PTI-CRT20 G1-1025

MANUAL FOR CERTIFICATION OF PLANTS PRODUCING UNBONDED SINGLE STRAND TENDONS

POST-TENSIONING INSTITUTE®

CERTIFIED PLANT

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APPENDICES

1. GENERAL

1.1 SCOPE AND PURPOSE

The Post-Tensioning Institute (PTI) program for Certification of Plants Producing Unbonded Single Strand Tendons has been developed to provide independent certification of a plant's extrusion and/or fabrication capability to produce standard and/or encapsulated unbonded single strand tendons. This certification program also includes evaluation of calibration practices for jacks and gauges used for stressing single strand tendons. The program is applicable to all facilities whether fixed or mobile.

The certification of a plant under this program indicates that the plant and the personnel are capable of producing unbonded single strand tendons in conformance with the PTI M10.2-24: Specification for Unbonded Single Strand Tendons (for structures designed with ACI 318) or PTI M10.6-24: Specification for Unbonded Single Strand Tendons Used for Slab-on-Ground Applications (for slab-on-ground applications), or alternative, but equivalent standards as specified by local or LDP requirements as listed on the supplier's tag. The remainder of this document will refer to "applicable PTI specification" to refer to the appropriate standard. Certification shall not be dependent on membership in PTI or on utilization of any products or services of PTI or the Independent Inspection Agency

1.2 LIMITATIONS

The certification program extends only to the extrusion and/or fabrication procedures and materials within the examined plant, and is expressly not intended to cover procedures or events subsequent to shipment of tendons to the job site. Furthermore, while it is intended that the inspections reflect the quality of routine production for a plant, the PTI certification program is expressly not intended for use in certifying the quality of particular tendons supplied by a plant or their suitability for use on any particular project. PTI does not approve, endorse, or guarantee any product or construction, or in any way make any warranty regarding products or construction design or methodology, including warranties of quality, workmanship or safety, expressed or implied, further including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. THE POST-TENSIONING INSTITUTE SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES. Acceptance of tendons, as fabricated for specific projects, remains the responsibility of the owner's designated representative.

The certification program is limited as stated herein and does not relate to a number of aspects of a post-tensioned project. For example, a post-tensioned project requires sound design and construction practices, the details of which may vary with the application.

PTI will administer the certification in accordance with the requirements of Section 5.0, and the policies and procedures set forth in the PTI-CRT20 G2 Quality Management System Manual (available from PTI upon request or by free download from PTI's website: www.Post-Tensioning.org). However, PTI shall not:

a) Design, manufacture, install, distribute or maintain unbonded tendons;

b) Design, implement, operate or maintain an unbonded tendon fabrication, extrusion or other certified process that is within the scope of the Unbonded Tendon Plant Certification Program;

c) Offer or provide consultancy to plants;

d) Offer or provide management system consultancy or internal auditing to plants.

Post-tensioning materials must also be installed, stressed, and finished properly (see Part 3 of either applicable PTI specifications). Any errors or omissions in design or construction utilizing unbonded tendons are the responsibility of others, and shall not in any way be considered to be delegated to, or made the

responsibility of, PTI, the PTI Certification Program, the Inspection Agencies, or any of their officers, agents or employees.

The interpretation of all program requirements herein is based on the terminology definitions as defined in the Post-Tensioning Terminology (PTT) document available on the PTI website at:

https://www.post-tensioning.org/Portals/13/Files/PDFs/Publications/131120-PTI-PTT.pdf

1.3 PTI CERTIFICATION PROGRAM CRITERIA SUMMARY

The PTI Certification Program is based on a review of materials, test data, and fabrication procedures during two or more plant inspections by an Inspection Agency each year that the plant is involved in the program. During the first year, there will be one in-depth announced inspection and one unannounced inspection. During the second and following years, a minimum of two unannounced inspections will be made of each plant. Inspection Agencies are selected from firms with in-depth experience in the post-tensioning industry. Inspections by an Inspection Agency shall include detailed review of records, test data, fabrication procedures, materials, equipment, and Quality Control Program as outlined in Sections 2.1 through 4.5, inclusive.

Testing done to satisfy the requirements of other certification programs may be used for application for this certification program as long as it satisfies the technical requirements of this program.

The PTI Certification Program assigns responsibility for the quality of the final tendon assemblies to the Certified Plant producing materials for shipment to project sites. This applies whether the Certified Plant utilizes in-house or outside facilities to coat and sheath the strand. Certified Plants utilizing coated strand received from outside facilities are responsible for the final condition and quality of the coated strand and its components.

Certified Plants shall maintain files in a well-organized manner, including a formal file guide, so the data normally reviewed during inspection can easily be retrieved. Maintain a formal file guide outlining the location of documents to be reviewed during inspections. It is the responsibility of the contact personnel at the participating plant to notify PTI and the Inspection Agency in advance when key plant personnel may be absent for extended periods of time, such as vacations, holidays, in-house training, plant closings, etc.

Maintain a system of record keeping at the Certified Plant that will permit traceability of material used on specific projects. Keep these records for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws. Specific requirements for record keeping are contained in Chapter 4 of this manual. This chapter includes the detailed requirements of the receiving logs and/or database, non-conforming material logs, extrusion logs, and the written quality control program.

Maintain a permanent record of anchorage system test reports and hydrostatic test reports for all components used by the Certified Plant at the Certified Plant for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Certified Plants shall have a written Quality Control Program on file to ensure ongoing compliance to the PTI Certification Program. The Quality Control Program shall include an outline of procedures and assignment of responsibilities for each task.

Certified Plants shall establish and maintain procedures to control items that do not conform to specified requirements to prevent inadvertent installation or use. Maintaining a log or file to track disposition/disposal of non-conforming items is mandatory. Track any item that fails to meet specifications when received or a non-conformance is discovered during the fabrication process. The tracking information shall include, as a minimum: item description, manufacturer, discovery date, description of non-conformance, resolution, and date of

resolution. Tag or mark and segregate all non-conforming items. Willful use of non-conforming items in a post-tensioned project shall warrant decertification of the plant.

1.4 PLANT INSPECTION CRITERIA

The Independent Inspection Agency shall give a numerical grade for each inspection criterion based on the grading guidelines presented in the following tables. Each grading item has a possible of 100 percent. The tables list the weight for each grading item. The percentage on each item is multiplied by the assigned weight, the weighted scores are summed, and divided by 1000 possible points to give the overall percentage for the inspection. Multiple items are identified as critical items and shown as bold in the text and highlighted yellow in the grading tables. The check marks indicate the applicability of the question to the various anchorage and certification types.

The inspection is based on two criteria; a percentage for each of the applicable critical items and an overall percentage based on the weight of each grade score.

- An overall percentage of less than 80% results in conditional certification and an overall percentage of less than 70% results in a failed inspection.
- ***Additionally, a percentage of less than 80% in any of the critical items results in conditional certification and a grade score of less than 70 points in any of the critical items results in a failed inspection.***

If an individual inspection criterion was cited as not meeting the minimum standard of the program in the plant's previous inspection, and the criterion is still found to be in nonconformance with the program requirements, the grade for this item will be changed to -50%, therefore reducing the total score for the inspection.

If a plant receives two conditional certifications within a 2-year period, the second conditional certification will be deemed as a failed inspection of the plant and the certification will be suspended. The plant will be allowed to get re-certified following the same procedure as outlined in Section 5.4

Document Legend:

Requirements – left column

Bold - critical items

Italics - quote from M-10.2-17 or M-10.6-15.

Inspection Grading Questions – right column

Inspection question for critical item

2. PRODUCTS

2.1 PRESTRESSING STEEL

2.1.1 Receiving and Inspection of Strand

Maintain receiving log and/or database according to Section 4.2.1.

Maintain non-conforming material log according to Section 4.3

(a) Ensure that material certifications and low-relaxation test results for strand are received prior to use. Relaxation tests shall be performed at least annually and if there is any change in the type of raw material or manufacturing. The relaxation test shall be performed as a full 1000-hour test at initial production and every third year thereafter. Interim annual 200-hour. relaxation tests are acceptable provided that the results, when extrapolated to 1,000-hours, compares consistently to previous satisfactory full 1000-hour. test results.

If material certifications are not yet received, clearly mark and segregate materials until proper documentation is received.

If strand is used (extruded or fabricated) without receiving mill certificates complying with the applicable PTI specification; PTI M10.2-24, Section 2.1.4 or PTI M10.6-24, Section 2.1.4, the plant will fail the inspection.

If strand is used (extruded or fabricated) without receiving low relaxation test results complying with the applicable PTI specification; PTI M10.2-24, Section 2.1.4 or PTI M10.6-24, Section 2.1.4, the plant will fail the inspection.

(b) Identify strand in storage with manufacturer's tag or equivalent by size, grade, type, and manufacturer.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.1.1 (a) Strand Certifications								
Are mill certificates on file? (a) If mill certificates are on file, the grade score is 100. (b) If mill certificates are not on file, but strand is clearly marked and segregated, the grade score is 100. (c) If mill certificates are not on file and strand is not clearly marked and segregated, the grade score is 70. (d) If mill certificates are not on file and the strand is used in extrusion or fabrication, the grade score is 0.	**25.00**	✓	✓	✓	✓	✓	✓	✓
Are current low relaxation test results on file? (a) If current low relaxation test reports are on file, the grade score is 100. (b) If low relaxation test results are not on file but strand is clearly marked and segregated, the grade score is 100. (c) If low relaxation test results are not on file and strand is not clearly marked and segregated, the grade score is 70. (d) If low relaxation test reports are not on file and the strand is used in extrusion or fabrication, the grade score is 0.	**25.00**	✓	✓	✓	✓	✓	✓	✓

(c) Label and segregate strand deemed unacceptable until final disposition is determined.

Maintain project traceability records according to Section 4.1.2.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Was the testing facility, whether in-house or otherwise, used for the mechanical property, dimensional, and relaxation testing identified, including physical address and contact information?	**3.46**	✓	✓	✓	✓	✓	✓	✓
2.1.1 (b) Identification								
Is all stored strand identified by manufacturers tag or equivalent containing the following information?								
Size?	**0.59**	✓	✓	✓				✓
Grade?	**0.59**	✓	✓	✓				✓
Type?	**0.59**	✓	✓	✓				✓
Manufacturer?	**0.59**	✓	✓	✓				✓
2.1.1 (c) Quarantined Strand								
Unacceptable materials labeled?	**3.46**	✓	✓	✓				✓
Unacceptable materials segregated from other materials?	**3.46**	✓	✓	✓				✓

2.1.2 Mechanical Properties of Strand

Prestressing steel shall conform to one of the following requirements:

- ASTM A416/A416M, latest edition
- Strand not specifically identified in the latest edition of ASTM A416/A416M shall conform to or exceed the minimum requirements of this standard.

Mill certificates for each coil of strand in inventory shall be on file, containing as a minimum the following test information:

- Heat number and identification;
- Specified tensile strength;
- Yield strength at 1% extension under load;
- Elongation at failure;
- Modulus of elasticity;
- Diameter of strand;
- Net area of strand;
- Type of material (low relaxation).

Load elongation curves for each coil of strand in inventory shall be on file.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.1.2 Mechanical Properties of Strand								
Do the mill certificates contain the following?								
Documentation that the prestressing steel conforms to ASTM A416/ASTM416M or equal? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Heat number and identification number? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Specified tensile strength? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Yield strength at 1 % extension under load? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Elongation at failure? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Modulus of elasticity? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Diameter of strand? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Net area of strand? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Type of material (low relaxation)? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the load-elongation curve for each coil of strand in inventory on file? Y/N	**3.46**	✓	✓	✓	✓	✓	✓	✓

2.1.3 Acceptance Criteria for Strand

Prior to extrusion, strand in storage shall have condition assessed and entered into extrusion log (see Section 4.4 for Extrusion Log Requirements). Reject physically damaged strand on arrival or have damaged sections removed prior to processing.

Strand used for tendon manufacture shall be of Surface Grade A, B, or C only. The strand in extrusion or production must match the surface grade records. Strand Surface Graded D, E, or F does not meet the requirements of ASTM A416/A416M and shall NOT be used.

Surface Grade A: No visible rust.

Surface Grade B: Light surface rust, which can be removed by vigorous rubbing with a cloth. No pitting noticeable to the naked eye, although the steel surface may be discolored in the affected area.

Surface Grade C: Surface rust, which when removed with a fine steel wool pad, leaves small pits on the steel surface of not more than 0.002 inch (50 micro-m) diameter or length.

Surface Grade D: Same as Grade C, except pits exceed 0.002 inch (50 micro-m) diameter or length can be felt with the fingernail.

Surface Grade E: Large oxidized areas with flakes developing in the corrosion affected zones and loss of steel section noticeable to the naked eye.

Surface Grade F: Heavy oxidation on most or all of the exposed surface areas with strong flaking and pit formations

If tendons are fabricated using strand with a Surface Grade D, E, or F, the plant will fail the inspection.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.1.3 – Acceptance Criteria of Strand								
Has the surface grade been assessed? Y/N	**0.59**	✓	✓	✓				✓
Has damaged strand been rejected upon arrival or have damaged sections removed prior to processing? Y/N	**0.59**	✓	✓	✓				✓
Do the Surface Grade records match the condition of the strand in use? Y/N	**0.59**	✓	✓	✓				✓
Has only grade A, B, or C strand been used? Y/N	**65.63**	✓	✓	✓				✓

2.2 ANCHORAGES AND COUPLERS

2.2.1 Acceptance Requirements for Anchorages and Couplers

Maintain receiving log according to Section 4.2.2.

Maintain records for anchors, wedges and couplers, including each manufacturer's Certificate of Compliance with the applicable PTI specification; PTI M10.2-24 Section 2.4, or PTI M10.6-24, Section 2.2, providing the following information:

(a) Manufacturer, lot numbers (date codes) and Certification of Materials for anchors.

