Compliance Services and Assessments, LC

(Formerly Codes and Standards Assessments)

Assessment Overview

This manual provides general information on CSA assessments in addition to important terms and conditions.

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This document is subject to change without notice.
Periodically check our web site to see if additional information has been added or changes made. The date on the cover will be indication of changes.

Recent changes were made to include:
Updated "Watch Your Time" page
Incorporated information about new assessments and allowed time for UFM4

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History:

CSA was founded in 2002 by a code official looking for effective alternatives to evaluating contractor qualifications. There needed to be an alternative method that would allow assessments within days, in more locations, less expensive, and without the delays of formal reviews, reference forms, etc. CSA believes that assessments can effectively evaluate contractor's qualifications while still being more favorable and supportive of contractors. Jurisdictions can have better success enforcing and achieving contractor qualifications with less resistance when they recognize CSA assessments. Other organizations cost more, require 5 to 10 years experience, lengthy applications, numerous reference forms, offer assessments at limited times throughout the year, and may take six months or more to receive notice of qualification. Although experience is beneficial, a thorough knowledge of the codes is essential for life safety systems. We often hear from contractors that they have 20+ years experience, why do they need to take a test. The next question is often "Where can I purchase the book (code) to study for the test"!

CSA assessments are administered over the Internet at professionally proctored locations to maintain security of questions. CSA started out by having partnering jurisdictions proctor the assessments. Although this service is still available, our primary focus has shifted to delivering assessments at professionally proctored facilities across the United States. Although some associations may deliver assessments with proctoring agencies offering more locations, we have found that there is little control over the quality or professionalism of many of these sites. CSA contracts with ACT, Inc., formerly known as the American College Testing Program. ACT is well known for its experience in developing and administering college entrance exams since 1959. ACT has strict guidelines for their proctoring locations and CSA wants our customers to receive the best service and best testing environment available. By using ACT's proctoring services CSA can deliver assessments at over 230 locations. This means that there is a location within a one-hour drive of over 80% of the population.

In addition to offering standardized nationally delivered assessments, CSA also develops assessments around specific jurisdictions needs. If a jurisdiction has a specific subject that they need to assess qualifications for, CSA can implement a solution. Our assessments are not limited to fire protection and assessments can be delivered over our national network. After successfully passing an assessment, CSA provides the participant with a quality PVC identification card and a certificate. ID cards include the participants' company name and in most cases it includes their photo. This allows the CSA card to serve as a company's employee ID badge for access to facilities, and promoting their qualifications. General Contractors have required the sub-contractors to wear their CSA badge so that they know a qualified person is on site. When the GC ensures his subs are qualified, this reduces the chance of a stop-work order being issued for failing to have qualified installers on site.

Overview of Assessment Process:

CSA questions are developed and reviewed by professionals in the respective fields. A set number of questions are randomly selected from a larger database. An assessment will be

organized to pull a designated number of questions from various topics based on pre-established criteria. Although this document will identify general criteria for some of the assessments, each assessment may vary. Assessments are intentionally mixed up for variety and this document is only a guide.

Participants must register for an assessment by starting at our web site www.CSAexams.com. Depending on the assessment, the procedures may vary slightly.

Nationally Delivered Assessments (ACT Proctored):

To take an ACT proctored assessment at over 230 locations, the participant needs to visit our web site at www.CSAexams.com. Select "Schedule Assessment", and select the option for 'Nationally Proctored Assessments'. If you are new to CSA you will fill out and submit information to create your account. If you are a returning participant you will be asked to enter your CA ID number and PIN number to view and validate the information we currently have in our system. Following review of your information for accuracy, proper formatting, and staff approval, it will be submitted to our scheduling system.

Once the information is processed (normally two to three business days) you will receive an automatic email with additional information including your user ID, password and payment instructions. New participants may take an additional one to two days to process. If you have not received an email within 72 hours please check your spam or junk folders within your email system. Following the link within the email will allow you to pay for your assessment and automatically select the time and location of your assessment over the Internet. If you need to change your schedule, you login to the link that was in your email, or you can visit our site for a link. You can change your assessment schedule on-line up to three days before your assessment. You must take your assessment within 60 days of requesting your authorization. We are unable to process any refunds with ACT proctored assessments. We can change the assessment title as long as the fee is the same. Please make sure you have requested the correct assessment before making payment.

Most ACT assessments will be open-book and most will allow the use of non-programmable calculators. Calculators that have alphabetic letters on the keys or as function features of keys will not be allowed. Only legally published versions of code books will be allowed. Printed copies of pdf documents from the CSA web site will be allowed. These may include installation manuals for CPVC pipe or our generic CSA hood installation manual. Copies of code books shall not be used as this violates copyright laws. Legally downloaded pdf prints are allowed. Paper will be provided for calculations and must be turned in after the assessment.

