MANUAL FOR CERTIFICATION OF PLANTS PRODUCING UNBONDED SINGLE STRAND TENDONS

POST-TENSIONING INSTITUTE

CERTIFIED PLANT

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1.0 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 M10.2-00: Specification for Unbonded Single Strand Tendons, PTI M10.6-15: Specification for Unbonded Single Strand Tendons Used for Slab-on-Ground Applications, or more stringent local specifications. 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 4.0, and the policies and procedures set forth in the PTI-CRT20 G2-1014 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 the PTI M10.2-00: Specification for Unbonded Single Strand Tendons). 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.

Interpretation of all program requirements shall be based on the terminology definitions as defined in the Post-Tensioning Terminology (PTT) document available on the PTI website at: http://www.post-tensioning.org/Uploads/Publications/Technical/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 3.5, inclusive.

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 so the data normally reviewed during inspection can easily be retrieved. A formal file guide outlining the location of documents to be reviewed during inspections shall be maintained. 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.

A system of record keeping shall be maintained at the Certified Plant that will permit traceability of material used on specific projects. These records shall be kept for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

A permanent record of anchorage system test reports and water tightness test reports for all components used by the Certified Plant shall be available 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. Any item that fails to meet specifications when received or a non-conformance is discovered during the fabrication process shall be tracked. The tracking information shall include, as a minimum: item description, manufacturer, discovery date, description of non-conformance, resolution, and date of resolution. All non-conforming items shall be tagged or marked and segregated. 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 tables below. A total of 100 points is possible for each criterion. The tables list the grading deduction that will be given if the minimum standard is not met. For example in Section 2.1.1 below, if the Strand Receiving Log is not kept current, 5 points will be deducted, resulting in a grade score of 95 for Receiving, Storage and Inspection of Strand (assuming everything else meets the program standards.) The check marks indicate the applicability of the question to the various anchorage and certification types.

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 grading deduction will be increased 50% from the value listed in the following tables. (For the example in the above paragraph of not keeping the Strand Receiving Log current, the grading deduction would be increased from 5 points to 7.5 points resulting in a grade score of 92.5.)

2. PRODUCTS

2.1 PRESTRESSING STEEL

2.1.1 Receiving, and Inspection of Strand

(a) Strand receiving log shall include, as a minimum: Date received, Manufacturer, Product (size, grade and type), Coil Number, and Overall Coil Condition. Strand that is delivered without mill certification or current low-relaxation test results shall be segregated until the documents are received.

(b) Material certifications and current low-relaxation test results for strand shall be received prior to use.

(c) Strand in storage shall be readily identifiable with manufacturer's tag or equivalent by size, grade, type, and manufacturer.

(d) Strand deemed unacceptable shall be clearly labeled and segregated until final disposition is determined.

Minimum Requirement: *If strand is used (extruded) without receiving mill certificates or low relaxation test results, the plant will fail the inspection.*

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
(a) Strand Receiving Log						
• Kept current? Y/N	-5	✓	✓	✓		✓
• All dates entered? Y/N	-5	✓	✓	✓		✓
• All manufactures properly identified? Y/N	-5	✓	✓	✓		✓
• Size, Grade, Type entered for all coils? Y/N	-5	✓	✓	✓		✓
• Overall Coil Condition of strand entered for all coils? Y/N	-5	✓	✓	✓		✓
• Mill Certificates available for all coils (unless strand is segregated until the documents are received)? Y/N	-10	✓	✓	✓		✓
• Current Low Relaxation test results available for all manufacturers? Y/N	10	✓	✓	✓		✓
(b) Material Certifications						
• Mill Certificates received prior to extrusion or use in production? Y/N	- Fail	✓	✓	✓	✓	✓
• Low relaxation tests on file before extrusion or use in production? Y/N	Fail	✓	✓	✓	✓	✓

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
(c) Identification						
• Stored strand identified by manufacturers tag or equivalent? Y/N	-20	✓	✓	✓		✓
• Tags indicate size, grade, type, and manufacturer? Y/N	-20	✓	✓	✓		✓
(d) Quarantined Strand						
• Unacceptable materials tagged? Y/N	-20	✓	✓	✓		✓
• Unacceptable materials segregated from other materials? Y/N	-15	✓	✓	✓		✓

2.1.2 Acceptance Criteria

Prior to extrusion, strand in storage shall have condition verified (Grading per Section 2.1.2) and entered into extrusion log. Physically damaged strand shall be rejected 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. Strand Surface Graded D, E, or F does not meet the requirements of ASTM A416 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, 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

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

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
• Does the extruder log contain records of Surface Grade? Y/N	-25	✓	✓	✓		✓
•						
• Damaged strand rejected upon arrival or have damaged sections removed prior to processing? Y/N	-15	✓	✓	✓		✓
• Do the Surface Grade records closely match the condition of the strand in use? Y/N	-5	✓	✓	✓		✓
• Use of grade A, B, or C only? Y/N	Fail	✓	✓	✓		✓

2.1.3 Records and Minimum Quality Steps

Records shall be available for strand in accordance with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 1.5.1. Records for coated and sheathed strand shall be maintained during the entire fabrication process to permit identification of strand manufacturer and coil (pack) number.

Receiving logs and extrusion logs shall be maintained for a minimum of three years. Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

The following minimum quality steps shall be maintained by the Certified Plant for Prestressing Steel:

(a) Maintain strand receiving log.

(b) Material certifications for strand shall be received and the coil identity recorded in the extrusion log prior to usage and, if material certifications are not yet received, materials shall be segregated until proper documentation is received.

(c) Maintain readily identifiable manufacturer's tag or equivalent on each coil of strand.

(d) Maintain extrusion log.

(e) Maintain traceability of strand coils.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
Certified mill test reports						
• Heat number and identification number? Y/N	-10	✓	✓	✓	✓	✓
• Ultimate tensile strength? Y/N	-10	✓	✓	✓	✓	✓
• Yield strength at 1 % extension under load? Y/N	-10	✓	✓	✓	✓	✓
• Elongation at failure? Y/N	-10	✓	✓	✓	✓	✓
• Modulus of elasticity? Y/N	-10	✓	✓	✓	✓	✓
• Diameter and net area of strand? Y/N	-10	✓	✓	✓	✓	✓
• Type of material (normal relaxation or low relaxation)? Y/N	-10	✓	✓	✓	✓	✓
Receiving logs and extrusion logs						
• Are strand receiving logs maintained for a minimum of three years? Y/N	-20	✓	✓	✓		✓
• Are strand extrusion logs maintained for a minimum of three years? Y/N	-20	✓	✓	✓	✓	✓
Written Quality Control Program for Prestressing Steel						
Is there a written quality control program for prestressing steel? Y/N	-50	✓	✓	✓	✓	✓

2.2 ANCHORAGES AND COUPLERS

2.2.1 Test Reports

Anchorage system test reports containing specific descriptive component information from an independent testing laboratory shall be made available to the Inspection Agency. The anchorage system tests required by the PTI M10.2-00: Specification for Unbonded Single Strand Tendons are static and fatigue tests. Anchorage system test reports shall demonstrate that assembled tendons with production anchors and corresponding wedges comply with the PTI M10.2-00: Specification for Unbonded Single Strand Tendons. Identifiable numbered, dated and revised drawings and specifications for components used in the tests shall be included in the test reports. Similar data shall be provided for couplers. Component parts from different manufacturers should never be mixed without similar test data. Attachment of loose, non-referenced documents will not be acceptable. Anchorages and couplers without proper documentation shall be clearly labeled "NOT TO BE USED IN PRODUCTION" (or equivalent language) and segregated until final disposition is determined.

