


“When the Walls Close In...”

the fundamentals of wet-area waterproofing


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Session Description

- It is undeniable that the options for wet area wall surfaces are growing...literally. Whether choosing large-unit porcelain tile, one-piece ceramic wall surfaces, or other solid surfaces in shower applications, the fact remains...the fundamentals of wet-area waterproofing must still be followed.
- Unfortunately, the increasing demand for these types of wall treatments is fueling the potential for increased exposure to costly and unhealthy microbial growth issues.

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Learning Objectives

In this presentation we will:

- Examine the history of large-format finished surfaces in wet areas/showers.
- Review the nature of vapor migration in wet areas and the role waterproofing membranes play in vapor containment, as well as best practices.
- Highlight misinformation, misperceptions, and ineffective installation practices which are fueling the increase in shortened life cycles of shower enclosures.
- The presentation culminates with supportive documentation and collaborative information from independent forensic and waterproofing consultants, strengthening the assertions and issues raised, and maps out a critical path of proactive specification language designed to minimize the risk of microbial growth when using large-format/monolithic wall surfaces in wet areas. By elevating materials, methods and best practices, the risk of remediation associated with poorly managed vapor migration can be greatly reduced.

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The evolution of tile size

Throughout the 50's, 60's & 70's the size of tile on wet surface walls remained relatively small.




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The evolution of tile size




Throughout the 50's, 60's & 70's, the size of tile on wet surface walls remained relatively small.




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The evolution of tile size



White body 4 1/4" x 4 1/4" wall tile with 6" x 6" and 2" x 2" unglazed porcelain mesh mounted tile made up the bulk of many wet-area wall tile installations.



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The evolution of tile size

Welcome to the '80s




When 8" x 8" floor tile...
.....mutated to the walls of bathroom walls & showers




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The evolution of tile size

Monocot Tura 12" x 12"... Welcome to the '80s

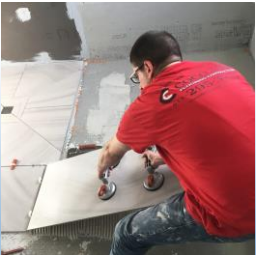


..... And porcelain 12" x 12" through-body floor tile eventually became a part of wet-area wall tile installations



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The evolution of tile size



Which leads us to...today

- Large-unit porcelain
- Agglomerate stone w/side wall/back wall size options
- Solid surfaces/one piece/pre-fab showers



The size of the tile continued to grow...to the point...



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Wall substrates evolved as well

'60s & '70s installations saw a mixture of mortar....and greenboard being used for wet-area wall substrates.

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Wall substrates evolved as well

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Wall substrates evolved as well


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What about the waterproofing?


- When using substrates like backerboard, a “poly” vapor membrane was placed behind the backerboard
- “Fat mud” wall mortar installations would use felt paper behind the mortar bed

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What about the waterproofing?




- When using substrates like backerboard, a “poly” vapor membrane was placed behind the backerboard




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What about the waterproofing?

Liquid membranes.... **....and sheet membranes**



Became “best practices” for waterproofing the face of the substrate. However, not all membranes perform as required for permeation concerns.



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What about the waterproofing?



Foam board is completely waterproof, typically, three times the cost, and may require additional blocking at seams.

Permeation rates and resistance to vapor migration may vary.




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Setting the stage...





So....why should you be concerned about...solid surfaces, cast/cultured marble, agglomerate stone panels, and large format porcelain finished surfaces?



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Setting the stage...vapor

While waterproofing on the walls has almost become a default standard... there still exists some widely held misconceptions regarding membranes VS. permeation.





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Setting the stage...ASTM E96

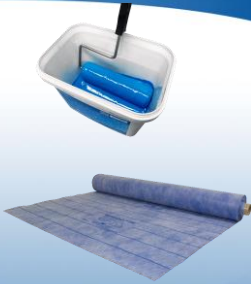

- **ASTM E96 Procedure E**
- **0.5 or lower is the gold standard**
- **Depending which WP membrane you select, you can wind up w/ounces...or gallons of vapor in your stud walls**



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Setting the stage...ASTM E96

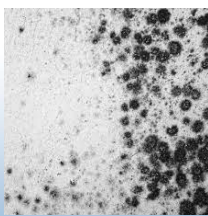

- Most liquid membranes will not meet this metric
- Many sheet membranes can meet this standard, but not all....
- Refer to third-party test results to validate claims

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Setting the stage...ASTM E96


- Vapor migration from shower assemblies... through the wall assembly into the stud wall is a major health concern
- Refer to third-party test results to validate claims


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Setting the stage...ASTM E96

- Vapor migration from shower assemblies... through the wall assembly into the stud wall is a major health concern
- Legal costs and remediation can be staggering



Florida Jury Awards \$50 Million in Habitability/Mold Case



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Setting the stage...ASTM E96



renovation/remediation costs can be as low as \$28/sf for small residential projects and up to \$150/sf for major projects, with total costs reaching \$3-\$7 million dollars



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Setting the stage...

So....why should you be concerned about solid surfaces, cast/cultured marble, agglomerate stone panels, and large-format porcelain finished surfaces?



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Setting the stage...

Combine a wide-open design palette in the bathroom, coupled with the fact the traditional "tile contractor" in many cases morphed into a... "floor covering" entity. And....traditional tile installers, have also in many cases.... evolved as well.



