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**8349 Shady Lady Court**  
**Las Vegas, NV 89131**  
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Assured Real Estate  
160 West Horizon Ridge Drive, Suite B  
Henderson, Nevada 89015

October 11, 2018

Subject: Addendum to Geotechnical Investigation Report  
Commercial Building  
37 South Water Street  
Henderson, Nevada

DEI No.: 18-0379

Reference: Geotechnical Investigation Report by DuPont Engineering, Inc. (Report No.: 18-0379, dated September 4, 2018)

The report was written with the understanding, or assumption, that the proposed construction was for a single-story, or two-story building. We now understand that assumption was incorrect. The actual construction will involve two buildings with heights of three and six stories. The six-story structure will be a wood-framed, and possible steel-framed, apartment building. The three story structure will be a remodel and expansion of the existing commercial building. Masonry and wood framed construction is anticipated. An existing concrete elevated slab will remain for this building as well.

The original investigation included two 15-foot deep borings. Those borings were not deep enough for the actual planned development. Therefore, we returned to the site and drilled two new borings to depths of 50-feet each. The boring logs are attached to this letter. It was determined that the soil conditions were uniform and unchanged throughout the entire 50-foot depth. The soils encountered were predominantly gravelly sands that varied in consistency from loose to medium dense to dense.

Based upon the better understanding of the planned development, as well as a deeper profile of the soil, it is necessary to amend the report.

The Grading Section of the report is amended as follows. Loose and/or loose to medium dense soils within 2 feet of the bottoms of new conventional foundations should be overexcavated. The removed soils less than 6 inches in diameter may be reused for backfill. Backfill for the foundation areas should be in accordance with the recommendations in the original report.

The foundation Section of the Report is amended as follows: The structures may be supported on conventional spread or continuous foundations, or they may be supported on drilled pier foundations. For continuous foundations the minimum footing width and depth should be 18 inches each. Spread footings should be a minimum of 3 feet square. An allowable bearing pressure of 3000 psf may be used. The bearing pressure may be increased by 1000 psf for each additional 6 inches of footing depth, and may increase 500 psf for each additional 6 inches of footing width.

However, the maximum bearing pressure should not exceed 5000 psf. A one-third increase may be used for short-term loading conditions such as wind or seismic.

For drilled pier foundations we recommend that the piers be designed for skin friction only. End bearing should not be considered in the pier capacity analysis.

The net allowable downward and uplift capacities (the loads that may safely be placed upon the pier by the tower) have been graphed for several pier diameters and are attached. Factors of safety of 2.5 for downward capacity and 4.5 for Uplift Capacity have been applied.

Lateral loading of the pier may be resisted by passive earth pressure. A design passive pressure equivalent to that produced by a 300-pcf fluid may be used. Total passive pressure should not exceed 4000 psf.

The following table indicates the design parameters used, which may be applied into computer based programs such as L-Pile.

Depth (Feet)	Soil Type	K (pci)	C (psf)	$\phi$ Friction Angle	$\gamma$ Unit Weight	N
0 - 50	S	400	0	34	105	18

The pier excavations can be drilled using water, if necessary, but a bentonitic slurry should not be used. The excavation should be drilled vertical and not be out of plumb more than 2 percent. The bottom of the excavations should be relatively clean of loose soil.

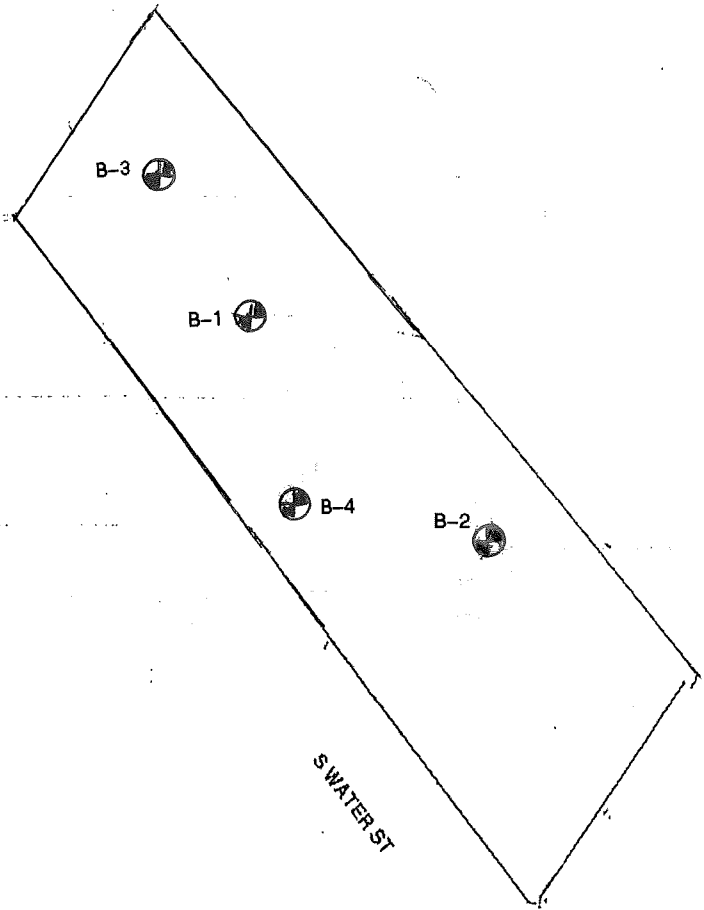
Concrete used for the construction of the piers should be in accordance with the recommendations presented in the Concrete Durability Requirements section of this report. Concrete slump should be maintained between 6 and 8 inches during placement. The slump should be achieved through proper mix design and proportioning, not by the addition of excess water. If concrete is placed with a tremie, the tremie should have a minimum diameter of 6 inches or 5 times the maximum aggregate size, whichever is greater.

