PIPELAYERS

CONTENTS

Features:

- **Hydrostatic transmission** on PL61.
- **Planetary power shift** transmission on 572R2, 583T, 587R, and 587T models.
- **Kick-out helps prevent boom bending** as boom approaches near-vertical.
- **Sealed and Lubricated Track.**
- **Simplified Controls** for all functions including raise, lower, quick-drop and power down, high and low range and speed adjustments.
- **Modular design of major components and accessory drive system** for simplified repair.
- **Separate, self-energizing brakes** for boom and hook winches.
- **Positive** track pin retention (583T, 587R, and 587T).
- **Hydraulic Drawworks** with two independently driven hydraulic motors for boom and hook winches.

MODEL	PL61		572R Series 2		583T	
Flywheel Power	92 kW	**125 hp**	179 kW	**240 hp**	231 kW	**310 hp**
Operating Weight (with full fuel tank and operator)	17 000 kg	**37,480 lb**	31 845 kg	**70,206 lb**	45 359 kg	**100,000 lb**
Engine Model	**C6.6 ACERT**		**3176C**		**C15 ACERT**	
Rated Engine RPM	**2100**		**2100**		**1850**	
No. of Cylinders	**6**		**6**		**6**	
Displacement	6.6 L	**403 in³**	10.3 L	**629 in³**	15.2 L	**928 in³**
Lift Capacity at 1.22 m **(4'0")** Overhang	18 145 kg	**40,000 lb**	40 800 kg	**90,000 lb**	63 504 kg	**140,000 lb**
Standard Boom Length	5.49 m	**18'0"**	6.1 m	**20'0"**	7.3 m	**24'0"**
Width of Standard Shoe	560 mm	**22"**	660 mm	**26"**	710 mm	**28"**
Length of Track on Ground	2645 mm	**8'8"**	3.176 m	**10'5"**	3.556 m	**11'8"**
Ground Contact Area (with standard shoes)	3 m²	**4650 in²**	4.19 m²	**6500 in²**	5.10 m²	**7896 in²**
Track Gauge	2 m	**6'7"**	2.235 m	**7'4"**	2.34 m	**7'8"**
Fuel Tank Refill Capacity	295 L	**78 U.S. gal**	479 L	**127 U.S. gal**	409 L	**108 U.S. gal**
GENERAL DIMENSIONS:						
Height to Top of Stack	2.91 m	**9'7"**	3.18 m	**10'5"**	3.454 m	**11'4"**
Height to Top of Counterweight or Winch	2.45 m	**8'1"**	2.9 m	**9'6"**	3.505 m	**11'6"**
Height with ROPS (boom removed)	2958 mm	**9'8.5"**	3454 mm	**11'4"**	3728 mm	**12'3"**
Width, Weights Retracted	3 m	**9'10"**	3.66 m	**12'0"**	3.73 m	**12'3"**
Minimum Shipping Width (both side frames removed)	2560 mm	**8'5"**	2.895 m	**9'6"**	3.07 m**	**10'1"****
Shipping Width (left frame removed)	2816 mm	**9'3"**	3.66 m	**12'0"**	3.61 m*	**11'10"***
Overall Length	3.78 m	**12'5"**	4.74 m	**15'6"**	5.23 m	**17'2"**
Ground Clearance	360 mm	**14"**	416 mm	**16.4"**	470 mm	**18.5"**
DRUMS and CABLES:						
Drum Capacity Load	73 m	**239'**	80 m	**263'**	181 m	**594'**
Boom	49.4 m	**162'**	52 m	**170'**	181 m	**594'**
Cable Diameter Load	16 mm	**0.62"**	19 mm	**0.75"**	19 mm	**0.75"**
Boom	16 mm	**0.62"**	19 mm	**0.75"**	19 mm	**0.75"**
Drum Diameter Load	216 mm	**8.5"**	254 mm	**10"**	317 mm	**12.5"**
Boom	245 mm	**9.63"**	224 mm	**8.5"**	317 mm	**12.5"**
Adjustable Counterweights	**7 @** 67.7 kg ea	**149 lb ea**	**2 @** 370 kg ea	**815 lb ea**	**2 @** 300 kg ea	**662 lb ea**
	9 @ 114.8 kg ea	**253 lb ea**	**7 @** 479 kg ea	**1055 lb ea**	**5 @** 430 kg ea	**948 lb ea**
					6 @ 535 kg ea	**1180 lb ea**
Total Weight Extendable	1231 kg	**2714 lb**	5073 kg	**11,184 lb**	9036 kg	**19,920 lb**
	LGP Option					
Operating Weight 610 mm **(24")**	17 800 kg	**39,242 lb**				
Shipping Width:						
Boom Removed	3200 mm	**10'6"**				
Counterweight Removed	3116 mm	**10'3"**				
Frame, Brackets, Winches Removed	2760 mm	**9'1"**				
Track Shoe Width	610 mm	**24"**				
	760 mm	**30"**				
Ground Contact Area:						
610 mm **(24")** Shoes	3.2 m²	**4690 in²**				
760 mm **(30")** Shoes	4 m²	**6200 in²**				

