

**Notification of California
Department of Transportation Qualification
Requirement for Ultrasonic Testing Personnel**

**San Francisco-Oakland Bay Bridge
East Span Seismic Safety Project**

April 2001

**SUBJECT: Notification of California Department Of Transportation
Qualification Requirement for Ultrasonic Testing Personnel**

**TEST SITE: CALTRANS
Transportation Laboratory
5900 Folsom Boulevard
Sacramento, California 95819**

California Department of Transportation (Caltrans) has established a policy that Ultrasonic Testing personnel be qualified by Caltrans, prior to performing weld testing for Construction Contracts. The purpose of the qualification program is to provide a means for Caltrans to confirm the proficiency and knowledge of Ultrasonic Testing Technicians performing work on Caltrans projects. This qualification program consists of passing a two-part test. The first part of the qualification test consists of a written examination, and the second part is a hands-on practical demonstration of ultrasonic testing proficiency. Both parts will be based on the requirements of the American Welding Society AWS D1.1-98 Code, Section 6, Part F "Ultrasonic Testing of Groove Welds", the Contract Special Provisions, and Caltrans' Standard Specifications.

The Prime Contractor is responsible for submitting the applications of the Quality Control Ultrasonic Test personnel to Caltrans. The attached application must be completed and returned to:

**CALTRANS UT QUALIFICATION PROGRAM
Metallurgy Branch, MS-5
5900 Folsom Boulevard
Sacramento, California, 95819**

Fax Number: 916-227-7117

Applications submitted to Caltrans for initial qualification testing will be reviewed and verified. Candidates that meet the minimum requirements specified in this letter will be tested in the order as received. The candidates will be notified by mail of the scheduled test date and location, within 30 days of receipt. The scheduled test date may be rescheduled if a written request is received by Caltrans two working days prior to the test date. If a candidate does not arrive at the test site, as scheduled, the application will be marked as disqualified. The applicant may reapply after the 90-day waiting period as allowed for disqualified candidates.

The written specific examination will be given a minimum of once per month at the Caltrans Transportation Laboratory in Sacramento, California. A maximum of twenty people can take the test on any given day. The written specific qualification examination will consist of twenty multiple choice, and true or false questions. The written examination will test the candidate's ability to apply the rules of AWS D1.1-98 Code, the

Contract Special Provisions, and Caltrans Standard Specifications. A maximum time duration of two hours will be strictly enforced. A minimum of sixteen out of the twenty questions (80%) must be answered correctly to pass the test. Caltrans will provide reference material to answer the code and specification questions. The Caltrans provided reference material is a laminated copy of AWS D1.1-98, Section 6, and a Caltrans Standard Specification book. **Some questions will require calculations to determine the correct answer. Candidates must bring a calculator and photograph identification to the test site.** The candidate shall not bring any additional reference material to the test. A representative of Caltrans will proctor the examination. The proctor for the written examination will be an Engineer, Caltrans NDT Level III, or Caltrans NDT Level II Technician. The results of the examination will be mailed to the candidate within seven working days. The results will be reported as “pass” or “fail”. **No information regarding the results of the qualification test will be given on the telephone.** The examination questions will not be reviewed or discussed with the applicants. The candidate is responsible for notifying their employer of their test result status. Only candidates that pass the written examination will be permitted to take the second part of the qualification test.

Candidates that fail the written examination may apply for a subsequent qualification test, after a ninety-day waiting period. The ninety-day waiting period commences from the date noted on the result notification letter. During this waiting period, the candidate shall receive additional training. This additional training must be documented in a notarized letter signed by an ASNT NDT Level III. This notarized letter must be attached to the application, along with the qualifications of the Level III. Caltrans will review the application for re-testing and notify the candidate of the application disposition within ten days of receipt. The Engineer shall determine if the additional training is sufficient, based upon the previous qualification test results.

