Technical Note 64

Tensioning and Re-tensioning of Slip Base Light Pole Bolts

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Queensland Government

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1 Clarification of bolt tensioning

The purpose of this technical note is to define the acceptable method for the tensioning and re-tensioning of the slip base light pole bolts for Department of Transport and Main Roads (TMR) projects.

2 Reference documents

Transport and Main Roads Specification MRTS78 *Fabrication of Structural Steelwork.*

Transport and Main Roads Standard Drawings 1372, 1380, 1381, 1382 and 1429.

Australian Standard AS 1252 – 1996.

Transport and Main Roads Rate 3 Road Lighting – Best Maintenance Practices.

3 Identification of conforming materials

All bolts and nuts shall be from tested batches. All bolts and nuts shall be tested in accordance with MRTS78 *Fabrication of Structural Steelwork*.

The contractor shall only use bolts, nuts and washers complying with AS 1252. These bolts, nuts and washers have identification marks embossed on the top of the bolt head, the top surface of the nut and protrusions on the edges of the washers.

3.1 Inspection for tensioning

Inspection by the Contractor of bolts, nuts and washers for damage to the threads and the galvanising shall take place before fitting. The contractor shall discard any damaged bolts, nuts and washers.

3.2 Inspection for re-tensioning

Inspection of bolts, nuts and washers for damage to the threads and the galvanising shall take place before fitting. Any damaged bolts, nuts and washers shall be discarded.

4 Assembly of the bolts, nuts and washers

The nut must be able to run freely up and down the bolt. If the nut is not free running then, nut shall be run up and down the thread a number of times to clear the blockage. If the nut still will not run freely on the bolt the contractor shall discard the nut and the bolt. This procedure must occur before taking bolts and nuts to site.

5 Tensioning and re-tensioning of bolts

The re-tensioning/replacement of bolts is to be undertaken when the lighting pole inspection indicates that:

- the pole has been hit but has not been knocked over, or
- the pole has minor damage that does not warrant replacement, or
- the slip bolt assembly is damaged or corroded, or
- the shear washer is damaged.

Tensioning	Re-tensioning
The following method shall be used for the tensioning of the bolts to the required torque specified on the drawings.	The following method shall be used for the re-tensioning of the bolts to the required torque specified on the drawings.
1. Prior to the installation of the light poles, the Contractor shall provide documentary evidence that the torque wrench used for the tensioning of the bolts has been calibrated.	1. All bolt assemblies shall be inspected for corrosion or damage. If the bolts are damaged or showing signs of corrosion, then the bolts will need to be replaced.
2. Install the Slip Base Mount so the slip base mount is perfectly level. Then tension the M24 anchor cage nuts to a minimum torque of 135Nm, as specified in TMR Standard Drawing 1380, 1381, 1382 and 1429.	2. All slip base road lighting poles are required to have a shear washer between the lighting pole base and the slip base mount. If the shear washer is damaged, the shear washer shall be replaced. In order to undertake this work, the road lighting pole will need to be removed and then re-installed.
3. When the light pole is erected, the bolts and nuts shall be assembled through the shear washer as per the TMR Standard Drawing by running the nut onto the bolt thread until the nut is finger tight.	3. Prior to the re-tensioning of the bolts, provide documentary evidence that the torque wrench used for the tensioning of the bolts has been calibrated.
4. Then place a conventional spanner on the bolt head to prevent it turning and then place the torque wrench on the nut. TMR Standard Drawing 1380, 1381, 1382 and 1429 requires the M36 bolts to have a torque of 90+/- 10 Nm. In order to achieve the correct torque setting, torque wrench must reach the specified setting in a constant movement.	4. Re-tensioning of the bolts requires the complete removal of the bolt assembly. As the slip base connection only uses three bolts, the lighting pole will need to be supported while the re-tensioning process is being carried out.
5. Repeat Step 4 for the remaining bolts.	5. Once the road lighting pole has been safely supported, then the first bolt shall be de-tensioned and removed from the shear washer without damaging the shear washer.
	6. The bolt assembly shall be inspected and if deemed to be in a sound condition, shall be lightly oiled.
	7. The bolts assembly shall be re-installed as per the TMR Standard Drawing by running the nut onto the bolt thread until the nut is finger tight.
	8. Then place a conventional spanner on the bolt head to prevent it turning and then place the torque wrench on the nut. TMR Standard Drawing 1380, 1381, 1382 and 1429 requires the M36 bolts to have a torque of 90+/- 10 Nm. In order to achieve the correct torque setting, torque wrench must reach the specified setting in a constant movement.
	9. Repeat Steps 4 to 8 for the remaining bolts.

Note: If the torque wrench runs out of travel and needs to be re-positioned and the torque wrench achieves the setting as soon as force is applied to the wrench, then the correct torque has not been achieved. The bolt will need to be loosened off and the above process repeated.