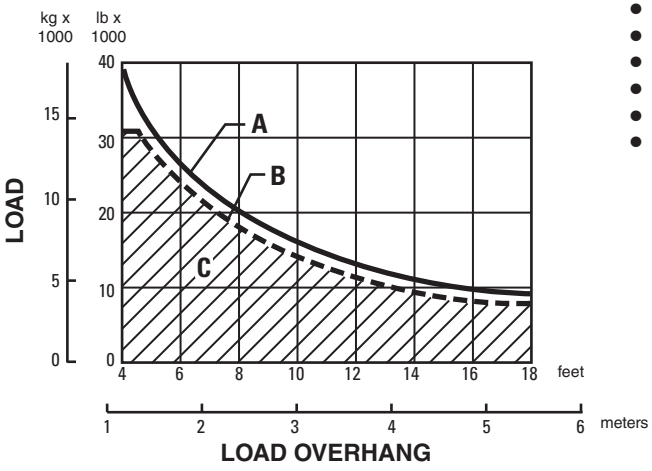
*Boom and counterweight only removed.
**Counterweight frame, counterweight mounting brackets, boom, and boom mounting brackets removed.

MODEL		**587R**		**587T**	
Flywheel Power		262 kW	**351 hp**	273 kW	**366 hp**
Operating Weight (with full fuel tank and operator)		53 442 kg	**117,820 lb**	53 070 kg	**117,000 lb**
Engine Model		**3406C DITA**		**C15 ACERT**	
Rated Engine RPM		**1900**		**1800**	
No. of Cylinders		**6**		**6**	
Displacement		14.6 L	**893 in³**	15.2 L	**928 in³**
Lift Capacity at 1.22 m **(4'0")** Overhang		91 625 kg	**202,000 lb**	91 625 kg	**202,000 lb**
Standard Boom Length		8.5 m	**28'0"**	8.5 m	**28'0"**
Width of Standard Shoe		864 mm	**34"**	864 mm	**34"**
Length of Track on Ground		3.587 m	**11'9"**	3.587 m	**11'9"**
Ground Contact Area (with standard shoes)		6.2 m²	**9613 in²**	6.2 m²	**9613 in²**
Track Gauge		2.54 m	**8'4"**	2.54 m	**8'4"**
Fuel Tank Refill Capacity		568 L	**150 U.S. gal**	568 L	**150 U.S. gal**
GENERAL DIMENSIONS:					
Height to Top of Counterweight or Winch		3.505 m	**11'6"**	3.505 m	**11'6"**
Height with ROPS (boom removed)		**—**		3835 mm	**12'7"**
Width, Weights Retracted		4.343 m	**14'3"**	4.343 m	**14'3"**
Minimum Shipping Width		3.860 m*	**12'8"***	3.860 m*	**12'8"***
Shipping Width (boom and counterweight removed)		4.038 m	**13'3"**	4.038 m	**13'3"**
Overall Length		5.486 m	**18'0"**	5.486 m	**18'0"**
Ground Clearance		457 mm	**18"**	457 mm	**18"**
DRUMS and CABLES:					
Drum Capacity	Load	181 m	**594'**	181 m	**594'**
	Boom	181 m	**594'**	181 m	**594'**
Cable Diameter	Load	19 mm	**0.75"**	19 mm	**0.75"**
	Boom	19 mm	**0.75"**	19 mm	**0.75"**
Drum Diameter	Load	317 mm	**12.5"**	317 mm	**12.5"**
	Boom	317 mm	**12.5"**	317 mm	**12.5"**
Adjustable Counterweights		**2 @** 285 kg	**628 lb**	**2 @** 285 kg	**628 lb**
		6 @ 640 kg	**1410 lb**	**6 @** 640 kg	**1410 lb**
		7 @ 714 kg	**1574 lb**	**7 @** 714 kg	**1574 lb**
Total Weight Extendable		12 900 kg	**28,440 lb**	12 900 kg	**28,440 lb**