We anticipate that drilling for the pier excavations may be used using conventional auger-type drilling equipment. However, because of the loose nature of much of the soils encountered, some sidewall caving should be expected.

Respectfully submitted,  
DuPont Engineering, Inc.

David R. DuPont, P.E.  
President

SITE PLAN  
ASSURED REAL ESTATE  
37 SOUTH WATER STREET  
HENDERSON, NEVADA



CLIENT: ASSURED REAL ESTATE  
DEI NO.: 18-0379







**Client:** Assured Real Estate  
**Project:** Commercial Development  
**Boring #** B-4

**Location:** 37 Water Street  
 Henderson, Nevada

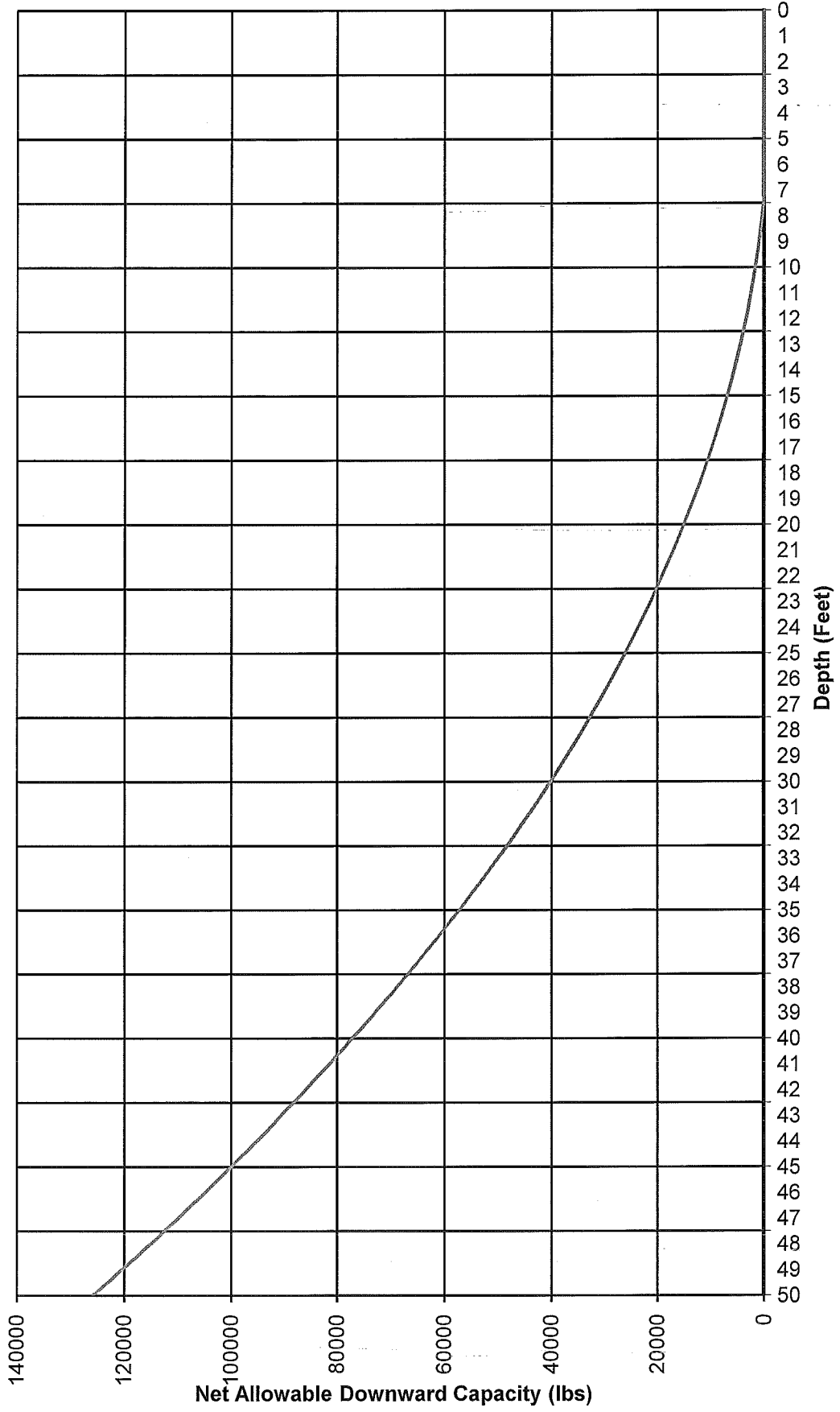
Depth, feet	Sample type	Resistance, blows/6 inches	Cohesion, ksf	Moisture Content, %	Dry Density, pcf	Unified Soil Classification	DEI No.: 18-0379	Date Drilled: 9/28/2018
							Logged By: D. DuPont	Datum: Ground Surface
							Boring Type: 6" Rotary Air	Type Rig: Mayhew
							Latitude: 36.0350	Longitude: -114.9851
							Groundwater Conditions: None ATE	
SOIL DESCRIPTION								
						AC	ASPHALT over TYPE 2	
2--						SW-SM	GRAVELLY SAND - brown, medium dense, dry to slightly moist	
							loose to medium dense	
4--								
6--	R	5/5		6.8	90		medium dense	
8--							medium dense to dense	
10--								
12--							medium dense	
14--								
16--								
18--							loose to medium dense	
	R	5/7		7.3	94			



