

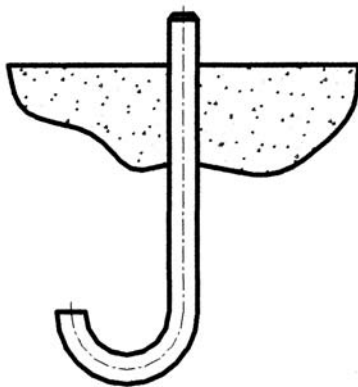
# SOLEPLATE LEVELLING AND BOLTING

There are the several options for holding down bolt placement, soleplate levelling and grout. The choice of the most appropriate can have a significant impact on the cost and ease of installation. Gantrail prepare proposal drawings with many quotations. These show details that may not be suitable for all applications and installations. Alternatively, cost savings may be achieved using different procedures and details on site. This note shows outline details and gives some of the advantages, 'Pros' and disadvantages 'Cons'.

## HOLDING DOWN BOLT PLACEMENT OPTIONS

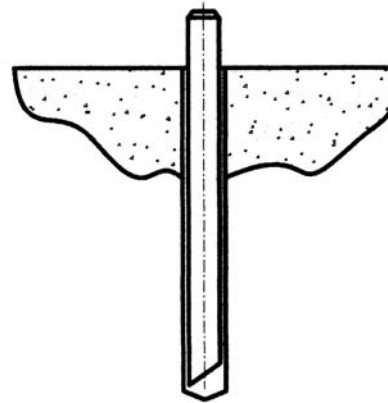
### *J Bolt or deformed bar cast into the concrete*

- Pros:** Cheap materials.
- Cons:** Difficult to ensure positional accuracy. Soleplates may not fit over bolts.



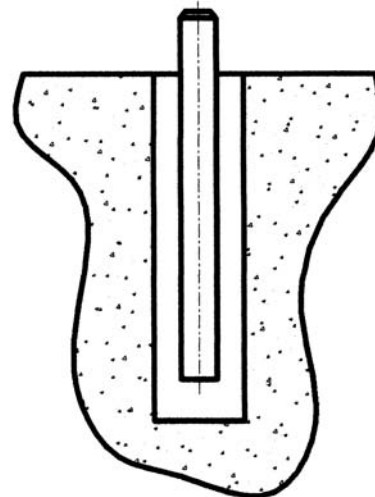
### *Drilled hole in concrete and threaded bar grouted in situ*

- Pros:** Accurate as actual soleplate drilled holes can be used as template.
- Cons:** May hit reinforcement when drilling and require diamond drilling or moving of bolt.



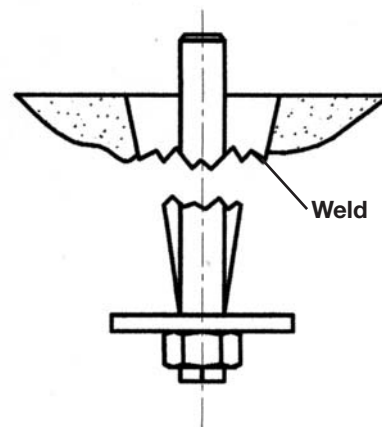
### *Void formed when casting slab/beam*

- Pros:** Cheap civil engineering operations.
- Cons:** Large hole to be filled with expensive epoxy polyester or cement resin grout.



### *Cast into proprietary removal bolt sleeve*

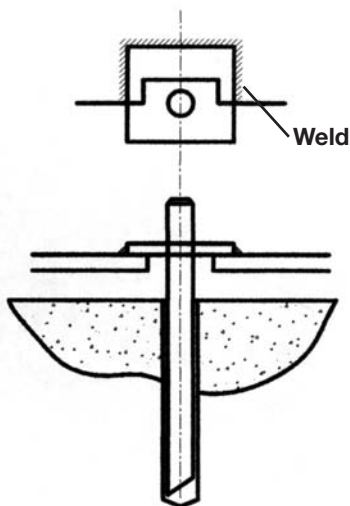
- Pros:** Tolerant to inaccuracies, high strength with simplicity.
- Cons:** More complicated formwork to hold dummy soleplate and holding down bolts.