*Counterweight frame, counterweight mounting brackets, and boom removed.

PL61

LIFTING CAPACITY* 5.49 m (18'0") BOOM



*Specified Equipment:

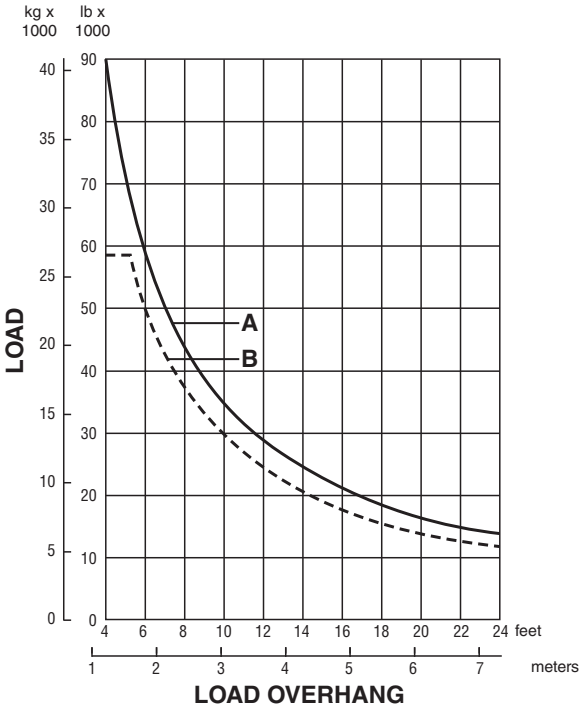
- 16 mm **(5/8")** diameter wire rope.
- 183.3 kN **(41,200 lb)** minimum breaking strength.
- 3 part load line.
- 3 part boom line.
- 1231 kg **(2714 lb)** counterweight extended.
- Standard 5.49 m **(18'0")** Boom.
- Total operating weight
  Narrow — 17 000 kg **(37,480 lb)**.
  LGP — 17 800 kg **(39,242)**.

KEY

A — Lift capacity at tipping point per ISO 8813
B — Rated load capacity per ANSI/ASME B30.14
C — Working range per ANSI/ASME B30.14

572R Series 2

LIFTING CAPACITY* 6.1 m or 7.3 m (20'0" or 24'0") BOOMS



*Specified Equipment:

- 19 mm **(3/4")** dia. wire rope 261.66 kN **(58,800 lb)** minimum breaking strength.
- 4 part load line.
- 4 part boom line.
- 5073 kg **(11,184 lb)** counterweight extended.
- Standard 6.1 m **(20'0")** Boom.

