

# GM Poles – Installation Instruction 3: Footings

Pole footings should be designed and certified by an engineer and should be based on a site specific soil report. Footings should be constructed by experienced personnel and a pre-pour footing inspection completed to ensure the construction is in accordance with the engineers drawings. Contact GM Poles to discuss your requirements for:

## **Soil Testing | Footing Design | Footing Construction | Footing Inspection**

All pole footings shall be constructed in accordance with the engineer's drawings and relevant Australian Standards, in particular the latest revision of AS3600 Concrete structures and SAA HB64 Guide to concrete construction.

### 1. Setting Bolts:

- The bolt-positioning template is to be fitted to the foundation bolts before setting the bolts in the reinforcement cage. Bolt threads are to be taped to prevent damage during pouring of concrete.
- Position, orientation and final height of footing is to be confirmed with the client and signed off. Bottom of bolt threads is to be above the finished ground level. Refer following table for length of thread that should be exposed above finished concrete level: (i.e. concrete to be finished to base of thread).

BOLT	THREAD LENGTH
M20	120mm
M24	150mm
M30	150mm
M36	200mm

### 2. Footing Excavation & Placing Cage:

- Footing is to be excavated in accordance with engineer's drawings.
- Particular care is to be taken with deep excavations which are defined as *having the potential for a person to fall greater than 2.0m*. For deep excavations an appropriate Work Method Statement must be followed.
- If the footing is to be left unattended then it is to be covered with timber sleepers nailed together (or similar) and fenced off to prevent injury.
- The reinforcing cage is to be placed in the footing using plastic spacers to ensure specified cover is achieved. If the amount of cover is not noted then ensure a minimum of 75mm. Cover is to be checked before pouring of concrete.
- If any portion of the footing is to extend above the ground then formwork is to be assembled in a tradesman like manner.
- Electricians conduits are to be installed in such a manner that the end below the ground will not be covered in concrete during pouring and the end above the ground is to finish a minimum of 100mm above top of foundation bolts.

### 3. Pouring Concrete:

- Standard Footings: Concrete is to be ordered in accordance with the engineer's drawings. If not specified, concrete with a maximum aggregate size of 20mm,  $f'c=32\text{MPa}$  and 100mm slump is to be used.
- Large footings: Concrete is to be ordered in accordance with the engineer's drawings and may require testing if specified.
- No water shall be added to the mix except to achieve the required slump. A test shall be carried out after any water is added.
- If the footing is deeper than 2.5m then the concrete shall be poured through a tremmie of appropriate diameter or a concrete pump lowered into the footing. The end of the tremmie or pump is to be kept within 2m of the rising concrete.
- All footings are to be properly vibrated. An immersion vibrator is to be used to vibrate the upper 2.5m of the footing (concrete below 3m will be compacted by hydrostatic pressure if the rate of pour is sufficient – refer SAA HB64). The vibrator is to be lowered vertically into the concrete:
  - Lower to  $\frac{3}{4}$  of the depth of the shaft;
  - Leave still for not less than 10 seconds (until air bubbles have stopped);
  - Relocate at centre's of approximately 6x the head diameter (e.g. 300mm centres for  $\text{Ø}50\text{mm}$  head);
  - The rate of pour is to be slow enough to ensure that all concrete is properly vibrated;

### 4. Concrete Finishing & Site Clean-Up:

- Concrete surface is to be finished in a tradesman like manner.
- Spoil removal and reinstallation of top soil and turf is generally the responsibility of the client.

### 5. Installation of poles:

- The following types of poles must not be stood before 28 days:
  - Hinged base, hydraulic operated;
  - Poles supporting catenary loads;
  - Poles supporting large horizontal cantilevers (e.g. traffic signal mast arms);
- Centrally loaded vertical poles may be stood after 7 days;