(b) Manufacturer, heat numbers and Certification of Materials (including heat treatment) for wedges.

(c) Manufacturer, lot numbers and Certification of Materials for couplers.

For a, b, and c – materials without certificates must be recorded in the non-conforming material log, quarantined, and clearly marked "NOT TO BE USED IN PRODUCTION" until material certifications are obtained.

Maintain non-conforming material log according to Section 4.3.

If Certificates are not filed for anchors, wedges, or couplers used for fabrication the plant will fail the inspection.

(d) Parts Drawings for anchors, wedges, and couplers showing dimensions, tolerances, material specifications, and special fabrication processes where required.

Maintain project traceability records according to Section 4.1.2

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.2.1 – Acceptance Requirements for Anchorages and Couplers								
Are certificates available for anchors, wedges, and couplers? (a) If certificates are available for all components, the grade score is 100. (b) If certificates are not available, and components segregated and clearly marked, the grade score is 100. (c) If components in storage without certificates are not segregated and clearly marked, the grade score is 70. *(d)* If components without certificates are used in fabrication, the grade score is 0.	**25.00**	✓	✓	✓	✓	✓	✓	
Are drawings for anchors, wedges, and couplers showing dimensions, tolerances and material specifications available?	**3.46**	✓	✓	✓	✓	✓	✓	

2.2.2 Test Reports for Anchorages and Couplers

Maintain anchorage system test reports containing specific and descriptive component information as follows:

Test reports from an independent testing laboratory accredited to ISO 17025 by A2LA, or other equivalent accrediting organizations shall be provided.

Anchorage System Tests for **STANDARD** Systems: Anchorage system test reports shall demonstrate that assembled tendons with production anchors and corresponding wedges comply with the PTI M10.6-24: Specification for Unbonded Single Strand Tendons. Used for Slab-on-Ground Construction. The anchorage system tests required are as follows:

- Static test (M10.6-24, Section 2.2.1.1)
- Fatigue test (M10.6-24, Section 2.2.1.2)

Anchorage System Tests for **ENCAPSULATED** Systems: Anchorage system test reports shall demonstrate that assembled tendons with production anchors and corresponding wedges comply with the applicable PTI specification. The anchorage system tests required by the PTI M10.2-24: Specification for Unbonded Single Strand Tendons are as follows:

- Static test (M10.2-24, Section 2.5.6 or M10.6-24, Section 2.2.1.1)
- Fatigue test (M10.2-24, Section 2.5.7 or M10.6-24, Section 2.2.1.2)
- Hydrostatic test (M10.2-24, Section 2.6.2 or M10.6-24, Section 2.2.6.1)
- Sheathing restraint (if applicable) (M10.2-24, Section 2.6.1)

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.2.2 Test Reports for Anchorages and Couplers								
Are tests performed by an independent testing laboratory accredited to ISO 17025 by A2LA, or other equivalent accrediting organizations?	**3.46**	✓	✓	✓	✓	✓	✓	
Are the following requirements of the applicable PTI specification met?								
Anchors and couplers designed to develop at least 95% of the specified tensile strength of prestressing steel?	**3.46**	✓	✓	✓	✓	✓	✓	
Total elongation under ultimate load is not less than 2% measured in a minimum gauge length of 3 ft. [915 mm] between two points at least 3 in. [75 mm] from each anchorage?	**3.46**	✓	✓	✓	✓	✓	✓	
Static and Fatigue test reports that are available the most current for the anchor and wedge combination(s) used by this plant?	**3.46**	✓	✓	✓	✓	✓	✓	
Static and Fatigue test reports available and current for the coupler and wedge combination(s) used by this plant?	**3.46**	✓	✓	✓	✓	✓	✓	
Do Static and Fatigue Tests contain the following information?								
Determination of the yield strength, specified tensile strength, and percent elongation of the complete tendon?	**3.46**	✓	✓	✓	✓	✓	✓	

Drawings and Specifications: Identifiable numbered, dated and current drawings and specifications for components used in the tests shall be included in the test reports.

Provide test reports for couplers. Component parts from different manufacturers shall not be mixed without qualifying test data.

Label anchorages and couplers without proper documentation, "NOT TO BE USED IN PRODUCTION," (or equivalent language) and segregate until final disposition is determined.

Maintain current static and fatigue tests of anchorages and couplers meeting the requirements of the applicable PTI specification. Additionally, the following conditions necessitate new Static and Fatigue tests of anchorages and couplers:

(a) Any dimensional changes beyond tolerances of tested anchor, wedges, or couplers, such as lengths, widths, thicknesses, and/or angles.

(b) Any mechanical, physical, and/or chemical changes to the anchor, wedges, or couplers such as change in material strengths, properties, or designations.

If Static and Fatigue test reports are not available for the type/brand of anchor and wedges being used by the plant, the plant will fail the inspection.

If available Static and Fatigue test reports do not match any of the component changes for the anchor and wedges being used by the plant, the grade for 2.2.1 will be reduced by 50 points.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Confirmation that the tendon assembly will withstand 500,000 cycles between 60% and 66% of the specified tensile strength?	**3.46**	✓	✓	✓	✓	✓	✓	
Confirmation that the tendon assembly will withstand 50 cycles between 40% and 85% of the specified tensile strength?	**3.46**	✓	✓	✓	✓	✓	✓	
Are Static and Fatigue test reports available for the type/brand of anchor and wedges being used? (a) If yes, the grade score is 100. (b) If no, have anchorages and couplers without documentation been segregated and clearly labeled, the grade score is 100. (c) If no and anchorages and couplers without documentation have not been segregated and clearly labeled, the grade score is 70. If no and anchorages and couplers used in fabrication, the grade score is 0.	**65.63**	✓	✓	✓	✓	✓	✓	
Are the tested components and the ones being used in fabrication of the same type, style and dimension within tolerance (lengths, widths, thickness, angles, material strengths, properties, or designations)?	**3.46**	✓	✓	✓	✓	✓	✓	

2.2.3 Encapsulated Systems

All encapsulated systems shall meet the requirements of the applicable PTI specification; PTI M10.2-24, Section 2.4.1.1 or PTI M10.6-24, Section 2.2.6.2. Manufacturer's packaging of encapsulated components shall be marked for lot traceability. Component parts from different manufacturers shall be tested as a system to verify compliance with watertightness requirements prior to shipping.

For encapsulated tendons, maintain hydrostatic test reports from an independent testing laboratory accredited to ISO 17025 by A2LA, or other equivalent accrediting organizations to demonstrate compliance with the watertightness requirement of the applicable PTI specification.

Test reports shall be available demonstrating that representative anchorages and couplers have been tested to ensure a watertight encapsulation of the prestressing steel and all connections in conformance with the applicable PTI specification; PTI M10.2-24, Section 2.6.2 or PTI M10.6-24, Section 2.2.6.1.

Identifiable numbered, dated and current drawings and specifications for encapsulation components used in the test shall be included in, or shall be referenced by, the test reports. Hydrostatic test reports shall be current. Retesting is required every 5 years or whenever a component of an assembly changes or the testing criteria changes, whichever is earlier.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.2.3 Encapsulated Systems								
Do the connecting components of the encapsulated system used to connect the sheathing to any anchorage or coupler enclosure meet the following PTI Specification requirements?								
Hydrostatic Testing (Section 2.6.2 of PTI M10.2-24 or Section 2.2.6.1 of PTI M10.6-24)								
Are hydrostatic test reports and drawings dated and current for the components being used? (a) If yes, the grade score is 100. (b) If no, if components without documentation been segregated and clearly labeled, the grade score is 100. (c) If no, and components have not been segregated and clearly labeled, the grade score is 70. (d) If no and components were used in fabrication, the grade score is 0.	**25.00**	✓		✓	✓		✓	
Are test reports from an independent testing laboratory accredited to ISO 17025 by A2LA, or other equivalent accrediting organizations on file?	**3.46**	✓		✓	✓		✓	

Connecting components for encapsulated systems shall:

Have a minimum thickness of 0.050 in. (1.25 mm).

Have a watertight, positive mechanical or monolithic connection to the anchorage protection or coupler enclosure and a watertight connection at the tendon sheathing in compliance with the applicable PTI specification; PTI M10.2-24, Section 2.4.1.1 (a) Item 4 or PTI M10.6-24, Section 2.2.6.2 Item 1(e).

Be translucent or have other method of verifying compliance with the applicable PTI specification; PTI M10.2-24, Sections 2.4.1.1 (b) through 2.4.1.1 (d) or M10.6-24, Sections 2.2.6.2 Item 2.

If the encapsulation system uses a sheathing overlap system, test reports shall be available that demonstrated compliance with the applicable PTI specification; PTI M10.2-24, Section 2.6.2.1 or PTI M10.6-24, Section 2.2.6.1.

If the encapsulation system uses a sheathing restraint system, test reports shall be available that demonstrate compliance with M10.2-24 Section 2.6.1.1 for sheathing restraint static load testing and M10.2-24 Section 2.6.1.2 for sheathing restraint sustained load testing. The test samples from the sheathing restraint sustained load test shall be used for the hydrostatic test according to M10.2-24 Section 2.6.2.2.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Do connecting components have 50 mil [1.25 mm] minimum thickness? (a) If all individual thickness measurements on two initial samples meet minimum thickness requirements, the grade score is 100. (b) If either of the average thickness measurements on the two initial samples falls below specified thickness, the grade score is 70. (c) If both initial samples fail the average thickness requirements then two additional random samples are take. If both additional samples meet minimum thickness requirements, the grade score is 70. (d) If either additional random samples falls below specified thickness, the grade score is 0.	**25.00**	✓		✓	✓		✓	
Has a positive mechanical or monolithic connection to the anchorage at all stressing, intermediate, and fixed anchorages?	**25.00**	✓		✓	✓		✓	
Are connecting components translucent? If no, is there another method of compliance with the applicable PTI standard?	**25.00**	✓		✓	✓		✓	

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Is a sheathing restraint system used for encapsulation? If yes:								
Do the test reports indicate compliance with the sheathing restraint static load test requirements of M10.2-24 Section 2.6.1.1?	**3.46**	✓		✓	✓		✓	
Do the test reports indicate compliance with the sheathing restraint sustained load test requirements of M10.2-24 Section 2.6.1.2?	**3.46**	✓		✓	✓		✓	
Were the sustained load test specimens used for the hydrostatic test?	**3.46**	✓		✓	✓		✓	

2.3 PT COATING

2.3.1 Acceptance Requirements for PT Coating

Maintain receiving log and/or database according to Section 4.2.3.

Certified Plants shall only use PT Coating materials complying with the requirements of the applicable PTI specification; PTI M10.2-24, Sections 1.5.4 and 2.2 or PTI M10.6-24, Sections 1.5.4 and 2.4. All PT Coating material shall be accompanied by a Manufacturer's Certificate of Compliance at the time of delivery and acceptance by the Certified Plant.

Maintain non-conforming material log according to Section 4.3.

Maintain project traceability records according to Section 4.1.2

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.3.1 Acceptance Requirements for PT Coating								
Is a Manufacturer's Certificate of Compliance available that states the PT Coating materials comply with the requirements of the applicable PTI specification?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is a Manufacturer's Certificate available for each load of PT Coating material delivered stating batch number, product name, and date of manufacture or shipping?	**3.46**	✓	✓	✓	✓	✓	✓	✓

2.3.2 PT Coating Material Quantity

Certified plants shall apply a minimum quantity of PT Coating to comply with the applicable PTI specification; PTI M10.2-24, Section 2.2.3 or PTI M10.6-24, Section 2.4.3 The coating shall extend over the entire length of coated and sheathed strand. Any coated strand exhibiting insufficient PT Coating application shall not be used in tendon fabrication. Application quantities shall be recorded on the extrusion log (see Section 4.4 for Extrusion Log requirements and recording frequency).

The minimum weight of the PT coating on the strand shall be not less than 2.5 lb (1.14 kg) per 100 ft (30.5 m) for 1/2 in. (13 mm) diameter strand and 3.0 lb (1.36 kg) per 100 ft (30.5 m) for 0.6 in. (15 mm) diameter strand. Completely fill the annular space between the strand and sheathing with coating material.

The quantity of PT coating material applied shall be determined by either an in-line flow meter or scale on the PT Coating recycle tank to determine PT coating application, or demonstrated equivalent with documented error of 1 % or less. Use either one of these methods to verify quantities at least once per shift.

Maintain records of applied quantities at least once per shift on each extrusion line even if strand is coated by outside facilities.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.3.2 PT Coating Material Quantity								
Does the PT Coating volumetric capacity reported in the extrusion log comply with the applicable PTI specification?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are tendons with less than 95% of the specified PT Coating rejected or segregated?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the error of the in-line flow meter or scale documented as 1% or less?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are PT coating application records available, even if strand is coated by outside facility?	**3.46**	✓	✓	✓	✓	✓	✓	✓

Inspection Verification of PT Coating Quantities

The Inspection Agency shall perform a dimensional check of samples of coated strand at the production site for compliance with the applicable PTI specification; PTI M10.2-24, Section 2.2.3 or PTI M10.6-24, Section 2.4.3.

The inside diameter of the sheathing shall comply with the applicable PTI specification; PTI M10.2-24, Section 2.3.3 or PTI M10.6-24, Section 2.3.2.2.

If tendons are fabricated using strand coated with less than the required quantities of PT coating according to M10.2-24, Section 2.2.3 or M10.6-24, Section 2.4.3, the plant will fail the inspection.