Static and Fatigue tests of anchorages and couplers shall be current and meet the requirements of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons. Additionally, the following conditions necessitate new Static and Fatigue tests of anchorages and couplers:

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

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

Minimum Requirement: *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	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are Static and Fatigue test reports available for the type/brand of anchor and wedges being used?	Fail	✓	✓	✓	✓	
• Are tests performed by an independent testing laboratory?	-10	✓	✓	✓	✓	
• Do the tests meet the PTI requirements?	-10	✓	✓	✓	✓	
• Are the anchors and couplers designed to develop at least 95% of the actual breaking strength of prestressing steel?	-10	✓	✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Does the testing reflect that 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?	-10	✓	✓	✓	✓	
• Are Static and Fatigue test reports that are available the most current for the anchor and wedge combination(s) used by this plant?	-10	✓	✓	✓	✓	
• Are Static and Fatigue test reports available and current for the coupler and wedge combination(s) used by this plant?	-10	✓	✓	✓	✓	
• Are anchorages and couplers without proper documentation clearly labeled and segregated until final disposition is determined?	-10	✓	✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Do Static and Fatigue Tests contain the following information:						
• Does the report provide determination of the yield stress, ultimate tensile strength, and percent elongation of the complete tendon?	-10	✓	✓	✓	✓	
• Does the report confirm that the tendon assembly will withstand 500,000 cycles between 60% and 66% of the minimum ultimate tensile strength?	-10	✓	✓	✓	✓	
• Does the report confirm that the tendon assembly will withstand 50 cycles between 40% and 80% of the minimum ultimate tensile strength?	-10	✓	✓	✓	✓	
• 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)?	-50	✓	✓	✓	✓	

2.2.2 Encapsulated Systems

All encapsulated systems shall meet the requirements of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.2.6. 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 water tightness requirements prior to shipping.

For encapsulated tendons, water tightness test reports from an independent testing laboratory shall be made available to the Inspection Agency to demonstrate compliance with the water tightness requirement of PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.2.6. Identifiable numbered, dated and revised drawings and specifications for encapsulation components used in the test shall be included in, or shall be referenced by, the test reports. Water tightness test reports shall be current and meet the requirements of PTI M10.2-00: Specification for Unbonded Single Strand Tendons. Retesting for water tightness of encapsulation systems is required whenever a component of an encapsulation system changes or the testing criteria changes.

Minimum Requirement: *If one or more listed requirements of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.2.6 are lacking from the encapsulated system the plant will fail the inspection.*

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Does the encapsulated system used meet the following PTI Specification requirements?						
Sleeves/Seals meet or exceed the same requirements as the sheathing for durability during fabrication, handling, storage, and installation? Y/N	Fail		✓	✓	✓	
Sleeves/Seals have 50 mil [1.25 mm] minimum thickness? Y/N	Fail		✓	✓	✓	
Sleeves/Seals have a positive mechanical connection to the anchorage at all stressing-ends, intermediates, and fixed-ends? Y/N	Fail		✓	✓	✓	
Sleeves/Seals provide a minimum 4 in. [100 mm] overlap between the end of the extruded sheathing covering the prestressing steel and the end of the sleeve and seal? Y/N	Fail		✓	✓	✓	
Sleeves/Seals are translucent or have other method of verifying the absence of voids in the PT Coating material? Y/N	Fail		✓	✓	✓	
Sleeves/Seals are translucent or have other method of verifying overlap with sheathing? Y/N	Fail		✓	✓	✓	
If encapsulation components from different manufacturers are mixed, is testing as a system available? Y/N [Moved from 2.3.3]	Fail		✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
Water Tightness Testing						
• Are water tightness test reports and drawings dated and current? Y/N	-20		✓	✓	✓	
• Are test reports from an independent testing laboratory available? Y/N	-20		✓	✓	✓	
• Does the testing meet the PTI requirements? Y/N	-30		✓	✓	✓	
• Do the inventory components match those in the test reports? Y/N	-30		✓	✓	✓	

2.2.3 Records and Minimum Quality Steps

Records shall be available for anchors, wedges and couplers, including each manufacturer's Certificate of Compliance with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, 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 item log, quarantined, and clearly marked " NOT TO BE USED IN PRODUCTION" until material certifications are obtained)

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

A system of record keeping shall be maintained at the Certified Plant, which will permit traceability of anchors, wedges, and couplers used on specific projects, whether attached to the tendons or shipped loose. Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Minimum Requirement: *If Certificates are not filed for anchors, wedges, or couplers used for fabrication the plant will fail the inspection. If Certificates are requested and transmitted during the same day as the inspection, the grade deduction for 2.2.3 will be reduced by 25%.*

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for Anchorages and Couplers:

(a) Material certifications for anchors, wedges, and couplers shall be received prior to usage.

(b) Static and fatigue test reports shall be available for anchors, wedges, and couplers that are being used together.

(c) Confirm the most current static and fatigue test reports from system manufacturers.

(d) Maintain records for traceability of components.

(e) Record disposition/disposal of non-conforming items in the non-conforming item log.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Check for manufacturers Certificate of Compliance:						
• Anchor? Y/N	-20	✓	✓	✓	✓	
• Wedge? Y/N	-20	✓	✓	✓	✓	
• Coupler? Y/N	-20	✓	✓	✓	✓	
• Are drawings for anchors, wedges, and couplers showing dimensions, tolerances and material specifications available? Y/N	-15	✓	✓	✓	✓	
• Were the above certificates for anchors, wedges, or couplers available to the inspector on the same day of the inspection (as opposed to being requested and transmitted on the same day of inspection from a vendor, supplier, etc.)? Y/N	25% reduct-ion of penalty listed above	✓	✓	✓	✓	
• Are certificates available for anchors, wedges, and couplers that are used for fabrication? Y/N	Fail	✓	✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Availability of records for traceability (Minimum 3 years) for:						
• Fixed anchorages (standard)? Y/N	-15	✓		✓	✓	
• Fixed anchorages (encapsulated)? Y/N	-15		✓	✓	✓	
• Intermediate anchorages(standard)? Y/N	-15	✓		✓	✓	
• Intermediate anchorages (encapsulated)? Y/N	-15		✓	✓	✓	
• Stressing anchorages (standard)? Y/N	-15	✓		✓	✓	
• Stressing anchorages (encapsulated)? Y/N	-15		✓	✓	✓	
• Fixed-anchorage wedges? Y/N	-15	✓	✓	✓	✓	
• Stressing- anchorage wedges? Y/N	-15	✓	✓	✓	✓	
• Couplers? Y/N	-15	✓	✓	✓	✓	
Non-conforming items						
• Is the non-conforming item log maintained to track disposition/disposal of non-conforming items? Y/N	-25	✓	✓	✓	✓	
Written Quality Control Program						
• Is there a written quality control program for Anchorages and Couplers? Y/N	-50	✓	✓	✓	✓	

2.3 PT COATING

2.3.1 Acceptance Requirements

Certified Plants shall only use PT Coating materials complying with the requirements of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons, 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.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Is a Manufacturer's Certificate of Compliance available that states the PT Coating materials comply with the requirements of the PTI *M10.2-00: Specification for Unbonded Single Strand Tendons*, Sections 1.5.4 and 2.4? Y/N	-35	✓	✓	✓	✓	✓
• 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? Y/N	-25	✓	✓	✓	✓	✓

2.3.2 PT Coating Material Quantity

Certified plants shall apply a minimum quantity of PT Coating to comply with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.4.3. The inside diameter of the sheathing shall comply with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.3.2. Certified Plants shall employ multiple methods of measuring the quantity of applied PT Coating. These methods shall be verified and reconciled at a frequency of not more than every thirty days. 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.

A written procedure for logical means of determining quantity of coating material applied to strand shall be provided. The Inspection Agency shall perform a dimensional check of samples of coated strand at the production site for compliance with Section 2.4.3 of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons. Individual samples observed and tested on site must exhibit PT Coating quantities of not less than ninety-five percent (95%) of required quantities.

Coated strand exhibiting insufficient PT Coating application shall be deemed unacceptable and shall be clearly labeled and segregated until final disposition is determined.

Minimum Requirement: *If tendons are fabricated using strand coated with less than ninety-five percent (95%) of required quantities of PT coating , the plant will fail the inspection.*

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Inspect sheathed strand samples for compliance with minimum PT Coating requirements.						
• Minimum weight of PT Coating on 1/2" strands not less than 2.5 lbs/100 ft. of strand? Y/N	-20	✓	✓	✓	✓	✓
• Minimum weight of PT Coating on 0.6" strand not less than 3.0 lbs/100 ft strand? Y/N	-20	✓	✓	✓	✓	✓
• Measure sheathing inside diameter (Minimum .030" greater than strand diameter)? Y/N	-10	✓	✓	✓	✓	✓
Calculations relating to Coating Material Quantities						
• Calculate volumetric capacity of sheathing _____	Task	✓	✓	✓	✓	✓
• Compare calculated capacity of sample to reported application, Comply? Y/N	-10	✓	✓	✓	✓	✓
• Compare reported application to required minimum, Comply? Y/N	-10	✓	✓	✓	✓	✓
• Is the method used to report application of PT Coating accurate? Y/N	-15	✓	✓	✓	✓	✓
• Is the application method reconciled at a frequency of not more than thirty days? Y/N	-10	✓	✓	✓	✓	✓
• Are tendons with insufficient PT Coating rejected or segregated? Y/N	-20	✓	✓	✓	✓	✓

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are tendons fabricated with not less than 95% of required quantity of PT coating? Y/N	Fail	✓	✓	✓	✓	✓
• Are application quantities recorded on extruder log? Y/N	-10	✓	✓	✓		✓

2.3.3 Quality and Compatibility

The coating materials used by the Certified Plant shall comply with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.4 and Table 1.

