



May 24, 2010

Submittal for SECTION 07 25 00.00 06
BUILDING AIR BARRIER SYSTEM

Submittal: SD-03

Building Air Tightness Technician and Building Air Tightness Test Procedures

1. **Testing Technicians:** The Air Tightness testing will be executed by Andy Wahl and Harold Cullick PE. Their resumes are attached.
 - a. Mr. Wahl has extensive experience in building leakage testing using the Blower Door technology as shown on the attached resume. Mr. Wahl has multiple certifications and is a trainer from BPI (Building Performance Institute, certificate from CBPCA (California Building Performance Contractors Association), and a CBPCA trainer. He also holds a Certificate (attached) from the Snell Group for Building Applications for Infrared Thermography.
 - b. Mr. Cullick, PE has been trained and certified as a California HERS rater and a California CEPE (Certified Energy Plans Examiner) by CABEC (California Association of Building Energy Consultants) in both non residential and residential construction. He has recently completed courses in building performance testing and energy auditing presented by the California Energy Commission and PG&E including building and ductwork leak testing and system diagnostics.
2. **Air Barrier Test Procedures:** The Air Barrier leakage test will be performed with an Energy Conservatory three fan Blower door (Model 3 three fan system). There will be a fourth blower door available in the instance that the three fan blower door capacity falls short of the capacity to perform the test at the flow and pressure levels specified. The calibration documents for these four fans are attached.
 - a. The Air Barrier Test will follow the procedures of ASTM E 1827-96, (Reapproved 2007), **Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door**. ASTM E1186-03, (Reapproved 2009) **Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems** and ASTM

571 Stanislaus Avenue, Suite E
P.O. Box 152
Angels Camp, CA 95222

 : 209-736-4880
 : 209-729-4440
 : harold@dylanmechanical.com
 : www.dylanmechanical.com



Dylan Mechanical Construction Services, Inc

- E779-03, **Standard Test Method for Determining Air Leakage Rate by Fan Pressurization** will be used as a references for the air leakage testing.
- b. The report will include multiple test point logarithmic (log-log) graphs per the specifications and the ASTM Standards, for both positive and negative building pressure/flow tests.
 - c. During the test, the following building conditions will exist.
 - i. Ceiling will be substantially open allowing free flow to the building return air plenum.
 - ii. The outside doors to the mechanical room will be open.
 - iii. The outside air louver and the exhaust air louver will be sealed.
 - iv. The toilet exhaust fan grilles will be sealed.
 - v. The overhead door will be sealed.
 - vi. The outside doors will be sealed, except for the ones used for the blower doors.
 - vii. Interior doors will be open.
 - viii. HVAC system will be energized in the instance that we need to use the Thermography testing to identify the leakage points as this requires a 20deg F delta between interior and exterior temperatures.
 - ix. Plumbing traps will be full.
3. **Thermography Test Procedures:** The Thermography testing will be performed using an infrared camera. Testing will follow the procedures specified in ASTM C1060-90 (Reapproved 2003) **Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Framed Buildings**. This is the standard referenced in the project specifications and is specifically for “Framed” construction, which is not the case in this instance. The procedures will be followed as applicable to this building. The **Standard for Infrared Inspection of Building Envelopes**, 2008 Edition and the **Standard for Infrared Inspection of Insulated Roofs** by the Infrasppection Institute will also be used as references in the Thermography inspection of the building envelope. The infrared images will be analyzed for areas of building air and energy/thermal leakage and voids. Problem areas will be identified and re-tested after corrective actions are completed.

By: Harold Cullick, PE
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