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SPUNLITE POLES



Installation

Installation

- a typical guide



Introduction

The following information is intended to provide a guide only for the installation of Spunlite sectional steel columns. It is in no way intended to supercede any procedures already in place by any individual, company or local authority nor should it be considered an 'instruction manual'.

Because ground conditions can vary from location to location, it is the requirement of the installer to ensure that a suitable foundation design has been approved by the project principal for each installation. If required, Spunlite Poles Ltd can offer a fully engineered foundation design service specific to your project on receipt of site geotechnical reports.

Scope

Procedure for lifting and installing of fully assembled Spunlite steel sectional lighting columns of any size. This procedure should reduce the possibility of the pole sections coming apart and falling to the ground however if in doubt, contact our office prior to any lifting taking place.

Description

Sectional steel columns are held together by a friction fit of the overlapping joints. It is only friction that holds the pole sections in place and when lifting the complete column, a **second** sling or ratchet tie down is required to be attached to the pole at the lifting point and the lowest available opening in the pole (e.g. the fuse access opening or preferably the cable entry for ground planted columns).

Hazard Management

The additional sling or strop (referred to above) is specifically an aid to reduce the chance of the main lifting strop or chain slipping and any pole sections coming apart. It IS NOT intended to be used as the main lifting mechanism for installing or removing poles.

Suitable site hazard management in accordance with local authority and your internal company procedures should be in place prior to any work being undertaken. The entire work area should include traffic and pedestrian management throughout the duration of the on-site work being carried out.

It is also advisable to ensure that the ground immediately surrounding the site is suitable or supported with appropriate bearers to allow for the extendable feet on the lifting truck or crane to be able to support the additional weight during the lifting of the column.

Lifting Equipment

- * Hiab truck, crane or similar is used to lift and erect the column. Ensure the machine has the capacity to cope with the height and weight of the column
- * 1 x ratchet tie down and 1 x suitable chain (1 for lifting and the other for securing the sections in place during the lift)
- * 2 x heavy duty spanners suitable for tightening the galvanised nuts on flange or shear based columns
- * Magnetic spirit level
- * Torque Wrench
- * Teflon aerosol spray (or similar) for lubricating bolt threads

**FOR MAJOR PROJECTS SPUNLITE POLES OFFER A FULL ON-SITE ASSEMBLY SERVICE
FOR FURTHER DETAILS, TALK TO ONE OF OUR PROJECT MANAGERS**

Installation

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Ground Planted & Ground Stub Columns

The typical depth of the ground stub or ground planted section is usually 20% of the mounting height (i.e. height above finished ground level).

Please refer to our **Base Connections & Foundations** section for more detailed information.

See further on for Shear/Flange Based and Flange Based Pad or Pile details.

Lifting & Placing Column

A full photo guide is provided at the end of this section.

- 1 The suggested point to attach the lifting strop or chain is approximately 2/3 up from the very bottom of the pole. Any lower may cause the pole to pivot uncontrollably once lifted completely off the ground. (See photos 1 & 2)
- 2 Secure the hook end of the ratchet tie down to the lifting chain (See photo 3). Secure the ratchet end hook into the cable entry hole (See photo 4) and using the ratchet, tighten the tie down to lock the sections together prior to lifting. (See photos 5 & 6)
- 3 Secure the chain to the lifting device securely ensuring there will be no obstructions when lifting begins. (See photo 7)
- 4 Start lifting the pole slowly, avoiding any sudden or jerking movements, taking care to ensure the bottom of the pole isn't dragged across the ground. Also, throughout the lifting, watch the ratchet tie down carefully to ensure it remains correctly in place to support the lap joint sections. The pole should be lifted to completely vertical. (See photos 8,9,10,11)
- 5 Ensuring the bottom of the hole has been backfilled accordingly to support the weight of the pole (see **Base Connections & Foundations** section for further details), carefully lower the pole into the hole. Once nested into place, check the ground-line mark on the pole is positioned accordingly and the pole is plumb and rotate the pole if required to ensure correct orientation of the pole. (See photos 12,13 & 14). At this point remove the lower ratchet tie down hook from the cable entry hole.
- 6 Whilst holding the pole in place with the lifting machine, proceed with backfilling and compacting the layers in accordance with the foundation design instructions frequently checking the pole is still plumb. (See photos 15 & 16)
- 7 Once all backfilling is complete, carefully remove the lifting strop by 'flapping' the ratchet tie down still attached to the lifting point. This will loosen the lifting chain. (See photos 17 & 18)

