Quality Assurance Procedure QAP 5926
Method of test for

Installation/Verification Test of Bolt Assemblies

1. SCOPE

1.1 This procedure shall be used to verify: (1) the Contractor uses an adequate snug tightening procedure, and (2) the minimum required tension has been achieved by the Contractor's method of tensioning bolts.

2. GENERAL

2.1 Each fastener lot shall have been previously tested in accordance with the Rotational Capacity Test of Bolted Fasteners (QAP 5924 & QAP 5925) and passed.

2.2 Three fastener assemblies from each Rotational Capacity Lot shall be tested prior to installation.

2.3 The Contractor shall use the same installation method to perform this test as to be used in actual installation.

2.4 A hardened washer shall be used under the turned element.

3. APPARATUS

3.1 Calibrated bolt tension measuring device (Skidmore Wilhelm or equivalent).

4. PROCEDURE

(To be performed by the Contractor, using the equipment and personnel to be used during installation.)

4.1 Install each fastener assembly into the tension measuring device and install sufficient spacers and/or washers so that at least three, but no more than five full threads are exposed between the nut face and the underside of the bolt head (this is the grip area).

4.2 Tighten each assembly using the snug tightening procedure to be used during installation. This procedure shall not induce more than 10% of the minimum required installation tension. For example the minimum installation tension on the 7/8 inch diameter bolt is 39,000 lbs. Therefore, the snug tight procedure shall not induce tension greater than:

39,000 X .10 = 3,900 lbs

4.3 From snug tight and using the tension control wrench (Contractors'), tension the fastener until the spline end shears for tension control bolts. At this point the induced tension shall be equal to or greater than

39,000 lbs. For all other A325 bolts tightening shall continue until the direct tension measuring device indicates 39,000 lbs or greater. If the bolt is tightened beyond 15% above the minimum tension, inspect the bolt for any thread damage. Elongation verification with calipers may be necessary if it appears the bolt has been stretched. Any evidence of thread damage or elongation warrants discarding the bolt assembly and rerunning the test.

5. ACCEPTANCE

5.1 The snug tightening method shall not induce more than 3900 lbs.

5.2 The tension at the point the spline end shears off shall be equal to or greater than 39,000 lbs for tension control bolts. For non-tension control bolts the assembly shall be tensioned to or greater than 39,000 lbs with no visible thread damage or evidence of elongation.

5.3 Any Rotational Capacity Lot which does not meet the criteria in 5.1-5.2 shall be rejected and not used on the project.