Label and segregate coated strand exhibiting insufficient PT Coating application and deemed unacceptable until final disposition is determined.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Is the measured sheathing inside diameter a minimum .030" greater than strand diameter?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Compare calculated capacity of sample to reported application, Comply?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the volumetric capacity of PT Coating of either of the two initial samples less than 95% of required quantity of PT coating? (a) If no, the grade score is 100. (b) If either of the volumes on the two initial samples falls below 95% of the requirement, the grade score is 80 (c) If both of the volumes on the two initial samples fall below 95% of the requirement, then two additional random samples are taken. If both additional samples have volumes 95% or higher than the requirement, the grade score is 70. **(d)** If either of the additional samples have volumes less than 95% of the requirement, the grade score is 0.	**65.63**	✓	✓	✓	✓	✓	✓	✓

2.3.3 Quality and Compatibility of PT Coating

PT coating materials used by the Certified Plant shall comply with the applicable PTI specification; PTI M10.2-24, Section 2.2.2 and *Table 2.2.2.1 or PTI M10.6-24, Section 2.4.4 and Table 2.4.4.1*.

No.	*Test description*	*Test method*	*Acceptance criteria*
1	*Dropping point*	*ASTM D2265*	*Minimum 300°F (149°C)*
2	*Oil separation at 160°F (71°C)* • *All weight/mass measurements shall be recorded to 4 significant digits in grams.* • *Run three (3) separate samples from the same batch. The bleed shall be calculated for each sample and the result reported as the average/mean of the three recorded samples.* • *Final result shall be reported to the nearest 2 significant digits (0.xx%).*	*ASTM D6184 (modified)*	*0.5% max by mass*
3	*Water content*	*ASTM D95*	*0.1% maximum*
4	*Flash point (refers to oil component)*	*ASTM D92*	*Minimum 300°F (149°C)*
5	*Corrosion test (5% salt fog at 100°F [38°C] 5 mils [0.127 mm], Q Panel Type S)*	*ASTM B117*	*Rust Grade 7 or better after 1000 hours of exposure according to ASTM D610[c]*
6	*Water-soluble ions[a]* *• Chlorides* *• Nitrates* *• Sulfides*	 *ASTM D512* *ASTM D3867* *ASTM D4658*	 *10 ppm maximum* *10 ppm maximum* *10 ppm maximum*

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.3.3 Quality and Compatibility of Coating								
Is certification on file that indicates that PT Coating that has been used satisfies the performance requirements of the applicable PTI specification?	**65.63**	✓	✓	✓	✓	✓	✓	✓
Are all testing dates within the required 30-month interval or sooner if any change is made to the chemical composition?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are report results from Tests 1, 9, and 10 filed for every batch of PT coating supplied?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Is PT Coating transported in dedicated equipment or is verification of cleaning of non-dedicated equipment available?	**0.59**	✓	✓	✓	✓	✓	✓	✓

	Procedure: The inside (bottom and sides) of a 1.06 qt (1 L) glass beaker (approximate outside diameter 4.13 in. [105 mm], height 5.71 in. [145 mm]) is thoroughly coated with 3.53 ± 0.35 oz (100 ± 10g) of corrosion-inhibiting coating material. The coated beaker is filled with approximately 30 oz (900 cc) of distilled water and heated in an oven at a controlled temperature of 100°F (38°C ± 1°C) for 4 hours. The water extraction is tested by the noted test procedures for the appropriate water-soluble ions. Results are reported as ppm in the extracted water.		
7	*Soak test (5% salt fog at 100°F [38°C] 5 mils [0.127 mm] coating, Q Panel Type S. Immerse panels 50% in a 5% salt solution and expose to salt fog)*	*ASTM B117 (modified)*	*No emulsification of the coating after 720 hours of exposure.*
8	*Compatibility with sheathing* *• Hardness and volume change of polymer after exposure to grease, 40 days at 150°F (66°C)* *• Tensile strength change of polymer after exposure to grease, 40 days at 150°F (66°C)*	*ASTM D4289 (ASTM D792 for density)* *ASTM D638*	*Permissible change in hardness 15%, volume 10%.* *Permissible change in tensile strength 30%.*
9	*Cone penetration*	*ASTM D217*	*265-295 (NLGI 2) worked penetration.*

10	*Kinematic Viscosity of base oil* • *Report measurement at 40℃ in ISO Viscosity Grade numbers*	*ASTM D445-17a*	*The base oil for each batch shall be within the same ISO Viscosity Grade as the PT Coating that was submitted for tests at the 30 months intervals.*

Transport bulk shipments of PT Coating in a manner that ensures it is not mixed with any PT Coating not certified according to M10.2-24 Section 2.2.4 or M10.6-24 Section 2.4.5. All shipping containers/tanks hoses and pumps being utilized for the transport/transfer of PT Coating shall be dedicated for the transport/transfer of PT Coating or be cleaned and free from any other contaminates that could have a deleterious impact on the PT Coating. In the event that non-dedicated equipment is used for the transport/transfer of PT Coating, verification of cleaning shall be required.

2.4 SHEATHING

2.4.1 Acceptance Requirements for Sheathing

Maintain receiving log and/or database according to Section 4.2.4.

Ensure the material certifications for sheathing material are received prior to usage.

Maintain non-conforming material log according to Section 4.3.

If used, ensure material certifications for UV stabilizer material are received prior to usage.

(a) The material documentation for UV stabilizer material shall contain at a minimum:

(b) Date received

(c) Manufacturer

(d) Product name / number

(e) Batch / lot number

(f) Let-down rate / application quantity required to achieve 90 days of UV protection

signed statement by the manufacturer stating that the application rate prescribed will provide 90 days of UV protection

Maintain project traceability records according to Section 4.1.2.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.4.1 Acceptance Requirements for Sheathing								
Is a supplier's certificate for each lot on file?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Does the material certification for UV stabilizer material contain the following?								
Date received?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Manufacturer?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Product name / number?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Batch/Lot Number?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Let-down rate / application quantity required to achieve 90 days of UV protection?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Signed statement by the manufacturer stating that the application rate prescribed will provide 90 days of UV protection?	**3.46**	✓	✓	✓	✓	✓	✓	✓

2.4.2 Dimensional Requirements for Sheathing

Apply sheathing in accordance with the applicable PTI specification; M10.2-24, Section 2.3 or PTI M10.6-24, Section 2.3 and record quantities in extrusion log. Sheathing thickness and inside diameter is to comply with the applicable PTI specification; PTI M10.2-24; Section 2.3.2 or PTI M10.6-24, Section 2.3.2.1. When properly fabricated, the strand should be easily pushed by hand through the sheathing in a 3-ft. long sample of coated and sheathed strand. No rifling is to be visible on the surface of the sheathing. Ensure sheathing is free from pinholes or other defects that may adversely affect the performance of the sheathing.

Conduct visual inspection of coated and sheathed strand to confirm that the amount of PT Coating material used is sufficient to ensure complete filling of the annular space between the strand and the sheathing. Check coated strand for proper sheathing movement and the absence of rifling during the extrusion process between cooling and rewinding.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.4.2 Dimensional Requirements for Sheathing								
Is the sheathing thickness identified for fabrication of structures designed using ACI 318 or SOG projects in aggressive environments a minimum 50 mil and standard SOG projects a minimum 40 mil?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the sheathing surface free of visible rifling?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the sheathing free of visible pinholes or other defects?	**3.46**	✓	✓	✓	✓	✓	✓	✓

2.4.3 Sheathing Material Thickness Quality

Measure sheathing thickness at the beginning of each shift on each extrusion line and any time a change is made to the sheathing thickness, in extrusion materials or after repairs or adjustments are made to the extrusion equipment using a digital, dial, or Vernier caliper.

For fabrication only plants, measure sheathing thickness at the beginning of each shift on each fabrication line and any time tendons from a coil of another sheathing thickness or from another extruded strand source are being fabricated (during the same shift and cutting line), using a digital, dial, or Vernier caliper

a) **Caliper Calibration**

Calibrate calipers used to measure sheathing material thickness at least once every six (6) months. Calibration shall be performed by an outside testing agency or by plant personnel using standard gauge blocks traceable to a national or international standard of measurement in accordance with the caliper calibration procedure set forth in Appendix F. Calipers shall be accurate to ± 0.002 in. (2 mils). Use calipers individually marked with a serial number or other unique identification.

Caliper calibration records shall show the following data at a minimum:

- Date of calibration
- Caliper identification
- Source of calibration (e.g. outside testing agency or standard gauge block) and its calibration reference standard
- Name of person/company doing the calibration
- Caliper error

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
2.4.3 Sheathing Material Thickness Quality								
a) Caliper Calibration								
Have calipers been calibrated within the last 6 months or less?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Do all calipers used for sheathing thickness measurements have an instrument error of no more than 0.0020 in.?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are all calipers individually marked with a serial number or other unique identification?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Do the caliper calibration records include the following data:								
Date of calibration?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Caliper identification?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Source of calibration: e.g. outside testing agency or standard gauge block and its calibration reference standard?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are records of calibration maintained for a minimum of three years?	**3.46**	✓	✓	✓	✓	✓	✓	✓

Maintain calibration records for a minimum of three years.

b) **Sheathing Thickness Measurement**

Provide minimum thickness sheathing complying with the applicable PTI specification; PTI M10.2-24, Section 2.3.2 or PTI M10.6-24, Section 2.3.2.1.

Sheathing thickness measurements of two samples from each type of strand extrusion (strand diameter and sheathing thickness) are to be taken as follows:

(a) Measure a sheathing sample of sufficient length length-wise to allow caliper to fully engage the thin edge of the caliper jaws.

(b) Apply sufficient pressure to the caliper to insure a true reading.

(c) Locate thinnest point, mark and take measurement.

(d) Take measurements at four equidistant locations around the circumference of the sheathing sample.

(e) Take measurements by holding the caliper perpendicular to the sheathing sample.

(f) Calculate the average thickness for each sample and compare with the specified sheathing thickness.

Due to the fabrication process, slight variations in sheathing thickness may occur around the circumference of the sheathing sample. Local reductions in sheathing thickness of up to 10% are acceptable provided an average of four equidistant readings along the circumference equals or exceeds the required thickness.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
b) Sheathing Thickness Measurement								
Does the strand move easily through a three-foot sheathing sample without having to spiral through the sheathing?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Do the samples meet the average thickness requirement? *(a) If either of the average thickness measurements on the two initial samples falls below specified thickness, the grade score is 80.* *(b) If both initial samples fail the average thickness requirements then two additional random samples are taken and if both additional random samples meet* average requirements, the grade score is 70. *(c) If either additional random sample fails the average thickness requirement, the grade score is 0.*	**65.63**	✓	✓	✓	✓	✓	✓	✓
Do the samples fall below the 10% allowed variation according to the thickness requirements? *(a) If all individual thickness measurements on the two initial samples meet minimum thickness requirements, the grade score is 100.* *(b) If any of the individual thickness measurements in the two initial samples or the two additional random samples (if required) fall below the 10% allowed variation, the grade score is 0.*	**65.63**	✓	✓	✓	✓	✓	✓	✓

If the average thickness of each initial sample for each type of strand extrusion sampled falls below standard, check two additional samples taken at random locations a minimum of 100 ft away from the initial sample location following item (d) above.

If either additional random sample fails the average thickness requirement, the plant will fail the inspection.

If any of the thickness measurements in the two initial samples or the two additional random samples (if required) fall below the 10% allowed variation, the plant fails the inspection

3. EXECUTION

3.1 FABRICATING PROCESS

3.1.1 Coated and Sheathed Strand

Certified Plants shall only use coated and sheathed strand complying with the requirements of applicable PTI specification.

Coated and sheathed strand received from sources other than the immediate Certified Plant shall be accompanied by Coating Plant's Certificate of Compliance with the requirements of the applicable PTI specification, their method of identifying sheathed and coated strand coils for traceability, date of extrusion, use of UV stabilizers (if used) and the sunlight exposure duration of coated and sheathed strand.

Certified Plants shall maintain traceability records of the strand, PT Coating, and sheathing material (plastic/resin) according to Section 4.1

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.1.1 Coated and Sheathed Strand								
Are coated and sheathed coils marked with tags listing the following?								
Manufacturer?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Grade?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Type?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Sheathing thickness?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Coil Markings								
Are coils clearly marked with sheathing minimum thickness?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are sheathing thickness markings permanent and visible until the coil is completely used?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is a Certificate of Compliance on file if strand is extruded in an outside facility?	**0.58**	✓	✓	✓	✓	✓	✓	✓

3.1.2 Fabricating Tendons

Fabricate coated and sheathed strand without damage to the sheathing from either machine operation or handling processes. When tendons are coiled or bundled, they should be secured using a method that does not damage the sheathing. Banding with steel bands is permissible as long as padding material is placed between steel bands and strand coils and the tension in the bands does not damage the sheathing. Position fixed and intermediate anchorages in a manner to prevent sheathing damage in bundles of fabricated tendons. Repair damage, if found, per the applicable PTI specification; PTI M10.2-24, Section 3.9.4 or PTI M10.6-24, Section 3.3.4.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.1.2 Fabricating Tendons								
Are the extrusion and handling processes free of conditions causing damage to the sheathing?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are coated and sheathed tendons fabricated without damage from the fabrication process?	**3.46**	✓	✓	✓	✓	✓	✓	
If damage is found, are tendons repaired prior to shipping?	**3.46**	✓	✓	✓	✓	✓	✓	
Are the coated and sheathed strand packs packaged to prevent damage during movement?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are the tendon bundles packaged to prevent damage during loading?	**3.46**	✓	✓	✓	✓	✓	✓	
Is padding material used between steel banding and sheathed strand?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Is the tension of the banding material properly controlled to prevent damage to the sheathing?	**3.46**	✓	✓	✓	✓	✓	✓	✓
Are the fixed anchorages positioned to prevent sheathing damage?	**3.46**	✓	✓	✓	✓	✓	✓	
Are the intermediate anchorages positioned to prevent sheathing damage?	**3.46**	✓	✓	✓	✓	✓	✓	

3.1.3 Fabrication of Encapsulated Tendons

For encapsulated systems that rely solely upon sheathing overlap connection without sheathing restraint: Provide the minimum specified overlap measured from the watertight seal to the end of the sheathing according to the applicable PTI specification; PTI M10.2-24, Section 2.4.1.1(c) or PTI M10.6-24, Section 2.2.6.2 Item 1(e).

