



# Durability Study: Decades Later: Still Better than New Steel

In 1979, over 10,000 square feet of DURAGRID® I-4000 1" (formerly DURADEK®) pultruded grating was installed in lieu of steel grating in the well bays and adjacent areas on Shell's offshore platform Ellen. The platform was destined for the Beta Field off the shore of southern California. Now, with over 40 years of use, the grating continues to show an excellent return on investment for current operators, Beta Offshore.

Anti-skid DURAGRID® has always been known for excellent durability and the 40-plus year exposure on Ellen has had little to no effect on the grating. Even accidental sandblasting and paint overspray has not noticeably degraded the grating's performance.

Previous reports indicated that abuse from the platform's SSV's (surface safety valves) and performing acid jobs have never been a problem. Workers experience less fatigue and a better kneeling environment with DURAGRID® pultruded grating.

When asked in 2010 about the lifespan of the grating on the platform, the Facility Superintendent at that time stated, "The grating looks to be in great shape. The surface shows very little wear and tear."

In 2020, we were able to acquire and examine a portion of the original grating for flexural testing. The removed panels were taken from an area on the offshore rig that received heavy daily foot traffic and constant UV exposure. Upon visual inspection, the grating had some cosmetic wear with no visual signs of glass exposure.

As one of the first generation designs, the panels were assembled with 3/8" FRP rods and polypropylene bushings to achieve proper bar spacing. Today's designs utilize a 3-piece mechanically locked and bonded cross rod design to achieve optimal bearing bar support with peak performance.

With over 40 years of daily exposure to weather and pedestrian traffic, the grating still retained over 80% of its flexural modulus and 80% of its maximum load capability from its published load tables. As tested against the published data for that particular series of grating, the extracted sample maxed out at 3,385 lbs.

Too often, the industry concentrates on short term costs. Now, decades later, the decision to go with DURAGRID® has proven to be a better return on investment than even new steel.

Span, L=42"	DURAGRID® I-4000 1" Grating		New Steel Grating†	
	Original Published Properties	Properties After 40 Years of Offshore Service	1.5"	1"
<b>Modulus, E</b>	4.88 x 10 <sup>6</sup> psi	4.0 x 10 <sup>6</sup> psi	29 x 10 <sup>6</sup> psi	
<b>Max Load</b>	10 bar panels	4,122 lb*	1,218 lb	541 lb
	9 bar panels	3,710 lb*		
<b>Allowable Load</b>	1413 psf	1132 psf	696 psf	309 psf

\*Prorated value - I-4000 series has 12 bars per foot of width.  
†From ANSI/NAAMM Metal Bar Grating Manual MBG 531-17.