Minimum Requirement: *If any PT Coating material used lacks Performance Test Results (Table 1- Performance Specification for PT Coating), the plant will fail the inspection.*

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Does all PT Coating that has been used satisfy the performance requirements of PTI Specification Table 1?	Fail	✓	✓	✓	✓	✓
• Are all testing dates within the required five-year interval?	-10	✓	✓	✓	✓	✓

2.3.4 Records and Minimum Quality Steps

A system of record keeping shall be maintained at the Certified Plant, which will permit traceability of PT Coating used on specific projects. Application of PT Coating shall be in accordance with Section 2.3 and entered into extrusion log.

Records of PT Coating material application shall be maintained to document compliance with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.4.3. Daily extrusion logs shall include source and batch number (or equivalent identification related to a specific Manufacturer's Certificate of Compliance) related to each coil coated. Records of reconciliation of applied quantities shall be maintained at least monthly even if strand is coated by outside facilities.

Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for PT Coating:

(a) Material certifications for PT Coating shall be received prior to usage.

(b) Maintain a clean pumping system for PT Coating to ensure that no contaminates are introduced into the system.

(c) Develop a logical means of determining quantity of PT Coating applied to the strand.

(d) Employ multiple methods of measuring the quantity of applied PT Coating. Continuously use these multiple methods to verify quantities and reconcile at least monthly.

(e) 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. Coated strand shall be checked for proper sheathing movement and the absence of rifling during the extrusion process between cooling and rewinding.

(f) Maintain records to confirm application of PT Coating quantities.

(g) Maintain records for traceability of PT Coating.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are the PT Coating batch numbers recorded on the extruder log? Y/N	-5	✓	✓	✓		✓
• Is the PT Coating used on a *specific project* traceable through plant records? Y/N	-15	✓	✓	✓	✓	
• Is the PT Coating source and batch number recorded on extruder log? Y/N	-10	✓	✓	✓	✓	✓
• Are application records available, even if strand is coated by outside facility? Y/N	-15	✓	✓	✓	✓	✓
• Are Performance tests satisfying the requirements of PTI Specification Table 1 on file?	-30	✓	✓	✓	✓	✓
• Are Performance tests on file for all brands of PT Coating used?	-30	✓	✓	✓	✓	✓
• Are PT Coating records maintained for a minimum of three years? Y/N	-10	✓	✓	✓	✓	✓
Minimum Quality Steps						
• Is there a written quality control program for PT Coating? Y/N	-50	✓	✓	✓	✓	✓

2.4 SHEATHING

2.4.1 Dimensional Requirements

Application of sheathing shall be in accordance with Section 2.4 and entered into extrusion log. Sheathing thickness and inside diameter is to comply with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.3.2, PTI M10.6-15: Specification for Unbonded Single Strand Tendons Used for Slab-on-Ground Applications, or more stringent local specifications. 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. Sheathing shall be free from pinholes or other defects that may adversely affect the performance of the sheathing.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Does the strand move easily through a three-foot sheathing sample without having to spiral through the sheathing? Y/N	-10	✓	✓	✓	✓	✓
• Is the sheathing thickness identified for fabrication of SOG Projects a minimum 40 mil and for all other tendons a minimum 50 mil, or a higher specification limit per local code? Y/N	-20	✓	✓	✓	✓	✓
• Is the sheathing surface free of visible rifling? Y/N	-25	✓	✓	✓	✓	✓
• Is the sheathing free of visible pinholes or other defects? Y/N	-10	✓	✓	✓	✓	✓
• Is the sheathing thickness listed on the extrusion log? Y/N	-10	✓	✓	✓	✓	✓

2.4.2 Sheathing Material Thickness Quality

Sheathing thickness shall be measured and documented 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, sheathing thickness shall be measured and documented 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.

Calipers used to measure sheathing material thickness shall be calibrated 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).

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

(a) Date of calibration.

(b) Caliper identification

(c) Source of calibration (e.g. outside testing agency or standard gauge block) and its calibration reference standard

(d) Name of person/company doing the calibration

Calibration records shall be maintained for a minimum of three years.

Sheathing thickness measurements of two samples are to be taken as follows:

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

(b) Sufficient pressure shall be applied to the caliper to insure a true reading.

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

(d) Measurements shall be taken at four equidistant locations around the sheathing.

(e) Measurements shall be taken by holding the caliper perpendicular to the sheathing sample.

(f) Calculate the average thickness for each sample and compare with the specified sheathing thickness. Local reductions in sheathing thickness of up to 10% are acceptable provided an average of 4 equidistant readings along the circumference equals or exceeds the required thickness.

If the average thickness of each initial sample for each type of strand extrusion sampled falls below standard, check two additional samples (with 4 equidistant thickness measurements per item d above) at random locations (a minimum of 100 ft away from the initial sample location).

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

Minimum Requirement: *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.*

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• For extrusion and fabrication plants, are sheathing thickness measurements being recorded per requirements of Section 2.4.2? Y/N	-10	✓	✓	✓	✓	✓
• Does documentation of sheathing thickness measurements list at least the strand manufacturer, coil number, heat number, and four measurements? Y/N	-10	✓	✓	✓	✓	✓
• Obtain two sheathing samples, from each type of strand being produced during the inspection, locate and mark samples at the thinnest point, record thickness measurement at this location, measure and record at four equidistant locations for each sample. Calculate the average of the four sample dimensions.	Task	✓	✓	✓	✓	✓

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
• Does the minimum thickness meet or exceed the thickness listed on the coil tag including tolerances? Y/N • Is any individual thickness measurement below specified? Y/N a) If all individual thickness measurements on the two initial samples meet minimum thickness requirements, there is no deduction; b) If either of the average thickness measurements on the two initial samples falls below specified thickness, deduct is 10; c) 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, deduct is 20; and,	a) 0; b) -10; c) -20;	✓	✓	✓	✓	✓
d) If either additional random sample fails the average thickness requirement, the plant fails the inspection e) 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 plant fails the inspection.	d) Fail; e) Fail	✓	✓	✓	✓	✓
• Does one or more calipers used for sheathing thickness measurement have an instrumental error of more than 0.0020 in.? Y/N	-10	✓	✓	✓	✓	✓

2.4.3 Records and Minimum Quality Steps

A system of record keeping shall be maintained at the Certified Plant, which will permit traceability of sheathing material used on specific projects. Records shall include source, lot material number and resin suppliers' certification of sheathing complying with PTI *M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.3*. Documentation shall also include: strand manufacturer, coil number, heat number, date of extrusion , UV stabilizer letdown rate (if used), and UV stabilizer manufacturer's suggested application rate (if used). Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for Sheathing:

(a) Maintain records of sheathing thickness checks.

(b) Material certifications for sheathing material shall be received prior to usage.

(c) Material certifications for UV stabilizer material shall be received prior to usage (if used).

(d) Maintain records for traceability of sheathing material.

(e) Uniquely identify sheathing thickness measurement equipment

(f) Maintain records for calibration of sheathing thickness measurement equipment.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Are the sheathing lot numbers recorded on the extruder log? Y/N	-5	✓	✓	✓		✓
• Is the sheathing used on a *specific project* traceable through plant records? Y/N	-20	✓	✓	✓	✓	
• Do the records list all of the following: date of extrusion, source, lot number resin supplier's certification and UV stabilizer letdown rate and manufacturer's suggested application rate (if used)? Y/N	-15	✓	✓	✓	✓	✓
• Is a supplier's certificate for each lot on file? Y/N	-15	✓	✓	✓	✓	✓
• Are sheathing records maintained for a minimum of three years? Y/N	-10	✓	✓	✓	✓	✓
• Are all calipers individually marked with a serial number or other unique identification? Y/N	-5	✓	✓	✓	✓	✓

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Do the caliper calibration records show the following data:						
• Date of calibration? Y/N	-5	✓	✓	✓	✓	✓
• Caliper identification? Y/N	-5	✓	✓	✓	✓	✓
• Source of calibration: e.g. outside testing agency or standard gauge block and its calibration reference standard? Y/N	-5	✓	✓	✓	✓	✓
• Are records of calibration maintained for a minimum of three years? Y/N	-5	✓	✓	✓	✓	✓
Minimum Quality Steps						
• Is there a written quality control program for Sheathing? Y/N	-50	✓	✓	✓	✓	✓

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 the PTI M10.2-00: Specification for Unbonded Single Strand Tendons. Maintain traceability of sheathed and coated strand coils by number with readily identifiable manufacturer's tag or equivalent by size, grade, type, sheathing thickness, and manufacturer, date of extrusion, use of UV stabilizers (if applicable) and the sunlight exposure duration of coated and sheathed strand.