## ***Knotched soleplate, cover plate and site drill***

**Pros:** *Position of holding down bolt can be changed on site if reinforcement is struck.*

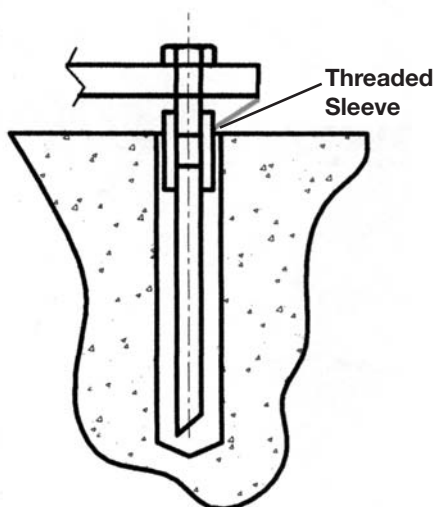
**Cons:** *More parts, and operations. Welders may not be available when soleplates are being fitted.*



## ***Threaded bar cast in threaded sleeve, hexagon headed bolt used as hold down bolt***

**Pros:** *Easier releveling and lifting of soleplate to cater for settlement*

**Cons:** *Difficult to ensure accuracy unless drilled and grouted. More parts, expensive*

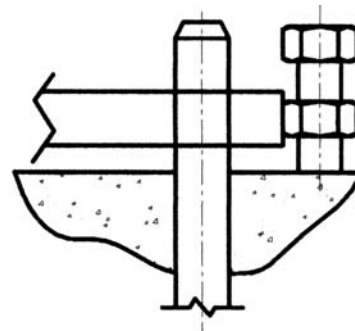


## **SOLEPLATE LEVELLING OPTIONS**

### ***Levelling screw through nut welded to soleplate side***

**Pros:** *Cheap and easy to use in most cases.*

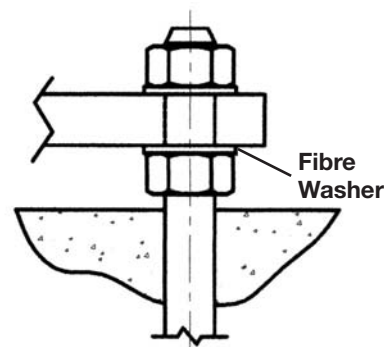
**Cons:** *Nuts readily knocked off on transit to site. Set screws sometimes not re-usable because they bond to grout.*



### ***Levelling nut under soleplate***

**Pros:** *Material cost low - one extra nut, a thin nut and fibre washer or plastic nut.*

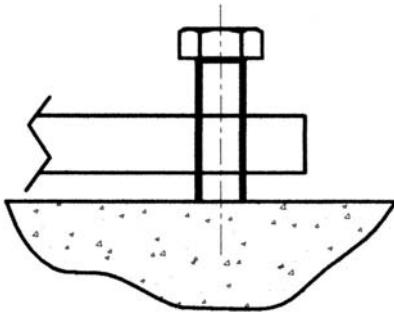
**Cons:** *Nut sometimes thicker than grout. Cannot access nut in trench. Fibre washer can be accidentally omitted and not checked before grouting.*



### ***Drilled and tapped soleplate***

**Pros:** *Easy to use on site. No increase in soleplate overall dimensions.*

**Cons:** *Expensive to drill and tap soleplate. Set screws often non re-usable because they bond into grout.*



## GROUT OPTIONS

### *Polyester bolt grout*

*Pros: Rapid set, high strength.*

*Cons: Hole sizes need to be accurate as grout shrinks. Expensive - 5 times that of cementitious.*

### *Epoxy bolt grout*

*Pros: Good for repairs.*

*Cons: Not normally used.*

### *Cementitious bolt grout*

*Pros: Approximately a fifth of the cost of resin grouts (polyester and epoxy).*

*Cons: Slow to cure, lower strength.*

### *Epoxy soleplate grout (polyester is not used)*

*Pros: High strength, toughness, good bonding to concrete and steel only  
15mm nominal thickness, fast set.*

*Cons: Cost - 5 times that of resin grout per unit volume.*

### *Cementitious soleplate grout*

*Pros: Cheaper - about a fifth the cost of resin grout per unit volume. Larger void filling capacity.*

*Cons: Nominal thickness 25mm instead of 15mm. Probably more difficult for quality control (this may be considered controversial by some suppliers).*