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INSPEC.NWZ

Dear,

Wishing everyone Happy Holidays and a Prosperous New Year

THANKS FOR ANOTHER GREAT YEAR!

By Doug Hartman

As we begin our 30th year of practice, the developmental growth in Texas cities has reached a pace not experienced since the 1970's. The skylines become more sophisticated and more expansive, and our firm's small contributions are reflected there as well. Our clients involve us in projects from coast-to-coast and on overseas sites, from distribution centers to medical facilities to military installations.

We want to take this opportunity to sincerely thank all of our clients for the confidence you place in us to provide you with specifications,

accessibility, and sustainability services throughout the years. Our success is based on your continued loyalty and our efforts to maintain a high level of service that is affordable, consistent in quality, and timely.

In 2014, we have prepared specifications on 475 projects; reviewed drawings and made inspections on 145 projects for conformance with TAS (Texas Accessiblity Standards); served as the accredited professional on 18 LEED® certified projects; and as a representative of the City of Dallas, served as Green Building Provider Contractor on 21 projects.

Relative to specifications, project types were roughly distributed as follows:

Office/Commercial/Retail/Auto	23%
Multifamily/Mixed Use/Adaptive Reuse	19%
Medical/Medical Office/Hospital/Clinic	17%
Manufacturing/Warehouses	11%
Hotel/Extended Stay	8%
Assisted Living	7%
Schools/Colleges/Universities	6%
Municipal/Institutional	4%
Dormitories	2%
Miscellaneous	3%

INSPEC STAFF CELEBRATING ANNIVERSARIES

Changes to Requirements f Floor Tile COF

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One of our proudest achievements is the longevity of our staff. As we enter 2015, we recognize the following for their service:

Name	Years at Inspec	Name	Years at Inspec
Joan Blankenship	29	Kevin Wang	10
Mike Ranalletta	24	Allen Cornett	9
Susan Lincoln	12	Alex Martinez	4
Steve Brown	11	Woodrow Woods	1
Marie Hartman	11		

LEED® TOOLS AND TIPS

by Allen Cornett, LEED®, Dallas Green Consultant

The world of sustainability is consistently growing and changing. Keeping up with what is current can be nothing short of a scavenger hunt at times. Among the wide range of project types, systems types, LEED® submittal documentation, and products available it can be enough to make your head spin. Below can be found links to several resources that may come in handy:

Is your LEED® project multiple buildings on a single tract of land for one owner, a single building on a master planned site for one owner, or a single building that is placed on different sites? The LEED® volume program or LEED® Campus/Multiple Building certification may be right for you.
http://www.usgbc.org/resources/leed-volume-program-overview-and-process
http://www.usgbc.org/cert-guide/volume
http://www.usgbc.org/resources/campus-guidance

Are you unsure how to handle gender ratio, fixture groups, metered faucets, or plumbing fixtures inside and/or outside a lease space? If so use the link below:
http://www.usgbc.org/resources/water-use-reduction-additional-guidance

Are you working on an addition or ground-up building being serviced by an existing mechanical system outside of the LEED® boundary? The link below provides information on how to address these systems in multiple LEED® prerequisites and credits:
http://www.usgbc.org/Docs/Archive/General/Docs7671.pdf

Do you ever wonder what goes into a review team's decision, or how to organize your information? The links below will provide some insight:
http://www.usgbc.org/search/submittal tips?filters=type%3Aresource http://www.usgbc.org/articles/leed-reviewer-compass-understanding-logic-behind-review-decision?mkt_tok=3RkMMJWWfF9wsRonuarNZKXonjHpfsX54ukuXKag38431UFwdcjKPmjr1YIFT8Z0aPyQAgobGp5I5FENTLLYX7Nwt6AFUg%3D%3D

Do you have a unique situation on a LEED® project and would like to know if anyone else has encountered a similar situation? The link below contains a forum that can be searched or a question posted:
http://www.leeduser.com/