After fabrication and up until shipment to the jobsite, the overlap shall be at least the specified minimum measured from the watertight seal to the end of the sheathing:

- ***PTI M10.2-24: 4 in. minimum overlap***
- ***PTI M10.6-24: 2 in. minimum overlap***

For encapsulated systems with a sheathing restraint connection: Prevent movement of the sheathing according to PTI M10.2-24, Section 2.4.1.1(d).

After fabrication and up until shipment to the jobsite, the sheathing restraint connection shall prevent displacement of the sheathing from the water-tight seal and/or displacement of the sheathing away from the anchorage, and any damage to the sheathing or anchorage that compromises the system integrity.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.1.3 Fabrication of Encapsulated Tendons								
Sheathing connections at fixed anchorages ready for shipment:								
For each sheathing connection at fixed anchorages not meeting specification, the grade score will be reduced by 5%.	**65.63**	✓		✓	✓		✓	

3.1.4 Fixed Anchorages

Attach fixed anchorages to the tendons in accordance with the applicable PTI specification; PTI M10.2-24, Sections 3.7.7.1 and 3.7.7.2 or PTI M10.6-24, Sections 3.2.4.1 and 3.2.4.2. Seat wedges evenly at the required force.

Calibrate analog gauges and jacks used in the fixed anchorage application process at intervals not exceeding six months. Print the required pressure for intended use on the face of the gauge or digital readout. Analog gauges shall have a dial face of not less than 3 ½ inches in diameter and digital readouts shall be visible to the operator and close enough and of sufficient size to be easily read. Digital gauges used in post-tensioning operations shall have minimum text height of 0.375 inches.

Identify jacks and gauges, pressure or digital readouts with a unique identification number.

If fabricated bundled tendons, completed and ready for shipment, contain more than 2 % of the anchors with wedges offset in excess of ¼", the plant will fail the inspection. Each anchorage with wedges offset greater than ¼" will result in a 10 % grade deduction per occurrence

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.1.4 Fixed Anchorages								
Are fixed- anchorages attached in accordance with the applicable PTI specification?	**0.59**	✓	✓	✓	✓	✓	✓	
Are wedges seated evenly?								
a) Each anchorage with wedges offset greater than ¼" will result in a 10% grade deduction per occurrence. *b)* If material ready for shipment contains more than 2% of the anchors with wedges offset in excess of ¼", the grade score is zero.	**65.63**	✓	✓	✓	✓	✓	✓	
Fixed Anchorage Application Equipment								
Are all analog gauge faces a minimum 3-1/2" inches diameter?	**0.59**	✓	✓	✓	✓	✓	✓	
Are digital readouts close enough and large enough to be visible by the operator? Do all digital gauges used in post-tensioning operations have a minimum text height of 0.375 inches?	**0.59**	✓	✓	✓	✓	✓	✓	
Is the required stressing pressure marked on all gauge faces?	**0.59**	✓	✓	✓	✓	✓	✓	
Are all gauges and jacks marked with an identification number?	**0.59**	✓	✓	✓	✓	✓	✓	
Do records indicate that all fixed anchorage seating equipment has been calibrated within the past six months?	**0.59**	✓	✓	✓	✓	✓	✓	

3.2 STORAGE AND SHIPPING

3.2.1 Storage

Take appropriate measures to protect bare strand, coated and sheathed strand, fabricated tendons, and anchorage components ("PT materials") from corrosive chemicals and weather conditions (e.g. exposure and extreme temperatures). Store PT materials at the fabrication plant as follows:

a) PT materials shall never sit in standing water or mud (elevated dunnage is appropriate).

b) Protect PT materials that are exposed to any salt-spray, saltwater and/or de-icing chemicals from this exposure (tenting or tarping with adequate ventilation or shrink-wrapping with moisture control is appropriate).

c) PT materials shall not be exposed to any elements known to be deleterious or corrosive.

Bare strand: Store in an environment that maintains the received condition. In addition to items a, b and c above, protective measures to protect bare strand (as documented in the plants' Quality Manual) from weather conditions at all times (e.g. exposure to rain, or snow)

Coated and sheathed strand: protect by the following in addition to items a, b and c above:

- Take appropriate measures to protect coated and sheathed strand from weather conditions at all times (e.g. exposure to rain, snow and/or extreme temperatures)

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.2.1 Storage								
Is the bare strand protected from (or not subject to) exposure **(as documented in the plants' Quality Manual)** to corrosive chemicals or weather conditions?								
Standing water or mud?	**0.59**	✓	✓	✓				✓
Corrosive chemicals, salts, de-icers?	**0.59**	✓	✓	✓				✓
Deleterious or corrosive elements?	**0.59**	✓	✓	✓				✓
Rain or snow?	**0.59**	✓	✓	✓				✓
Is the coated and sheathed strand protected from (or not subject to) exposure to corrosive chemicals or weather conditions?								
Standing water or mud?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Corrosive chemicals, salts, de-icers?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Deleterious or corrosive elements?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Sunlight exposure for longer than 1 month (if UV stabilizers not used)?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Has a detailed exposure log been maintained or documentation produced (according to Section 2.4.1) showing UV protector added achieving a minimum 90 days protection?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Rain or snow?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Are fabricated tendons protected from (or not subject to) exposure to corrosive chemicals or weather conditions?								
Standing water or mud?	**0.59**	✓	✓	✓	✓	✓	✓	
Corrosive chemicals, salts, de-icers?	**0.59**	✓	✓	✓	✓	✓	✓	
Deleterious or corrosive elements?	**0.59**	✓	✓	✓	✓	✓	✓	
Sunlight exposure for longer than 1 month (if UV stabilizers not used)?	**0.59**	✓	✓	✓	✓	✓	✓	

- Protect coated and sheathed strand and fabricated tendons that are exposed to sunlight (ultraviolet degradation) longer than one month maximum from this exposure by tenting or tarping with adequate ventilation, unless ultraviolet light stabilizers are added to the sheathing per manufacturer's recommendations.

- Maintain either a detailed exposure log or documentation showing UV protector added to sheathing material per manufacturer's recommendation to achieve a minimum of 90 days protection.

Note: the one month maximum is the aggregate time after extrusion, including fabrication and staging time, until the PT materials leave the plant.

Fabricated tendons: protect by the following in addition to items a, b and c above:

- Protect stored fabricated tendons that are exposed to any precipitation (snow, rain, etc.) for a period of time longer than 7 calendar days (staging) from this exposure (tenting or tarping with adequate ventilation, or shrink-wrapping with moisture control is appropriate).

- Protect fabricated tendons that are exposed to sunlight (ultraviolet degradation) longer than one month maximum from this exposure by tenting or tarping with adequate ventilation, unless ultraviolet light stabilizers are added to the sheathing per manufacturer's recommendations.

- Maintain either a detailed exposure log or documentation showing UV protector added to sheathing material per manufacturer's recommendation to achieve a minimum of 90 days protection.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
Rain or snow if stored more than 7 calendar days?	**0.59**	✓	✓	✓	✓	✓	✓	
Has a detailed exposure log been maintained, or documentation produced (according to Section 2.4.1), showing UV protector added achieving a minimum 90 days protection?	**0.59**	✓	✓	✓	✓	✓	✓	
Are anchorage components and loose hardware (in stock and staged for shipping) protected from (or not subject to) exposure to corrosive chemicals or weather conditions?								
Standing water or mud?	**0.59**	✓	✓	✓	✓	✓	✓	
Corrosive chemicals, salts, de-icers?	**0.59**	✓	✓	✓	✓	✓	✓	
Deleterious or corrosive elements?	**0.59**	✓	✓	✓	✓	✓	✓	
Rain or snow?	**0.59**	✓	✓	✓	✓	✓	✓	
Sunlight exposure for longer than 1 month (if UV stabilizers not used)?	**0.59**	✓		✓	✓		✓	
Has a detailed exposure log been maintained or documentation produced (according to Section 2.4.1) showing UV protector added achieving a minimum 90 days protection?	**0.59**	✓		✓	✓		✓	
Are non-metallic tie-downs used to secure tendon bundles to the bed of the transport vehicle?	**0.59**	✓	✓	✓	✓	✓	✓	
Does PT supplier provide protection to ensure that materials are not damaged during transport?	**0.59**	✓	✓	✓	✓	✓	✓	

Anchorage components and loose hardware: (in stock and staged for shipping) protect by the following in addition to items a, b and c above:

- Protect anchorage components and loose hardware from weather conditions at all times (e.g. exposure to rain, snow and/or extreme temperatures)

- Protect encapsulated anchorage components that are exposed to sunlight (ultraviolet degradation) longer than one month maximum from this exposure by tenting or tarping with adequate ventilation, unless ultraviolet light stabilizers are added to the sheathing per manufacturer's recommendations.

- Maintain either a detailed exposure log or documentation showing UV protector added to plastic anchor coating material per manufacturer's recommendation to achieve a minimum of 90 days protection.

Shipping PT Materials

- Use non-metallic tie-downs to secure tendon bundles to the bed of the transport vehicle. Metal strapping or chains shall not be used.

- PT Supplier shall provide protection to ensure that materials will not get damaged during transport.

3.2.2 Handling

Sheathed strand and tendon bundle packaging shall prevent damage to the material during loading, and transportation to the job site.

When handling material bundles, use smooth forklift booms, protected forks, or nylon slings. Unprotected forks, steel cables (choker) or chains shall not be used.

Prior to transport, secure tendons or tendon bundles to avoid shifting or other movements in transit which may damage the sheathing. Ensure loose component shipping containers prevent damage or corrosion occurs during shipping and handling.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.2.2 Handling								
Are the tendons handled to prevent sheathing damage?	**0.59**	✓	✓	✓	✓	✓	✓	
Are the tendon bundles properly secured to prevent sheathing damage during transport?	**0.59**	✓	✓	✓	✓	✓	✓	
Are PT materials shipped loose properly packaged to prevent damage or corrosion during shipping and handling?	**0.59**	✓	✓	✓	✓	✓	✓	

3.2.3 Labeling

Label tendons or tendon bundles in a weatherproof and durable manner to permit easy identification of their intended location in the project, as detailed on the post-tensioning installation drawings.

Each shipment of fabricated material shall display at least one PTI Certified Plant tag that describes the proper handling and storage of the material, and identifies the material as coming from a PTI Certified Plant. This requirement may be waived for local shipments of residential slab on ground projects.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.2.3 Labeling								
Are tendons and tendon bundles clearly labeled to permit easy identification of their intended location?	**0.59**	✓	✓	✓	✓	✓	✓	
Are labels weatherproof and durable?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Does each shipment of fabricated materials have at least one PTI Certified Plant tag?	**0.59**	✓		✓	✓		✓	
If, “No” are the fabricated materials intended for SOG only? ("Yes" results in 100% on this question and previous question.)	**0.59**		✓	✓		✓	✓	

3.3 FIELD STRESSING EQUIPMENT

3.3.1 Jacks and Gauges

Identify jacks with a unique identification number.

Identify gauges with a unique identification number. Analog gauges used in post-tensioning operations shall have a dial face of not less than 3½ inches in diameter. Digital gauges used in post-tensioning operations shall have minimum text height of 0.375 inches. Clearly identify the maximum stressing pressure for the intended use on the face of the gauge or digital readout.

Gauges may be re-calibrated in the plant against a master gauge traceable to known national or international standard of measurement, provided that the jack has also been calibrated against the same master gauge. Calibrate over the full pressure range of the gauge being calibrated.

This provision applies to all jacks and gauges supplied by the plant, regardless if they are in the plant or in the field.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.3.1 Jacks and Gauges								
Are all gauges individually marked with a unique identification number?	**0.59**	✓	✓	✓	✓	✓	✓	
Do all analog gauges have a dial face of at least 3-1/2 inches diameter? Do all digital gauges used in post-tensioning operations have a minimum text height of 0.375 inches?	**0.59**	✓	✓	✓	✓	✓	✓	
Is the maximum stressing pressure clearly identified on the face of the gauge or digital readout?	**0.59**	✓	✓	✓	✓	✓	✓	
Are all jacks marked with a unique identification number?	**0.59**	✓	✓	✓	✓	✓	✓	
If a master gauge is used, is it traceable to a known standard?	**0.59**	✓	✓	✓	✓	✓	✓	

3.3.2 Facilities

Maintain areas used for the storage, maintenance and calibration of stressing equipment in an organized functional manner. Maintain and store calibrating or calibrated equipment in designated areas.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.3.2 Facilities								
Is the area used for maintenance and calibration of stressing equipment maintained in an organized and functional manner?	**0.59**	✓	✓	✓	✓	✓	✓	
Is the calibrating and/or calibrated equipment stored and identified in a manner that maintains their functionality and accuracy?	**0.59**	✓	✓	✓	✓	✓	✓	

3.3.3 Calibration Requirements

Certified Plants shall maintain records demonstrating that jacks and gauges are calibrated against a testing machine or a load cell that is traceable to a national or international standard. The calibration of testing machines, load cells, master gauges, and any other equipment used at a Certified Plant facility for the calibration of stressing jack and gauges, including fixed-end applicators must be confirmed at intervals not exceeding 12 months. The agency or laboratory supplying the certification of any type of testing equipment used at a Certified Plant facility shall record the date of calibration of its own testing equipment. Testing agency or laboratory's equipment must be calibrated at intervals not exceeding 24 months. Record serial numbers of calibrating and calibrated equipment on all calibration documents.

Calibrate jacks and gauges as a unit, including fixed-end anchorage applicators, at intervals not exceeding six months (some project specific specifications may require calibration at more frequent intervals).

Calibration records shall show the following data, at a minimum:

(a) Date of calibration.