Candidates that pass the written examination will receive a schedule request form for the practical demonstration, along with the results of the written examination. The Candidate will be allowed to request three dates for the second part of the examination, in order of preference. The candidate will have thirty days, starting from the date the results are mailed to the candidate, to submit the schedule request form to Caltrans. The fax number and address to submit the schedule request will be noted on the form. The practical examination will be scheduled based upon the order of receipt. Candidates that fail to submit the schedule request form within the required time shall have to start the process over with the submittal of an application. A maximum of two practical qualification tests will be scheduled per working day, with one in the morning and one in the afternoon. The candidate will be notified by fax or mail, within seven working days, of the scheduled test date.

The second part of the qualification test is a hands-on practical demonstration of the candidates ability to perform ultrasonic testing in accordance with AWS D1.1-98, Section 6, Part F “Ultrasonic Testing of Groove Welds”. The practical demonstration will be conducted on two separate weld sample plates. The candidate shall evaluate twelve linear inches of weld, in each sample plate, in accordance with the requirements of AWS

D1.1-98 Section 6.26 “Testing Procedures”. The candidates must be capable of detecting, sizing, evaluating, and reporting known ultrasonic indications in accordance with the criteria set fourth in AWS D1.1-98. Two separate reports (“Report of Ultrasonic Testing of Welds” Form D-11, Annex D, AWS D1.1-98) are required for documentation of findings and evaluation of discontinuities. Caltrans will provide the necessary report forms.

The candidate shall bring the following items to the test site for the practical demonstration examination:

- **Scientific calculator**
- **Ultrasonic equipment (as specified in this letter).**
- **Photographic identification.**
- **Notification letter received from Caltrans.**

The two weld sample plates are mock-ups of typical joints utilized in the field welding of pile material. One sample is a double “V” groove joint and the other sample is a single “V” groove joint with backing. The sample welds have known ultrasonic indications that were evaluated and qualified by a series of examinations conducted by Caltrans personnel, consultants, and the test block manufacturer. Certain discontinuities have been designated as “Required Detection Indications” that must be detected and properly evaluated in order to pass the qualification test. Candidates failing to locate, size, evaluate, and report the “Required Detection Indications” are disqualified.

In addition to the “Required Detection Indications”, the candidates will be evaluated on their ability to comply with the requirements of AWS D1.1-98, Section 6, Part F. The candidate will receive credits for the proper completion of specific mandatory checkpoints. The checkpoint items are derived directly from the AWS D1.1-98 Code requirements. A minimum eighty-percent (80%) is required for qualification. This evaluation will be scored by a Caltrans proctor, during the entire practical demonstration. The proctor for the hands-on practical examination will be a Caltrans Level III or an approved Caltrans Level II NDT Technician.

The maximum time allowed for the practical demonstration is four hours. During this four-hour period, the candidate is required to calibrate the instrument, test both plates, and document the test findings. If the candidate does not complete the above noted tasks within the allotted, time he/she will be disqualified.

Results of the second part of the qualification test will be reported as “pass” or “fail” only. The candidates will be notified by mail of their qualification status within fourteen working days after completion of the qualification test. The results of the qualification test will be reported as “Qualified Ultrasonic Testing Technician” or “Disqualified”. The results of the examination will be sent to the candidate. The candidate is responsible for informing their employer of their qualification status. **Caltrans will not accept telephone calls regarding the examination results.**

Qualified technicians will be issued a wallet card with a qualification identification number. This qualification will be effective for a period of three years. Caltrans reserves the right to revoke this qualification if the technician fails to maintain proficiency as determined by the Engineer. In order to renew the qualification, the technician must submit to Caltrans a notarized letter that details their work history for the previous qualification period. Caltrans will renew the qualification if there is no lapse of hands-on ultrasonic testing greater than six months, and if the technician's previous Caltrans work history is satisfactory, as determined by the Engineer.

Disqualified candidates may apply for qualification testing after a ninety-day waiting period. Disqualified candidates will be required to retake the entire practical examination. The ninety-day waiting period commences from the date noted on the disqualification letter. During this waiting period, the candidate shall receive additional training and hands-on experience performing ultrasonic testing in accordance with the AWS D1.1 Code. This additional training and hands-on experience must be documented in a notarized letter signed by an ASNT NDT Level III. This notarized letter must be attached to the application, along with the qualifications of the Level III. Caltrans will review the application for re-testing and notify the candidate of the application disposition within ten days of receipt. The Engineer shall determine if the additional training and hands-on experience is sufficient, based upon the previous qualification test results.

