



THE TEST REPORT

A Newsletter of the California Council of Testing and Inspection Agencies

PRESIDENT'S CORNER –

By Elizabeth Levi

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President's Corner

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- 1 The 2007 year is over and it seems as though the time passed by quickly. We end of the year with 48 firms represented in membership and 2 new firms waiting membership auditing. How exciting to be a part of California's growing industry in the Inspection and Testing arena. Our Southern California member firms are growing and input is being given from all over the state on issues such as DSA, OSHPD, City/County Regulatory Agencies, and ASFE RO. Although, we have had ups and downs with the different Regulatory Agencies (including DSA), we continued to keep the dialogue open in order to keep the communication flowing.
 - 2 The Las Vegas Annual Business Meeting is fast approaching and we have planned a fantastic time for all. This year our event will take place at the Treasure Island Resort & Hotel on January 25 & 26, 2008. Room packages are still available if needed, but reservations must be made immediately. If you have any problems reserving a room, call me directly and I will make sure your reservation is set.
 - 3 Will Wahbeh is working with several individuals in the concrete industry to speak at our Business meeting on Saturday. The Golf Classic is open to all members and guests and they have room for more to join for play. Limo will pick up all players at the Hotel Lobby to make things easier on those playing. Contact Bill Cale at bcale@cts-1.com to join in on the fun.
- It has been my pleasure serving as your President and Interim Treasurer for the 2007 year. I have enjoyed working for the membership and with the different Committees Chairs. I am constantly humbled by the amount of mentoring, assistance, and friendship that was showered on me by many of the member firms during my position as President. I am fortunate to have had a very strong Board of Directors working with me to keep me focused and moving forward. It is amazing that we can set aside our competitive side to come together as one group to improve the image of Special Inspection and Testing Labs throughout California. Throughout the year, you have continuously brought to the table many ideas and concepts which we have turned into positive goals.
- This year we have seen the start of our Continuing Education Seminar that was headed by Greg Ruf (Krazan), Jeffrey Cannon (Kleinfelder) and Miki Craig (DCI). It was a great turn out and we plan to continue more educational seminars to the Industry in 2008. We focused more time building membership with our Southern California friends and have seen an increase in meeting attendance. While our ongoing issues with DSA seem to be a constant focus, there seems to be strength in numbers while we gather in unison both North and South firms. Our Ontario and San Diego meetings proved to be our largest with DSA being the solid forum for our talks.
- Also this year, we expanded our involvement in the ASFE RO Committee and plan to move into 2008 with a consolidated list of items for them to support and educate us. ASFE continues to have solid backing to assist us legislatively which our membership needs in order to gain positive momentum on the key issues we are fighting today.
- As the year ends, I want to thank each and every one of you for your support, knowledge, and strength that you shared with me and the other members during the 2007 year. I look forward to the same member support with the incoming 2008 Board of Directors and new President.
- Thank You!

We're on the Web!
[http://
www.cctia.org](http://www.cctia.org)



In Memory of Vern Peterson

By Cliff Craig, Dynamic Consultants, Inc.

Vern Petersen passed away November 14, 2007 after losing his battle with cancer.

He was a staff member with International Code Council (ICC) and we worked together on numerous committees involved with the ICC (formerly ICBO) special inspection exam development. He was responsible for the coordination of the various special inspection exam committees that met regularly all over the country. I was one of the industry representatives that served on the committee. We met once or twice a year for two or three days. I had many telephone conversations and many more email contacts.

His passing struck me harder than I expected. I had lost a friend and our industry had lost a loyal supporter. Vern had been with the certification exam process from the beginning when it started with Dave Nelson and ICBO out of Whittier, California. He was involved in the transition over to ICC and he was a significant reason for the respectful manner in which ICC accepted the program and our industry. Vern was an important voice, behind the

scenes, that helped our industry maintain an influence in the certification process. Thank you, Vern!