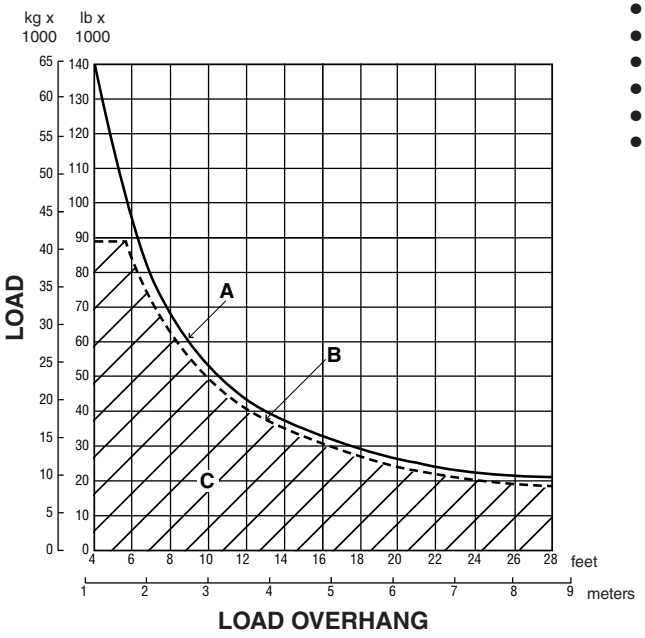
KEY

A — Max lift
B — Rated lift

NOTE: ISO stands for the International Standards Organization. ANSI stands for American National Standard Institute.

583T

LIFTING CAPACITY* 7.3 m, 8.5 m (24'0", 28'0") BOOMS



***Specified Equipment:**

- 19 mm **(3/4")** diameter wire rope.
- 26 672 kg **(58,800 lb)** minimum breaking strength.
- 6 part load line.
- 5 part boom line.
- 9036 kg **(19,920 lb)** counterweight extended.
- Standard 7.3 m **(24'0")** Boom.
- Total operating weight 45 359 kg **(100,000 lb)**.

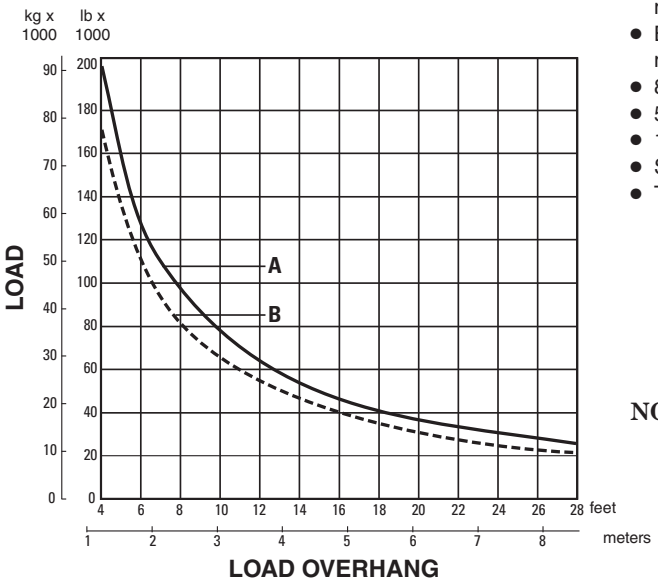
KEY

A — Max lift capacity per ISO 8813
B — Rated load per ANSI/ASME B30.14
C — Working range per ANSI/ASME B30.14

