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 = (0.5inch) / 4 — 0.12500

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

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

22,577 x 0.1963 (area of bolt) = 4.4331 kips / bolt capacity

Load

6' length of panel x 0.1151kips / sf design load = 0.6906 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*fy 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	

STATE OF NEW HAMPSHIRE
MICHAEL P. REINA
No. 10369
LICENSED PROFESSIONAL ENGINEER

11/4/10

166 PREFAB DECK PANELS