I will always remember during one of the early exam committee meetings, we had just finished a series of heated debates among the committee members about special inspection issues. These debates were common during the early days of the committee. Vern managed to keep us on target in spite of the different points of view. We were a vocal and outspoken group from different parts of the country and a real handful as we argued over issues big and small. During all of this Vern was cool and calm. Always with a smile, he kept our focus on the objective. I complimented him on his management skills with some strong personalities, my own in particular. He simply said his job was to “facilitate” the process, and indeed he did! He enabled us to learn from each other’s experiences, which enhance the dynamics and effectiveness of the exam development process. With his wisdom and guidance, the exam committees developed into a system we can trust and depend on as effective and representative to our industry. Thank you, Vern!

FAQ: Is An Overhead Puddle Weld Possible?

Question: I have specified a overhead puddle weld on a project and the contractor is claiming that they cannot perform this weld. I’m attempting to determine if the contractor is correct. Do you have any thoughts on this?

Submitted by a S.E. from Oakland

Response Submitted by Greg Ruf: Puddle welds are typically used to join sheet metal to *underlying* structural steel elements. These welds are generally completed by using high heat settings to allow for burning through of the sheet metal. With the higher heat required for this welding technique a larger weld puddle is formed than would typically be created with the use of a lower heat (amperage) setting. The connection strength of the puddle metal is a function of the perimeter area of the weld. With the larger puddle area of a puddle weld versus that of a linear weld or plug weld, and the higher heat of the molten metal, the application of a puddle weld is governed by gravity. The forces of gravity do not allow for the creation of a larger weld puddle as is common for a puddle weld in any position other than the flat position.

The completion of welds on a vertical surface and in the overhead position requires a much greater degree of control on the heat settings so that sufficient heat is applied to obtain proper penetration while excessive heat is avoided. This does not allow for burning through of the sheet metal to create the weld. By avoiding the “overheating” of the metals the molten metals will freeze much quicker and the effects of gravity are overcome. By designating a plug weld as opposed to a puddle weld a hole of the required size (perimeter) is provided in the sheet metal prior to the start of welding. The weld is then made along the perimeter of the hole using a lower heat setting that provides for proper penetration while controlling the size of the weld puddle to avoid loss of metal due to drop out associated with gravity. Where the interior of the hole is to be completely filled with weld metal a plug is created that can be ground and dressed to create a uniform surface with that of the surrounding metal.

Greg Ruf is the Managing Engineer for Krazan & Associates San Francisco Bay Area operations, with over 25 years of experience in providing special inspection services. Mr. Ruf is based in San Jose, CA. He can be reached at greg@krazan.com.



FAQ: Overhead Puddle Welds (Continued)

Response Submitted by Dave Palfini

Arc spot (puddle) welds and arc seam welds are only done in the flat position. See AWS D1.3-98, Table 1.2 It is almost impossible to do them in any other position.

Dave Palfini is a principal at Testing Engineers, Inc. and an ASNT Level III and AWS – Senior CWI. He can be reached at DPalfini@Testing-Engineers.com

Response Submitted by Doug Williams: The simple answer is that if the contractor won't do it, it's not going to get done - regardless of theory.

See D1.3-98 Table 4.1 for standard joints. #4.4, Arc spot weld-sheet to supporting structural member is only shown for F, i.e., flat weld only. #4.5B is only shown for the Horizontal position. The relevant all-position weld might be #4.5, the arc plug weld.

Doug Williams is a consulting metallurgical and welding engineer with over 35 years of experience in metal working industries. He can be reached at Doug@WeldEngineers.com

GOT A QUESTION?

Send it to Q&A, CCTIA 2811 Teagarden St. San Leandro, Ca. 94577 or email terry@testing-engineers.com

Specifying Lightweight Concrete

By Mark Gilligan Structural Engineers with Tipping Mar & Member of SEAONC QA Committee

It is common practice to use lightweight concrete over metal deck for floors and in some cases roofs in steel building. The choice of lightweight as opposed to normal weight concrete is driven by a desire to minimize the weight of the floor and by a desire to improve the fire resistance of a given assembly.