(b) Jack and Gauge Identification Numbers.

(c) Method of calibration load cell, master gauge, testing machine or other testing equipment and its calibration reference standard.

(d) The full range of calibration with gauge readings indicated against actual load. Full range means incremental readings must be taken at a maximum of 1,000 psi intervals of pressure up to the maximum range, which the gauge will be used. Maintain records for a minimum of three years unless a longer period is stated in project specific specifications.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.3.3 Calibration Requirements								
Was the testing machine or load cell calibrated within the last 12 months?	**0.59**	✓	✓	✓	✓	✓	✓	
Is the testing machine or a load cell used for jack and gauge calibration traceable to a national or international known standard?	**0.59**	✓	✓	✓	✓	✓	✓	
Does the agency or laboratory certifying the calibration of the testing machine or load cell indicate the calibration date of its own equipment?	**0.59**	✓	✓	✓	✓	✓	✓	
Was the laboratory or agency testing machine calibrated within 24 months of the calibration date for load cell?	**0.59**	✓	✓	✓	✓	✓	✓	
Are calibration records for the jacks and gauges (as a unit) updated within 6 months?	**0.59**	✓	✓	✓	✓	✓	✓	
Is repaired equipment recalibrated prior to putting back in use?	**0.59**	✓	✓	✓	✓	✓	✓	
Are calibration records available in the plant for all jacks and gauges?	**0.59**	✓	✓	✓	✓	✓	✓	
Do the calibration records show the following data:								
Date of calibration?	**0.59**	✓	✓	✓	✓	✓	✓	
Jack and gauge identification numbers?	**0.59**	✓	✓	✓	✓	✓	✓	
Method of calibration: e.g. proving ring, load cell, testing machine, etc., and its calibration reference?	**0.59**	✓	✓	✓	✓	✓	✓	
Was the calibration performed with incremental gauge readings against the actual load taken at a maximum of 1,000 psi intervals up to the maximum intended use of the gauge?	**0.59**	✓	✓	✓	✓	✓	✓	
Are records of calibration maintained for a minimum of three years?	**0.59**	✓	✓	✓	✓	✓	✓	

Maintain a log of all sets of jacks and gauges in the plant and in the field. This log shall include at a minimum: project identification, jack identification number, gauge identification number, size of dial face, maximum stressing pressure for intended use, and calibration date. Keep duplicate copies of calibration records in the plant for any equipment in the field.

3.4 COMPLAINTS RECEIVED BY THE PLANT

A Certified Plant shall maintain a record of all complaints made known to it relating to the plant's compliance with PTI's certification requirements and with relevant standards. The plant shall take appropriate action with respect to the complaint and any deficiencies found in its products or services and shall document the actions in its records. A management representative shall acknowledge receipt of the complaint and the corrective actions taken. These records must be made available to PTI upon request. PTI's Independent Inspection Agency will review the plant's complaint records and its documentation of corrective action as part of the detailed review of records during each plant inspection.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.4 COMPLAINTS RECEIVED BY THE PLANT								
Complaints Records								
Does the plant have a file where all complaints are recorded?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Have all complaints made known to PTI been recorded?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Has the corrective action been documented?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Has a management representative signed off acknowledging receipt of the complaint, and attesting to the action(s) taken?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Corrective Action(s)								
Has the plant taken action(s) in response to each complaint?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Is the action appropriate?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Have deficiencies been corrected?	**0.59**	✓	✓	✓	✓	✓	✓	✓

3.5 ACTIONS TAKEN TO PREVENT/CORRECT NONCONFORMITIES

Each evaluation report prepared by the Independent Inspection Agency will include a detailed list of all items that were found to be in nonconformance with the Certification Program requirements set forth in this manual.

Upon receipt of the evaluation report, the plant shall submit a formal written response to PTI describing what preventive and/or corrective action(s) has been or will be taken to bring the plant's operations into conformance with program requirements. The formal response must be submitted to and received by PTI within thirty (30) days of receipt of the evaluation report, and must address each noted non-conformity. Failure to submit a formal response within 30 days after the receipt of the evaluation report or that does not address all of the cited nonconformities will result in a ten (10) percent deduction on the plant's overall percentage on its next inspection.

In its next inspection of the plant, the Independent Inspection Agency will review and verify that preventive and corrective actions have indeed been implemented as reported in the plant's formal response to PTI. If the cited deficiency is still in nonconformance with program requirements at the time of the follow-up plant inspection, the plant will receive a 90% reduction on the weighted score. for the nonconformity. For example, if the plant received 80% on a critical item with a weight of 67.74, the initial score for this item would be 54.19 points (67.74 x 0.80). If the deficient condition still exists on the follow-up inspection, the grade score would be 36.13 points (67.74 x 0.80 x 0.90). This would also result in a 72% (0.80x 0.90) on a critical item which would result in Conditional Certification.

(a) Critical Items: The grade score is further reduced by 10% on each subsequent inspection. Examples:

a. 2.4.3.b.2 (b) with the weight of 65.63 and the grade score of 80% for the first nonconformity: 65.63 x 0.80 = 52.50 is the individual grade score (Certified).

b. For the follow-up nonconformity on the same item: Grade Score: 0.80 x 0.90 = 0.72; Individual Grade Score: 65.63 x 0.72 = 47.25 (Conditional Certification).

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
3.5 ACTIONS TAKEN TO PREVENT/CORRECT NONCONFORMITIES								
Formal Written Response								
Did the plant have any inspection criteria that were found to not meet the minimum program standards on the previous plant inspection? If yes, did the response meet both of the following conditions: A written response was submitted to and received by PTI within 30 days receipt of the inspection report. The response addressed all of the cited nonconformities **(If No, the grading deduction is applied to the overall percentage)**	**-10% of overall percentage**	✓	✓	✓	✓	✓	✓	✓

c. A third nonconformity in a row on the same subject: Grade Score: 0.80 x 0.90 x 0.90 = 0.648 and the Individual Grade Score is 65.63 x 0.648 = 42.53 (Certification Suspended)

d. 2.4.3.b.2 (d) with the weight of 65.63 and the grade score of 0% for the first nonconformity: 65.63 x 0 = 0 is the individual grade score (Certification Suspended). For the follow-up nonconformity on the same item: Grade Score: 0 x 0.90 = 0; Individual Grade Score: 65.63 x 0 = 0 (The plant remains suspended or will be decertified)

(b) Other Items: The grade score reduction is increased by 1.5 on each subsequent inspection. Examples:

a. 2.2.2.3 with the weight of 3.46. This is a yes or no question with the grade score either 100% or 0%. For the first nonconformity, the Grade Score is 0 and the Individual Grade Score is 0. For the follow-up nonconformity, the Grade Score is 1 – 1.5 = -0.5 and the Individual Grade Score is 3.46 - (3.46 x 1.5) = -1.73

b. A third nonconformity in a row on the same subject: Grade Score: 1 – (1.5 x 1.5) = -1.25 and the Individual Grade Score is 3.46 – (3.46 x 1.5 x 1.5) = -4.33

If the plant receives a third consecutive nonconformity on the same grading question, the plant fails the inspection resulting in Suspended Certification. A plant must reapply for certification according to Section 5.11.

4. RECORD KEEPING

4.1 General

Maintain records for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Traceability information may be kept in separate logs or a single log used for tracking all materials; log sections must be clearly identified and information easily retrievable during an inspection.

4.1.1 Log Maintenance Requirements

Required documentation of the following logs are detailed in Sections 4.2 through 4.4:

- Receiving Log (4.2)
- Non-conforming material Log (4.3)
- Extrusion Log (4.4)

4.1.2 Project Traceability

Maintain a system of record keeping at the Certified Plant for the following items, which will permit traceability of shipped material used on specific projects, whether attached to the tendons or shipped loose:

- Strand
- PT coating

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
4.1 General								
4.1.1 Log Maintenance Requirements Have the following logs been maintained for a minimum 3 years?								
Receiving log and/or databases?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Non-conforming logs?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Extrusion logs?	**0.59**	✓	✓	✓	✓	✓	✓	✓
4.1.2 Are traceability records of materials used on specific projects (minimum 3 years) available for								
Strand?	**0.59**	✓	✓	✓	✓	✓	✓	✓
PT Coating?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Sheathing?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Are traceability records for anchorages and couplers available for a minimum of 3 years?								
Fixed anchorages (standard)?	**0.59**	✓	✓		✓	✓		
Fixed anchorages (encapsulated)?	**0.59**	✓		✓	✓		✓	
Intermediate anchorages(standard)?	**0.59**	✓	✓		✓	✓		
Intermediate anchorages (encapsulated)?	**0.59**	✓		✓	✓		✓	
Stressing anchorages (standard)?	**0.59**	✓	✓		✓	✓		
Stressing anchorages (encapsulated)?	**0.59**	✓		✓	✓		✓	
Fixed anchorage wedges?	**0.59**	✓	✓	✓	✓	✓	✓	
Stressing/intermediate- anchorage wedges?	**0.59**	✓	✓	✓	✓	✓	✓	
Couplers?	**0.59**	✓	✓	✓	✓	✓	✓	

- Sheathing
- Anchorages
- Wedges
- Couplers

4.2 RECEIVING LOGS

4.2.1 The strand receiving log and/or database shall include:
(a) Date received,
(b) Manufacturer,
(c) Product (size, grade and type),
(d) Coil Number, and

4.2.2 The receiving log and/or database for all anchorage components and couplers shall contain the following information:
(a) Date received
(b) Item / Manufacturer
(c) Storage location (inside, outside with/without protection from elements, quarantined storage area, etc.)

4.2.3 The receiving log and/or database for PT Coating shall contain the following information:
(a) Date received
(b) Manufacturer
(c) Storage location (inside, outside with/without protection from elements, quarantined storage area, etc.)

4.2.4 The receiving log and/or database for sheathing material shall contain the following information:
(a) Date received
(b) Item / Manufacturer
(c) Storage location (inside, outside with/without protection from elements, quarantined storage area, etc.)

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
4.2 Receiving Logs								
4.2.1 Does the strand receiving log and/or database contain?								
Date Received?	**0.59**	✓	✓	✓				✓
Manufacturer?	**0.59**	✓	✓	✓				✓
Size, Grade, Type?	**0.59**	✓	✓	✓				✓
Coil Number?	**0.59**	✓	✓	✓				✓
4.2.2 Does the anchorage component and coupler receiving log and/or database contain?								
Date received?	**0.59**	✓	✓	✓	✓	✓	✓	
Item / Manufacturer?	**0.59**	✓	✓	✓	✓	✓	✓	
Storage location?	**0.59**	✓	✓	✓	✓	✓	✓	
4.2.3 Does the PT coating receiving log and/or database contain?								
Date received?	**0.59**	✓	✓	✓				✓
Manufacturer?	**0.59**	✓	✓	✓				✓
Storage location?	**0.59**	✓	✓	✓				✓
4.2.4 Does the sheathing material receiving log and/or database contain?								
Date received?	**0.59**	✓	✓	✓				✓
Item / Manufacturer?	**0.59**	✓	✓	✓				✓
Storage location?	**0.59**	✓	✓	✓				✓

4.3 NON-CONFORMING MATERIAL LOGS

Track disposition / disposal of non-conforming strand in a non-conforming log.

Track disposition / disposal of non-conforming anchorage components in a non-conforming material log.

Track disposition / disposal of non-conforming PT coating material in a non-conforming material log.

Track disposition / disposal of non-conforming sheathing material in a non-conforming material log.

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
4.3 Non-conforming material Logs								
Are the following items recorded on the non-conforming material log?								
Disposition / disposal of nonconforming strand?	**0.59**	✓	✓	✓	✓	✓	✓	
Disposition/disposal of non-conforming anchorage components?	**0.59**	✓	✓	✓				✓
Disposition / disposal of nonconforming PT Coating?	**0.59**	✓	✓	✓				✓
Disposition / disposal of nonconforming sheathing material?	**0.59**	✓	✓	✓				✓

4.4 EXTRUSION LOG

The following information shall be recorded on the extrusion log:

a) **Strand:** Ensure material certifications for strand have been received and Record the coil identity in the extrusion log prior to usage. If material certifications are not yet received, segregate materials until proper documentation is received.

Assess the surface condition of strand, see Section 2.1.3, in storage and enter the surface grade into extrusion log.

Record:

- Coil identity (manufacturer, coil and heat number)
- Surface grades

b) **PT Coating:** Apply PT Coating in accordance with Section 2.3 and enter applied quantity into extrusion log

Maintain records of PT Coating material application to document compliance with the applicable PTI specification; PTI M10.2-24, Section 2.2 or PTI M10.6-24, Section 2.4.3.

Record:

- Batch Numbers
- PT Coating application quantity at least once per shift (from inline flow meter or scale at recycle tank)

c) **Sheathing:**

Record:

- Date of extrusion
- Sheathing thickness
- Source and batch number
- UV stabilizer manufacturer's suggested application rate to achieve the minimum protection for 90 days

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
4.4 Extrusion Log								
Are the following items recorded on the extrusion log?								
a) Strand								
Coil identity (coil and heat number)?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Surface grades at time of extrusion for each coil?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Strand manufacturer?	**0.59**	✓	✓	✓	✓	✓	✓	✓
b) PT Coating								
Batch numbers?	**0.59**	✓	✓	✓	✓	✓	✓	✓
PT Coating application quantity?	**0.59**	✓	✓	✓	✓	✓	✓	✓
c) Sheathing								
Date of extrusion?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Sheathing thickness (4 measurements)?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Source and batch number?	**0.59**	✓	✓	✓	✓	✓	✓	✓
UV stabilizer manufacturer's suggested application rate to achieve the minimum protection for 90 days?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Are sheathing thickness measurements recorded per frequency requirements of Section 4.4?	**0.59**	✓	✓	✓	✓	✓	✓	✓

Sheathing Thickness Measurement Frequency: Record sheathing thickness in the extrusion log at the beginning of each shift on each extrusion line and any time a change is made to the sheathing thickness, in extrusion materials or after repairs or adjustments are made to the extrusion equipment using a digital, dial, or Vernier caliper.