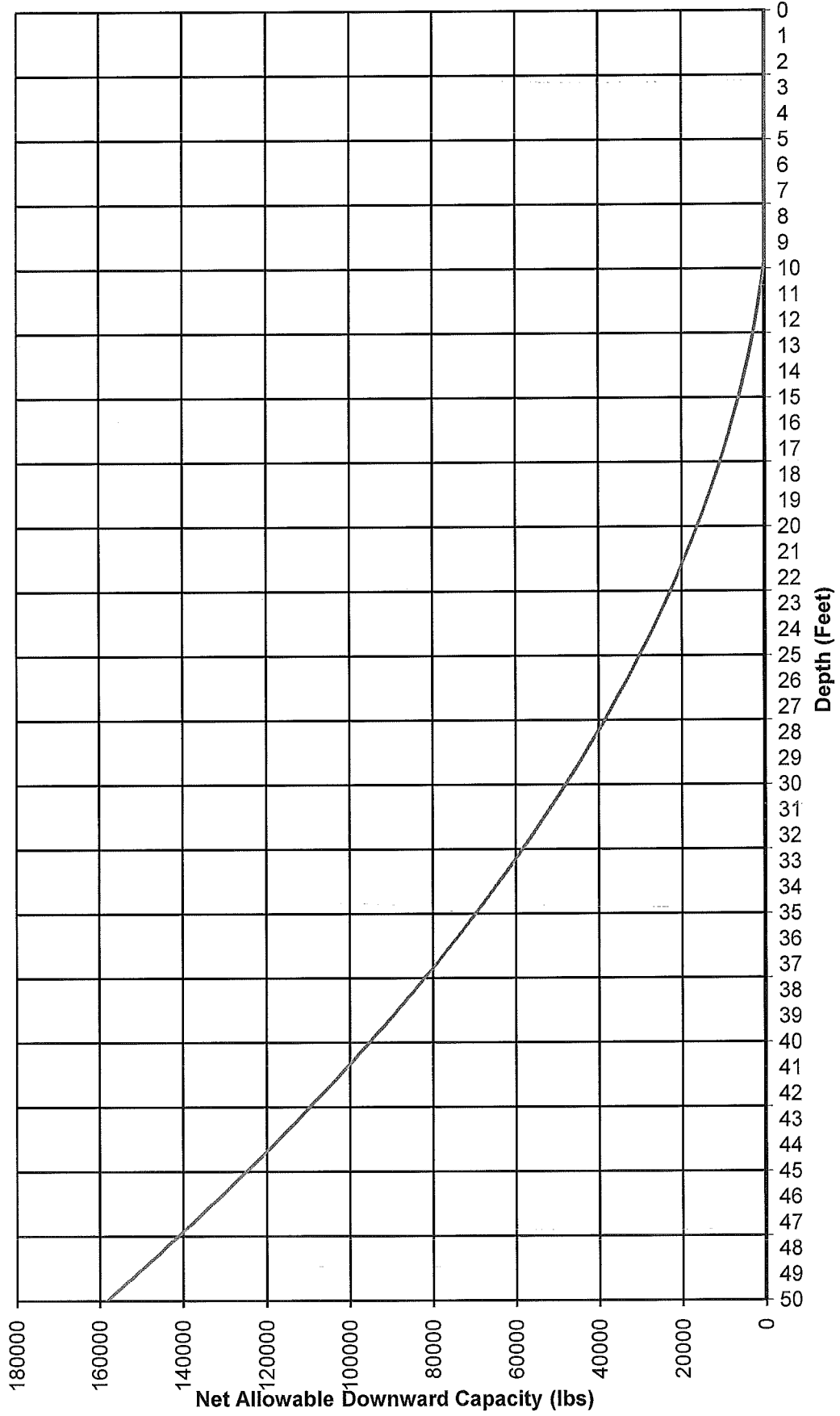




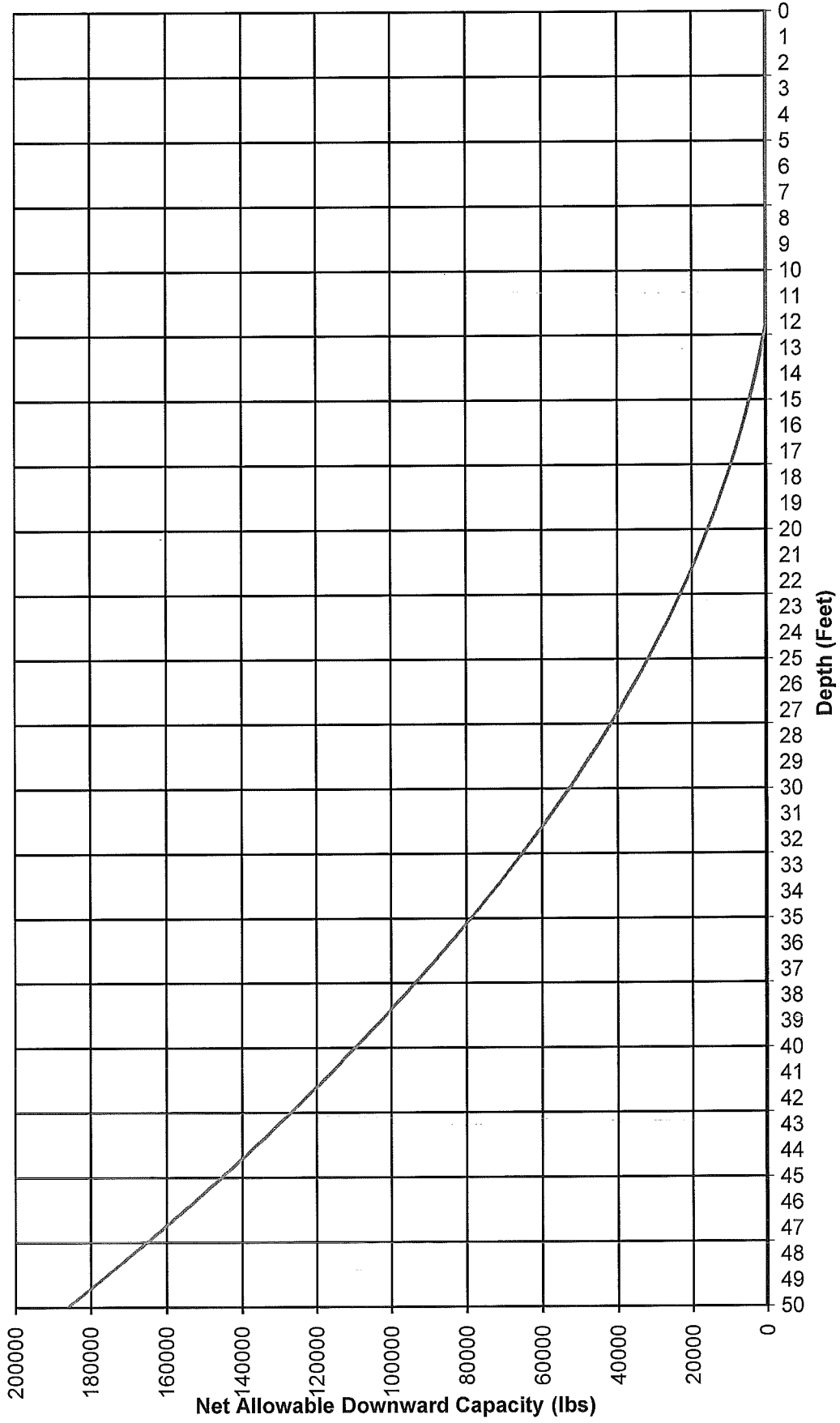
**Net Allowable Downward Capacity (Pier Diameter = 3 feet)**