The following is a summary of the minimum requirements for applicant candidates and ultrasonic equipment:

Minimum Requirements for Candidate

Candidate's certification and experience level must comply with the following criteria:

1. Certified by employer as Level II UT Technician, in accordance with the American Society of Nondestructive Testing (ASNT), SNT-TC-1A-96 Guidelines.
2. Proof of formal Ultrasonic Testing training as described in SNT-TC-1A-96 Paragraphs 6 and 7.
3. Current eye examination as specified in SNT-TC-1A Paragraph 8.2.
4. Documented work history for the current period of Level II certification.
5. Certifying Level III's credential must be submitted with application.

Minimum Equipment Requirements

Candidates must bring the following ultrasonic equipment and documents to the practical demonstration test:

1. Ultrasonic instrument meeting the minimum requirements of AWS D1.1-98, Section 6.22. The instrument must be qualified in accordance with the requirements of AWS D1.1-98 Section 6.24. Proof of current two-month qualification of instrument gain control is required. Previously stored calibrations may not be utilized during the qualification test. The instrument storage will be cleared at the qualification test site. The candidate shall be capable of calibrating and setting-up the equipment for testing as required by AWS D1.1-98 and as stated in ASNT Recommended Practice No. SNT-TC-1A, Paragraph 4.3 (2).
2. Angle beam search units meeting the minimum requirements of AWS D1.1-98, Section 6.22. Transducer frequency shall be between 2 and 2.5 MHz, inclusive. Transducer dimensions must comply with the requirements of AWS D1.1-98, Section 6.22.7.2.
3. Straight beam (longitudinal wave) search unit meeting the minimum requirements of AWS D1.1-98, Section 6.22.6
4. Couplant conforming to the requirements of AWS D1.1-98 Section 6.26.4.
5. AWS D1.1-98 Structural Welding Code (for the hands on practical demonstration only).
6. IIW Calibration Reference Standard.

Caltrans Provided Resources

Caltrans will provide the following resources at the qualification test site:

1. Reference material for written test (laminated copy of AWS D1.1-98, Section 6, and Caltrans Standard Specification Book).
2. Test report forms for documenting findings.
3. Marking crayon.

Confidentiality Statement

Caltrans will require each qualifying candidate to sign a confidentiality statement prior to testing. This requirement forbids the disclosure of any information regarding the content

of the written test or flaw location and characterization. In addition, the candidate may not take notes or remove any scratch paper from the test facility. If Caltrans has reason to believe the integrity of the qualification test has been jeopardized the qualifications of the individuals involved will be revoked.

Application for Ultrasonic Qualification Testing

Name of Applicant:
Address:
Phone No:
Contract No:

Prime Contractor

Company Name:
Address:
Phone No:
Name of Contact Person:
Position and Title of Contact Person:

Nondestructive Testing Company

Company Name:
Address:
Phone No:
Name of Contact Person:
Position and Title of Contact Person:

All the information requested below must be submitted to be considered a completed application. An incomplete application package submitted for qualification will not be accepted or processed.

The application package shall include the following documentation:

1. A written practice conforming to ASNT-TC-1A
2. Proof of Education (diploma or degree)
3. Proof of Testing (the actual exams may be requested)
4. Documentation of Experience (list references and phone numbers)
5. Certification by employer as Level II UT Technician, in accordance with the American Society of Nondestructive Testing (ASNT), SNT-TC-1A-96 Guidelines
6. Proof of formal Ultrasonic Testing training as described in SNT-TC-1A-96 Paragraphs 6 and 7
7. Current eye examination as specified in ASNT-TC-1A Paragraph 8.2
8. Documented work history for the current period of Level II certification
9. Certifying Level III's credential must be submitted with application.

I certify that the above provided information is true and accurate.

Signature:	Date:
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