Shear & Flange Based Stub

For poles with ground stubs, set the ground stub in the ground in accordance with the foundation design and lift the pole into place afterwards. It is important to ensure that the underside of the flange plate is set approximately 75mm above what will be the finished ground line. It is also vital to ensure the flange plate is level to horizontal. Once the foundation is complete, lower the above ground section of the pole onto the base flange using the same lifting method as described above and apply the bolts and nuts accordingly (see further on in this section for details).

Flange Based for Pad or Pile Foundation

For a concrete foundation, with the holding down bolts cast into place, it is important to check the orientation of the door and/or arm before lifting and lowering into place. This will vary depending on access for the lifting truck and in which direction the pole can be lifted without obstruction.

Installation

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Placing Shear & Flange Based Columns (stub foundation)

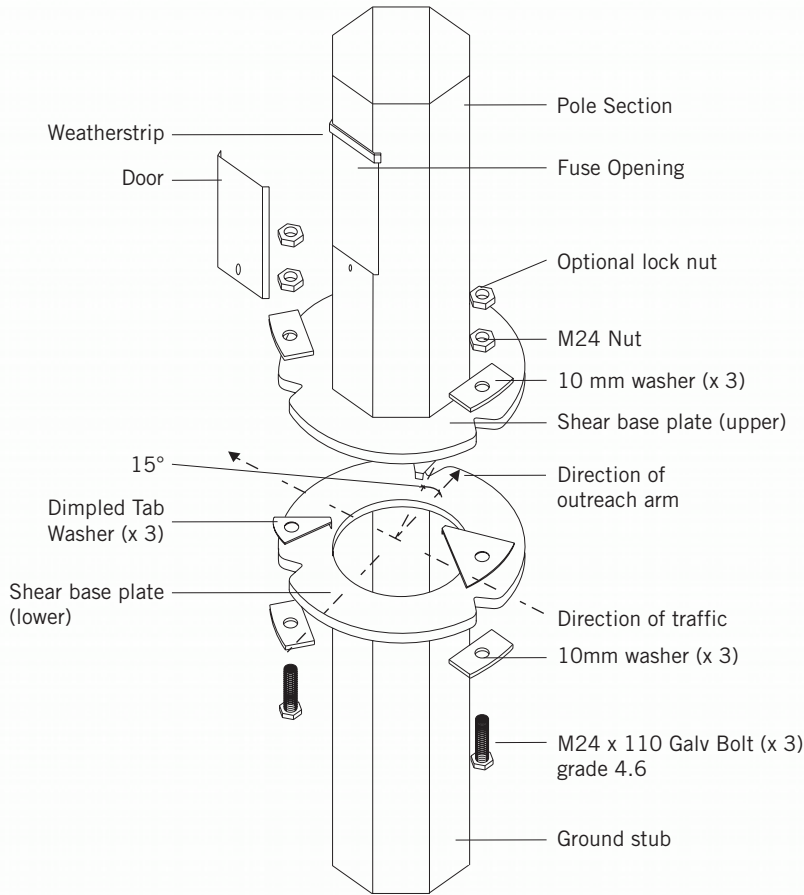
- 1 Ensure the ground stub is orientated correctly (as per diagram) and plant in accordance with the foundation specification for the site. (Refer to the 'Base Foundations' section for a suggested foundation design.)
- 2 Lubricate the threads of all foundation bolts with lubricating spray or similar to ensure the nuts will turn easily when applied.
- 3 Lift the pole as described on the previous page to vertical and position above the base flange plate taking care to orientate the outreach arm as per the diagram and carefully lower the pole onto the base flange maintaining alignment and keeping tension on the lifting device.
- 4 Once pole is sitting correctly in place, assemble the three sets of bolts and nuts as per the diagram remembering to lubricate the threads with the lubricating spray.
- 5 Tighten the nut closest to the base flange plate (primary nut) to 250Nm minimum torque. Slacken off then immediately re-torque to between 90 and 100 Nm. **DO NOT exceed 100 Nm as this will not allow the 'shear' mechanism to function as required when struck by a vehicle.**
- 6 Once the three bolts and nuts are in place, apply the optional second nuts as locking nuts to assist in keeping the primary nuts locked in place. Take particular care not to change the position of the primary nut as this will change the required torque setting. This may cause the shear mechanism not to operate. At this point, check all components are aligned correctly.
- 7 Remove the lifting chain in the usual manner as described on the previous page.
- 8 The base flange connection should be inspected every 6 months or immediately after any earth tremors or significant wind speeds. Each bolt is to be removed individually using a 'g-clamp' as a temporary holding device during inspection and checked for corrosion, fatigue or cracking and then re-applied in accordance with the above instructions. Repeat this process for the remaining two bolts individually. **Any sign of fatigue or damage on any of the bolts or nuts will require an immediate replacement of all three fasteners.**

