

THE NEED FOR DOUBLE CLAMPS WHEN DRIVING WIDE SHEET PILES

THE PROBLEM

01. Lightweight Wider Sheet Piles

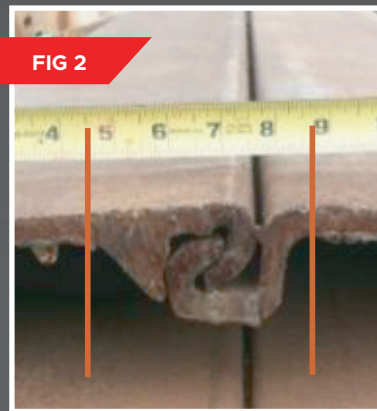
The introduction of 770 series sheet piles at 30.3" wide such as Z12-700 to Z14-770 has led to problems materializing when driven with a **single clamp vibro hammer**. The soil resistance on the wider and thin sheet pile prevents the pile from moving. This generates continuous stress on the steel to the point of fatigue failure, (similar to that shown in **Fig 1**.) A patch repair on each pile is usually required.

02. Heavy Cold Formed Sheet Piles

A second and less well recognized problem occurs with the recently introduced higher capacity cold form sheet piles. A similar failure occurs however it's not caused by soil resistance. This time it is caused by the lock not quite fitting the hammer clamp.

The hot rolled lock is approx. 4.5 inches wide. **Fig 2**, where the cold form lock is approx. 5 inches wide. **Fig 3**.

The clamp opening is approx. 4.76 inches wide meaning the cold form lock at approx. 5 inches doesn't quite fit. **Fig 4**.



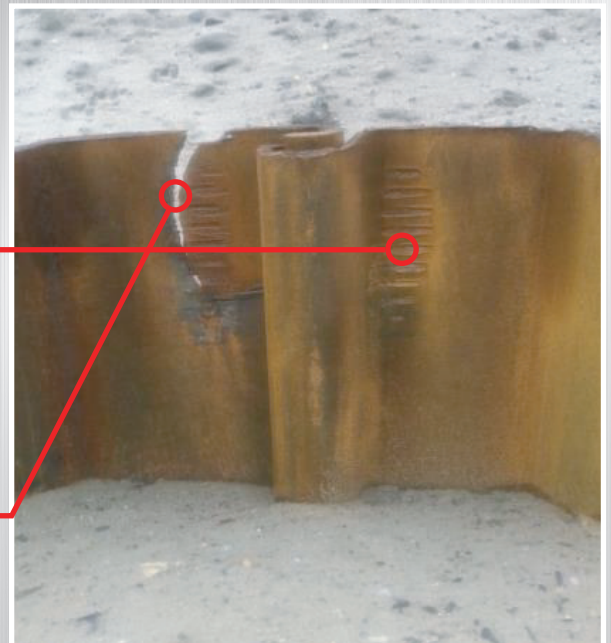
THE OUTCOME

02. Heavy Wider Cold Form Sheet Piles

The lock doesn't quite fit and it catches the edge of the lock here.

This causes the clamp to raise slightly at this point thus concentrating the vibro energy into the left flange edge leading to the flange steel failing.

Endless repair is needed as lock after lock is ripped near the vibro jaws. Time consuming repairs follow adding significant cost to the job.



THE SOLUTION



The single clamp vibro is replaced with a Double Clamp assembly. In Europe double clamps are used extensively and now slowly being adopted in the US.

KEY ADVANTAGES

- Double clamps distribute the vibro hammer's energy concentrically down each pile in the pair.
- With wider lightweight sheet piles the additional skin friction that is a problem for single clamps is easily dealt with.
- For larger cold form sheet piles, a double clamp solves the lock size issue and eliminates lock fit concerns completely.

MAINSTREAM HAMMER MAKERS OFFERING DOUBLE CLAMPS

ABI
EQUIPMENT
LIMITED

PVE

LIEBHERR
DIESEKO GROUP



COST COMPARISON

INFORMATION PROVIDED BY ABI: DRIVE SKZ 38 AT 60FT LENGTH

Single Clamp - Crane Suspended Vibro

1.	Crane suspended vibro + power pack	\$12,500
2.	Crane rental	\$10,000
3.	4 x crew	\$4,000
	Total	\$26,500/mth

Additional costs - repair to damaged pile heads

SKZ 38 at 60ft = 5.34 tons

Driving 10 pairs/day = 220 pairs/mth

Each pair needs 1ft repair = 220ft

220/60 = 3.7 pairs for repair/mth

3.7 pair x 60ft = 19.8 tons

@ \$2,000/ton = \$39,600

Welder @ \$5,400/mth

\$45,000/mth

Total Cost - Single Clamp **\$71,500/mth**

Double Clamp - ABI Leader Rig

1.	ABI leader rig	\$46,000/mth
	2 crew with (2 x production speed)	
	Total Cost - Double Clamp	\$46,000/mth

TAKEAWAY

Double Clamps eliminate the failure of lightweight wide and heavy cold formed sheet piles. When the added costs of **cutting and repairing heads** of damaged sheet pile pairs are taken into account it is clear that **costs almost triple** from \$26k/mth to over \$70k/mth. Double Clamps **reduce cost and schedule**.