When you take your assessment you are required to present your email notification that includes your user ID and PIN (password), in addition to a state issued photo ID such as a driver's license. It is that participant's responsibility to present this in order to take the assessment. The user ID and PIN for making payment and scheduling will be the same used to log into the assessment.

Jurisdiction Proctored Assessments:

Assessments that are proctored by the local jurisdiction, such as the fire marshal, will often incorporate many of the same questions as ACT delivered assessments. Some jurisdictions will include questions related to their local amendments and/or regulations. A few administrative procedures may vary depending on the criteria established by the jurisdiction.

A standard example of an assessment proctored by a local jurisdiction would be as follows: The contractor visits our site at www.CSAexams.com to make payment and request an assessment date and time. Normally within 24 to 48 hours CSA will send the participant/ contact person a schedule confirmation notice indicating the date and time for the location requested. You must take the confirmation email and a state issued photo ID with you to the assessment location as it will contain your login and password for the assessment. The site proctor will log the participant into the assessment after verification of ID and any open books to be used.

Some jurisdictions have limitations on the use of books and which books will be allowed. As an example, the participant's books may be collected and a jurisdiction copy provided in its place. After the assessment the books will be switched back. Additional information on a particular sites policy can be found under "Test Info" on our web site for that jurisdiction. The address and specific site information will also be included under the "Test Info" link. Most test sites will take your picture. Pictures may be included on the CSA ID card. This will vary by jurisdiction and assessment.

Watch Your Time:

CSA assessments have time limits on the graded portions of each assessment. Overview, sample questions, and survey questions will not have time limits and are not scored. Unless indicated otherwise, all assessments require an 80% score for passing.

Some assessments involve questions from multiple books. As an example: Commercial sprinkler tests will include several documents such as NFPA 13, NFPA 25, NFPA 14, NFPA 13R, and an installation manual for CPVC plastic pipe. Questions will be randomly delivered. When questions come from multiple documents, the question will normally start off with a reference of what document it applies to. This is to assist the participant in quickly looking up the topic and to ensure that the response is appropriate for the respective document. The assessment time clock applies to all the graded questions.

To help the participants we provide a "Watch Your Time" sheet. This sheet outlines approximately how many questions are on each test and the allowed time for the assessment. This information will be included in Annex "A" of this document and can be downloaded separately from the web site. The participant is advised to review this sheet before the assessment. There is also a document which includes screen shots from a test to help you understand how to use and navigate through a test before you take it.

Study Tips

The following information may help you to prepare and study for assessments. It is general information and may not apply to every assessment.

Some assessment such as fire alarm and sprinklers may include a few questions on related OSHA requirements. Such as lock-out-tag-out, fall protection, and confined spaces. These are federal regulations which impact all workers. Every employer is required by law to ensure their employees are trained on OSHA requirements. We do incorporate a few questions related to these areas. Although scored, these questions can only impact a few percentage points on your overall assessment score. Information on OSHA requirements can be obtained at www.osha.gov. Fire alarm assessments may also include questions from the International Building and Fire Codes as they apply to fire alarm systems. Participants should study and have these documents with them during tests.

Sprinkler and underground fire main tests may include questions related to fire pumps and the impact a fire pump can have on a system. An example is how a remote fire pump will impact pressure on a supply line to a building. A question may provide a street flow with pressure and a fire pump rated flow and pressure. The participant will need to identify the appropriate discharge pressure. For level 2 tests the street flow value will generally match the pump rated pressure so that no complex calculations are required. Questions will also include the impact of pump pressure at churn. Level 2 and level 4 underground assessments will require the participant to calculate the friction loss within a pipe when given values of loss either by psi/foot or by psi/given length. Level 2 and level 4 underground assessments do not require complex calculations for friction loss such as Hazen Williams. Often pressure information will have been evaluated by the civil designer. However, there are frequent occasions where the designer did not specify a pressure rating, the pump rating is changed by the contractors without review of the civil engineer, or a pipe is being replaced or upgraded without the involvement of an engineer. The underground contractor needs to be able to evaluate if the underground pipe is properly rated for the anticipated pressures. See Annex B for some sample questions.

Several of our assessments will include theory based questions that do not come directly out of a standard or code book. Examples include but are not limited to the calculation of voltage drop and friction loss. NFPA 72 does not tell you how to calculate voltage drop. However, both the IBC and NFPA 72 require voltage drop to be calculated. In some cases, information on these theory based questions can be found in the Annex of the respective standard or in the handbook version of the standard. In some cases you will need to review text books, books on theory, or obtain tutoring to understand the criteria.

