Seaman Corporation • 1000 Venture Blvd. • Wooster, OH 44691
www.fibertite.com

Issue Date: January 15th, 2013
Issued By: FiberTite Technical Services
Re: FM Approvals Changes,
Steel Deck Ratings and Approvals

FM Approvals: Changes to Steel Deck Ratings and Approvals

In October of 2012 FM Approvals provided all "4470 Manufacturers" a letter that was essentially a heads up outlining some of the changes to and an implementation date for the new Approval Standard 4470. A copy of the Approval Standard can be obtained via the RoofNav website.

Last year FM Global revised their Approval Standard 4470 with an effective date of December 31, 2012. The changes they are implementing relate to the installation of Class 1 roof covers over steel deck construction for FM insured buildings. And although these changes are "technically" only applicable to FM insured construction, they will ultimately impact the way roof systems are engineered across the industry. This is true for both adhered and mechanically fastened systems but it would appear that the greatest impact will be directed at mechanically fastened membrane systems using wide width membranes.

Over the years we have grown accustomed to testing and evaluating our systems according to the gauge and tensile of the steel decking to determine acceptable fastener patterns and sheet width. This has been a logical practice as it is fairly evident that the withdrawal value of the fasteners and their subsequent loading is critical in determining the systems ultimate wind resistance. With the implementation of the changes to the 4470 we will now have to include the span of the steel decking into the evaluation.

The changes FM is implementing will apply rational analysis to ensure steel deck construction does not exceed allowable stress limits when evaluated according to the latest edition of the North American Specification for the Design of Cold Formed Steel Structural Members; AISI S 100-2007.

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FM will review all steel deck assemblies to determine which currently "Approved" assemblies theoretically overstress the deck. After identifying the "overstressed" assemblies, FM Approvals will make one or all of the following changes within individual RoofNav assemblies:

For existing RoofNav Assemblies:

- Reduce the deck span
- Increase the deck thickness / gauge
- Increase the tensile strength of the steel

Or……..

Create new RoofNav assemblies from the existing assemblies with the wind rating reduced to a level where the roof deck is not overstressed while maintaining all parameters of the assembly (i.e. deck span, grades and thickness)

The greatest impact of these changes will apply to wide width membranes and FiberTite's 100-in sheet is no exception.

Consider the following:

22-gauge, 33ksi steel decking with 6' bar joist is probably the most common construction scenario we see in the US. And the most common wind uplift requirement is the ubiquitous 1-90. The changes to Approval Standard 4470 will essentially outlaw 1-90 approval for sheet widths greater than 6 1⁄2' on these buildings.

For new construction, options may include increasing the deck gauge and/or tensile strength or decreasing the span of the structural members. The cost impact of these changes will be borne by the building owners as the narrow sheets, heavier gauge, greater tensile strength and/or tighter bar joist spacing… will require greater labor and overall material costs.

We encourage designers to throw away the 1-90 "cookie cutter" and do the actual FM evaluations/ engineering for their projects. The vast majority of the US only requires a 1-60 for wind resistance and arbitrary wind engineering will escalate overall construction costs.

The impact of the changes on adhered roof systems over mechanically fastened insulations doesn't appear to be as great but it is none the less limiting. Maximum approvals over 22-ga 33ksi steel are limited to 1- 165 and 22-ga 80 ksi steel will be limited to 1-300.

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To date, FM has not offered a "bridge" between 2012 contracts slated for 2013 construction obligated to comply with the new requirements. It is prudent for all stake holders in the construction project to be informed of the changes to Approval Standard 4470 and engage the FM Loss Prevention Engineers for guidance/advice toward compliance and/or acceptance.

At this time we do need to emphasize that the changes to Approval Standard 4470 are not codified in the International Building Code and they are only applicable to FM Insured construction. However we also understand that as FM goes…so goes our industry.

It will take a little more time to understand the full impact on our approvals but we do expect to re-issue our revised RoofNav Guide and incorporate the changes to Approval Standard 4470 in the near future. Until we've accomplished this review, we offer the attached spread sheets provided to us by FM Approvals that accompanied their notice regarding the changes.

The spread sheets are fairly self explanatory in delineating sheet widths, gauge, tensile and span of the steel decking relative to approved uplift ratings and approvals.

If you have questions and or require assistance in the interpretation and or application of FiberTite Roofing Systems relative to the changes to Approval Standard4470, do not hesitate to contact FiberTite Technical Services at: 1-800-927-8578.