Placing Flange Based Columns (pad or pile foundation)

- 1 Mark the base plate hole and matching foundation bolt to confirm orientation prior to lifting.
- 2 Lubricate the threads of all foundation bolts with lubricating spray to ensure the nuts will turn easily when applied.
- 3 Wind one 'dumpy' level nut onto each bolt. These will act as levelling nuts once the pole is lowered into place. There should be approximately 125mm of exposed thread above the 'dumpy' nut per bolt.
- 4 Lift the pole as described on the previous page to vertical and position above the foundation bolts. By manual method, prior to lowering the pole, have one of the installation crew rotate the pole to match the position of the bolts and gently lower the pole maintaining alignment.
- 5 Once the pole is lowered into place, resting on the 'dumpy' levelling nuts, maintain the strain on the pole and, using one of the spanners, adjust the 'dumpy' levelling nuts to achieve correct pole alignment.
- 6 Apply two standard nuts per bolt to the top side of the base flange using the 'Snug Tight' method as described in clauses 9.2 and 15.2.5.2 NZS 3404:1997 (see **Base Connections & Foundations** section for further detail.)
- 7 After tightening to 'Snug Tight', the nuts are loosened off and re-tightened back to 'Snug Tight'. This is very important as it ensures the galvanised layers on the bolt and nut have been compressed.
- 8 Remove the lifting chain in the usual manner as described on the previous page.
- 9 Grout under the base flange using a high strength low shrink grout as specified in the foundation design.

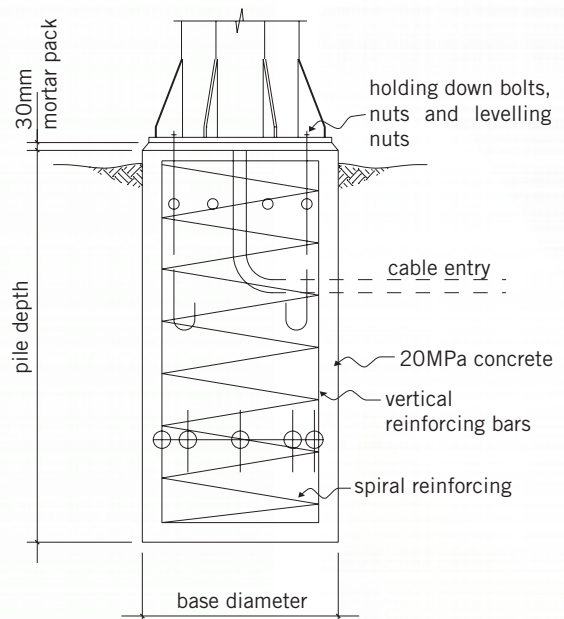
Installation

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Shear Based Detail

Flange Based Detail



Installation

- photo reference



Photo 1



Photo 2



Photo 3

Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18

For major projects, Spunlite can offer an on-site assembly service. Speak to one of our Project Managers today for further details.