For fabrication only plants, measure and record sheathing thickness at the beginning of each shift on each fabrication line, and any time tendons from a coil of another sheathing thickness are being fabricated (during the same shift and cutting line), using a digital, dial, or Vernier caliper

4.5 WRITTEN QUALITY CONTROL PROGRAM

Maintain a written Quality Control Program to ensure ongoing compliance to the PTI Certification Program. The Quality Control Program shall include, at a minimum, an outline of procedures and assignment of responsibilities for each task in the following categories:

(a) Prestressing steel
(b) Anchorages and couplers
(c) PT coating
(d) Sheathing
(e) Fabrication process
(f) Storage, shipping, packaging, and labeling
(g) Stressing equipment

Questions	Weight (out of 1000 pts)	IA	IB	IC	IIA	IIB	IIC	III
4.5 Written Quality Control Program								
Is there a written Quality Control Program for the following?								
Prestressing steel?	**0.59**	✓	✓	✓	✓	✓	✓	
Anchorages and Couplers?	**0.59**	✓	✓	✓	✓	✓	✓	✓
PT Coating?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Sheathing?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Fabrication Process?	**0.59**	✓	✓	✓	✓	✓	✓	✓
Storage, Shipping, Packaging, and Labeling?	**0.59**	✓	✓	✓	✓	✓	✓	
Stressing equipment?	**0.59**	✓	✓	✓	✓	✓	✓	✓

5. PTI CERTIFICATION PROGRAM ADMINISTRATION

5.1 APPLICATION FOR CERTIFICATION

An application for participation in the PTI Certification Program shall be submitted on the appropriate form supplied by the Post-Tensioning Institute (see Appendix A for a sample "PTI Plant Certification Contract" documents). Two copies of the contract and supporting data shall be submitted.

PTI Certification is available for several types of plants producing unbonded tendons, as follows:

Type I – Extrusion and Fabrication Plant

Type II – Fabrication Only Plant

Type III – Extrusion Only Plant

Individual plant certification can be obtained in the following categories:

Category A – Both Standard and Encapsulated Systems

Category B – Only Standard Systems

Category C – Only Encapsulated Systems

A company may not certify one or more plant(s) and then operate others outside of the PTI Program. Failure to comply with the foregoing will result in decertification of all plants.

If a company should open a new fabrication or extrusion facility, the company must submit a complete application for certification of the new plant prior to the start of production. The first inspection will be scheduled by the Independent Inspection Agency within 30 days of the receipt from PTI of the complete application.

This agreement applies to all fixed plants and mobile fabricating facilities. Each mobile fabricating facility is considered a separate plant. If a company has multiple mobile fabricating facilities, each would require a unique number (affixed to the mobile fabricating facility in a permanent manner and readily accessible for inspection) and certification.

Upon receipt of the application, supporting data and application fee, the Post-Tensioning Institute will review the application and supporting data. If additional data is required, the applicant will be so notified and further processing will be withheld until the requested information is received.

5.1.1 Application Form

The application shall include the following information:

Applicant: The name and complete address of the company, business, organization, or individual applying for evaluation, the type (e.g. extrusion and fabrication plant; fabrication only plant; or extrusion only plant), and the location of the facility to be certified. The applicant need not be a member of PTI.

Category: The type of system to be produced at each plant (e.g. standard system, encapsulated system, or both).

Acknowledgement: The application must be signed by a proprietor, partner or authorized officer of the applying firm, and notarized. The name and title of the person to be contacted for additional information shall also be given if it is different from the individual signing the application.

5.1.2 Supporting Documentation

To facilitate the plant inspection process, all test data required by Sections 2.1, 2.2, 2.3, and 2.4 of this manual, along with examples of records as required by each section must be submitted with the application for review prior to the plant

inspection. The following information, if applicable to the materials, anchorages, and equipment involved shall be submitted:

1. Descriptions of the materials, anchorages, and equipment including drawings, metallurgical data, and other pertinent data. A compact illustrative brochure should be submitted if available.

2. Test reports indicating the performance of the materials, anchorages, and equipment. The test reports must contain, or be accompanied by, the following if applicable:
   (a) A statement of the laboratory's independence and its relationship to the applicant.
   (b) Copies of test procedures used, unless tests are standard tests, in which case the complete designations of the test standards shall be given.
   (c) Verification of the laboratory's capabilities and facilities to conduct such tests.
   (d) A statement that the data presented are representative for the materials, anchorages, and equipment and that reports or knowledge of inferior behavior have not been withheld.

3. A detailed list of the applicant's stressing equipment. The list shall include size, capacity, manufacturer's name and model designation of each item. Copies of current calibration reports shall be supplied for all sets of stressing equipment in use.

5.1.3 Use of Purchased Coated Strand

If any strand is coated outside of the applicant's plant, and if the outside plant is not a current PTI Certified Plant, the outside coating facility plant shall be inspected and certified either as a Type I – Extrusion and Fabrication Plant or as a Type III – Extrusion Only Plant prior to use of its coated strand by the applicant's plant. PTI Certification of the applying plant will not be issued until all extrusion plants that the applying plant uses have passed inspection and been PTI Certified.

Applicant must submit with the application all relevant documentation required in Sections 2.1, 2.3, and 2.4 pertaining to any coated strand produced outside of the applying plant. This information must be provided for each extrusion plant used by the applying plant.

5.1.4 Application Fee

A payment of the initial application fee must be submitted with a facility's application for certification. This fee covers PTI's administrative and development costs, and the cost of the two, first-year inspections. Receipt of the appropriate annual fee for PTI Member or Non-Member Certification is required before the application is processed. Current application fees can be obtained from PTI.

5.1.5 Financial Standing with PTI

Certification is conditional upon the facility's fulfillment of its required financial obligations to PTI.

5.1.6 Supplemental Fees for Facilities Outside the Continental United States and Canada

Current application fees are applicable to facilities located in the continental United States and Canada only. Fees for other facilities will be determined on a case-by-case basis. In general, facilities located outside the continental United States and Canada will be required to pay supplemental fees approximately equal to the added travel and inspection costs associated with conducting facility inspections outside the continental United States and Canada.

5.2 INSPECTIONS

5.2.1 Independent Inspection Agency

The PTI Unbonded Tendon Plant Certification Committee shall select an Independent Inspection Agency to perform the evaluation of plants. The Independent Inspection Agency shall be an organization staffed with personnel experienced and familiar with unbonded post-tensioning materials, components, and production processes; as well as unbonded post-tensioning design and construction. Inspection personnel shall meet the minimum qualifications established by the Committee. The Independent Inspection Agency shall be appointed for a minimum initial term of three (3) years. The Independent Inspection Agency's activities shall terminate at the close of the contract term unless renewed by mutual agreement.

The Independent Inspection Agency shall be responsible for conducting plant inspections, preparing an evaluation report, and sending copies of the evaluation report to the Post-Tensioning Institute within 15-days of any inspection. Subject to the confidentiality provisions of Section 5.2.2, the Independent Inspection Agency shall submit a semi-annual report to PTI summarizing the agency's activities over the previous six months.

5.2.2 Confidentiality

Except as otherwise required by law, the test report and underlying data and any other information furnished by the inspected plant shall not be disclosed by the Independent Inspection Agency or PTI to any personnel other than the inspected plant's authorized representative. The Independent Inspection Agency shall sign a confidentiality agreement (See Appendix C) with each participating plant to protect all confidential, proprietary or trade secret information of the participating plant. When PTI is required by law or authorized by contractual arrangements to release confidential information, the plant concerned shall, unless prohibited by law, be notified of the information provided.

5.2.3 Schedule of Inspections

The PTI Certification Program is based on the review of materials, test data and fabrication procedures during two plant inspections by an Independent Inspection Agency each year the plant is involved in the program. The purpose of the inspection shall be to determine whether the procedures of the plant conform to the requirements of this program. The in-depth inspection and future unannounced inspections shall cover the items listed in Sections 2.1 through 3.4 of this manual as appropriate for plant type and category.

During the first year there will be one in-depth announced inspection and a minimum of one unannounced inspection. During the second and following years, a minimum of two unannounced inspections will be made of each plant. Plants applying for their initial certification after November 1st will receive one (1) in-depth announced inspection that calendar year and a minimum of two (2) unannounced inspections in the second and following years.

If a plant receives an overall Grade Score of 99% or higher on the first inspection each calendar year, they will receive a virtual inspection on their second inspection in that calendar year. Random third inspections will all be conducted virtually.

Should the Inspection Agency representative be delayed in the execution of their duties due to failure by the inspecting plant to make supervisory or staff personnel available, produce material and production records, provide access to the production facility and/or equipment or any other related inspection items available within 1-hour of arrival of the Inspection Agency representative at the plant location, the inspector shall have the sole discretion of failing the inspection. When the Independent Inspection Agency completes its evaluation of the supporting data submitted with the application, the Independent Inspection Agency will make arrangements with the applicant for the initial announced in-depth inspection.

5.2.4 Mobile Fabricating Facility Notification

The location of a mobile fabricating facility must be reported daily. It is the company operating the mobile plant's responsibility to communicate the location to PTI. Examples of such would include: GPS locators on all vehicles, web site reporting, or a PTI approved method of location monitoring.

5.2.5 Random Inspections

The Independent Inspection Agency will conduct an additional unannounced inspection of approximately ten percent (10%) of the plants participating in the program each year. These plants will be randomly selected (from the list of plants with the lowest 20% grade scores from the previous year) by PTI utilizing random number generators from among the list of Certified Plants as of April 1 each year. Costs of these additional inspections will be borne by PTI and will not result in an additional fee to the selected plants.

5.2.6 Grading

Each grading item has a possible of 100 percent. The Independent Inspection Agency shall give a percent grade for each inspection criteria based on the grading guidelines in each section. If a question does not apply to the plant type and category, the full score of 100 percent will be applied to that question. Each grading item score is multiplied by the assigned weight and summed give the overall grade percentage for the inspection. Fifteen grading items are identified as critical items (shown as bold in the text and highlighted green in the grading tables).

5.2.7 Notification of Inspection Results

An evaluation report will be issued by the Inspection Agency and submitted to PTI within 15 days following completion of each inspection. PTI will review the report for compliance with program standards, and then forward the report to the plant within 5 business days starting the day after receiving from the Inspection Agency. Within 10 business days after the report is forwarded to the plant, a certification status decision, and a formal letter and certificate will be mailed to the plant.

5.2.8 Equipment Calibration

Measuring and test equipment used by the Inspection Agency during plant inspections shall be calibrated using known national or international reference standards at intervals not exceeding 12 months. Records of these calibrations shall be maintained by the Inspection Agency and shall be submitted to PTI.

5.3 CERTIFICATION

A plant will be certified if all of the following criteria are met:

Certified	The plant receives 80% or higher in each of the critical items and an overall grade percentage of eighty (80%) or higher.
Conditionally Certified	The plant receives 70% or higher in each of the critical items and an overall grade percentage of seventy (70%) or higher.
Certification Suspended	The plant receives below 70% in any of the critical items or an overall grade percentage less than seventy (70%). This status will remain in place until the plant requests and the independent inspection agency completes a re-inspection according to Section 5.4, until the appeal process outlined in Section 5.6 is resolved, or until the plant is decertified.

Both Overall and Critical Item Grade Percentages must be met in order for a plant to qualify for a certification below.	**Overall and Critical Item Grade Percentages**
Certified	80%-100%
Conditionally Certified	70%-79.9%

Certification Suspended	<70%

When a plant receives an overall grade percentage of seventy to seventy-nine (70 – 79.9%), the plant's certification is conditional upon receiving an overall grade percentage of eighty (80%) or higher as well as on each critical item on the subsequent unannounced inspection. If the plant does not receive a grade percentage of eighty (80%) or higher on the overall grade score and on each critical inspection category on the subsequent unannounced inspection, the plant's certification will be suspended. If an appeal is not received according to Section 5.6 within the 21 days after receiving the report the plant will be decertified.

5.4 RE-INSPECTION

5.4.1 Failed Inspections

Plants which do not pass the initial in-depth inspection, or subsequent unannounced inspections, may request re-inspection. Such requests shall be made in writing to the Post-Tensioning Institute and received by PTI within 21 calendar days of receiving the Independent Inspection Agency's evaluation report. A request for Re-Inspection shall include the following:

(a) A statement that the deficiencies noted in the previous inspection have been corrected

(b) A detailed explanation of what was done to correct the deficiencies

(c) Payment of the re-inspection fee prevailing at that time. Current re-inspection fees can be obtained from PTI.

Requests for re-inspection shall be sent by certified mail or other delivery methods such that the time and date of delivery can be verified. If the request is not received by PTI within the required 21-day period, the plant will be decertified and will have to re-apply as a new applicant in order to regain certification status.

Plants properly requesting re-inspection (such re-inspection to be unannounced) will remain as Certification Suspended until the re-inspection report is issued by the Independent Inspection Agency. The inspection will take place within 30 days of receipt of the application form, statement of the correction of the nonconformities, and submission of the re-inspection fee. Copies of re-inspection reports will be issued by the Independent Inspection Agency and submitted to PTI within seven (7) days of the re-inspection. A plant that fails re-inspection shall be decertified and will have to re-apply as a new applicant in order to regain certification status.

5.4.2 Early Re-inspection of Conditionally Certified Plant

A plant may also request a re-inspection in order to upgrade its certification status from "Conditional" or "Suspended" to "Certified". The request for re-inspection may be submitted at any time following the receipt of the Independent Inspection Agency's evaluation report and shall include the items noted in 5.4.1.