Do you want to search for materials and find out which LEED® credits they can contribute to? The link below contains a database that is a good starting point:
https://www.greenwizard.com/

Do you find yourself in need of 1 or 2 innovation in design credits that are not exemplary performance items? If so peruse the pilot credit library or cradle-to-cradle products for possibilities:
http://www.usgbc.org/pilotcredits
http://www.c2ccertified.org/products/registry

Would it be helpful to have access to the LEED® online forms but your project has not been registered yet? When you sign it at the link below there are sample active forms that can be downloaded for your use:
https://www.leedonline.com/irj/portal/anonymous

Hopefully the links above will shed some light and make your projects less cumbersome.

LEED® Update – Projects can be registered under the LEED® 2009 rating systems until 10/31/16.

CONTINUOUS INSULATION AND VAPOR RETARDING CONSTRUCTION

by Kevin Wang

As far back as any of us can remember, it was customary to use a vapor retarder in exterior wall construction in ASHRAE climate zones 3 and above (Dallas-Fort Worth is in zone 3). In the higher zones (colder climates), an air tight vapor barrier was/is critical in keeping warm/moist interior air from entering the exterior wall/soffit construction during the winter. In zone 3, while the presence of a vapor retarder didn't do much good in the winter because poor installations allowed air to pass through seams and terminations, it also did no harm in the summer when the vapor drive was reversed.

However, over the last 20 years or so, ASHRAE has modified its recommendations about vapor retarders in zones 3 and 4 (roughly from Austin to Kansas City) to where vapor retarders are no longer recommended, except when dew point calculation deems it is needed. And in some cases, vapor retarders are prohibited in exterior walls (City of Plano is one municipality), and many sustainable design checklists carry the same message.

So, in the North Texas area we now live by a simple rule of thumb when it comes to exterior framed wall construction: Never put a vapor retarder in the cavity wall assembly. The rationale behind this policy is to allow moisture, in water vapor form, to be able to pass through the cavity and prevent it from being trapped inside the wall, where it can cause very costly damage.

Now, to complicate matters, the past two iterations of the International Building Code (IBC) and the International Energy Conservation Code (IECC), require the installation of a continuous plane of insulation in the wall cavity for certain construction types. With the introduction of this new requirement, the most common solution for code compliance is to include a layer of rigid insulation, most commonly either a layer of extruded styrene, mineral wool, or a foil-faced polyisocyanurate board. The foil facing on the "iso" board is a vapor retarding material, which goes against the tenet that we've all adhered to. Does this spell disaster for our exterior walls? Not necessarily.

Before getting any further into the conversation, it's important to understand the reasons vapor permeability in our wall design has been paramount in the past. For decades, the typical method of insulating framed construction has been the use of batt insulation within the wall framing. As we now know, the effectiveness of the batt insulation in this application is more or less negated by the thermal bridging from the exterior finish, through the wall framing, into the conditioned space. We all also know that when warm, moist air meets a surface cooler than the dew point, the water vapor in the air will condense on that cooler surface. The same way your iced tea glass will "sweat" in the summertime, the wall framing in the exterior wall, whether chilled by exterior air in the winter or conditioned air in the summer, may cool to a low enough temperature to allow for condensation to occur within the wall assembly. It's no secret that exterior wall assemblies will get wet from time to time. We design them with this in mind, with a means for the moisture not to be trapped within the assembly. It is not the mere presence of moisture that causes damage, but its remaining without a means of escape that does.

So, why is it now not necessarily detrimental to incorporate a vapor-retarding material in the wall assembly? The answer is actually fairly simple in concept. Born out of the goal of energy-use reduction, the requirement for continuous insulation exists to provide for more efficiently insulated exterior walls, therefore lowering the energy consumed to heat or cool our occupied space. Because the thermal bridge effect is so significant, the

logical solution would be to prevent that bridging from occurring in the first place instead of counteracting it. Therefore, the layer of continuous insulation outside of the framing is a much more effective use of insulation than within the framing itself. By also placing that continuous layer of insulation outside of the wall framing, we are essentially bringing the framing into the conditioned space, where, if all components are properly detailed and installed, it should remain close to the design temperature for the building's occupied spaces. This means that, providing that temperature is constantly above the dew point, condensation should not be occurring interior to the continuous plane of insulation.

