

"It's All Downhill"

By Dean Moilanen

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Session Description

- Slope-to-drain waterproofing concepts are an essential part of ceramic tile and stone installations. Over time, a variety of installation methods and products have been employed to achieve the required slope to drain. Failure to follow industry best practices can result in costly failures in wet-area applications.
- We will examine some of the historic means, methods, best practices, and forensic examination of failures. In addition, we will focus on new technologies which offer the architect, distributor, and contractor more consistent, reliable, and durable slope-to-drain installations.
- At the conclusion of this presentation, the participant will be armed with the most current and relevant information regarding slope-to-drain installation details.

Learning Objectives

1. We will examine the evolution of slope-to-drain shower pan methods.
2. We will examine the pros and cons of historic slope-to-drain shower pan methods.
3. We will investigate the latest developments in slope-to-drain technology.
4. We will examine current best practice for successful slope-to-drain installations.

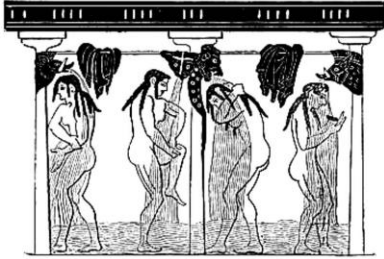
"It's All Downhill"

The evolution of the shower....and slope to drain



"It's All Downhill"

The evolution of the shower....and slope to drain



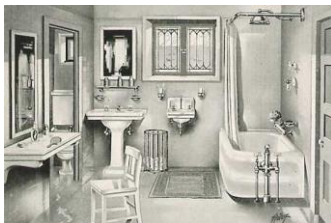
"It's All Downhill"

The evolution of the shower....and slope to drain



"It's All Downhill"

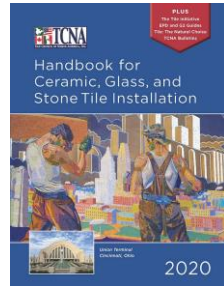
The evolution continues....



"It's All Downhill"

The evolution of standards...

The TCNA Handbook contains numerous references for "slope-to-drain" details in a variety of installation methods.



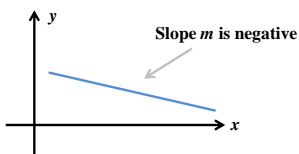
"It's All Downhill"

The evolution of the shower and slope to drain... "born in the fifties"



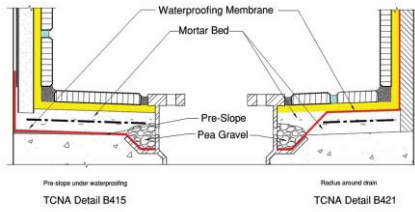
"It's All Downhill"

- This should be old news, but it is surprising how some architects and contractors think "slope to drain" is a recommendation, and not a requirement.



"It's All Downhill"

The evolution of standards....



"It's All Downhill"

The evolution of the shower....building pan and curb



"It's All Downhill"

The evolution of the shower....preparing for mortar



"It's All Downhill"

The evolution of the shower....use of a level ensures correct slope to drain...1/4" per foot



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The evolution of the shower....can you tell if the slope is there?



"It's All Downhill"

A108.1A Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar – 2014

NOTE – ANSI A108.01 and A108.02 are a part of these A108.1A standards

2.3.4 The shower drain shall be installed by the plumber. The waterproof membrane shall be installed over a slope of 1/4 in. per ft. (20mm/m) to the drain weep holes.

2.3.5 Galvanized reinforcing wire shall be suspended near the middle of the mortar bed. Reinforcing wire shall not butt against vertical surfaces. When installing mortar bed mix in a defined space of 65 sq. ft. or less, wire reinforcing is not required unless specified by the project architect or design professional. Alternative reinforcing such as fiberglass strands and/or chemical or latex additives designed for this purpose can be specified by the project manager or design professional.

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The evolution of the shower...and the pan



"It's All Downhill"

The evolution of the shower...and the pan



"It's All Downhill"

The evolution of the shower...and the pan



"It's All Downhill"

The evolution of the shower....and slope-to-drain methods



"It's All Downhill"

The evolution of the shower...early prefabricated "slope to drains" were designed to be used under loose-laid shower pan materials.



"It's All Downhill"

Prefabricated shower pans are offering architects and contractors an alternative to traditional mortar bed "slope to drain"....but they are not created equal.

TECHNICAL FEATURE

Make sure things "pan out"

By David Michaels,
Director of Architectural Services,
The Hydrex Company



"We are now aware of the various prefabricated pan types and pans available for shower pan waterproofing, and this is not created equal. Strength and durability of the tile substrate is paramount in our selection process."

—Michael Lee, Senior Associate, CDC Consultants

Back in the 1940s, when Ray Michaels of Hydrex Company was laboring to create flexible shower pan materials, he could not have foreseen that his efforts would be a substitute for the tile and stone commonly used in the traditional shower pan and other waterproofing methods. Michaels' waterproofing method gave shower pan a new dimension — and a "happy accident" resulted: a product that was thin, strong, and durable, and known for its ability to disperse rain, water, and sewage, making "Hydrex" the tile and stone. From those humble beginnings, the Hydrex Company's prefabricated shower pan has grown into a leading manufacturer of shower pan products. One of the first prefabricated shower pan products was the Hydrex shower pan, which was made of a single piece of material and was known for its ability to disperse rain, water, and sewage, making "Hydrex" the tile and stone.