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 PTI M10.2-00: Specification for Unbonded Single Strand Tendons, their method of identifying sheathed and coated strand coils for traceability, date of extrusion, use of UV stabilizers (if applicable) and the sunlight exposure duration of coated and sheathed strand.

Certified Plants shall maintain traceability records of the strand, PT Coating, and plastic (resin) according to Sections 2.1, 2.3, and 2.4.

Maintain traceability of coated and sheathed strand coils by number with readily identifiable manufacturer's tag or equivalent by size, grade, type, and manufacturer.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Are the coated and sheathed coils clearly identified for traceability through the fabrication process? Y/N	-15	✓	✓	✓	✓	✓
Are coated and sheathed coils marked with tags listing the following?						
• Manufacturer? Y/N	-10	✓	✓	✓	✓	✓
• Grade? Y/N	-5	✓	✓	✓	✓	✓
• Type? Y/N	-5	✓	✓	✓	✓	✓
• Sheathing thickness? Y/N	-10	✓	✓	✓	✓	✓
Are traceability records available for in-house or outside coated and sheathed strand listing?						
• Strand? Y/N	-10	✓	✓	✓	✓	✓
• PT Coating? Y/N	-10	✓	✓	✓	✓	✓
• Plastic (Resin)? Y/N	-10	✓	✓	✓	✓	✓
• Certificate of Compliance? Y/N	-10	✓	✓	✓	✓	✓
• Date of extrusion, use of UV stabilizers (if applicable) and the sunlight exposure duration of coated and sheathed strand? Y/N	-10	✓	✓	✓	✓	✓

3.1.2 Fabricating Tendons

Coated and sheathed strand shall be fabricated 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. Fixed and intermediate anchorages shall be positioned in a manner to prevent sheathing damage in bundles of fabricated tendons. If damage is found, it shall be repaired per the PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 3.2.5.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are the extrusion and handling processes free of conditions causing damage to the sheathing? Y/N	-15	✓	✓	✓	✓	✓
• Are coated and sheathed tendons fabricated without damage from the fabrication process? Y/N	-10	✓	✓	✓	✓	
• If damage is found, are tendons repaired prior to shipping? Y/N	-10	✓	✓	✓	✓	
• Are the coated and sheathed strand packs packaged to prevent damage during movement? Y/N	-5	✓	✓	✓	✓	✓
Questions	**Grading**	**Anchorage Type**		**Certification Type**		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are the tendon bundles packaged to prevent damage during loading? Y/N	-5	✓	✓	✓	✓	
• Is padding material used between steel banding and sheathed strand? Y/N	-5	✓	✓	✓	✓	✓
• Is the tension of the banding material properly controlled to prevent damage to the sheathing? Y/N	-5	✓	✓	✓	✓	✓
• Are the fixed anchorages positioned to prevent sheathing damage? Y/N	-5	✓	✓	✓	✓	
• Are the intermediate anchorages positioned to prevent sheathing damage? Y/N	-5	✓	✓	✓	✓	

3.1.3 Sheathing for Encapsulated Tendons

Breaches in sheathing used for encapsulated tendon systems are unacceptable. Breaches discovered during fabrication and prior to shipment shall be repaired by the Certified Plant in accordance with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 3.2.5.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Is the sheathing on encapsulated tendons free of visible breaches? Y/N	-20		✓	✓	✓	
• Are breaches repaired prior to shipping? Y/N	-20		✓	✓	✓	

3.1.4 Fixed Anchorage

Fixed anchorage shall be attached to the tendons in accordance with PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Sections 3.2.4.1 and 3.2.4.2. Wedges shall be seated evenly at the required force.

Gauges and jacks used in the fixed anchorage application process shall be calibrated at intervals not exceeding six months. The required pressure for intended use shall be printed on the face of the gauge or digital readout. 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.

Jacks shall be identified with a unique identification number.

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

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Application of Fixed Anchorages						
• Are fixed- anchorages attached in accordance with PTI *M10.2-00: Specification for Unbonded Single Strand Tendons*? Y/N	-15	✓	✓	✓	✓	
• Are wedges seated evenly? Y/N a) Each anchor with offset greater than ¼" will result in a 50 point deduction per occurrence.	0; -50; -100; Fail	✓	✓	✓	✓	
Fixed Anchorage Application Equipment						
• Are all gauge faces a minimum 3-1/2" inches diameter? Y/N	-15	✓	✓	✓	✓	
• Are digital readouts close enough and large enough to be visible by the operator? Y/N	-10	✓	✓	✓	✓	
• Is the required stressing pressure marked on all gauge faces? Y/N	-15	✓	✓	✓	✓	
• Are all gauges and jacks marked with an identification number? Y/N	-10	✓	✓	✓	✓	
• Do records indicate that all fixed anchorage seating equipment has been calibrated within the past six months? Y/N	-20	✓	✓	✓	✓	

3.1.5 Records and Minimum Quality Steps

If a plant uses coils of various specified sheathing thicknesses, all coils shall be clearly marked with the sheathing thickness until the coil is completely used.

A system of record keeping shall be maintained at the Certified Plant, which will permit traceability of strand, sheathing material, PT Coating, anchors, wedges, and couplers used on specific projects. Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for the Fabricating Process:

(a) Employ methods that will not damage sheathing while fabricating and handling material.

(b) Employ methods that will not damage sheathing when coiling or bundling tendons. (refer to Section 3.2 for details)

(c) Employ methods that will not damage sheathing when positioning fixed and intermediate anchorages.

(d) Employ application processes for fixed anchorages that ensure proper seating of the wedges.

(e) Maintain current calibration of equipment used to apply fixed anchorages.

(f) Maintain records for traceability of strand, PT Coating, sheathing material, anchors, wedges, and couplers used on specific projects.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are coils clearly marked with sheathing minimum thickness? Y/N	-10	✓	✓	✓	✓	
• Are sheathing thickness markings permanent and visible until the coil is completely used? Y/N	-5	✓	✓	✓	✓	
Are the following materials used on specific projects traceable?						
• Strand? Y/N	-15	✓	✓	✓	✓	
• PT Coating material? Y/N	-10	✓	✓	✓	✓	
• Sheathing material? Y/N	-10	✓	✓	✓	✓	
• Fixed-anchors? Y/N	-10	✓	✓	✓	✓	
• Stressing-end anchors? Y/N	-10	✓	✓	✓	✓	
• Intermediate anchors? Y/N	-10	✓	✓	✓	✓	
• Fixed-end wedges? Y/N	-10	✓	✓	✓	✓	
• Stressing-end wedges? Y/N	-10	✓	✓	✓	✓	
• Couplers? Y/N	-10	✓	✓	✓	✓	
• Are records maintained for a minimum of three years? Y/N	-10	✓	✓	✓	✓	
Minimum Quality Steps						
• Is there a written quality control program for Fabrication Process? Y/N	-50	✓	✓	✓	✓	✓

3.2 STORAGE AND SHIPPING

3.2.1 Storage

Appropriate measures shall be taken 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). PT materials shall be stored (until received at the jobsite) as follows:

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

b) PT materials that are exposed to any salt-spray or saltwater or de-icing chemicals shall be protected from this exposure (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 shall be stored in an environment that maintains the received condition. In addition to items a, b and c above, protective measures include:

- Appropriate measures shall be taken to protect bare strand from weather conditions at all times (e.g. exposure to rain or snow and extreme temperatures)

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

- Appropriate measures shall be taken to protect coated and sheathed strand from weather conditions at all times (e.g. exposure to rain or snow and extreme temperatures)
- Coated and sheathed strand and fabricated tendons that are exposed to sunlight (ultraviolet degradation) longer than one month maximum shall be protected 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 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 shall be protected by the following in addition to items a, b and c above:

- Stored fabricated tendons that are exposed to any precipitation (snow, rain, etc.) for a period of time longer than 7 calendar days (staging) shall be protected from this exposure (tenting or tarping with adequate ventilation, or shrink-wrapping with moisture control is appropriate).
- Fabricated tendons that are exposed to sunlight (ultraviolet degradation) longer than one month maximum shall be protected 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 sheathing material per

manufacturer's recommendation to achieve a minimum of 90 days protection.