Although this is generally a simple concept for us to understand in principle, the problem of vapor permeability does not just automatically go away. It is still extremely important for us to understand the factors that could contribute to moisture collecting within the exterior wall assembly and mitigate each of those factors accordingly. First, as we always recommend, regardless of the exterior wall construction, engage a mechanical engineer to perform a dew point calculation of the assembly. This should verify that your design is sound in principle. Next, as a high percentage of failures is not the result of a material itself failing, but rather in terminations and transitions, work through the detailing of specific conditions for each material and plane. The continuity of the insulation is extremely important in particular. Some insulation and exterior cladding manufacturers offer whole system design services, including a system warranty*. Finally, no matter how well considered your solutions may be, they will not be effective unless properly executed during construction. Periodic reports and observations in the field during construction are important to confirm that the designed system is built to the intended performance. For instance, sealing of joints is of particular concern for some systems to perform as designed.

"Work smarter, not harder." I don't know who first said this, but continuous insulation is just another example of the saying. We want our building materials to work more effectively and result in more efficient buildings. As the industry continues to evolve and adapt, we must continue to understand the ramifications of new materials and applications.

*Manufacturers offering design services include:

Dow Building Solutions

Kingspan
Owens Corning

“WHAT'S WRONG WITH MY DOORS?”

by Mike Ranalletta, RAS, TAS/ADA Specialist

Prior to the 2012 TAS revisions, curb ramps used to be a cause of some concern with architects and civil engineers. What kind of surface is acceptable? Heavy broom finish? Grooves? Truncated domes? Well that’s all over with now. The 2012 Texas Accessibility Standards does not require a contrasting texture and color on curb ramps (that are not in the public right-of-way).

What I see more frequently as an issue is doors, particularly door surfaces. Section 404.2.10 clearly states that “swinging door and gate surfaces within 10 inches of the finished floor or ground, measured vertically, shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16 inch of the same plane as the other.” See full section below.

Aluminum and glass doors, solid glass doors, wood doors with raised panels; all must comply with this section.

Latches, door stops, seal strips and other devices attached to the door on the push side, within 10 inches of the floor, that project more than a 1/16 inch from the door surface can render the door non-compliant.

Chapter 4: Accessible Routes, 404 Doors, Doorways, and Gates
404.2.10 Door and Gate Surfaces. Swinging door and gate surfaces within 10 inches of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16 inch of the same plane as the other. Cavities created by added kick plates shall be capped.
EXCEPTIONS:
1. Sliding doors shall not be required to comply with 404.2.10.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal shall not be required to meet the 10 inch bottom smooth surface height requirement.
3. Doors and gates that do not extend to within 10 inches of the finish floor or ground shall not be required to comply with 404.2.10.
4. Existing doors and gates without smooth surfaces within 10 inches of the finish floor or ground shall not be required to provide smooth surfaces

complying with 404.2.10 provided that if added kick plates are installed, cavities created by such kick plates are capped.

IN THE KNOW: *THE TEXAS ACCESSIBILITY STANDARDS WERE REVISED IN 2012. www.tdlr.texas.gov/ab/abtas*

ARE YOU A CDT?

by Susan Lincoln

The Construction Documents Technology (CDT) program provides a comprehensive overview of the written construction documents. Anyone who writes, interprets, enforces, or manages construction documents will greatly benefit from this program. That means you - project architects, contract administrators, contractors, and material suppliers. We are all working with the written construction documents.

This program teaches the roles and relationships of all the participants as well as the interrelationship of the drawings and specifications. CDTs perform their jobs better because they know and understand better.