7

587R/T

LIFTING CAPACITY* 8.5 m (28'0") BOOM



***Specified Equipment:**

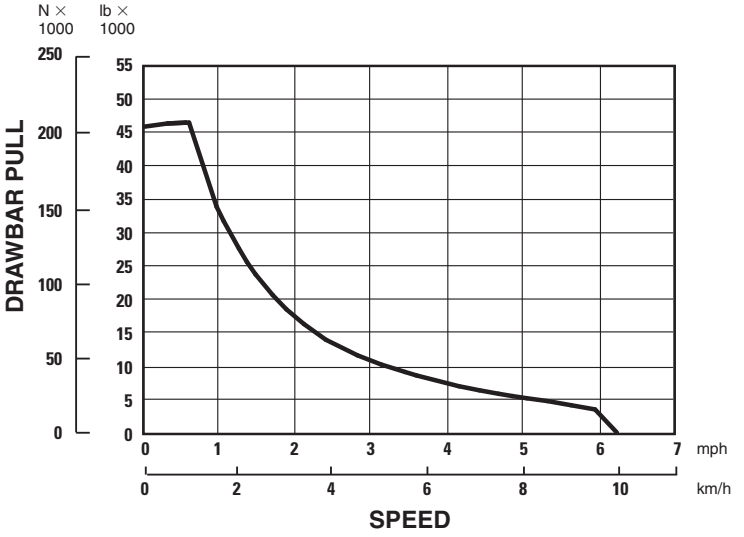
- Load: 19 mm **(3/4")** dia. wire rope 26 672 kg **(58,800 lb)** minimum breaking strength.
- Boom: 19 mm **(3/4")** dia. wire rope 26 672 kg **(58,800 lb)** minimum breaking strength.
- 8 part load line.
- 5 part boom line.
- 12 900 kg **(28,440 lb)** counterweight extended.
- Standard 8.5 m **(28'0")** Boom.
- Total operating weight 53 070 kg **(117,000 lb)**.

KEY

A — Max lift
B — Rated lift

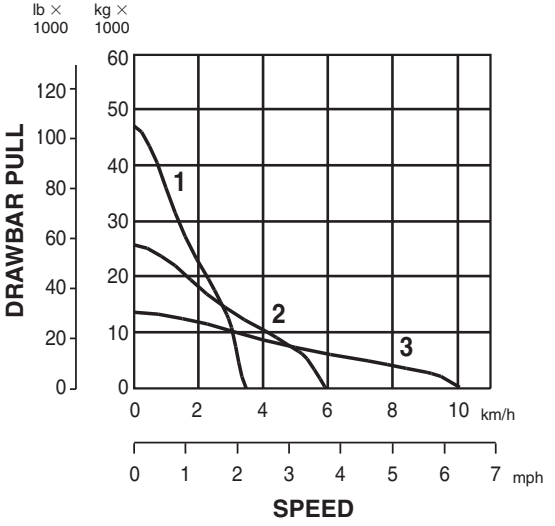
NOTE: ISO stands for the International Standards Organization. ANSI stands for American National Standard Institute.

PL61

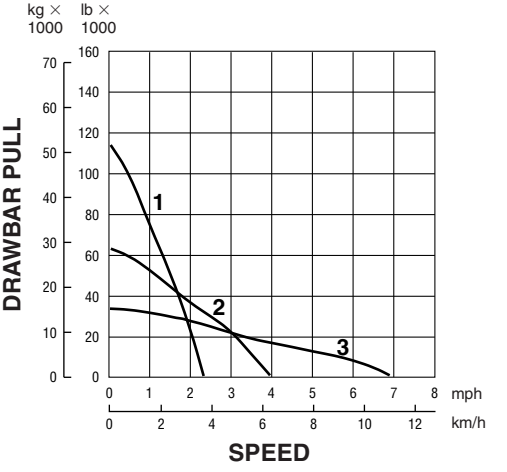


NOTE: Usable pull will depend upon weight and traction of equipped tractor.