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

- Appropriate measures shall be taken to protect anchorage components and loose hardware from weather conditions at all times(e.g. exposure to rain or snow and extreme temperatures)
- Encapsulated anchorage components that are exposed to sunlight (ultraviolet degradation) longer than one month maximum shall be protected 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.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
Is the bare strand protected from (or not subject to) exposure to corrosive chemicals or weather conditions?						
• Standing water or mud? Y/N	-10	✓	✓	✓		✓
• Corrosive chemicals, salts, de-icers? Y/N	-10	✓	✓	✓		✓
• Deleterious or corrosive elements? Y/N	-10	✓	✓	✓		✓
• Rain or snow? Y/N	-10	✓	✓	✓		✓
Is the coated and sheathed strand protected from (or not subject to) exposure to corrosive chemicals or weather conditions?						
• Standing water or mud? Y/N	-10	✓	✓	✓	✓	✓
• Corrosive chemicals, salts, de-icers? Y/N	-10	✓	✓	✓	✓	✓
• Deleterious or corrosive elements? Y/N	-10	✓	✓	✓	✓	✓
• Sunlight exposure for longer than 1 month (if UV stabilizers not used)? Y/N	*-10*	✓	✓	✓	✓	✓
• Has a detailed exposure log been maintained or documentation produced showing UV protector added achieving a minimum 90 days protection? Y/N	*-10*	✓	✓	✓	✓	✓
• Rain or snow? Y/N	-10	✓	✓	✓	✓	✓

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Are fabricated tendons protected from (or not subject to) exposure to corrosive chemicals or weather conditions?						
• Standing water or mud? Y/N	-10	✓	✓	✓	✓	
• Corrosive chemicals, salts, de-icers? Y/N	-10	✓	✓	✓	✓	
• Deleterious or corrosive elements? Y/N	-10	✓	✓	✓	✓	
• Sunlight exposure for longer than 1 month (if UV stabilizers not used)? Y/N	-10	✓	✓	✓	✓	
• Has a detailed exposure log been maintained or documentation produced showing UV protector added achieving a minimum 90 days protection? Y/N	-10	✓	✓	✓	✓	
• Rain or snow if stored more than 7 calendar days? Y/N	-10	✓	✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
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? Y/N	-10	✓	✓	✓	✓	
• Corrosive chemicals, salts, de-icers? Y/N	-10	✓	✓	✓	✓	
• Deleterious or corrosive elements? Y/N	-10	✓	✓	✓	✓	
• Rain or snow? Y/N	-10	✓	✓	✓	✓	
• Sunlight exposure for longer than 1 month (if UV stabilizers not used)? Y/N	-10		✓	✓	✓	
• Has a detailed exposure log been maintained or documentation produced showing UV protector added achieving a minimum 90 days protection? Y/N	-10		✓	✓	✓	

3.2.2 Handling

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

Handling of material bundles, including loading and unloading, shall be done using loading bar, protected forks, or nylon slings. Unprotected forks, steel cables (choker) or chains shall not be used.

Prior to transport, the tendons or tendon bundles shall be secured to avoid shifting or other movements in transit, which may damage the sheathing. Loose component shipping containers shall be suitable so that no damage or corrosion occurs during shipping and handling.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are the tendons handled to prevent sheathing damage? Y/N	-5	✓	✓	✓	✓	
• Are the tendon bundles properly secured to prevent sheathing damage during transport? Y/N	-5	✓	✓	✓	✓	
• Are PT materials shipped loose properly packaged to prevent damage or corrosion during shipping and handling? Y/N	-5	✓	✓	✓	✓	

3.2.3 Labeling

Tendons or tendon bundles shall be clearly labeled in a weatherproof and durable manner to permit easy identification of their intended location in the structure, 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	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are tendons and tendon bundles clearly labeled to permit easy identification of their intended location? Y/N	-15	✓	✓	✓	✓	
• Are labels weatherproof and durable? Y/N	-5	✓	✓	✓	✓	✓
• Does each shipment of fabricated materials have at least one PTI Certified Plant tag? Y/N	-10	✓	✓	✓	✓	
• If, “No” are the fabricated materials intended for SOG? Y/N ("Yes" results in 10 point addition returning points deducted above.)	10	✓	✓	✓	✓	

3.2.4 Records and Minimum Quality Steps

A system of record keeping shall be maintained at the Certified Plant, which will permit traceability of shipped material used on specific projects, whether attached to the tendons or shipped loose. Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for Storage and Shipping:

(a) Employ methods to store material (in-process and finished) so that it will not be damaged by the elements or other means.

(b) Employ methods to move and handle material (in-process and finished) that will not damage it.

(c) Employ methods to prevent damage to finished material during shipping.

(d) Clearly label all shipments.

(e) Maintain records for traceability of shipped material used on specific projects.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Are the following materials used on specific projects traceable?						
• Strand? Y/N	-15	✓	✓	✓	✓	
• PT Coating material? Y/N	-10	✓	✓	✓	✓	
• Sheathing material? Y/N	-10	✓	✓	✓	✓	
• Fixed anchorages? Y/N	-10	✓	✓	✓	✓	
• Stressing-end anchorages? Y/N	-10	✓	✓	✓	✓	
• Intermediate anchorages? Y/N	-10	✓	✓	✓	✓	
• Fixed-end wedges? Y/N	-10	✓	✓	✓	✓	
• Stressing-end wedges? Y/N	-10	✓	✓	✓	✓	
• Couplers? Y/N	-10	✓	✓	✓	✓	
• Are records maintained for a minimum of three years? Y/N	-10	✓	✓	✓	✓	
Minimum Quality Steps						
• Is there a written quality control program for Storage, Shipping, Packaging, and Labeling? Y/N	-50	✓	✓	✓	✓	✓

3.3 FIELD STRESSING EQUIPMENT

3.3.1 Gauges and Jacks

Gauges shall be individually identified with a unique identification number. Gauges used in post-tensioning field stressing operations shall have a dial face of not less than 3½ inches in diameter. The maximum stressing pressure for intended use shall be clearly identified on the face of the gauge or digital readout.

Jacks shall be individually identified with a unique identification number.

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. Such calibration shall be 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	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Are all gauges individually marked with a unique identification number? Y/N	-10	✓	✓	✓	✓	
• Do all gauges have a dial face of at least 3-1/2 inches diameter? Y/N	-10	✓	✓	✓	✓	
• Is the maximum stressing pressure clearly identified on the face of the gauge or digital readout? Y/N	-10	✓	✓	✓	✓	
• Are all jacks marked with a unique identification number? Y/N	-10	✓	✓	✓	✓	
• If a master gauge is used, is it traceable to a known standard? Y/N	-10	✓	✓	✓	✓	
• If a master gauge is used, is the calibration shown over the full pressure range of the gauge being calibrated? Y/N	-10	✓	✓	✓	✓	

3.3.2 Facilities

Areas used for the storage, maintenance and calibration of stressing equipment shall be maintained in an organized functional manner. Calibrating or calibrated equipment shall be maintained and stored in designated areas.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
• Is the area used for maintenance and calibration of stressing equipment maintained in an organized and functional manner? Y/N	-15	✓	✓	✓	✓	
• Is the calibrating and/or calibrated equipment stored and identified in a manner that maintains their functionality and accuracy? Y/N	-10	✓	✓	✓	✓	

3.3.3 Records and Minimum Quality Steps

Certified Plants shall maintain records demonstrating that jacks and gauges are calibrated against a testing machine or a load cell that is traceable to known standards. The calibration of testing machines and load cells used for jack and gauge calibration must be confirmed at intervals not exceeding 12 months. The agency or laboratory supplying calibration confirmation of testing machine or load cell shall indicate the date of calibration of its own testing equipment. Testing agency or laboratory's equipment must be calibrated at intervals not exceeding 24 months. Serial numbers of calibrating and calibrated equipment shall be noted on all calibration documents.

Jacks and gauges, as a unit and master gauges, (including fixed-end applicators) shall be calibrated at intervals not exceeding six months (some project specific specifications may require calibration at more frequent intervals). Jacks and gauges that have been damaged, repaired, or overhauled shall be calibrated, as a unit, (including fixed-end applicators) prior to use.

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

(a) Date of calibration.

(b) Jack and Gauge Identification Numbers.