The program includes:

- The Construction Process
  - Construction contract types
  - Modifications and substitution procedures
- Contractual Relationships
  - Rights, duties, and responsibilities
  - Contract provisions
  - Relationship and organization of construction documents
- Uses of Construction Documents
  - Organizational formats

- Interpreting construction documents

Are <u>you</u> a Construction Documents Technologist (CDT)? If not, why not? If you are reading this article, you are involved in some area of the construction process and you would benefit. Even if you do not plan to take the exam, the knowledge itself is invaluable.

The Dallas CSI Chapter provides a study course every year that covers this material. Check the web site for details. http://dallas.csinet.org

"Pass the Construction Documents Technology Exam (CDT), and you'll join an elite group of professionals known in the industry for their comprehensive knowledge of the writing and management of construction documents."

RAINSCREEN SYSTEMS AND MATERIALS

by Woodrow Woods

Moisture is one of the leading causes of building enclosure deterioration. Understanding and predicting moisture movement through exterior walls is critical to improving building performance and preventing damage to the building and contents. The largest source of moisture for exterior building walls is caused by wind driven rain.

Rainscreen wall systems are designed to allow for some rainwater to penetrate the outer surface and provide a way for the water to positively drain back to the outside of the building. An air space is provided behind claddings to create a ventilation space to ensure an uninterrupted drainage gap and act as a capillary break between the cladding and the remainder of the wall. Water within the cavity runs down whatever surface it encounters until it is directed back outside the cavity by strategically placed flashing. Since the water to be drained tends to stick to the surface by capillary action, a drainage gap of at least 1/4" wide and preferably 3/8" wide should be provided to allow the water to properly drain and not pond.

Water that remains in the drainage cavity will be absorbed into the building materials, penetrate into the building or be dried out thru evaporation and vented to the exterior. Problems can develop at interruptions in the plane of the wall by items such as windows, decks, and the termination of walls at grade. These require proper flashing and weep holes to direct water to the exterior. In addition, it is critical that a properly designed UV resistant air-moisture barrier and proper flashing around all penetrations be properly installed behind the air space to divert water to the outside rather than into the building. Once the structural support for the rainscreen veneer panels or materials are in place, it is recommended that the building be tested for water penetrations or leakage prior to installing the rainscreen panels.

Ventilation should be designed at the top and bottom of the walls to allow evaporation of any remaining water in the cavity to be removed to the exterior. The vented airspace also allows for wind pressure differences across the cladding to be reduced by connecting an air space behind the cladding with the wind-induced pressure acting on the exterior. Since the air pressure in the cavity stays close to the air pressures of the wind driven rain on the panels, less rain will be forced across openings and into the cavity.

Failures in screened systems can occur if proper drainage is not provided and the wall is allowed to retain water within the system. As a designer, one should be aware of three factors to address in designing a rainscreen system as follows:

1. Deflection of primary rain driven water away from the building
2. Drain any water that gets behind the rainscreen panels back to the outside using proper barriers and flashing
3. Dry the cavity thru proper ventilation at top and bottom of panels

Some of the rainscreen systems available to the designer in America today include brick or stone veneer cavity walls, ventilated (ACM) aluminum composite panels, wood-grained composite exterior panels (Prodex, by Prodema and Meteon by Trespa), architectural terracotta (Hunter Douglas Contract-NBK terracotta panels and baguettes and Boston Valley TerraClad Systems) and drainable EIFS. Even manufacturers of composite fiber cement panels (Hardipanel, etc) now require furring behind their sheet products to promote drainage.

Specifications for rainscreen system include the entire system including the exterior panel materials, subgirts and splines that provide support for the panel system anchored to the supporting wall system, complete secondary drainage system, and air/moisture barrier and flashing. Panels should be anchored to subgirts and splines with clips that allow individual panels to be installed and removed without disturbing adjacent panels and not be sealed.