As a general rule CSA assessments do not require you to have established years of experience as some other testing bodies do. Experience is very critical in any profession. However, just because we do not require documented experience, we still expect you to be competent in your field and know the necessary theory to perform the related functions. Not having the experience may require that you make an extra effort in reviewing additional resources or take training courses.

We also find that having many years of experience does not mean you are ready for an assessment or will pass. Many people have learned a trade through on-the-job training but have had little technical training on actual code criteria. Standards and technology have changed significantly over the years. Keeping current with these changes is critical and will often require refresher classes or seminars in addition to keeping up with technical trade journals.

One text book that we recommend for learning about friction loss, fire flows, fire pumps, elevation pressures, and sprinkler calculations is "Fire Protection Hydraulics and Water Supply Analysis," by Pat Brock. It is available through www.ifsta.org. NFPA documents including standards and handbooks can be purchased at www.nfpa.org. **Verify with your jurisdiction what code edition (year) they have adopted.** We recommend you purchase the edition that is enforced by your jurisdiction as this will be used day to day. However, do not use a code that is more than two code cycles behind (one code cycle is usually three years). Although newer editions may be available, many jurisdictions will typically be one or two code cycles behind due to the formal reviews and public hearings required prior to adoption.

Some information on voltage drop calculations can be found on the Internet and also from fire alarm equipment manufacturers and distributors. There may also be information on our web site under "Test Info". We will try to add information and links to help you prepare.

As we begin our regular review of questions to verify validity/conflicts with the 2010 standards we will be incorporating questions having more difficulty than previously. This is especially true for level 4 assessments including Business Representative and Design tests.

Some of the tests will also begin to incorporate questions related to the International Building and Fire code requirements as this set of documents has become nationally recognized across the United States. Questions will relate to the respective field such as requirements for the number of rooms equipped with visual devices in hotels, and detection requirements by occupancy, standpipe requirements, etc. Questions will be taken from Chapter 9 of IBC/IFC unless indicated otherwise. Questions will be selected that are consistent to the 2006 edition.

Important Information, Terms, and Conditions:

By requesting a schedule authorization, or requesting to sit for an assessment, the participant or participants representative is agreeing to the terms and conditions outlined in this document, on the CSA web site, and by the proctoring agency such as ACT, Inc. If a participants representative is processing the request, it is his/her responsibility to provide the participant with all applicable terms, conditions, instructions, and guidelines for the assessment.

Some assessments, including all ACT proctored assessments, are video and audio recorded. Any person caught, video taped, or appearing to conduct suspicious activities related to cheating or copying question information will be subject to administrative actions and review. Participants caught cheating or conducting suspicious activities

during the assessment may be asked to leave the assessment and the test center. Following review by CSA staff and formal notification of findings to the participant or contact person, a person found to have conducted inappropriate activities may be disqualified from receiving a passing grade and may be banned from future CSA assessments. Any payments will be forfeited. A participant will have 14 calendar days from receiving formal notification of administrative action to appeal an administrative decision. Appeals must be received by email at info@CSAexams.com or by certified mail at the address on the cover of this document or as provided on our web site. If sent by email, it is the participants' responsibility to ensure that we received and acknowledged receipt of the appeal. Failure to follow the outlined procedures will forfeit the participants' rights to an appeal. No refunds will be issued.

Assessment scores presented at the time of the assessment are preliminary scores and are not final until validated by CSA staff. Receipt of an ID card and/or certificate will be final confirmation of a passing score. Participants may challenge specific questions by following criteria outlined on the web site. There may be additional charges to challenge questions.

CSA cards and certificates are the property of Compliance Services and Assessments, LC (CSA). Misrepresentation of an individual's qualification, use by another person, representation for other than demonstrating minimum qualifications through computer based assessments, or other inappropriate use of the card or certificate will be grounds for administrative action. This may include recovery of the card, certificate, or other such documentation. A local AHJ, authorized agent, or CSA representative is authorized to take possession of such documents and return to CSA.

On occasion CSA will receive complaints about an individual's work ethics, quality of work, or failure to comply with minimum codes. Such actions compromise the reputation and quality of any qualification body. Upon such documented complaints CSA may initiate an investigation into the validity of such claims. If it is found that the individual is not representing themselves in a professional manner or is performing work in violation of recognized codes, CSA reserves the right to take possession of CSA documents pending the outcome of a formal investigation. During such formal investigation CSA will notify the individual in writing and provide the individual with the opportunity to defend the claims made against them. The individual will be required to respond in the times outlined in the notification.