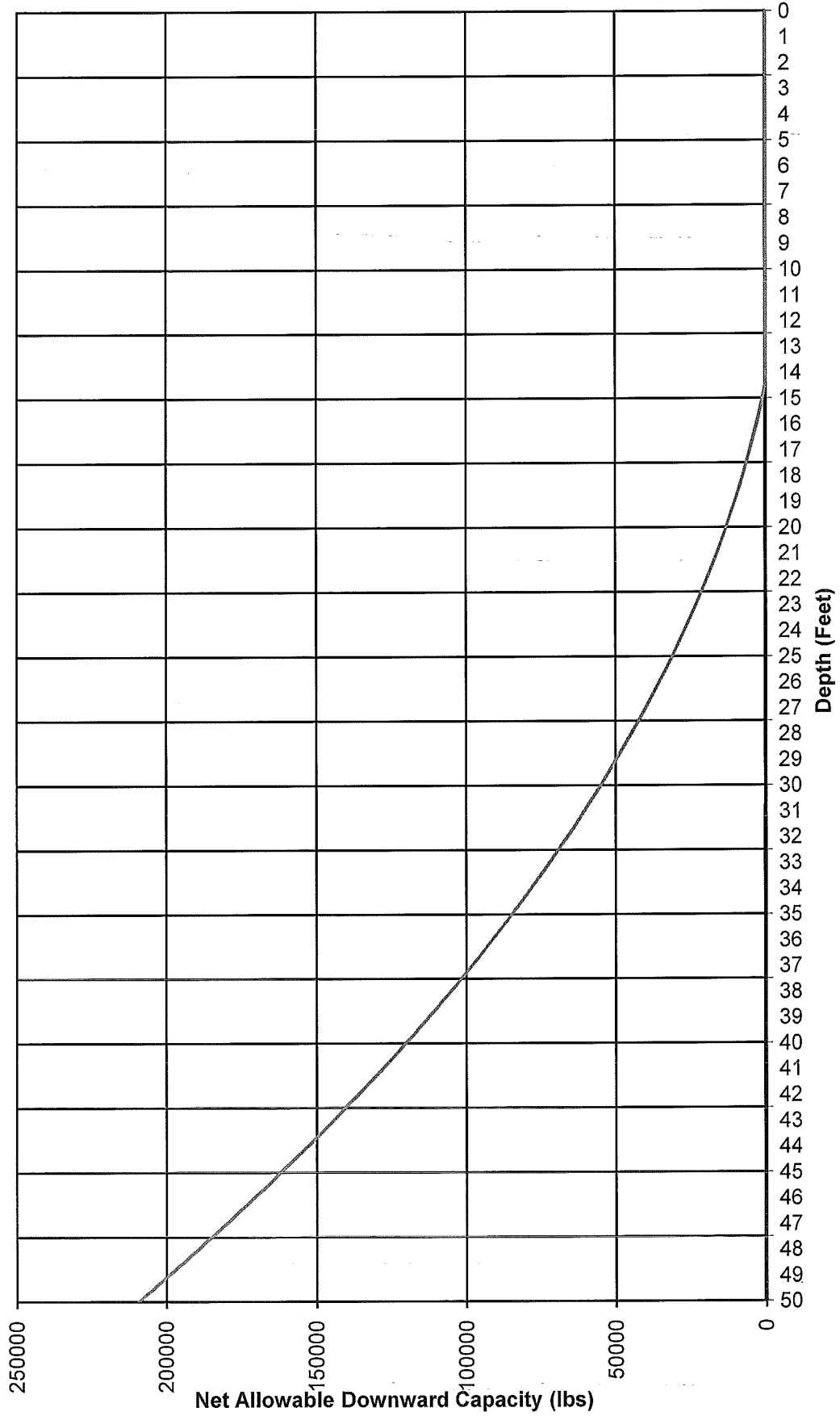
**Net Allowable Downward Capacity (Pier Diameter = 4 feet)**