572R Series 2



583T



KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

MODEL	PL61				572R Series 2			
Travel	**Forward**		**Reverse**		**Forward**		**Reverse**	
Speeds (at rated RPM)	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
1st Gear	3.1	**1.9**	3.8	**2.3**	3.5	**2.2**	4.5	**2.8**
2nd Gear	5.4	**3.3**	6.7	**4.1**	6.1	**3.8**	7.9	**4.9**
3rd Gear	10.0	**6.2**	10.0	**6.2**	10.6	**6.6**	13.5	**8.4**
Hydrostatic	10.0	**6.2**	10.0	**6.2**	—	**—**	—	**—**

MODEL	583T				587R				587T			
Travel	**Forward**		**Reverse**		**Forward**		**Reverse**		**Forward**		**Reverse**	
Speeds (at rated RPM)	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
1st Gear	3.5	**2.3**	4.7	**2.9**	3.2	**2.0**	4.3	**2.7**	3.2	**2.0**	4.3	**2.7**
2nd Gear	6.4	**4.0**	8.1	**5.0**	5.6	**3.5**	7.4	**4.6**	5.8	**3.6**	7.6	**4.7**
3rd Gear	10.8	**6.8**	13.8	**8.6**	9.7	**6.0**	12.6	**7.8**	10.0	**6.2**	12.9	**8.0**

MODEL	PL61		572R Series 2	
Pipelayer Hook Speeds per minute, Bare drum at rated engine RPM	**m/min**	**ft/min**	**m/min**	**ft/min**
Low Raise & Lower	33.0	**108**	11.0	**37**
Hi Raise & Lower	69.5	**228**	22.0	**72**

MODEL	583T		587R/T	
Pipelayer Hook Speeds per minute, Bare drum at rated engine RPM	**m/min**	**ft/min**	**m/min**	**ft/min**
Low Raise	26.0	**85**	—	**—**
Low Lower	22.0	**73**	15.5	**50.8**
Hi Lower	30.0	**98**	15.5	**50.8**

PIPELAYER APPLICATION CALCULATIONS:

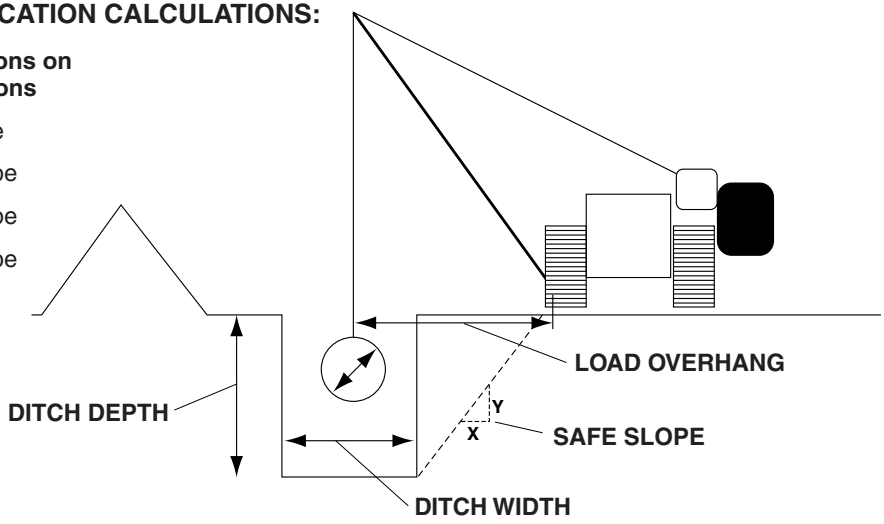
Typical pipelayer applications on flat, firm underfoot conditions

PL61 laying 8" to 16" pipe

572R2 laying 16" to 24" pipe

583T laying 24" to 36" pipe

587R/T laying 36" to 56" pipe



The chart above provides general information representing typical pipelayer applications. While the following scenario explores many of the variables involved in pipelaying it does not cover all the possible variables that must be considered by pipelaying contractors.