Regarding choosing an effective air/moisture barrier, the following should be considered:

1. Products need to be UV resistant, as some sunlight may penetrate the rain screen through joints in the panels.
2. The product may be required to be vapor permeable (typical) or vapor retarding depending on the results of a dew point calculation.
3. Products should be selected based on method of application. For instance, mechanically attached or peel-and-stick sheets may not be appropriate for windy, high rise construction, where a fluid applied product might be easier to apply.

Rainscreen systems offer the designer a fresh alternative to many of the traditional building materials using a variety of materials, color and texture while providing a critical solution to controlling water migration into the building.

“Slippery Situation: 2014 Changes to Requirements for Floor Tile COF”

by Steve Brown

A major change has occurred regarding the “coefficient of friction” for ceramic, porcelain and glass floor tile, the frequently cited and specified measurement of a tile’s “frictional resistance” and the parameter most closely related to traction and slipperiness. Starting this year, the commonly specified value of 0.60 static coefficient of friction determined by the ASTM C1028 test method, has been superseded by a new method, new test conditions, and a new threshold value. The ceramic tile standard (ANSI A137.1) now specifies a required COF of ≥0.42 for level interior tiles that will be walked on when wet. Previously, there was no required COF value in A137.1 for wet floors. Further, many ceramic tile manufacturers will report their tile's COF value as a DCOF (Dynamic Coefficient of Friction) per the new DCOF AcuTestSM method. Previously the ASTM C1028 method determined a tile’s SCOF (Static Coefficient of Friction - the frictional resistance one pushes against when starting in motion), using a 50 pound weight, a Neolite sensor and a strain gauge. The new method, titled the DCOF AcuTestSM, determines dynamic coefficient of friction (DCOF - the frictional resistance one pushes against when already in motion) with an automated, portable instrument called the BOT-3000, a type of measuring device used specific to flooring applications. The DCOF AcuTest method, now included in ANSI A137.1, determines DCOF under wet conditions using slightly soapy water, or more specifically, water with 0.05 percent Sodium Lauryl Sulfate (SLS) in solution. The SLS is a wetting agent which causes water to spread in a thin film, similar to that found when a slip occurs or when a floor is being cleaned. This was deemed necessary because in actual installations residual soap can remain on the floor after cleaning and can re-emulsify when water is spilled or tracked in creating slippery conditions.

It is very important to understand that the results from the old SCOF method cannot be directly compared to the new DCOF method for the following reasons: first, the frictional resistance between two objects at rest is different and higher than that measured when motion is already taking place; Second, the new test method uses 0.05 percent SLS solution, which is more slippery than the deionized water used in ASTM C1028; and third, the new method applies less force to the test sensor than the force applied in ASTM C1028. These differences and other variables make it impossible to compare directly between the two methods. Also, from ANSI A137.1 (Section 6.2.2.1.10), “The coefficient of friction (COF) measurement provided in this standard is an evaluation of a tile surface under known conditions using a standardized sensor material prepared according to a specific

protocol. As such it can provide a useful comparison of tile surfaces, but it does not predict the likelihood a person will or will not slip on a tile surface".

A relevant consideration moving forward is will floors that met the 0.6 SCOF criteria meet the new 0.42 DCOF AcuTest criteria? Since many floors that were installed to meet or exceed 0.6 SCOF, per ASTM C1028, will in fact exceed 0.6 SCOF, it is reasonable to expect on average those floors will also exceed the new 0.42 DCOF AcuTest criterion. However, as previously stated, it is important to understand there is no direct relationship between the methods; thus COF values on tiles cannot be correlated between the two evaluation methods.
Clearly the architect/designer should carefully consider tile selection with respect to exposure and expected usage. The new COF requirement mandated by ANSI A137.1 and the new performance measurement method provide help in addressing tile selection, and combined with the manufacturer's recommendations and industry standards, moving forward should not be a problem.

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