CSA qualification assessments have expiration dates which may vary by assessment and jurisdiction. These dates will be indicated on the ID card and certificate. Typical expirations are three years from the month the assessment was passed. It is the individual's responsibility to re-qualify prior to the end of the expiration month. If the individual keeps their contact information up to date with CSA via email or our web site, we will attempt to notify the participant in advance. However, we do not guarantee this as many people move around, change email addresses, or use spam filters that may block our emails. To re-qualify the individual must take a new test with new fees. Although yearly continuing education is important, to ensure that participants are up to

date with the latest codes and requirements for the respective discipline, CSA requires new assessments to be taken and passed.

To ensure that you receive email notifications we suggest you add www.csaexams.com, info@csaexams.com, and www.act.org to your authorized sites or address books as directed by your email service providers guidelines. Neither CSA nor ACT can be held responsible for blocked emails. If you are expecting a notification and have not gotten it, please check your spam and/or junk folders.

If a participant has any concerns or comments regarding a test center, please forward them in writing to us at info@CSAexams.com. This will allow us to investigate and forward as appropriate to the centers administrator.

ANNEX “A”

Watching Your Time Guide

WATCHING YOUR TIME

The following information will help you prepare for assessments. This information is subject to change. In addition to that indicated, some assessment may include a few questions on OSHA criteria such as Lock-Out-Tag-Out and/or Confined Spaces as applicable, and the International Building and Fire Code. Some questions may also cross reference standards such as monitoring of water flow in NFPA 72 and NFPA 13. Assessments are usually based on standards issued within the last 3 years.

Unless indicated otherwise, each assessment requires a passing score of 80%.

NFPA documents can be obtained at www.nfpa.org
International Building and/or Fire Codes can be obtained at www.iccsafe.org. The same information for these tests can be found in either the IBC or IFC. You don't need both.
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(ASC2) Automatic Sprinkler On-Site Competent Person Commercial: ~80 questions in 2 hours. Standards include NFPA 13, 13R, 14, 25, and criteria on CPVC pipe listings.

(ASR2) Automatic Sprinkler On-Site Competent Person Residential: ~40 questions in 1 hour. Standards include NFPA 13R, 13D, 25, and criteria on CPVC pipe listings.

(ASCR2) Automatic Sprinkler On-Site Competent Person Combined Commercial/ Residential: ~101 questions in 2 hours and 30 minutes. Standards include NFPA 13, 13R, 13D, 14, 25, and CPVC pipe listings.

(ASCR4) Automatic Sprinkler Designer/Business Certificate Holder: ~121 questions in 3 hours. Standards include NFPA 13, 13R, 13D, 14, 20, 25, International Building and/or Fire Code, and CPVC pipe listings.

(ASD2) Automatic Sprinkler Domestic On-Site: 30 questions in 1 hour. Materials required include NFPA 13D, and the ASD2 Study booklet from our site.

(FA2) Fire Alarm Competent On-Site Person: ~77 questions in 2 hours. Standards include NFPA 72, 70, and International Building and/or Fire Code.

(FA4) Fire Alarm Designer/Business Certificate Holder: ~100 questions in 3 hours minutes. Standards include NFPA 72, 70, and International Building and/or Fire Code.

(FEX) Fire Extinguisher Inspection, Testing, and Maintenance: ~42 questions in 60 minutes. Standards include NFPA 10 and all annex material.

(CKH2) Commercial Hood Install and Service: ~ 49 questions in 1 hour. Questions are based on NFPA 17A, NFPA 96, and CSA Kitchen Hood Design Manual.

(KHFE2) Kitchen Hoods and Fire Extinguishers: 91 questions in 120 minutes. Documents include NFPA 10, 17A, 96, and the CSA Kitchen Hood Design Manual.

(UFM2) Private Fire Service Mains On-Site: ~43 questions in 1 hour. Standards include NFPA 24 with friction loss concepts including impact of fire pumps.

(UFM4) Private Fire Service Mains Business Representative: ~62 questions in 2 hours Standards include NFPA 24 with friction loss concepts including impact of fire pumps.

(CTFH2) Confidence Testing Fire Hydrant: 35 questions, 1 hour. Questions are based on NFPA 25 Handbook, CTFH2 Test Material booklet (on our site), and Kennedy K81 O&M manual (our site).

ANNEX "B"

Sample Questions for Select Assessments

This section provides a few sample questions to help participants study and prepare. These questions are generally related to math type questions which is where the biggest concerns have been expressed. These questions are not intended to teach theory and will not cover all formats that a related question may be presented. They are intended to help individuals understand general concepts.