In the recent years we have seen a number of situations during construction where concrete suppliers have during the submittal process claimed that they cannot comply with the 110 pcf density specified. Often times this issue will arise when the reviewer of the mix design notes that the reported density of fresh concrete is significantly larger than the 110 pcf specified and requests evidence that the mix complies with the specified density.

This lack of availability can have significant consequences that may not always be obvious to the structural engineer. From a structural point of view another 5 to 7 pcf might translate into an added 2 to 3 psf of slab area which can be fairly easily accommodated by most projects. But when we look at the problem from the point of view of the fire rating of the assembly these few additional pounds per square foot can cause a number of problems that are not easily solved.

Fire ratings of assemblies are determined by test and the assembly used in the project has to match that used in the qualification test. The vast majority of the assemblies tested using lightweight concrete specified a density of 110 pcf. Thus when the concrete mix design reports a density of 120 pcf the installed assembly no longer has the fire rating assumed. If concrete with the specified density is truly not available the consequences can be disruptive to say the least.

When the lightweight concrete mix design does not meet the criteria for inclusion in the assembly your options are limited. You could assume the concrete was normal weight and use one of the ratings using normal weight concrete but this would change the thickness of the floor and it most likely would result in changes to the lateral system to deal with the increased weight. Another option would be to apply some sprayed on fireproofing to the underside of the deck. Neither of these options are desirable.

At this point it might be desirable to say that fire rating are not in our scope of work and wash our hands of the problem, but the reality is that we still have a responsibility to produce designs that comply with the fire assembly that is being used and if not let our Client know. In addition if the problem arises it can be very disruptive to our work even if we have no formal liability.

Determination of Concrete Density

The equilibrium density of a concrete mix design is determined by ASTM C567 which allows you to either determine the equilibrium by test or by calculations based on dry weights of the materials properties. The test procedure consists of heating a physical sample of the lightweight concrete until the weight effectively stops changing. The calculation procedure is useful when the drying test has not been performed. The calculation procedure has also been used to qualify a mix design when it is likely that the test procedure would have produced larger values.

Typical practice is to allow a tolerance of 3 pcf +/-



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Specifying Lightweight Concrete (Continued)

By Mark Gilligan

When density of fresh concrete is measured using ASTM C138 the density is typically 3 to 8 pcf greater than the equilibrium density for the same mix. The relationship can be used to make an initial determination of whether or not there is a problem.

Solution to the Problem

The solution to this problem requires that the aggregate suppliers, concrete suppliers and structural engineers work together.

The practice of using lightweight concrete has developed over the years and has been encouraged by the suppliers of lightweight aggregate and concrete. Thus the industry has a moral if not a legal responsibility to keep the design community informed of changes in the market place so as to prevent problems. If 110 pcf lightweight concrete is truly not available then in many instances we will need to modify our designs. If changes are needed they should occur early in the process not during construction and we should not find ourselves with a constructed facility that does not comply with the required fire rating.

The concrete suppliers have an obligation to be aware of the specified concrete properties and to raise the issue when the requirements cannot be met. When 110 pcf light weight concrete is specified it is not acceptable to submit a mix design with a 120 pcf wet density without either clearly noting that the mix does not comply with the specified properties or providing evidence the equilibrium density complies with the specifications.

During Construction Administration the structural engineer should:

1. Verify that the light weight concrete is being used to meet fire rating requirements. In some cases there is no need for a rated assembly or normal weight concrete of the thickness provided would have the desired rating. If this is the case it may be possible to accept slightly heavier concrete.
2. Note the wet density reported for the mix design and if it is greater than 113 pcf plus the tolerance allowed by the evaluation report, request verification of the equilibrium density. This verification could be based on either method described in ASTM C567.
3. If the Contractor cannot provide evidence the mix complies with specified density suggest that he consider replacement of normal weight fine aggregates with a lightweight aggregate. A call to the supplier of lightweight aggregates can be helpful in resolving this problem since they are often willing to work with the concrete supplier and show him how he can produce a mix that complies with the specifications.

If this approach is followed it will save everybody a lot of grief.