Attachments as follows:

- FM Spreadsheet - Max Deck Spans (ft.) by Wind Rating/Fastener Spacing, Sheet Guage for 33 ksi
- FM Spreadsheet - Max Deck Spans (ft.) by Wind Rating/Fastener Spacing, Sheet Guage for 80 ksi

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Seaman Corporation
Phone: 330-262-1111 or Toll-free: 800-927-8578
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MAX DECK SPANS (FT.) BY WIND RATING/FASTENER SPACING, SHEET GAUGE for 33 ksi

Fastener Row Spacing (ft.)	Gauge	330	315	300	285	270	255	240	225	210	195	180	165	150	135	120	105	90	75	60
3.5	18	4.5	5.5	5.5	5.5	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	-	4	4	4.5	4.5	4.5	5	5.5	5.5	5.5	6	6	6	6	6	6	6	6	6
	22	-	-	-	-	-	4	4	4.5	4.5	4.5	5.5	5.5	5.5	6	6	6	6	6	6
4	18	4.5	4.5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	-	-	-	-	4	4.5	4.5	5	5	5.5	6	6	6	6	6	6	6	6	6
	22	-	-	-	-	-	-	-	-	4	4.5	5	5	6	6	6	6	6	6	6
4.5	18	-	4	4	4.5	5	5	5.5	6	6	6	6	6	6	6	6	6	6	6	6
	20	-	-	-	-	-	-	4	4	5	5	5.5	6	6	6	6	6	6	6	6
	22	-	-	-	-	-	-	-	-	-	-	4	4.5	5	5.5	6	6	6	6	6
5	18	-	-	-	4	4	4.5	5	5	5.5	6	6	6	6	6	6	6	6	6	6
	20									4	4.5	5	5.5	6	6	6	6	6	6	6
	22	-	-	-	-	-	-	-	-	-	-	-	4	4.5	5	6	6	6	6	6
5.5	18	-	-	-	-	-	-	4	4.5	5	5.5	6	6	6	6	6	6	6	6	6
	20	-	-	-	-	-	-	-	-	-	-	4	4.5	5	6	6	6	6	6	6
	22	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	5	6	6	6	6
6	18	-	-	-	-	-	-	-	-	4	5	5.5	6	6	6	6	6	6	6	6
	20	-	-	-	-	-	-	-	-	-	-	-	-	4.5	5.5	6	6	6	6	6
	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	5.5	6	6	6
6.5	18	-	-	-	-	-	-	-	-	-	4	4.5	5.5	6	6	6	6	6	6	6
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7	18	-	-	-	-	-	-	-	-	-	-	-	4	5.5	6	6	6	6	6	6
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7.5	18	-	-	-	-	-	-	-	-	-	-	-	-	4	5.5	6	6	6	6	6
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Wind Rating		330	315	300	285	270	255	240	225	210	195	180	165	150	135	120	105	90	75	60

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3.5	18	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	22	5.5	5.5	5.5	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
4	18	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	22	4.5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
4.5	18	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	22	4	4	4.5	5	5	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6
5	18	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	4.5	5	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	22	-	-	4	4	4.5	4.5	5	5.5	6	6	6	6	6	6	6	6	6	6	6
5.5	18	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	4	4.5	4.5	5	5.5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6
	22	-	-	-	-	-	4	4.5	5	5.5	6	6	6	6	6	6	6	6	6	6
6	18	5	5.5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
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8	18	-	-	-	-	4	4	4.5	5	6	6	6	6	6	6	6	6	6	6	6
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8.5	18	-	-	-	-	-	4	4	4.5	5	5.5	6	6	6	6	6	6	6	6	6
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	22	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4.5	5	6	6	6
10	18	-	-	-	-	-	-	-	4	4	4.5	4.5	5	6	6	6	6	6	6	6
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	22	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4.5	5.5	6	6
10.5	18	-	-	-	-	-	-	-	4	4	4.5	4.5	5	5.5	6	6	6	6	6	6
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11	18	-	-	-	-	-	-	-	-	4	4	4.5	5	5	6	6	6	6	6	6
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11.5	18	-	-	-	-	-	-	-	-	-	4	4	4.5	5	5.5	6	6	6	6	6
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	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4.5	5	6	6
12	18	-	-	-	-	-	-	-	-	-	4	4	4.5	5	5.5	6	6	6	6	6
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4.5	5	6	6	6
	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	5.5	6
Wind Rating		330	315	300	285	270	255	240	225	210	195	180	165	150	135	120	105	90	75	60