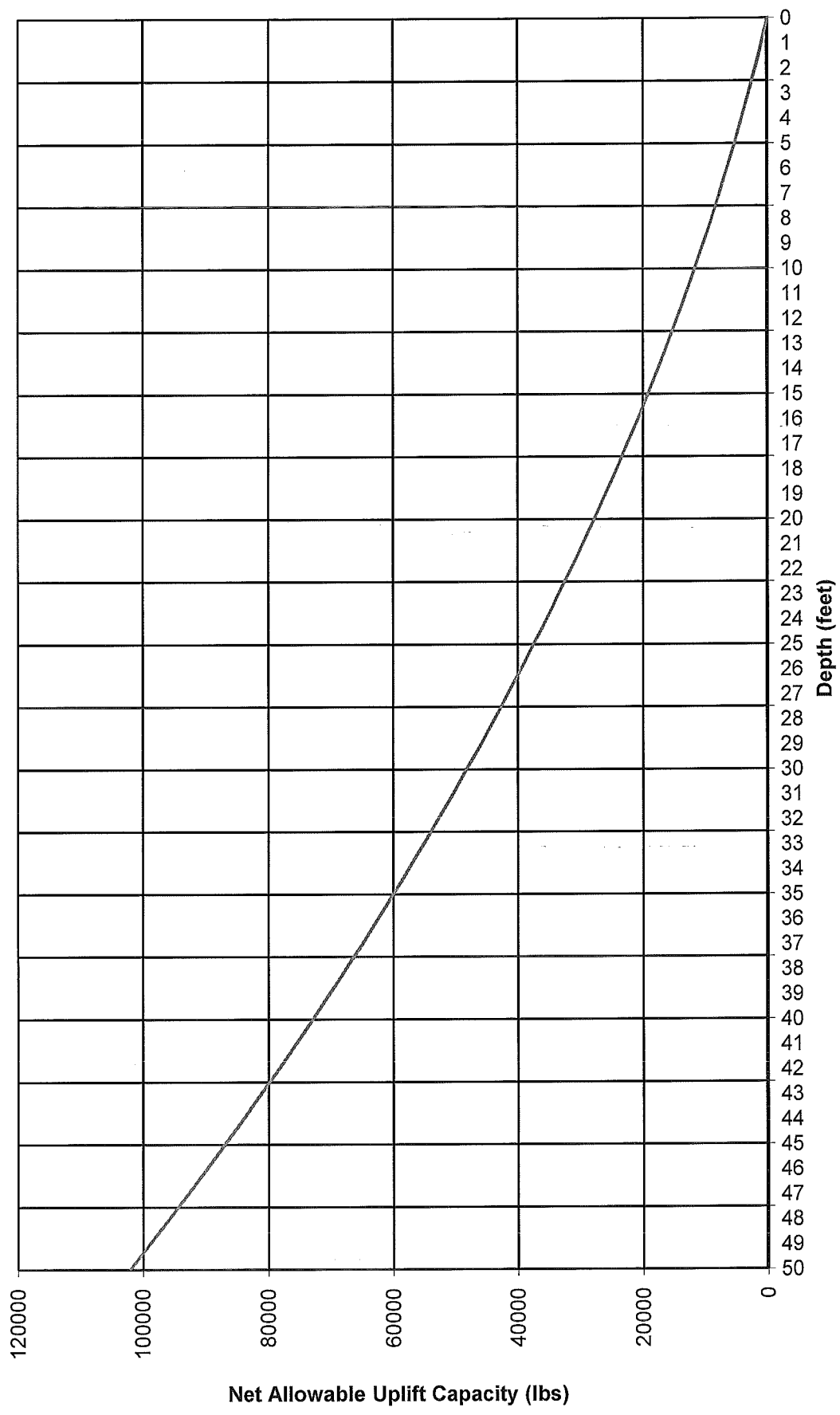
**Net Allowable Downward Capacity (Pier Diameter = 5 feet)**