(c) Method of calibration: e.g. proving ring, load cell, testing machine, etc., 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. Records shall be maintained for a minimum of three years unless a longer period is stated in project specific specifications or applicable laws.

A log shall be maintained 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 (if gauge is used), maximum stressing pressure for intended use, and calibration date. Duplicate copies of calibration records shall be kept in the plant for any equipment in the field.

Minimum Quality Steps:

The following minimum quality steps shall be maintained by the Certified Plant for Stressing Equipment:

(a) Have written procedures for calibrating jacks and gauges (including fixed-end applicators).

(b) Uniquely identify jacks and gauges.

(c) Clearly mark gauge face with the stressing pressure for the intended use.

(d) Maintain a functional and organized area for storage, maintenance, and calibration of stressing equipment.

(e) Maintain current calibration records of all equipment being used.

(f) Maintain current calibration records for all testing machines, load cells, jacks, and gauges.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
• Was the testing machine or load cell calibrated within the last 12 months? Y/N	-25	✓	✓	✓	✓	
• Does the agency or laboratory certifying the calibration of the testing machine or load cell indicate the calibration date of its own equipment? Y/N	-25	✓	✓	✓	✓	
• Was the laboratory or agency testing machine calibrated within 24 months of the calibration date for load cell? Y/N	-15	✓	✓	✓	✓	
• Are calibration records for the jacks and gauges (as a unit) updated within 6 months? Y/N	-15	✓	✓	✓	✓	
• Is repaired equipment recalibrated prior to putting back in use? Y/N	-10	✓	✓	✓	✓	
• Are calibration records available in the plant for all jacks and gauges? Y/N	-15	✓	✓	✓	✓	

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	Type I Extrusion & Fabrication Plant	Type II Fabrication Plant	Type III Extrusion Plant
Do the calibration records show the following data:						
• Date of calibration? Y/N	-10	✓	✓	✓	✓	
• Jack and gauge identification numbers? Y/N	-10	✓	✓	✓	✓	
• Method of calibration: e.g. proving ring, load cell, testing machine, etc., and its calibration reference? Y/N	-10	✓	✓	✓	✓	
• 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? Y/N	-10	✓	✓	✓	✓	
• Are records of calibration maintained for a minimum of three years? Y/N	-10	✓	✓	✓	✓	
Minimum Quality Steps						
• Is there a written quality control program for stressing equipment? Y/N	-10	✓	✓	✓	✓	

3.4 COMPLAINTS TO SUPPLIER

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. Failure to provide these records when requested may result in withdrawal of the plant's certification.

Questions	Grading	Anchorage Type		Certification Type		
		Standard	Encapsulated	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
Complaints Records						
Does the plant have a file where all complaints are recorded? Y/N	-30	✓	✓	✓	✓	✓
Have all complaints made known to PTI been recorded? Y/N	-50	✓	✓	✓	✓	✓
Has the corrective action been documented? Y/N	-30	✓	✓	✓	✓	✓
Has a management representative signed off acknowledging receipt of the complaint, and attesting to the action(s) taken? Y/N	-25	✓	✓	✓	✓	✓
Corrective Action(s)						
Has the plant taken action(s) in response to each complaint? Y/N	-25	✓	✓	✓	✓	✓
Is the action appropriate? Y/N	-25	✓	✓	✓	✓	✓
Have deficiencies been corrected? Y/N	-50	✓	✓	✓	✓	✓

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, if applicable.

Upon receipt of the evaluation report, the plant must 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 in a timely manner or that does not address all of the cited nonconformities will result in a ten (10) point deduction on the plant's overall grade score on its next inspection. Further, 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 one and one-half (1½) times the grading deduction set forth in Appendix D for the nonconformity. For example, if the grading deduction listed in Appendix D is 50 points, the grading deduction would be 75 points if the deficient condition still exists on the follow-up inspection. If the grading deduction is listed as 100 points, the new deduction would be 150 points resulting in a negative score of 50 for the item.)

Questions	Grading	Anchorage Type		Certification Type		
		Standard	**Encapsulated**	**Type I** Extrusion & Fabrication Plant	**Type II** Fabrication Plant	**Type III** Extrusion Plant
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 Y/N (If No, the grading deduction is applied to the overall grade score)	-10	✓	✓	✓	✓	✓

Note: with the exception of point deductions that are due to failure to correct a non-conformity in accordance with Section 3.5, the score of any section shall not be less than zero.

4.0 PTI CERTIFICATION PROGRAM ADMINISTRATION

4.1 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.

4.1.1 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.

4.1.2 Supporting Documentation

To facilitate the plant inspection process, all test data required by Sections 2.1, 2.2, 2.3, and 2.5 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.

4.1.3 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.

4.1.4 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.

4.1.5 Financial Standing with PTI

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

4.1.6 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.

4.2 INSPECTIONS

4.2.1 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 4.2.2, the Independent Inspection Agency shall submit a semi-annual report to PTI summarizing the agency's activities over the previous six months.

4.2.2 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.

4.2.3 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.

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.

4.2.4 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.

4.2.5 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 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.

4.2.6 Grading

The Independent Inspection Agency shall give a numerical grade for each inspection criteria based on the grading guidelines and forms presented in Appendix D.

4.2.7 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 days.

4.2.8 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.

4.3 CERTIFICATION

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

Certified	The plant receives an overall grade score of eighty (80) or higher in each inspection category (2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4 or 3.5).
Conditionally Certified	The plant receives an overall grade score of seventy-five (75) or higher and no individual category (2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4 or 3.5) has a score below seventy (70).
Certification Suspended	The plant receives an overall grade score less than seventy-five (75), an individual category (2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4 or 3.5) has a score below seventy (70), or fails the inspection. This status will remain in place until the plant requests and the independent inspection agency completes a re-inspection according to Section 4.4, until the appeal process outlined in Section 4.6 is resolved, or until the plant is decertified.

Both Overall Grade Score and Individual Category Scores must be met in order for a plant to qualify for a certification below.	**Overall Grade Score**	**Individual Category Score**

Certified	80-100	80-100
Conditionally Certified	75-100	70-100
Certification Suspended	<75	<70

When a plant receives an overall grade score of seventy-five to seventy-nine (75 - 79), the plant's certification is conditional upon receiving a grade score of eighty (80) or higher in each inspection category on the subsequent unannounced inspection. If the plant does not receive a grade score of eighty (80) or higher in each inspection category on the subsequent unannounced inspection, the plant's certification will be suspended. If an appeal is not received according to Section 4.6 within the 21 days after receiving the report the plant will be decertified.

4.4 RE-INSPECTION

4.4.1 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. 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.

4.4.2 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 4.4.1.

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.

4.4.3 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 4.14.3.

4.5 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.

4.6 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.

4.6.1 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.

4.6.2 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.

4.6.3 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.

4.6.4 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.

4.7 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.

4.8 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.

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.

4.9 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.

4.10 EVIDENCE OF NON-COMPLIANCE

If PTI receives written evidence from a specifier/purchaser of post-tensioning materials that a PTI Certified Plant has not fully complied with the requirements of the program, PTI and the Independent Inspection Agency shall solely determine if there is sufficient cause to conduct an additional unannounced inspection of the plant. If so determined, the Independent Inspection Agency shall conduct an unannounced inspection. If the plant passes the inspection, the cost of the inspection will be borne by PTI; if the plant should fail the inspection, the cost will be borne by the plant, and the plant would have to request re-inspection in accordance with 4.4 in order to maintain its certification status.

This supplemental inspection will be additional to any other inspections under this program and will not alter the normal inspection cycle set forth in 4.2.3.

4.11 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 4.1 in order to regain its certification status.

4.12 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.

4.13 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.

4.14 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 4.2.2, inactive plant status, applications of appeal, decisions of any appeal board, and decertification or other discontinued participation in the program.

4.15 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.

4.16 CHANGED CONDITIONS

A plant shall notify PTI in writing of any materially changed condition as defined in 4.15.1 and 4.15.2 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 4.15.2, cost of the additional inspection will be borne by PTI and will not result in an additional fee to the plant.

4.16.1 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 4.15.

4.16.2 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 4.15.

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 4.4.3, including payment of the re-inspection fee prevailing at that time. This supplemental inspection will not alter the normal inspection cycle set forth in 4.2.

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 4.4 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.

4.16.3 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 materials or records, that are subject of the plant inspection, are stored outside of the 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 storage) is not lengthened by more than one hour, notification of multiple locations to PTI is sufficient. If the remote storage resulted in inspection delay longer than one hour, the existing provisions for inspection delay apply as outlined in 4.2.3.