We understand that there are limited resources for these specific topics. We do not expect UFM participants to be designers. However, CSA and the jurisdictions do expect these installers to have an understanding of friction loss, impacts of pump, and forces exerted on thrust blocks and joints in large diameter pipe. These are life safety systems and the installer is expected to understand critical forces and pressure limitations of the materials used.

Business certificate holder tests related to sprinkler systems may include calculations such as Hazen Williams, flow from Pitot values, and K factors.

Additional study questions may be found on our web site under the "Test Info" link.

Underground Fire Main (UFM) Sample Questions:

1. A new 6” fire main is being installed to supply a warehouse. Based on the anticipated fire flow demand of the sprinkler system the friction loss will be 0.03 psi/ft (psi per foot). The new section of pipe will be 125’ long. What is the friction loss (in psi) within this new section of pipe?

   Answer: A friction loss of 0.03 psi/ft x 125’ of pipe results in a total loss of 3.75 psi.

2. If a 200’ section of pipe has a total friction loss of 4 psi, what is the friction loss per foot of pipe (psi/ft)?

   Answer: Divide the friction loss by the total length of pipe to get the loss per foot of pipe. 4 psi / 200’ = 0.02 psi/ft

3. A fire pump has been installed on a supply pipe between the street tap and the building. The fire flow at the street has a static pressure of 70 psi and a residual flow of 55 psi at 1,000 gpm. The sprinkler contractor has selected a fire pump rated at 90 psi at 1,000 gpm. No pressure reducing valves have been provided. Assuming the sprinkler system is flowing 1,000 gpm, what is the discharge pressure at the pump?

   Answer: Pumps boost pressure. In this question (typical of UFM questions) the flows are consistent and the question is based on flowing water or residual pressures. As long as the flows are the same you simply add the pressures of 55 psi suction + 90 psi pump to obtain a discharge of 145 psi.

   a. Using the information in the question above calculate the following: The fire pump develops a churn pressure of 120% of the rated pressure. What is the discharge pressure of the pump at churn during the weekly automatic pump test?

      Answer: The churn pressure of the pump by itself is 90 psi x 1.20 (or 120%) = 108 psi. The question asks for the discharge pressure during the weekly automatic pump test. This indicates that the system is open to the street pressure which provides a static pressure of 70 psi. Thus, You have to add the static pressure of 70 psi to the pump churn pressure of 108 psi to get 178 psi discharge pressure.

   b. The civil engineer did not specify a pressure rating for the pipe as he/she did not know what size pump the sprinkler contractor was going to select. Using the information above, what is the required minimum pressure rating of the underground pipe between the pump and the building? Select the appropriate option below.
      1.) 100 psi 2.) 150 psi 3.) 200 psi

Answer to 3b: Based on the answer from question 3a we identified that the pump churn during the weekly testing will be 178 psi, which is above 150 psi. Therefore, the pipe must be rated for 200 psi. (This churn pressure of 178 can also create issues for the sprinkler contractor as many of his fittings are generally only rated for 175 psi. This issue is not addressed here).

There are questions related to thrust blocks and forces on them. The table of thrust at 100 psi will be provided in the question. However, the question may be at a pressure other than 100 psi. Footnotes to the table show an example of how to calculate for pressures that are not 100 psi. Make sure to read and follow the footnote if the pressure given is other than 100 psi. In the example you would insert the actual value for pressure over the 100 to obtain the proper ratio. Example 90 psi would be 90/100, 130 psi would be 130/100.

Fire Alarm Voltage Drop Sample Questions:

1. A fire alarm circuit has five strobes with current values of 0.125A, 0.095A, 0.209A, 0.209A, 0.209A. What is the total current of these devices?

   Answer: 0.125A + 0.095A + 0.209A + 0.209A + 0.209A = 0.847A

   a. Using the information above, and a wire resistance is 0.00307 ohms per foot (3.07 ohm per 1,000 feet). The total distance between the panel to the last device is 500 ft. What is the voltage drop on the circuit?

      Answer: First you must account for the wire resistance in the pair of wires (out and back). Thus, the total distance of wire is 1,000 ft. Using ohms law you calculate the following: V = 0.847A x (1,000 x 0.00307). This results in a voltage drop of 2.60 volts.

      The standard format that NFPA 70 and manufacturers provide wire resistance is ohms per 1,000 feet. If a question is provided with this format you will likely need to convert this to a resistance/foot. Example: Resistance is 3.07 ohms per 1,000 ft is converted by 3.07 ohms / 1000 ft = 0.00307 ohms/ft