"It's All Downhill"

*"We are aware of the various prefabricated foam pans and tray available for shower pan waterproofing and they are **not created equal**... strength and durability of the tile substrate is paramount in our selection process."*

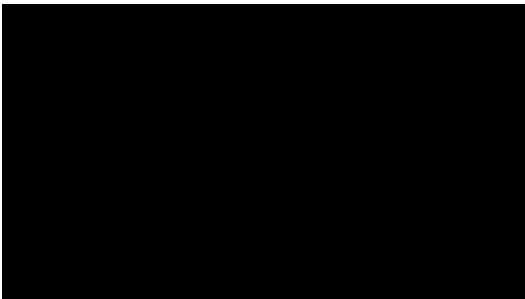
Senior Associate, CDC Consultants

"It's All Downhill"

A variety of options....



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Make sure your choice of prefabricated shower pan/tray also includes a prefab foam curb....



"It's All Downhill"

Make sure your choice of prefabricated shower pan/tray also includes a prefab foam curb....



"It's All Downhill"

The evolution of the shower....building the pan and curb

Anchoring the lath can cause a puncture in the membrane.



"It's All Downhill"

The evolution of the shower....building the pan and curb

A lath & mud curb and pan can last a lifetime, but prefab foam curbs and pans reduce labor and installation failures.



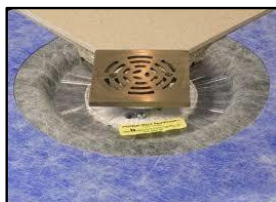
"It's All Downhill"

It's not just the shower...
.....it might be the drying area...



"It's All Downhill"

It's not just the shower pan...
.....it is the drain you select as well....



"It's All Downhill"

It's not just the shower pan...
.....it is the drain you select as well....



"It's All Downhill"

It's not just the shower pan...
.....it is the drain you select as well....



"It's All Downhill"

It's not just the shower...
.....slope to drain is required on exterior decks and patios...



"It's All Downhill"

It's not just the shower...

.....slope to drain is required on exterior decks and patios...



"It's All Downhill"

It's not just the shower...

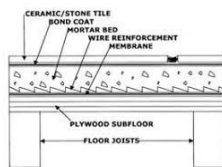
.....slope to drain is required on exterior decks and patios...



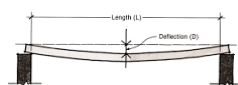
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Deflection...

- The combination of larger tile & stone and cost cutting subfloor building methods (24" on-center 3/4" substrate) is wreaking havoc on residential floors & exterior decks.
- It has been a repeated request by tile/stone contractors to develop a method for identifying problematic floors.



Calculating Deflection



Maximum allowable deflection (D) for joists is equal to L/560
For example, if L = 20'-0"

$$\text{Deflection (D)} = \frac{L}{560} = \frac{20' \times 12"}{560} = \frac{240"}{560} = .429" \approx 1/2"$$

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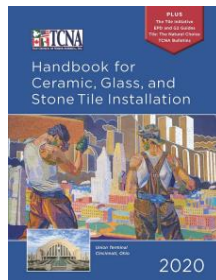
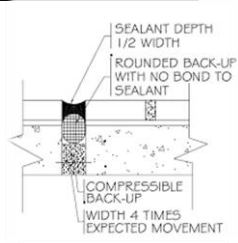


Of course, do not forget to put movement joints into your finished installation.

8' to 12' for exterior
20' to 25' for interior

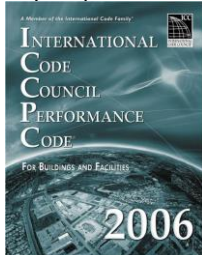
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EJ 171 – Movement Joints:



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Drywall/Greenboard



*USG agrees that drywall/green board **SHOULD NOT** be used in wet areas...*

Unanimous code change, "reflects the poor performance of drywall in wet areas....especially in tile/stone tub & showers"

"It's All Downhill"

The evolution of new products & methods combine with craftsmanship to create lasting beauty.



"It's All Downhill"

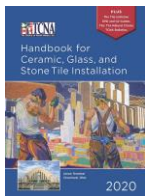
The evolution of new products & methods combine with craftsmanship to create lasting beauty.



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



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].



BSD SpecLink

0000	QUALITY ASSURANCE
0000	Maintain one copy of ANSI A108.01-2010 and TCNA Handbook on site.
0000	Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
0000	Installer Qualifications:
0000	Company specializing in performing tile installation, with minimum of five years of documented experience.
0000	Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
0000	Installer Certification:
0000	Ceramic Tile Education Foundation (CTEF) - Certified Tile Installer (CTI).
0000	Apprenticeship Program: Installer has achieved Journeyworker status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IUBAC) or a U.S. Department of Labor (DOL) recognized program.
0000	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.
0000	International Masonry Training and Education Foundation (IMTEF) - Superior Certification Program (SCP).



ACT

ADVANCED CERTIFICATIONS FOR TILE INSTALLERS

LARGE FORMAT TILE

MEMBRANES

MUD WORK

SHOWERS

GAUGED PORCELAIN TILE

GROUTS





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.
TCNAtile.com/find-qualified
info@tcnatile.com

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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