**Net Allowable Downward Capacity (Pier Diameter = 6 feet)**

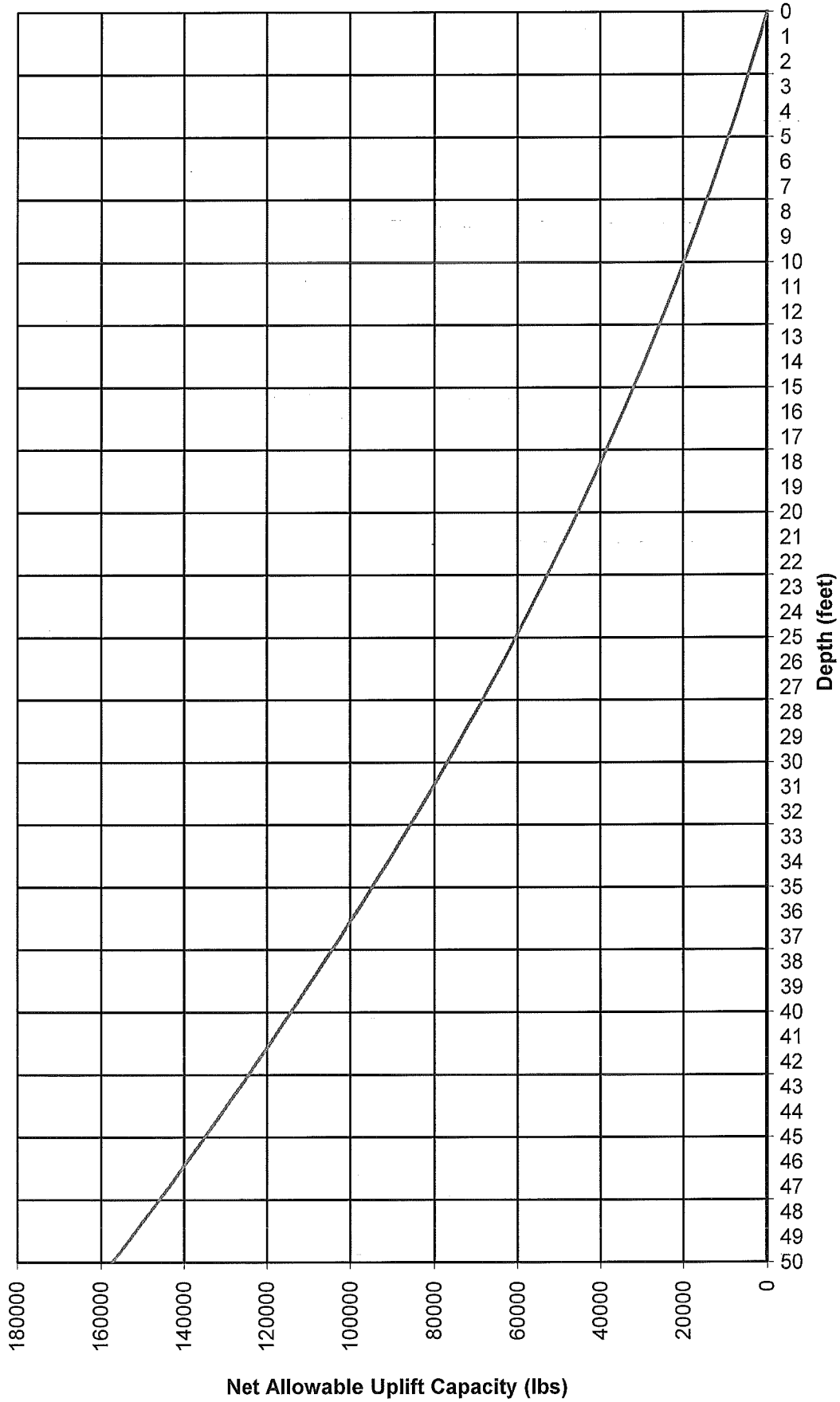


**Net Allowable Uplift Capacity (Pier Diameter = 3 feet)**



