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JAN 17 2011

RESUBMIT _____ APPROVED Accepted

BY *KMH* DATE *1/20/11*

Leveling Devices
Bridgewater, VT Route 100A, BR14

Assume:

Grid weight of	65.1	lbs / sf incl steel and concrete
Additional	50	lbs / sf dead load for workers, tools, etc
Leveling Devices @	3	foot c/c +/-
	1/2	inch Dia bolts
	6	Unbraced length of bolt
	6	Support spacing c/c in feet

Strength of bolt under compression

$r = (0.5 \text{ inch}) / 4 = 0.12500$

$F_a = 23580 - 1.03 (k / r)^2$

$F_a = 23580 - 1.03 (0.65 * 6 / 0.125)^2 = 22,577$

$22,577 \times 0.1963 \text{ (area of bolt)} = 4.4331 \text{ kips / bolt capacity}$

Load

$6' \text{ length of panel} \times 0.1151 \text{ kips / sf design load} = 0.6906 \text{ kips / ft / stringer}$

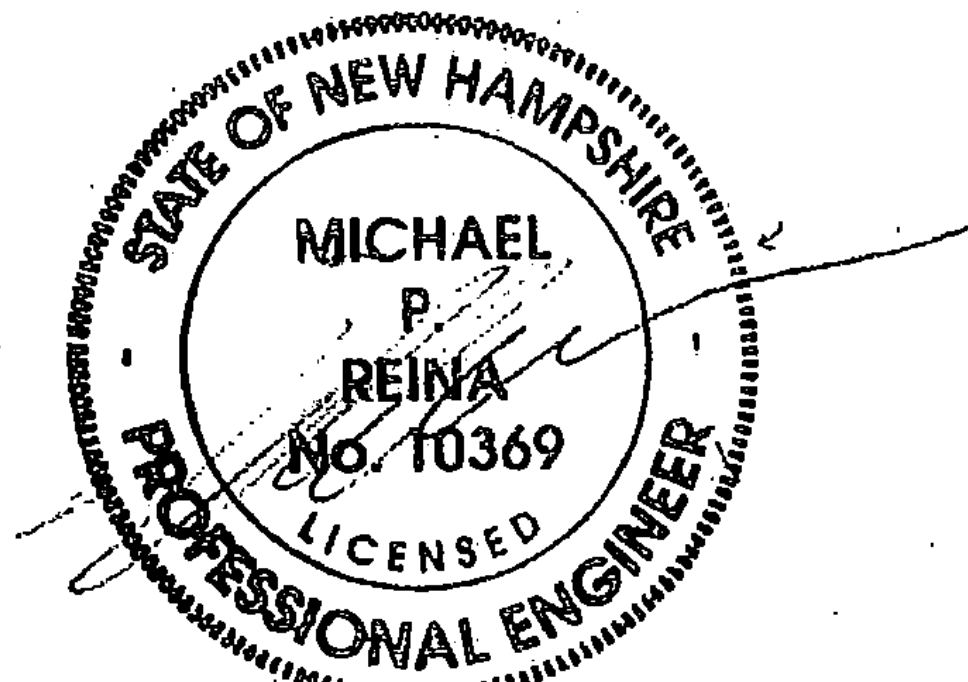
Determine size of leveling plate

Plate support interval	4	inches	Cross Bar Spacing
Plate width	3	inches	
Plate Thickness	1/2	inches	
Grade of steel	50	Grade	
Effective plate width	2 3/8	Plate width - support bolt hole	
Section Modulus of leveling plate	0.0990	inches ³	
Moment Capacity	2.721354167	in-kips	
Maximum spacing of leveling plates	3.940564968	feet or 47.29 Use 36 inches	
Check max spacing based on stud	6.419133567	feet or 77.03 Use 36 inches	
Check max spacing based on CB			

Uniform load on cross bars (2) 0.028775 kips/in

Since load is short term us operating limit for stress and shear $0.75 * f_y$ for cross bar

Effective depth of cross bar	2	inch
Effective thickness of CB	0.25	inch
Effective section property of CB	0.166666667	in ³
Moment at 2" from centerline of plate	2.12935	
Cross Bar Stress	12.7761	ksi vs allow 37.5 ksi
Cross Bar Shear	0.51795	kips
Operating shear capacity	11.25	kips



1/14/10
166 PRE FAB DECK PANELS