When sizing pipelayers for an application there are many considerations other than the machine's SAE rated lift capacity. These include but are not limited to:

- pipe diameter and weight per linear foot
- ditch width and depth
  ditch width is typically 2 × pipe diameter
  ditch depth is typically >2.5 × pipe diameter
- distance from the ditch (safe slope) required by soil stability conditions
  typically 2:1 (meaning the pipelayer must be 2 × ditch depth from the ditch edge)
- acceptable distance between pipe lifting points while suspended (to prevent bending)
  determined by the pipe's bending characteristics. If the lifting points are too far apart a pipe can sag enough due to its own weight that it will damage itself.
- the operating safety factor desired by the contractor
- the length of pipe that will need to be suspended while laying-in
  determined by pipe bending characteristics, terrain, etc.
- ground conditions, road bed preparation

An important consideration is the necessary load overhang. This is the distance from the center of the pipe to the tractor's left track rail. The load overhang required for an application can be estimated by:

- load overhang = safe slope× ditch depth + (0.5 × ditch width)

The pipelayer's rated load capacity at a specific load overhang (per ANSI/ASME B30.14) can be found in the load capacity graphs in this section of the performance handbook. Once the load capacity is determined the maximum lift point spacing can be estimated by:

- $\text{max lift point spacing} = \dfrac{\text{load capacity at load overhang}}{\text{safety factor} \times \text{pipe weight per linear foot}}$

The maximum distance between pipe lift points (based on pipe bending characteristics) may be a shorter distance than the maximum spacing between lift points as calculated based on pipelayer load capacity. If this is the case, then in order to avoid damaging the pipe, the shorter distance should be considered to be the maximum distance between pipelayers.

As an example, consider a project involving 0.5" wall 24" diameter pipe which has a weight per linear foot of 125.5 lb and the soil has a safe slope of 2. Using the above formulas:

- the ditch depth would be 3 × 2 ft = 6 ft deep
- the ditch width would be 2 × 2 ft = 4 ft
- the load overhang would be 2 × 6 ft + (0.5 × 4 ft) = 14 ft

Using the 572R Series 2's lift capacity chart we find that the 572R Series 2 has an ANSI rated load capacity of approximately 21,250 lb at a 14 ft load overhang.

When using rated load numbers it is important to understand that the lift capacity charts are based on SAE and ANSI test procedures that rate pipelayers on level, concrete surfaces. Working on softer underfoot conditions, working on slopes, (and other) can greatly reduce the pipelayer's load capacity.

If the contractor employs a safety factor of 2 then the maximum spacing between pipe lift points is:

$$\frac{21{,}250 \text{ lb}}{2 \times 125.5 \text{ lb/ft}} = 84.7 \text{ ft}$$

It is important to remember that this is the distance between the lift points, not the distance nose-to-tail between pipelayers. For this example, assume that 500 ft of pipe must be suspended during the laying-in process.

$$\frac{500 \text{ ft}}{84.7 \text{ ft per pipelayer}} = 5.9 \text{ which means that six pipelayers are needed}$$

The number of pipelayers required could also be determined by a second method:

$$\frac{\text{ft of pipe suspended} \times \text{pipe weight per ft} \times \text{safety factor}}{\text{rated load at overhang}}$$

In this case:

$$\frac{500 \text{ ft} \times 125.5 \text{ lb/ft} \times 2}{21{,}250 \text{ lb}} = 5.9 \text{ which again implies six pipelayers}$$

If, in this same example, soil conditions required a safe slope of 2.33 then the load overhang would have been 16 ft. At this load overhang the 572R Series 2's rated load capacity is approximately 18,125 lb. Using the equations above, this results in 72.2 ft between lift points which means that seven 572R Series 2 pipelayers are now necessary. Using the second method:

$$\frac{500 \text{ ft} \times 125.5 \text{ lb/ft} \times 2}{18{,}125 \text{ lb}} = 6.9 \text{ again implying that seven 572R2 pipelayers are needed}$$

Rather than adding another pipelayer, 583T's could be used. At a 16 ft load overhang the 583T has a rated load capacity of 29,400 lb. This translates to 117.1 ft between lift points. If the pipe's bending characteristics will allow this space between lift points, the job could be done with only five 583T's.

Notes —