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Some lines should NOT be blurred

A survey of a number of “non-traditional” solid surface shower wall finishes make no mention, nor suggest, or require, any type of waterproofing on the walls. Their specifications and instructions bear this out.



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Some lines should NOT be blurred

In conversations with a number of forensic tile consultants, as well as members of IIBEC, who count waterproofing consultants and forensic experts amongst their membership, have shared their concerns about the “blurring” of WP requirements when using large-format/solid-surface finishes in wet areas.



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Some lines should NOT be blurred

One truism of waterproofing that remains unchanged, unwavering, regardless of the finished goods on the wall....”moisture will find whatever path that becomes available.” In the case of large-format tile, stone, agglomerate stone, or....any solid surface relying on a caulked, sealed joint, seam as the sole line of defense, will not be enough.



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Some lines should NOT be blurred

Or, with regard to the maintenance dependent nature of sealed/caulked joints...."CAULK & REPEAT"

In my many conversations with forensic consultants in both the waterproofing & tile/stone industries, lack of waterproofing on the walls and sole reliance on caulked joints to fend off vapor migration will be a....fail.

RINSE/REPEAT
RINSE/REPEAT
RINSE/REPEAT
RINSE/REPEAT
RINSE/REPEAT



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How prevalent is this concern?

When the ticking time bomb of mold remediation/litigation explodes on one of your projects...it is a big deal in your world.

Legal reviews with titles like..."The Growing Impact of Toxic Mold Litigation" and "Growing Mold, Growing Litigation" indicate a growing problem.



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How prevalent is this concern?

The practice of forgoing waterproofing on the wall when installing large-format tile, stone, and various solid surfaces appears to be on the increase.

There does appear to be some confusion on the part of some architects, owners, and contractors with regard to "best practices", waterproofing, and large-format wet-area installs.



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What is the solution?

Use approved wet-area substrates...only

No drywall...no greenboard

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What is the solution?

Use a waterproof membrane that meets or exceeds ASTM E 96 Procedure E.

Most liquid membranes will not meet this metric, but there are few.

Most sheet membranes (but not all), will meet this ASTM standard, with CPE thermoplastics performing best.

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Summary

Regardless of the large-format finish... ..there must be waterproofing

Architects, owners, and contractors are making WP assumptions based on limited information.

Cost savings of eliminating WP on the walls are not worth remediation/litigation costs.

Sealed/caulked joints are failure points if relied on solely for protection.

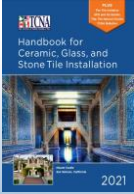
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Why leave it to just anyone?

"Because tile is a permanent finish, the lowest bid should not be the driving factor, but rather who is the most qualified to perform the scope of the work specified." - TCNA Handbook

The Tile Council of North America urges design professionals to include language in specifications to secure qualified contractors and installers. The following nonprofit programs are well-established and recognized by the Handbook Committee:

- Advanced Certifications for Tile Installers (ACT)
- Ceramic Tile Education Foundation (CTEF) Certified Tile Installer Program
- International Masonry Institute (IMI) Contractor College
- Journeyman Tile Layer Apprenticeship Programs
- Natural Stone Institute (NSI) Accreditation for Natural Stone Tile Installation
- National Tile Contractors Association (NTCA) Five Star Contractor Program
- Tile Contractors Association of America (TCAA) Trowel of Excellence Program



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MasterSpec®

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer is [a **Five-Star member of the National Tile Contractors Association**] [or] [a **Trowel of Excellence member of the Tile Contractors' Association of America**].
2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
3. Installer employs only [Ceramic Tile Education Foundation Certified Installers] [or] [installers recognized by the U.S. Department of Labor as Journeyman Tile Layers] for Project.
4. Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of [mud floors] [mud walls] [membranes] [shower receptors] [gauged porcelain tile/gauged porcelain tile panels and slabs] [and] [large format tile].



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BSD SpecLink

QUALITY ASSURANCE

- 0001. Maintain one copy of [ANSI A108.01/02.01](#) and [TCNA H201](#) on site.
- 0002. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- 0003. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.
- 0004. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
- 0005. Installer Certification: Ceramic Tile Education Foundation (CTEF) Certified Tile Installer (CTI) Apprenticeship Program. Installer has achieved Journeyworker status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IBIAC) or a U.S. Department of Labor (DOL) recognized program.
- 0006. Advanced Certifications for Tile Installers (ACT). Certification in the installation of membranes, mortar bed (mud) floors, mortar (mud) walls, shower receptors, large format tile, gauged porcelain tile/panels/slabs and grouts.
- 0007. International Masonry Training and Education Foundation (IMTEF) Supervisor Certification Program (SCP).



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LARGE FORMAT TILE

MEMBRANES

MUD WORK

SHOWERS

GAUGED PORCELAIN TILE

GROUTS

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Advanced Certifications for Tile Installers
tilecertifications.com

Ceramic Tile Education Foundation
ceramictilefoundation.org
info@ceramictilefoundation.org

National Tile Contractors Association / Five Star Contractor Group
tile-assn.com
NTCAqualifiedlabor@tile-assn.com

Tile Contractors' Association of America
tcaainc.org
info@tcaainc.org

Tile Council of North America, Inc.
www.tilecouncil.com
info@tilecouncil.com

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ANY QUESTIONS?

This concludes our program.
Please feel free to contact me for additional information.

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THANK YOU!

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