Plants properly requesting an upgrade re-inspection will maintain their current conditional or suspended status until the re-inspection report is issued by the Independent Inspection Agency. Copies of re-inspection reports will be issued by the Independent Inspection Agency and submitted to PTI within seven (7) days of the re-inspection. A plant that fails re-inspection shall be decertified and will have to re-apply as a new applicant in order to regain certification status.

5.4.3 Early Re-inspection to Change Plant Category or Type

A plant may request a re-inspection in order to be certified in fabrication capability outside its current certification type/ category (for example, adding an extruder or fabricating encapsulated tendons). The request for re-inspection may be submitted at any time. The unannounced inspection will take place within 30 days of receipt of the application form and re-inspection fee. Copies of re-inspection reports will be issued by the Independent Inspection Agency and submitted to PTI within seven (7) days of the re-inspection. A plant that fails re-inspection at the

new type or category will remain at the previous certification type/category until the next unannounced inspection.

A plant may request a change in certification type or category due to the removal of equipment/processes from production (for example, taking an extruder out of production) by informing PTI of the change in writing within 35 days according to Section 5.14.3.

5.5 INACTIVE STATUS

Plants, which anticipate being inactive for 21 days or more, shall notify the PTI Certification Director in writing of this situation within 7 days. Certification shall remain in effect during this period of inactivity. Plants inactive for 30 days or more will be placed on PTI's Inactive Plant List. Plant must immediately notify PTI Certification Director of ANY production/fabrication being resumed. ANY production/fabrication activity removes the Plant from inactive status and scheduling of inspections will resume.

Plants shall provide notice to PTI Certification Director when they become aware of temporary closures or reduced work schedule that prevent inspection from being performed or they shall be responsible for additional inspection agency expenses.

5.6 APPEAL PROCEDURE

In the event a dispute arises between applicant and the Independent Inspection Agency concerning the applicant's evaluation report, applicant may appeal the decision. An Appeal shall be made in writing to the Post-Tensioning Institute and received by the PTI within 21 days of receiving the PTI's Independent Inspection Agency's evaluation report. Applicant shall state in writing its position to PTI.

An Appeal shall be sent by certified mail or other delivery methods such that the time and date of delivery can be verified. If the appeal is not received by PTI within the required 21-day period, the plant loses its ability to appeal and the applicant's evaluation report stands.

Upon receipt, the PTI staff shall acknowledge receipt of the appeal in writing and refer the matter to the Certification Advisory Board (CAB) within 7 days. CAB will then establish an Appeal Board within 7 days to review the appeal.

5.6.1 Appeal Board

The Appeal Board shall consist of five members. The CAB Chair shall serve as Chair of Appeal Board; if the CAB Chair has a conflict of interest on the matter, then the Vice-Chair of CAB shall serve as Chair. If the Vice-Chair of CAB has a conflict of interest on this matter, the CAB Chair shall appoint another CAB member without a conflict of interest as Chair of the Appeal Board. The CAB Chair will appoint three members of the Appeal Board selected from the current Unbonded Tendon Plant Certification Committee as follows:

- Two (2) General Interest/User representatives
- One (1) Post-Tensioning Company representative

The Applicant shall designate one (1) representative who is not an officer, employee, or is otherwise affiliated with the Applicant as the fifth member of the Appeal Board. Any person who has been involved in the certification evaluation and decision that is being appealed shall not be eligible to serve on the Appeal Board.

5.6.2 Appeal Board Review

The Appeal Board will forward the Applicant's written appeal to the Inspection Agency for review and comment within 14 days of receipt by PTI of the complaint. The Independent Inspection Agency will then submit a written statement either re-affirming and/or clarifying its position on the matter within 7 days to the Appeal Board, with a copy to the applicant. Based on the Independent Inspection Agency's response, the Applicant may then decide whether a formal meeting with the

Appeal Board is desired. If so, the Applicant must submit a formal meeting request in writing to PTI within 7 days of receipt of the Independent Inspection Agency's response. This written request must be accompanied by an appeal board meeting fee deposit of $7,500, which will be refunded to the Applicant if the Appeal Board decides that the Applicant should be certified. If not, PTI will retain the deposit to defray the cost of the meeting.

If requested, the meeting will be scheduled by PTI within the next two to four weeks, with the meeting to be held at PTI's office in Farmington Hills, Michigan. The Applicant shall be afforded a full opportunity, in person and by counsel if desired, to be heard by and to present any relevant additional evidence to the Appeal Board. In addition, a representative of the Independent Inspection Agency shall also attend if so directed by the Appeal Board.

5.6.3 Appeal Board Decision

The Appeal Board will review the testimony, written statements and other supporting documentation and decide the matter within 14 days. The Appeal Board's decision shall be final and binding upon both parties.

5.6.4 Complaints

An applicant or other interested party may also file a complaint with PTI. A complaint will typically involve an administrative matter of some sort. Examples of instances that might generate a complaint include: an inspector not following good safety practices, staff not responding to an inquiry in a timely manner, a competitor misusing the PTI certification mark, etc.

PTI staff shall acknowledge receipt of the complaint in writing and shall forward the complaint to the Certification Advisory Board for review. As needed, CAB will request additional information from the submitter, staff and/or the Inspection Agency. Based on the information provided, CAB will decide what action, if any, is warranted.

The submitter will be notified of CAB's decision as well as any follow-up action that is directed.

5.7 RIGHTS OF CERTIFIED PLANTS

Upon certification, PTI shall provide the plant with a certification certificate and other formal certification documentation as prescribed in this manual. This documentation shall clearly convey the following:

1. The name and address of the plant

2. The date certification is granted

3. The type, category and scope of certification

Qualifying plants are registered with PTI and are awarded the right to display the PTI Certification Certificate designating them as PTI Certified Plants and are added to the PTI's published list of certified plants. In addition, PTI will provide plant with a mountable wall plaque suitable for office display.

Plants may reference their certified status in company literature and correspondence for as long as the certification is in effect and provided the reference is to the specific plant(s) certified and not the company as a whole.

5.8 RENEWAL OF PTI CERTIFICATION

The PTI Unbonded Tendon Plant Certification Program operates on a calendar year basis. During December of the year in which the initial Certificate was issued and each subsequent year, each certified plant shall submit the following:

(a) A written request for renewal of certification to the Post-Tensioning Institute on the form provided by PTI for that purpose (see Appendix B).

(b) The application for renewal shall be accompanied by test data required by this manual for any component of the post-tensioning system that is new or was modified since the previous year's last inspection.

(c) Annual Renewal Fee – Thirty days prior to the beginning of each subsequent year, each certified plant will be invoiced an annual fee; current fees can be obtained from PTI. This annual renewal fee covers PTI's prorated administrative and development costs, and the cost of plant inspections during the year. For plants initially certified in the previous year, the renewal fee will be prorated based on the number of inspections received in the previous year (not including re-inspections.) For example, the second year fee for plants receiving one inspection the previous year would be one half of the annual renewal fee; plants with two inspections would be the full renewal fee. Renewal fees are non-refundable. If the plant ceases operation before the second inspection, a refund is not available.

(d) Tonnage Fee – All participating plants, as a condition of certification must pay a fee based on total North American shipments of post-tensioning materials, including coated unfabricated strand. When one or more post-tensioning suppliers are wholly or majority owned by the same parent entity, the total shipments of post-tensioning materials of both or all companies so owned shall be utilized in calculating the tonnage fee for each such entity. Current fees can be obtained from PTI.

(e) Calculation of Tonnage Fee – Payment of tonnage fee is only required once on all shipments of post-tensioning materials. For coated unfabricated strand shipped between participating plants in the Unbonded Tendon Plant Certification Program, the participating plant fabricating the completed post tensioning assembly shall report the tonnage to PTI and shall be responsible for payment of the tonnage fee to PTI. The tonnage fee for tonnage shipped outside the United States but within the North American Continent shall be fifty percent (50%) of the United States tonnage assessment rate calculated in U.S. dollars. This provision is applicable to all individual companies, including those located outside of the United States, or to calculation of consolidated tonnage assessments for separate companies wholly or majority owned by the same parent company.

(f) Payment of Tonnage Fees – Payment of tonnage fees is expected within sixty (60) days of the invoice date. The Executive Director of the Institute shall advise the Institute's Executive Committee of the name of any plant not paying an invoice within this time `of any participating plant not paying an invoice within sixty (60) days requesting that the past due invoice(s) be paid in full in not more than thirty (30) days from the original past due date. Any participating plant that does not pay an invoice within ninety (90) days of the invoice date shall be advised by the Executive Director of the Institute that they have been decertified.

If a participating plant fails to submit an annual or quarterly statement of tonnage within thirty (30) days after the close of the prior calendar year or quarter, the Executive Director of the Institute shall invoice the participating plant for a fee at the rate of one hundred fifty percent (150%) of the last reported statement of tonnage. Such payments based on prior reported statement of tonnage will be adjusted to the participating plant's account after a new statement of tonnage is submitted. In the event that the statement of tonnage is not submitted within ninety (90) days after the close of the prior calendar year or quarter, the Executive Director of the Institute shall advise the participating plant that they have been decertified.

(g) Sample Use(s) of PTI Plant Certification Mark – Submit samples -- in electronic, paper or combination of both formats -- of the plant's use(s) of the PTI certification mark, including the following if applicable:

- Company letterhead/correspondence
- Marketing brochures
- Space Advertisements
- Company Website (screenshot acceptable)
- PT Installation Drawing Plan Sheet

If the PTI Plant Certification Mark is used on multiple items in the same manner (e.g. multiple company brochures), submit only one sample that is typical.

Plants requesting renewal of certification will be maintained on the list of PTI Certified Plants until such time that future inspection evaluation reports may necessitate a change. Plants not requesting renewal of certification by January 15 will automatically be decertified and dropped from the list of PTI Certified Plants.

5.9 CHANGES TO THE UNBONDED TENDON PLANT CERTIFICATION PROGRAM

The PTI Unbonded Tendon Plant Certification Committee shall periodically review the requirements for the Certification of Plants Producing Unbonded Single Strand Tendons Program to determine if it should be updated. PTI shall give due notice of any changes it intends to make in the requirements for certification. All proposed changes and certification documents will be available to the general public for review and comment at the PTI Web site. Discussions are open for 45 days. In addition, PTI will distribute proposed documents to interested stakeholders for review and comment. PTI will maintain a database of interested parties for review and distribution. Any person interested in being included on this distribution list, may contact PTI at any time.

Comments returned to PTI staff within the discussion period shall be considered by the UTPC Committee for closure in accordance with the PTI Certification Committee Manual. Approved changes will not affect certification in effect prior to the effective date but will be considered when subsequent inspections are made.

5.10 EVIDENCE OF NON-COMPLIANCE

Any industry stakeholder may submit evidence to the PTI alleging that a PTI Certified Plant has not fully complied with the requirements of the UTPC Program. Upon receipt of the evidence, the Certification Program Manager (CPM) shall review and validate; send a written response as confirmation of receipt to said allegation(s) within 7 days of receipt. If a person files a complaint by telephone, they will be asked to submit a written summary of the complaint.

The CPM shall contact the Unbonded Tendon Plant Certification Committee (UTPCC) to discuss the compliant. If the CPM & UTPCC determines that a special, unannounced inspection of the Plant is necessary, the independent inspection agency will conduct the inspection, focusing specifically on addressing the complaint. This special inspection will be in addition to the normal inspection cycle. If the Plant passes the inspection, the cost of the inspection will be borne by the PTI: if the Plant fails the inspection, the cost of the inspection will be borne by the Plant and the Plant will be responsible for requesting re-inspection to maintain its certification status.

If a special inspection is not authorized, the CPM will contact the Plant to discuss the compliant. The plant will provide a receipt acknowledging the complaint, within 2 business days. The Plant will have 10 business days to provide sufficient response, including appropriate corrective actions, to the CPM. Lack of response to the complaint may result in plant certification status change. If the corrective actions are deemed insufficient, the CPM may send the results to the UTPCC. Potentially leading to the decertification of the Plant. A decertified Plant must reapply as a new applicant in accordance with 5.1 in order to regain its certification status

5.11 DECERTIFICATION

Plants which fail to pass future inspections, or which choose to discontinue their participation in the Certification Program shall not be permitted to display any previously awarded certified plant plaques or certificates. Additionally, they may not reference prior certified plant status in company literature or correspondence including the use of PTI Certified Plant Tags on shipments.

Once a plant has been decertified, it must re-apply as a new applicant in accordance with 5.1 in order to regain its certification status.

5.12 CHANGE IN CERTIFICATION

In the event of a change in certification such as the following:

- A change in the plant's type and/or category of certification
- A change in the plant's certification status (e.g. fully, conditional, or suspended)
- A change in location of the plant
- A change in the company name of the plant

PTI shall issue a new certified plant plaque and certificate reflecting the change. The plant shall discontinue the use of any previously awarded certified plant plaques or certificates and shall not reference prior certified plant status in company literature, advertising materials or correspondence including the use of PTI Certified Plant Tags on shipments.

5.13 RESPONSIBILITY TO ENSURE CONFORMITY OF PRODUCTS

Plants shall be responsible for ensuring that their products conform to the certification requirements set forth in this manual.

5.14 PUBLICATION OF PLANT STATUS

The Post-Tensioning Institute shall periodically publish certification actions and the status of participating plants. Published actions and status conditions include certification of new plants, failure to pass any re-inspection under Section 5.2.2, inactive plant status, applications of appeal, decisions of any appeal board, and decertification or other discontinued participation in the program.

5.15 PROHIBITED PTI SERVICES

To ensure that the program is impartial and fairly administered, PTI shall not engage in activities which are within the scope of the Certification Program. Specifically, PTI shall not:

(a) Design, manufacture, install, distribute or maintain unbonded tendons;

(b) Design, implement, operate or maintain an unbonded tendon fabrication, extrusion or other certified process that is within the scope of the Unbonded Tendon Plant Certification Program;

(c) Offer or provide consultancy to plants;

(d) Offer or provide management system consultancy or internal auditing to plants.

