



FIRE PROTECTION ENGINEERS
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PROJECT: 1213b:
Direct Visual Signaling as a
Means for Occupant Notification
in Large Spaces

Fire Alarm Test Protocol
Direct Visual Signaling as a Means for
Occupant Notification in Large Spaces

Purpose

This protocol is only for Phase 1. In Phase 1, testing will be done in large warehouse stores to test the hypothesis that the current performance based approach provides sufficient direct alerting of occupants. The goal of Phase 1 is to draft material for inclusion in the Annex of the 2006 edition of NFPA 72. Phase 2 (not yet proposed or approved) will extend testing to other large spaces such as malls and atria. One goal of Phase 2 is to test the method in more challenging visual environments. A second goal is to gather sufficient data to permit drafting of code text permitting or limiting the performance based approach as an acceptable method of occupant notification. See the project **Technical Description** for additional information.

General

1. This protocol includes:

- 1.1. Pre-test documentation.
- 1.2. Notifications.
- 1.3. Emergency plan.
- 1.4. Test preparation.
- 1.5. Participant Registration
- 1.6. Preparation and training of test subjects.
- 1.7. System test.
- 1.8. Post test survey and interviews.
- 1.9. Post test review.
- 1.10. Return to normal.

2. Subsequent protocols:

Following the first set of test, this protocol; will be reviewed and revised if necessary.

3. Suggestions for changes or additions to this protocol are welcome. Please send your comments by email to Bob Schifiliti, rps@rpsa-fire.com.

4. Requests for changes to this protocol while on-site for implementation of the protocol will be considered as needed to achieve thoroughness, safety to personnel, and data collection.

5. These tests are intended to simply determine whether or not the current performance based methods within NFPA 72, 2002 provide reasonable occupant notification in large spaces. Because of time limitations imposed by the code development cycle, this project is not designed to gather large amounts of data or to analyze exact causal relationships. A second test phase will be proposed to test other spaces and variations on the existing performance based solutions contained in NFPA 72, 2002.

6. Testing is planned to take place in two or three “big box” stores. Tests have been scheduled for August 24 at a Home Depot in Reading, MA and August 25 at a Home Depot in Danvers, MA. They provide two different ceiling heights and configurations. We will gather for the tests at 6:30 AM. Volunteers should plan to be there by 7:00 AM.

Schedule:

- 1. Weds. August 24, 2005, 6:30 AM
Reading, MA Home Depot
- 2. Thurs. August 25, 2005, 6:30 AM
Danvers, MA Home Depot
- 3. _____, 2005, 6:30 AM
Plaistow, NH Home Depot

Technical Panel members and other interested people are welcome to attend and participate. Please contact me by email and let me know if you will be present for a test.

Equipment, Materials and Information Needed

1. Owner's technician authorized and equipped to perform system testing of audible and visible occupant notification.
2. Store layout drawings showing racks and aisles.
3. Fire alarm drawings showing location of audible and visible notification appliances.
4. Hand tools. Provided by site and by an independent contractor/technician.
5. System contractor level password/passcode.
6. Light meter.
7. Cameras
8. Nametags
9. Tables for registration and for follow-up survey.
10. Pencils & pens
11. Note cards for participants
12. Consent Forms (two sided)
13. Pre-Test Survey forms.
14. Post-Test Survey forms.
15. Clipboards
16. Traffic cones
17. Posters
 - 17.1. Registration
 - 17.2. Test and emergency information
18. Coffee, snacks, cups, napkins, water