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 4.14.3, 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 4.4.

4.16.4 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.

Appendix A - PTI Plant Certification Contract Documents

Appendix A.1 Application Form

Appendix A.2 PTI Plant Certification Contract

Appendix A.1

Application Form – PTI Unbonded Tendon Plant Certification Program

POST-TENSIONING INSTITUTE ®

Application Form – PTI Unbonded Tendon Plant Certification Program

Please complete a separate form for each plant that is applying for certification

1.

Company/Facility Information					
Applicant Company Name:					
Physical Address of Plant					
City		State:		Postal Code	
Mailing Address (if different)					
Name of Primary Person to Contact:					
Phone Number:					
Fax Number					
Primary Contact's E-mail Address:					
Name of Plant Contact:					
Plant Contact's Phone Number:					
Description and Trade Name (if applicable) of products produced by the Plant: (*e.g. ½ in. Unbonded Tendons for SOG*)					
Company Website (if applicable):					

2.

Certification Information (see 3.1)
(Indicate the requested certification type and category)

Certification Type:	Select **X** only one:	**Category Requested:**	Select **X** only one
Type I – Extrusion and Fabrication Plant	☐	**Category A** – Both Standard and Encapsulated Systems	☐
Type II – Fabrication Only Plant	☐	**Category B** – Only Standard Systems	☐
Type III – Extrusion Only Plant	☐	**Category C** – Only Encapsulated Systems	☐

3.

Use of Outside* Extrusion Facilities to Provide Coated and Sheathed Strand
*(*Outside is defined as any source other than the immediate plant)*

Do you use an outside extrusion facility for some or all of your coated and sheathed strand?	Yes:	No:

If yes, please list the company name and location for each outside extrusion facility used.

Company Name	**Extrusion Plant Location**

Application Form continued on the back

(continued)

4. **Supporting Documentation Submittals** (see 4.1.2)

Description of Supporting Documentation Required	Select **X** submittal method used		
	Enclosed	Under separate cover	Not applicable
GENERAL			
Descriptions of the materials, anchorages, and equipment including drawings, metallurgical data, and other pertinent data. A compact illustrative brochure should be submitted if available			
2.1 PRESTRESSING STEEL			
Material certifications for strand currently being used (per 2.1.1)			
Current low-relaxation test results for strand (per 2.1.1)			
Example of a receiving log (per 2.1.1)			
Example of an extrusion log (per 2.1.3)			
Certificate of Compliance from Outside Extrusion Facility if used (per 3.1.1)			
2.2 ANCHORAGES AND COUPLERS			
Anchorage system test reports containing specific descriptive component information from an independent testing laboratory (per 2.2.1), including:			
• Static tests of anchorages and couplers (per 22.1)			
• Fatigue tests of anchorages and couplers (per 2.2.1)			
• Water tightness test reports (per 2.2.2)			
Manufacturers' Certificate of Compliances for anchors, wedges and couplers (per 2.2.3)			
Parts Drawings for anchors, wedges, and couplers showing dimensions, tolerances, material specifications and special fabrication processes where required (per 2.2.3)			
2.3 P-T COATING			
Manufacturer's Certificate of Compliance for the corrosion inhibiting coating (per 2.3.1)			
Written procedure for determining quantity of coating material applied to strand (per 2.3.2)			
Certificate of Compliance from Outside Extrusion Facility if used (per 3.1.1)			
2.4 SHEATHING			
Example of sheathing thickness documentation records (per 2.4.2)			
Material certifications for sheathing material (per 2.4.3)			
Example of sheathing traceability record (per 2.4.3)			
Certificate of Compliance from Outside Extrusion Facility if used (per 3.1.1)			
EQUIPMENT			
A detailed list of the applicant's stressing equipment (per 4.1.2.3)			

I hereby certify that the above information is complete and accurate to the best of my knowledge. I also affirm that I have reviewed the PTI Plant Certification Contract and agree to abide by terms and conditions set forth therein.

Company: _____ Date: _____

Name: _____ Title: _____

Signature: _____

(To digitally sign the form, click on the signature block to the left and then select the "Sign as" drop-down menu and select "New ID" Then click the "Sign" button and select "A new digital ID I want to create now", then click the "Next" button Select either one of the methods to store your ID and then continue as requested.)

Submit application and application fee (contact PTI for member credit, if applicable) to Post-Tensioning Institute, 38800 Country Club Dr., Farmington Hills, MI 48331 or by e-mail to Michelle.Stern@post-tensioning.org.

Appendix A.2

Plant Certification Contract

PTI PLANT CERTIFICATION CONTRACT

This agreement is entered into by and between Post-Tensioning Institute (PTI) and

_____(participant)

with respect to plant(s) described in the Application Form(s) attached hereto as Exhibit A, and is effective January 1, 2017.

WHEREAS:

A. PTI has developed and published its Specification for Unbonded Single Strand Tendons (Specification); and
B. PTI has adopted a program for Certification of Plants Producing Unbonded Single Strand Tendons; and
C. PTI and Participant desire to review the Participant's compliance with specified provisions of the Standard through a series of voluntary inspections;

NOW THEREFORE, in consideration of the payment of fees by Participant to PTI, and in consideration of PTI's agreeing to administer the certification program, it is hereby agreed as follows:

1. This agreement applies to all of the Participant's plants.

2. Fees are charged to Participant on a per plant basis, as set by the PTI and are payable by Participant in advance.

3. Inspections, Grading, and Certification
   (a) Inspections will be conducted by an Independent Inspection Agency appointed by PTI. PTI retains sole authority in the appointment of the Independent Inspection Agency.
   (b) Inspections, grading, and certification shall be conducted as described in the ***PTI Manual for Certification of Plants Producing Unbonded Single Strand Tendons*** (Manual) which is incorporated herein by reference.
   (c) Inspections will be conducted on dates scheduled by the Independent Inspection Agency.
   (d) Participant agrees to cooperate fully with the PTI appointed Independent Inspection Agency and its employees.
   (e) Participant agrees that it shall not in any manner intimidate, threaten, harass, impede or interfere with the Independent Inspection Agency in the performance of work under this Contract.
   (f) Participant agrees to not divulge the schedule or location of inspectors to other companies.
   (g) Immediately following inspections, the inspector will be available for an exit interview with plant management.

4. Periodic Program Audits
   As part of the Quality Management System for the Unbonded Tendon Plant Certification Program, PTI will periodically engage a team of auditors to conduct a management review of the program.
   (a) Audits will be performed by a team appointed by PTI. The audit team may on occasion be accompanied by external observers (limited to ANSI representatives.)
   (b) Audits shall be conducted as described in the PTI Quality System Manual for Certification of Plants Producing Unbonded Single Strand Tendons which is incorporated herein by reference.
   (c) The audit team and observers (if applicable) may accompany PTI's Inspection Agency on a normally scheduled inspection of the Participant's plant.

(d) Participant agrees to cooperate fully with the PTI appointed audit team, and agrees to provide said audit team and observers (if applicable) with access to its facilities and records upon request.

(e) The identity of a Participant whose plant has been audited as part of a PTI Quality Management Review shall be kept confidential.

5. 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 Participant;
   d) Offer or provide management system consultancy or internal auditing to Participant.

6. Confidentiality: Except as required by legal order or otherwise required by law, neither PTI and its auditors and accompanying observers (if applicable) nor the Independent Inspection Agency nor any of its employees shall reveal any data or grading with respect to any plant inspected at Participant's request, other than Participant's authorized representatives, except with Participant's written consent. When PTI is required by law or authorized by contractual arrangements to release confidential information, the Participant shall, unless prohibited by law, be notified of the information provided.

7. Term: This contract shall become effective on the first day of the month following payment of inspection fees. Contracts are for a maximum of one year and expire on December 31 of each year. Renewal shall be in accord with Section 3.4 of the Unbonded Tendon Plant Certification Manual.

8. Application: Application for certification shall be made in such form as PTI may from time to time prescribe. An application form must be submitted for each of the Participant's plants.

9. Certification, Certificate, and Certification Mark
   Upon certification,
   (a) Participant shall receive a Certification Certificate.
   (b) PTI will grant Participant the right to use, in conformance with this agreement, the appropriate Certification Mark for use on stationary and for advertising purposes.
   (c) It is understood by Participant that in issuing a certificate and Certification Mark and authorizing its use, PTI does not approve, endorse, or guarantee any product, system, or construction, or in any way make any express or implied warranties in connection with any product, system, or construction.
   (d) The Certificate and Certification Mark remain the property of PTI and must be surrendered by Participant immediately in the event of decertification or voluntary withdrawal from the program and any use of literature, documents, advertising matter, or any other items bearing the Certification Mark must immediately cease.
   (e) Participant agrees that certification is limited to the scope of extrusion and/or fabrication procedures as defined in the Manual for Certification of Plants Producing Unbonded Single Strand Tendons. Participant further agrees to not make claims regarding certification that are not consistent with the scope of its certification.

