

6490300 GALVANIZED STEEL POLES, MAST ARMSM AND MONOTUBE ASSEMBLIES  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (Internal, 3-26-19)

I had one comment in the attached copy of John's proposed revisions. Please note that Cheryl Hudson has also submitted proposed revisions to this spec (attached email) and it may be less confusing to combine John's and Cheryl's revisions into one.

→ Base plate installation steps are as follows:¶  
→ → 1. Verify that the nuts can be turned onto the bolts past the elevation  
corresponding to the bottom of each in-place leveling nut and be backed off by the effort of one  
person on a 12 inch long wrench, without employing a pipe extension on the wrench handle.¶

AS **Arnold, Scott**  
Should this be "a person using an ordinary spud wrench" to be consistent with the effort described above for snug tight?¶

Response:

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Cheryl Hudson  
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Comments: (Internal, 3-26-19)

Attached is the Origination form and marked up specification. John suggested changing the table from "A" to "1"; not sure which is the preferred nomenclature.

Response:

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Arthur Berger  
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Comments: (Internal, 3-27-19)

1. During this assembly, check all connections . . .
2. Visually inspect the connection after snugging all bolts, ensuring, at a minimum, firm contact has been achieved at a minimum between faying surfaces beneath bolts within one bolt diameter of bolt hole edges. Re-snug bolts in a connection where faying surfaces are not in firm contact.

Response:

Respectfully disagree; changes were not made as the intent is clear as-is.

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Robert Higginbotham  
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Comments: (Industry, 4-3-19)

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### 649-3-Fabrication¶

Paragraph 3-Before shipping assemble mast ARM and monotube assemblies including luminaire and bracket to assure proper fit. During assembly check all connections to ensure a snug tight connection can be achieved as defined in 649-5. The idea here is to check the mast ARM after galvanizing and prior to the shipment. Some manufactures send their assemblies out for galvanizing and then send the structures to the customer. More clarification of the time at which the M.A. assembly is required to be put together and checked for fit is necessary, so that manufactures who do send out structures for galvanizing are required to bring the structures back to the shop and re-assemble. This alleviates warped connection plate issues and galvanizing slag issues.¶

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### 649-3-Fabrication¶

Re-snug bolts where faying surfaces are not in firm contact.¶

- → Re-snugging the bolts? Can an electric torque wrench be used for re-snugging?¶

Are there provisions for a contractor to use an electric or hydraulic torque wrench if they so choose?¶

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Lastly, requesting a uniform tightening pressure while doing turn of nut method leaves room for opinion. How much of a turn and at what pattern? This is a question only because of past scrutiny and interpretation of the specification. Generally speaking, can a substitute torque foot pounds be recommended if an electric or hydraulic wrench is used for snug tight?¶

Example—600-ft-pounds of torque on any set of connection plates should bring the plates into a snug tight condition, when using a 1¼-inch connection bolt.¶

¶

Some contractors have already purchased these tools at a hefty price and prefer their use, due to their safety and speed of the connection bolt installation.¶

¶

**Response: Changes has been made.**

Before shipping, assemble mast arm and monotube assemblies including luminaire and bracket, to assure proper fit. **Assembly of mast arms must be done after galvanizing to ensure mast arm to pole connections can achieve a snug-tight condition as defined in 649-5.** The mast

Table 460-7, Nut Rotation from the Snug-Tight Condition. Maintain **as close to** uniform contact pressure **as possible** on the faying surfaces during snugging and turn-of-nut process, **by utilizing suitable erection methods and by using** a bolt tightening pattern that balances the clamping force of each bolt, as closely as possible, with the equal clamping force of a companion bolt.

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Aaron Ebert

Comments: (Internal, 4-5-19)

inside the terminal box containing the information described in the Standard Plans.

Before shipping, assemble mast arm and monotube assemblies including luminaire and bracket, to assure proper fit. **During assembly check all connections to ensure a snug-tight connection can be achieved as defined in 649-5. The mast arm and monotube assemblies may be separated for shipment.**

Ensure all components are protected from damage during shipping and handling by

I would recommend striking this comment from the procedure in entirety. If we cannot gain acceptance to that my proposed wording would be: Fabricator to ensure adequate manufacturing controls are in place to achieve appropriate assembly dimensions and tolerances. Adequate manufacturing controls defined such that during assembly all connections achieve a snug-tight connection as defined in 649-5.

for its entire length. **Tighten nuts to a snug-tight condition to bring the faying surfaces of the assembly into full firm contact with plies solidly seated against each other, but not necessarily in continuous contact which is referred to as snug-tight. Snug-tight is defined as the maximum nut rotation resulting from the full effort of one person using an ordinary 12-inch longspud wrench or equivalent. Visually inspect the connection after snugging all bolts, ensuring firm contact has been achieved at a minimum between faying surfaces beneath bolts within one bolt diameter of bolt hole edges. Re-snug bolts in a connection where faying surfaces are not in firm contact. After bringing the faying surfaces to a snug-tight condition, tighten nuts in accordance with**

I understand the intent of this but struggle to accept a criteria being written into a procedure that is not measurable. This has the potential to turn into a big mess down the road with the next generation of people inherit the procedure and think we at a minimum need to ensure we state this to FL. It will work for now, but background knowledge will be lost in the coming years.

Response:

Changes have been made to incorporate the comments pertaining to Section 649-3.

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No Name

Comments: (Industry, 4-12-19)

Regarding the statement "Visually inspect the connection after snugging all bolts, ensuring firm contact has been achieved at a minimum between faying surfaces beneath bolts within one bolt diameter of bolt hole edges". With the use of the term "Visually", is the intent to prohibit the use of tools such as feeler gauges? The area around the bolt between the faying surfaces is not visually accessible without the use of tools. Please evaluate providing inspection requirements to clarifying the method of inspection and the acceptance criteria.

Response:

This change is intended to avoid using feeler gauges entirely in assessing the firm contact. The use of the term "visual" is consistent with inspection guidance given in the RCSC bolt spec.

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