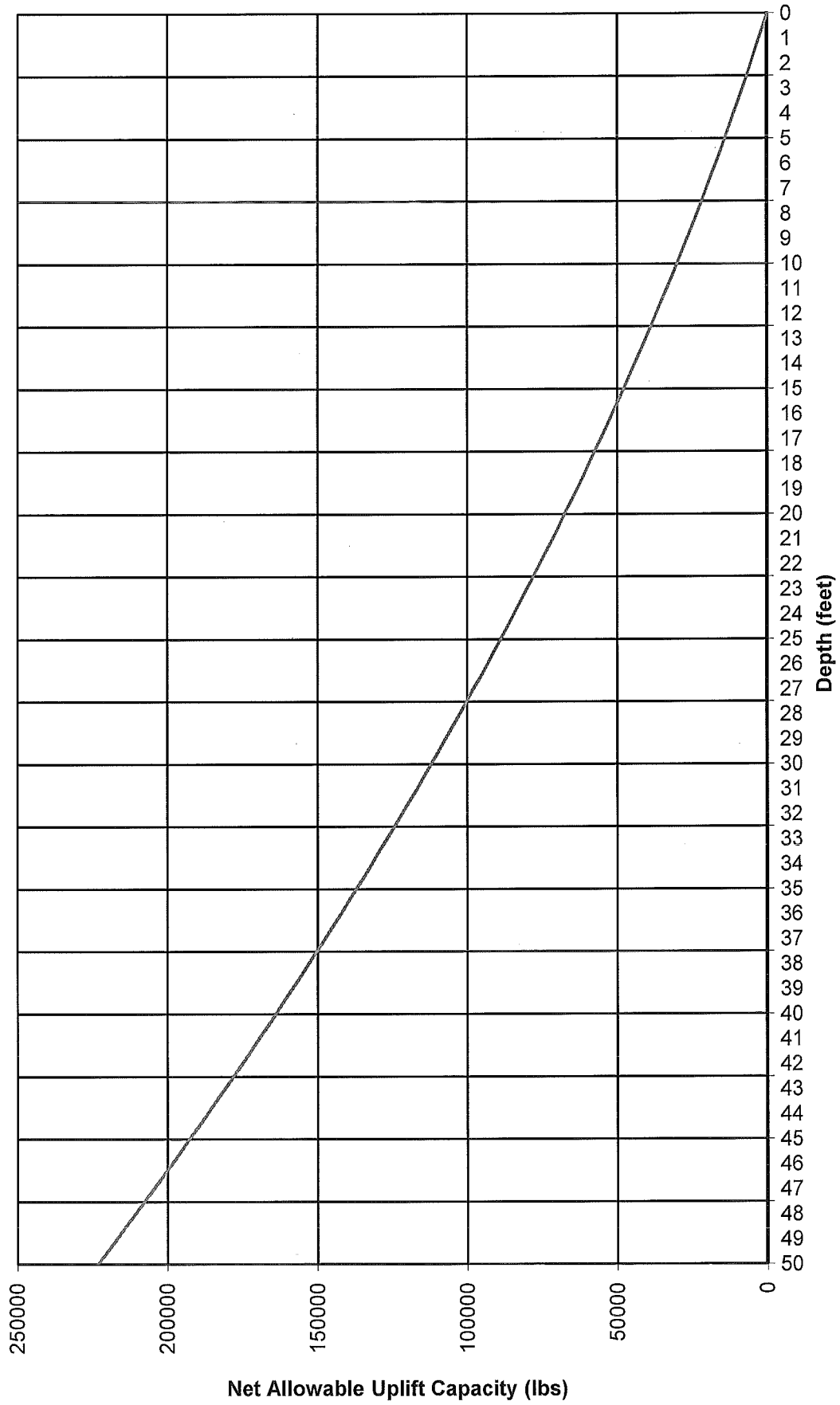
CLIENT: ASSURED REAL ESTATE  
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**Net Allowable Uplift Capacity (Pier Diameter = 4 feet)**