10. 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 will notify the plant in writing that it must discontinue the use of any previously awarded certified plant plaques or certificates, and not reference prior certified plant status in company

literature, advertising materials or correspondence including the use of PTI Certified Plant Tags on shipments. In addition, PTI shall issue a new certified plant plaque and certificate reflecting the change.

11 Certification Documents: If the plant provides copies of certification documents to others, the documents shall be reproduced in their entirety unless otherwise specified in the PTI-CRT20 G1 Manual for Certification of Plants Producing Unbonded Single Strand Tendons. This includes, but is not limited to inspection reports, certification certificates, program manuals, and certification related correspondence.

12. Participant promises to abide by the terms of this agreement. Participant understands that PTI reserves the right to change the terms and conditions governing certification and use Certification Marks from time to time, and Participant shall abide by such changed provision upon receipt of notice thereof or otherwise completely withdraw from the certification program by surrendering its certificates and foregoing the right to use the Certification Mark. Violation of the Agreement, or any part thereof, including, without limitation, any misrepresentation by Participant or misuse of the Certification Mark, constitutes grounds for PTI to withdraw Participant's privilege to participate in the Certification Program. In the event Participant is notified in writing by PTI that such withdrawal has occurred, Participant shall immediately surrender its certification and cease using the Certification Mark or facsimile thereof in any way.

13. Indemnification and Waiver of Claims: Participant agrees to indemnify, hold harmless and defend PTI from any and all liability, loss, expenses, or damage, including court costs and attorney's fees, PTI may suffer as a result of any matter arising from any action undertaken by PTI pursuant to this agreement, including, without limitation, any claims, demands, costs, or judgments against it arising from the testing or certification of Participant's systems by PTI, or from Participant's use of the Certification Mark, or from the use or operation of the certified systems or any certificate issued under this application whether the liability, loss, expense, or damage is caused by, or arises out of negligence by PTI or its officers, agents, employees, or otherwise.

    Participant further agrees that it hereby waives any claim it may have against PTI arising from any action undertaken by PTI pursuant to this agreement, including, without limitation, the accidental or negligent release of data by PTI or from the negligent performance of tests by PTI.

14. Participant agrees to submit an affidavit that all statements in this application and its submitted materials are true.

15. Choice of Law: Any disputes arising under this agreement shall be governed by the law of the state of Illinois.

IN WITNESS THEREOF, the parties have executed this contract the day and year first above written.

Post-Tensioning Institute

By_____
Theodore L. Neff

Title Executive Director

Participant Company _____

By_____
Signature of Proprietor, Partner, or Authorized Officer

Title _____

Appendix B

Application for Renewal of PTI Plant Certification

POST-TENSIONING INSTITUTE ®

Renewal Form – PTI Unbonded Tendon Plant Certification Program

Please complete a separate Renewal Form for each and every plant that your company will be operating in the coming year. This should include all plants currently on inactive status. (Note: do not include plants that are new and will open in the future; for these plants, you must submit a new Application Form.)

Please complete all four sections and then sign and date the form.

1.

Company/Facility Information					
Applicant Company Name:					
Total Number of Plants to be Renewed: *(Submit a separate form for each plant)*					
Physical Address of Plant:					
City:		State:		Postal Code	
Mailing Address (if different):					
Name of Plant Contact:					
Plant Contact's Phone Number:					
Description and Trade Name (if applicable) of products produced by the Plant (*e.g. ½ in. Unbonded Tendons for SOG*):					
Company Website (if applicable):					

2.

Communication Preferences	
Primary Plant Inspection Communications (All official correspondence including plaques, and certificates will be sent to this address)	
Name of Primary Person to Contact:	
Phone Number:	
Fax Number:	
Primary Contact's E-mail Address:	
Electronic Communications (additional personnel to receive E-mail of inspection report and certificate)	
Name	**E-mail Address**

Renewal Form continued on the back

Renewal Form – PTI Unbonded Tendon Plant Certification Program

(continued)

3.

Certification Information (see 4.1) *(Indicate the requested certification type and category)*			
Certification Type:	Select ✓ only one:	**Category Requested:**	Select ✓ only one
Type I – Extrusion and Fabrication Plant		**Category A** – Both Standard and Encapsulated Systems	
Type II – Fabrication Only Plant		**Category B** – Only Standard Systems	
Type III – Extrusion Only Plant		**Category C** – Only Encapsulated Systems	

4.

Use of Outside* Extrusion Facilities to Provide Coated and Sheathed Strand *(*Outside is defined as any source other than the immediate plant)*		
Do you use an outside extrusion facility for some or all of your coated and sheathed strand?	Yes: ☐	No: ☐
If yes, please list the company name and location for each outside extrusion facility used.		
Extrusion Facility Company Name	**Extrusion Plant Location**	

I hereby certify that the above information is complete and accurate to the best of my knowledge. I also affirm that I have reviewed the PTI Plant Certification Contract and agree to abide by terms and conditions set forth therein.

Company: _____ Date: _____

Name: _____ Title: _____

Signature: _____

Appendix C

Inspector / Auditor Confidentiality Agreement

APPENDIX C – 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 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 Minimum Requirements

Appendix D: Summary of Minimum Requirements:

2.1.1 *If strand is used (extruded) without receiving mill certificates or low relaxation test results, the plant will fail the inspection.*

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

2.2.1 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.

2.2.2 If one or more listed requirements of the PTI M10.2-00: Specification for Unbonded Single Strand Tendons, Section 2.2.6 are lacking from the encapsulated system the plant will fail the inspection.

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

2.3.2 If tendons are fabricated using strand coated with less than ninety-five percent (95%) of required quantities of PT coating, the plant will fail the inspection.

2.3.3 If any PT Coating material used lacks Performance Test Results (Table 1- Performance Specification for PT Coating), the plant will fail the inspection.

2.4.1 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.

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

Appendix E

Example of the Application of Repeated Grade Deductions

Appendix E: Example of the application of repeated grade deductions in Section 2.2.3 and 3.5.

The table below summarizes the grade deductions if a plant is unable to produce a certificate of compliance for an anchor, wedge, or coupler. The second column of the table summarizes the grade deductions in an inspection. The right half of the table summarizes the various point deductions for a subsequent inspection.

Application of grade deductions for repeated nonconformities in Section 2.2.4 Anchorage and Couplers / Records:

			Second Inspection		
	Records	**First Inspection**	Available	Produced during inspection	Not available
First Inspection	Available	No grade deduction	No grade deduction	75% grade deduction	Full grade deduction
	Produced during inspection	75% of grade deduction	No grade deduction	150% of 75% grade deduction	150% of full grade deduction
	Not available	Full grade deduction	No grade deduction	150% of 75% grade deduction	150% of full grade deduction

Numerical Example of grade deductions received for repeated nonconformities in Section 2.2.3:

			Second Inspection		
	Records	**First Inspection**	Available	Produced during inspection	Not available
First Inspection	Available	0	0	15	20
	Produced during inspection	15	0	22.5	30
	Not available	20	0	22.5	30

Appendix F

Procedure for Calibrating Digital, Dial, and Vernier Caliper

Appendix F

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

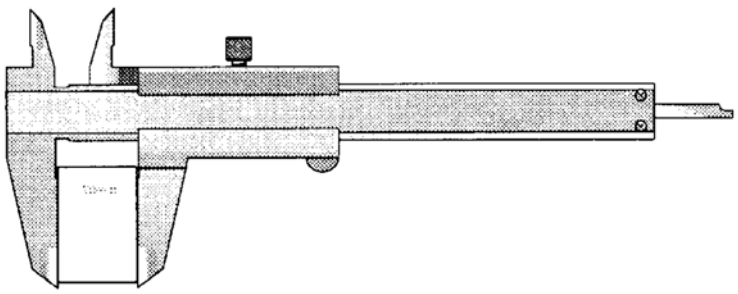
The instrumental error (deviation of reading) is the error that is inherent to a measuring instrument. In other words, it is the difference between the true value and the measured value, when making a measurement under the standard conditions specified for that instrument. The procedure to calibrate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