(e) Market or offer the UTPC program as linked with the activities of an organization that provides consultancy.

(f) State or imply that certification would be simpler, easier, faster, or less expensive than an alternative certification program.

5.16 CHANGED CONDITIONS

A plant shall notify PTI in writing of any materially changed condition as defined in 5.16.1 and 5.16.2 below within thirty (30) days of the change. Failure to do so will result in the plant's decertification. At PTI's discretion, an additional inspection may be conducted. This supplemental inspection will not alter the normal inspection cycle set forth in 4.2. With the exception of a change in product and/or certification category as defined in 5.16.2, cost of the additional inspection will be borne by PTI and will not result in an additional fee to the plant.

5.16.1 Change in Ownership

A change in the controlling ownership of the plant is considered a material change that shall be reported to PTI in accordance with 5.15.

5.16.2 Change in Product and/or Certification Category

A plant shall not produce product that is outside the scope of the plant's current type and category of certification. If the plant would like to revise its certification type and/or category, the change shall be requested in writing in accordance with 5.15.

The plant has the option of waiting until the next unannounced inspection to change type or category of the plant or they may request a supplemental inspection in accordance with the re-inspection requirements of 5.4.3, including payment of the re-inspection fee prevailing at that time. This supplemental inspection will not alter the normal inspection cycle set forth in 5.2.

For a new plant's first inspection or a plant which is conditionally certified, if the plant applies for Category A – Both Standard and Encapsulated Systems but during the inspection there were no encapsulated components onsite, the plant will be certified as Category B – Only Standard Systems. The plant has the option of requesting a re-inspection (for a fee) according to Section 5.4 or waiting until their next random inspection for a change to Category A – Both Standard and Encapsulated Systems once the encapsulated components have been obtained.

For a plant which was previously certified as Category A – Both Standard and Encapsulated Systems but during the inspection there were no encapsulated components onsite, the plant will be certified as Category B – Only Standard Systems. In order to reinstate certification as Category A – Both Standard and Encapsulated Systems, the plant may respond in writing that encapsulated components have been acquired using the same encapsulated system, having the same supervisory personnel in the plant, and having the same primary equipment in the plant (if any conditions or personnel have changed, a re-inspection will be required). Records of restored production will be verified during the next inspection.

5.16.3 Change in Operations, Equipment and/or Facilities:

Modification to the equipment, manufacturing process, facilities, or quality system which may affect the Plant's conformance with the Certification Program is a material change that shall be reported to PTI.

If any extrusion or fabrication operations, materials or records that are subject of the plant inspection, are located outside of the main plant premises, PTI should be notified so that the Inspection Agency may be made aware of it. If the overall inspection time (including going to and coming back from the remote site) is not lengthened by more than one hour, notification of multiple locations to PTI is sufficient. If the remote site resulted in inspection delay longer than one hour, the existing provisions for inspection delay (5.2.3) or application as a new plant location (5.1) apply as outlined.

If a piece of equipment which is critical to a plant performing to a specific certification type/category is off line for repair, the plant has 5 days to report the outage and 30 days to restore the equipment (35 days) while remaining at the current certification type/category.

If the equipment is not returned to service after 35 days, the certification type/category will be changed.

If an unannounced inspection occurs while critical equipment is out of service for less than 35 days and there is product in the plant that was produced while the critical equipment was in operation and the inspection can be continued using material on-hand, the certification type/category can continue until the next inspection.

If there is no material on-hand that was produced while the critical equipment was in operation the plant is certified at the certification type/category observed during the inspection.

If the plant has passed a previous inspection, they may be reinstated to the previous certification type/category once they have notified PTI in writing that the equipment is back in service. Records of restored equipment production will be verified during the next inspection.

If the plant has not successfully passed the previous inspection (i.e. new plants or plants with a conditional certification), they must be re-inspected according to Section 3.4 before they are reinstated to the previous certification type/category.

If an unscheduled inspection occurs before the plant reports a substantial change per 5.12, the plant will be certified at the certification type/category observed during the inspection. The type/category observed during the inspection will remain until the next unscheduled inspection or until a re-inspection (for a fee) is requested according to Section 5.4.

5.16.4 Change in Material Supplier's Ownership

In the event that a supplier changes ownership and sells the same product under different name/product ID number, the supplier maintains the burden of proof that the product meets the same requirements. The supplier has the option of repeating the testing required by the specification or obtaining certification from the testing agency that the product under the new name/manufacturer is the same product meeting the same standards as the original testing.

5.16.5 Change in Plant Location

If a plant moves (anytime the extrusion or fabrication equipment is moved, no matter the distance) the plant shall be re-inspected at the new location before certified production processes begin. Once PTI is notified of the move, the inspection will occur within the next 30 days. If the move occurs before the plant receives the 2 random inspections, there will be no additional charge. If the plant has already received the 2 random inspections for the year, an additional re-inspection must be paid for according to Section 5.4.

Appendix A

PTI Plant Certification Documents

A.1 – Application Form

Visit

https://www.posttensioning.org/certification/plantcertification/programoverview.aspx

for the latest version of the PTI-CRT20 F1 Application Form

A.2 – PTI Plant Certification Contract

Visit

https://www.posttensioning.org/certification/plantcertification/programoverview.aspx

for the latest version of the PTI-CRT20 F3 PTI Plant Certification Contract

Appendix B

Renewal Form for Returning PTI UTPC Certified Plants

Visit

https://www.posttensioning.org/certification/plantcertification/programoverview.aspx

for the latest version of the PTI-CRT20 F2 Renewal Form

Appendix C

Inspector / Auditor Confidentiality Agreement

PTI-CRT20 F19-0420

Confidentiality Agreement

CONFIDENTIALITY AGREEMENT for PTI Inspectors and Auditors

This agreement, dated as of this_____day of_____, 20_____, by and

between "Inspection Agency or Auditor" and_____("Participant").

Whereas, during the course of the Post-Tensioning Institute's ("PTI") inspection program for Certification of Plants Producing Unbonded Single Strand Tendons ("Certification Inspection") the Inspection Agency , and in some instances, PTI's or ANSI auditors review Participant's compliance with the PTI program for Certification of Plants Producing Unbonded Single Strand Tendons;

Whereas, such review of compliance requires Inspection Agency/Auditors to examine and review files, data, documents and other materials of Participant which are, in Participant's sole judgment, confidential and proprietary or trade secret information ("Information");

Whereas, the certification program requires execution of an agreement between PTI and Participant which prohibits revelation of any data or grading with respect to any plant visited during a Certification Inspection; and

Whereas, the parties desire to clarify their rights and obligations respecting Information;

Now therefore, in consideration of the mutual promises set forth below and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. The Inspection Agency/Auditors shall not copy, electronically capture screen or photo images, record video, or remove from Participant's premises any Information examined or otherwise revealed to it during a Certification Inspection without the express written permission of Participant.

2. The Inspection Agency/Auditors agrees not to reveal for any purpose, or use, for purposes other than the Certification Inspection, at any time, any and all Information examined or otherwise revealed to it during a Certification Inspection without the express written permission of Participant.

3. The term "Information" shall not include general knowledge of materials, processes, data, or information which comes into the public domain not due to the fault of the Inspection Agency/Auditors.

4. Any amendment or waiver of the terms of this Agreement shall be made only in writing executed by the parties. Any waiver of the terms of this Agreement shall not act as a subsequent waiver of the same or similar terms. Any disputes arising under this Agreement shall be governed by the laws of the State of_____.

In witness whereof, the parties have executed this agreement as of the date set forth above.

_____
Inspection Agency/Auditors

_____
Participant

Appendix D

Summary of Critical Items

Appendix D: Summary of Critical Items:

2.1.1 *If strand is used (extruded or fabricated) without receiving mill certificates and low relaxation test results complying with the applicable PTI specification; PTI M10.2-24, Section 2.1.4 or PTI M10.6-24, Section 2.1.4, the plant will fail the inspection.*

2.1.3 If tendons are fabricated using strand with a Surface Grade D, E, or F, the plant will fail the inspection.

2.2.1 If Certificates are not filed for anchors, wedges, or couplers used for fabrication the plant will fail the inspection.

2.2.2 If Static and Fatigue test reports are not available for the type/brand of anchor and wedges being used by the plant, the plant will fail the inspection.

2.2.3 Test reports shall be available demonstrating that representative anchorages and couplers have been tested to ensure a watertight encapsulation of the prestressing steel and all connections in conformance with the applicable PTI specification; PTI M10.2-24, Section 2.6.2 or PTI M10.6-24, Section 2.2.6.1.

2.2.3 Connecting components for encapsulated systems shall: *Have a minimum thickness of 0.050 in. (1.25 mm).*

2.2.3 Connecting components for encapsulated systems shall: Have a watertight, positive mechanical or monolithic connection to the anchorage protection or coupler enclosure and a watertight connection at the tendon sheathing in compliance with the applicable PTI specification; PTI M10.2-24, Section 2.4.1.1 (a) Item 4 or PTI M10.6-24, Section 2.2.6.2 Item 1(e).

2.2.3 Connecting components for encapsulated systems shall: *Be translucent or have other method of verifying compliance with the applicable PTI specification; PTI M10.2-24, Sections 2.4.1.1 (b) through 2.4.1.1 (d) or M10.6-24, Sections 2.2.6.2 Item 2.*

2.3.2 The minimum weight of the PT coating on the strand shall be not less than 2.5 lb (1.14 kg) per 100 ft (30.5 m) for 1/2 in. (13 mm) diameter strand and 3.0 lb (1.36 kg) per 100 ft (30.5 m) for 0.6 in. (15 mm) diameter strand. Completely fill the annular space between the strand and sheathing with coating material.

2.3.3 PT coating materials used by the Certified Plant shall comply with the applicable PTI specification; PTI M10.2-24, Section 2.2.2 and *Table 2.2.2.1 or PTI M10.6-24, Section 2.4.4 and Table 2.4.4.1*.

2.4.3 *If either additional random sample fails the average thickness requirement, the plant will fail the inspection.*

If any of the thickness measurements in the two initial samples or the two additional random samples (if required) fall below the 10% allowed variation, the plant fails the inspection

3.1.3 For encapsulated systems that rely solely upon sheathing overlap connection without sheathing restraint:

After fabrication and up until shipment to the jobsite, the overlap shall be at least the specified minimum measured from the watertight seal to the end of the sheathing:

- *PTI M10.2-24: 4 in. minimum overlap*
- *PTI M10.6-24: 2 in. minimum overlap*

For encapsulated systems with a sheathing restraint connection:

- *After fabrication and up until shipment to the jobsite, the sheathing restraint connection shall prevent displacement of the sheathing from the water-tight seal and/or displacement of the sheathing away from the anchorage, and any damage to the sheathing or anchorage that compromises the system integrity.*

3.1.4 If fabricated bundled tendons, completed and ready for shipment, contain more than two anchors with wedges offset in excess of ¼", the plant will fail the inspection.

Appendix E

Procedure for Calibrating Digital, Dial, and Vernier Caliper

Appendix E

Procedure for Calibrating Digital, Dial and Vernier Calipers

SET-UP AND PREPARATION

1. Clean the calipers. Taking a lint-free cloth, much like those for use with eyeglasses, clean off all the dirt and oil from the head of the calipers and the body.

2. Inspect the caliper measurement faces for signs of damage. Do not use damaged calipers.

3. Before taking a measurement, remove cutting chips, dust, burrs, etc. from the gage block. Make sure that the gage block is at room temperature.

4. When measuring, slowly move the slider while lightly pressing the finger hold against the main scale. The slider should not feel loose or have any play. If any problems are found they should be corrected by adjusting the pressing screw and setscrew on the slider (if fitted). Tighten the pressing screw and setscrew, then loosen them in a counter clockwise direction about 1/8 of a turn (45°). Check the sliding action again. Repeat the procedure while adjusting the angular position of the screws until an appropriate sliding smoothness is obtained.

5. Close and zero the calipers. Bring the jaws as tightly closed as you can. Once there, zero the calipers.

6. Test repeatability. Open the calipers steadily as far as they can open, and close them again. The display should read "Zero," or at most a single unit of the smallest amount (such as ".001" for those that can read that amount). If the amount is greater, the calipers may need to be recalibrated professionally.

CALIBRATION

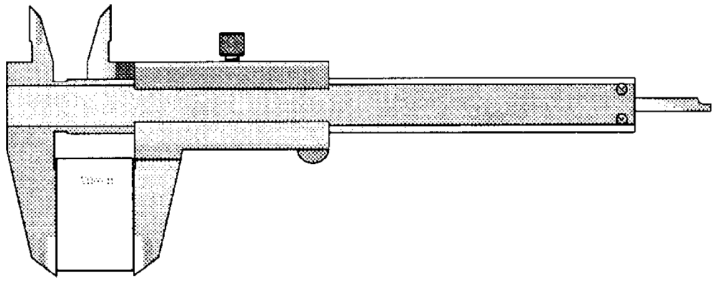
The instrumental error (deviation of reading) is the error that is inherent to a measuring instrument. In other words, it is the difference between the true value and the measured value, when making a measurement under the standard conditions specified for that instrument. The procedure to calibrate the caliper is as follows

1. Close the jaws and set the caliper zero.

2. Open the calipers to a length larger than the size of the object to be measured.

3. Insert a standard 0.050 gage block between the two faces used for external measurement (figure) and record the reading. Determine the instrumental error by subtracting the calibrated dimension of the gauge block from the reading on the caliper. Check the parallelism of the faces by inserting a gauge block at different points on the jaw.

4. Recheck the zero reading. If the zero is incorrect, this may be a sign that a piece of dirt has transferred from the work piece to the caliper faces. Clean the faces and work piece, and repeat the measurements from step



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