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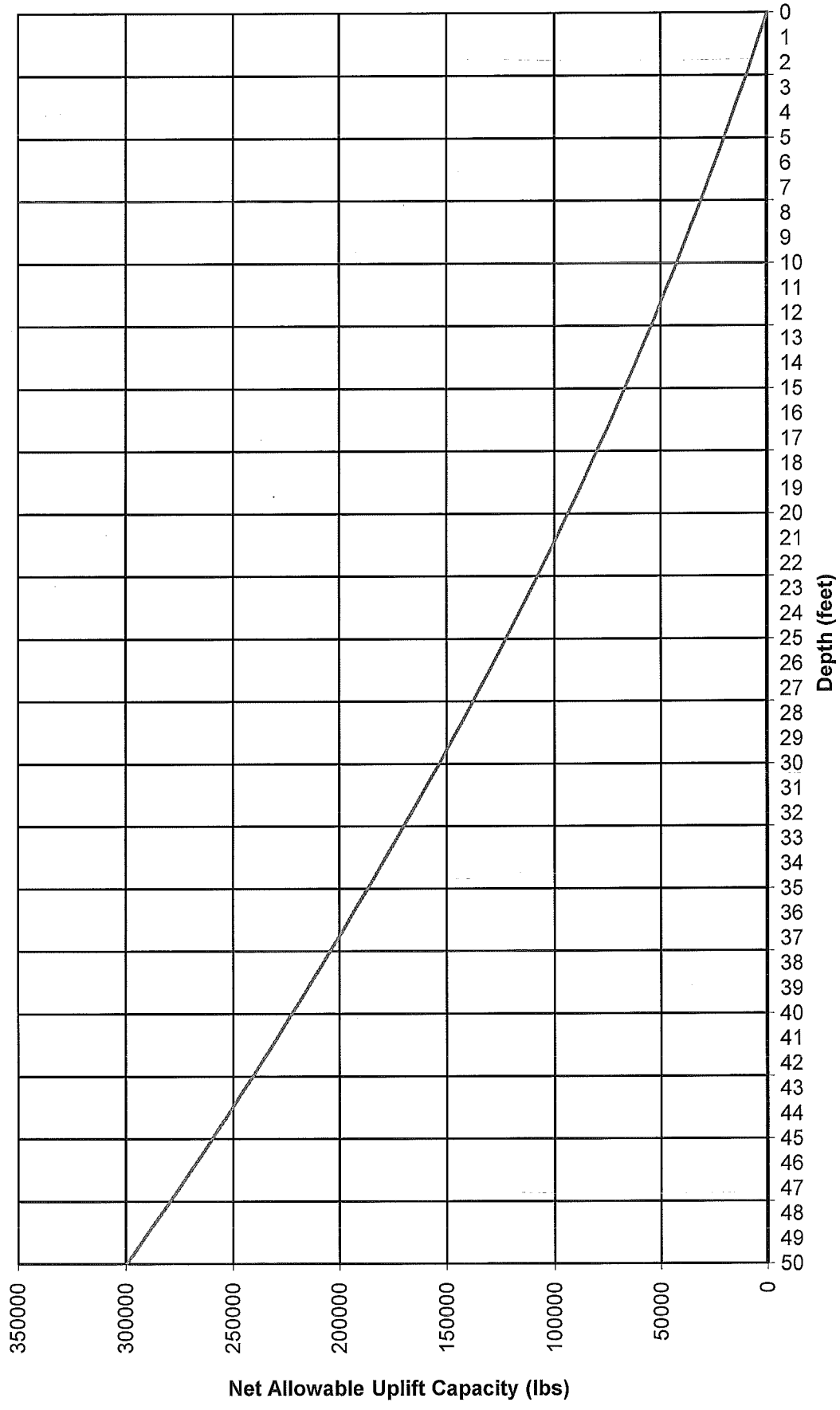
**Net Allowable Uplift Capacity (Pier Diameter = 5 feet)**



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**Net Allowable Uplift Capacity (Pier Diameter = 6 feet)**



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