(s) present, in order to evaluate its readiness for the intended environment.

Finally, the Division would evaluate the Employer's ability to maintain the equipment in a safe condition. Frequency of inspections, out-of-service standards and specific training for the maintenance crew should be covered. In the event that the equipment undergoes major repairs, or future modifications, or if it is found to be unacceptable to the Division during an inspection, a re-certification process will normally be necessary.

After the Division finds that a piece of equipment is "acceptable to the Division", the operation and maintenance of such equipment in a manner that does not endanger employees is solely the responsibility of the employer.

Engineers currently known by the Division to possess sufficient knowledge and experience to evaluate equipment for use in Hazardous Locations are as follows:

**Charles W. Watts**  
**5121 Siesta Lane**  
**Yorba Linda, CA 92886**

**Phone 714-993-1430**  
**Cell 714-488-8259**

Other Engineers may also be acceptable. The Employer has sole responsibility for selecting a qualified Engineer.