Tasks

1. Pre-test documentation.
 - 1.1. Obtain as-built drawings or other available documentation for the test site.
 - 1.2. Photograph representative areas of the test building.
 - 1.3. Document condition of the system before altering or testing. In the event that the system is found to not be in a trouble free condition, the technician, Project Manager and owner will discuss the status of the system and make a determination on whether the test should continue.
 - 1.4. Check several strobes for conformance with the as-built documentation.
 - 1.5. Check installation for general conformance to the performance based requirements of NFPA 72, 2002.
 - 1.6. Document any special conditions.
2. Notifications
 - 2.1. If acceptable to the owner, notify and invite the local fire department to participate in the testing.
 - 2.2. The owner will notify employees in advance of the test schedule.
 - 2.3. On the morning of the tests, orange traffic cones with signs will be posted at all entrances.
 - 2.4. Voice announcement will be made prior to activation of the strobes.
3. Emergency plan.
 - 3.1. Personnel with radios and/or cell phones will be located at the fire alarm panel.
 - 3.2. In the event that the system is activated by a manual box, flow switch or automatic fire detector, the fire department will be immediately contacted and the audible fire alarm signal will be activated. In addition, manual voice announcements will be made to initiate evacuation.
 - 3.3. Employees will follow their pre-emergency plan.
 - 3.4. Members of the test team will meet at a designated location outside of the store.
4. Test Preparation.
 - 4.1. Place traffic cones and signs.
 - 4.2. Measure and document ambient light.
5. Participant Registration
 - 5.1. Greet and hand out Participant Information Sheet & Consent Form.
 - 5.2. Review Consent form for initials on each page and initials, signature and date on last page. Person reviewing the Consent form adds their name after answering any questions or concerns.
 - 5.3. Upon acceptance of the signed Consent form, give participant a Pre-Test Survey.
 - 5.4. Review Pre-Test Survey. If anyone checks Yes for epilepsy or seizures they should be asked to not participate in the test.
 - 5.5. Assign Participant Number (R-01, R-02, for Reading, D-01, D-02 for Danvers, etc.) and write in box on the Pre-Test Survey form.
 - 5.6. Provide participants with a Test Note Card and pencil to take notes during the test. Write their Participant Number on the top, right corner of the card.

6. Preparation and training of test subjects.
 - 6.1. The participation of hearing impaired persons is being solicited from local organizations. In addition, we will ask employees, fire department personnel and anyone else who is interested to take part in the tests.
 - 6.2. Test subjects will be told that the test is intended to determine if the operation of the strobes interferes with their ability safely and comfortably walk to the exits.
 - 6.3. Test subjects will not be told that the fire alarm audible signals will be disabled.
 - 6.4. Test subjects will be sent to specific aisles and asked to “shop” in those aisles.
 - 6.5. They will be asked to await the start of the test and to note approximately where they were and what direction they were facing when the system activated.
 - 6.6. Subjects will be instructed to walk to a designated gathering location when the fire alarm system activates.
7. System Test.
 - 7.1. The owner’s fire alarm technician will:
 - 7.1.1. Disable the audible fire alarm circuits.
(We are certain this is possible in the Reading store. It has been reported, but not confirmed, as possible at the Danvers store.)
 - 7.1.2. Disable any off-site signal transmission or notify the supervising station to place the system “on test”.
 - 7.1.3. Notify the fire department that testing will take place for a designated time period.
 - 7.2. Make paging announcement that testing is about to begin.
 - 7.3. Activate the visible signals.
 - 7.4. Observe occupant response.
 - 7.5. Record the arrival time of test subjects at the designated gathering location(s).
 - 7.6. Once all test subjects respond, the signals will be turned off.
8. Post test survey and interviews.
 - 8.1. As each participant returns to the gathering location, note their Participant Number and arrival time.
 - 8.2. Provide each participant with a Post-Test Survey form and a pencil. Write their Participant Number on the top, right corner of the form.
 - 8.3. Review each participants form and comments. Ask questions about their responses and overall opinion of the system and of the test. Add reviewer’s notes on the back of the Post-Test Survey form.
 - 8.4. Using a diagram of the store, record the location and the direction the subject was facing.
 - 8.5. Take each subject back to the location and ask them to identify the strobe(s) they saw, if any.
9. Post test review.
 - 9.1. What worked?
 - 9.2. What needs to be changed for future tests?
 - 9.3. Should additional tests be done at this location before returning the system to normal and before the store opens?

10. Return to normal.

10.1. Remove traffic cones and signs.

10.2. The owner's fire alarm technician will:

10.2.1. Re-connect or re-activate the audible fire alarm circuits.

10.2.2. Re-enable any off-site signal transmission or notify the supervising station that testing has been completed.

10.2.3. Notify the fire department that testing has been completed.

10.3. Make paging announcement that testing has been completed.

10.4. Document that the system has been returned to normal operational status.

END OF TEST PROTOCOL