sions and the volume of the cast-in-place portion will be measured as provided herein.

Unless designated as pay items, this price shall include waterstops, waterproofing, damp-proofing, anchor bolts, drain assemblies, silicone treatment, protective coating for concrete exposed to tidal waters, and trial batches.

If corrugated metal bridge deck forms are used in lieu of removable forms, the price for concrete shall include furnishing and placing metal forms, additional concrete required to fill corrugations, work necessary to facilitate inspection of the underside of the deck, repairing deficiencies, and strengthening beams or girders to maintain the design live-load rating of the bridge. If prestressed deck panel forms are used in lieu of removable forms, the price shall include casting, furnishing, and placing forms.

Bridge-deck grooving will be measured in square yards of deck surface area from the faces of parapets, sidewalks, or curb lines and will be paid for at the contract unit price per square yard. No deduction will be made for drainage items and joints.

Payment will be made under:

Pay Item	Pay Unit
Concrete (Class) item	Cubic yard
Bridge-deck grooving	Square yard

SECTION 405—PRESTRESSED CONCRETE

405.01—Description.

These specifications cover the use of prestressed or post-tensioned hydraulic cement concrete when called for on the plans.

405.02—Materials.

(a) **Concrete** shall conform to the requirements of Section 217, Class A5 with the following exceptions:

1. Concrete for piles, beams, and slabs shall contain 3.5 gallons per cubic yard of calcium nitrite conforming to Section 215, unless granulated iron blast-furnace slag (minimum 40 percent by weight) or silica fume (minimum 7 percent by weight) conforming to Section 215, is used.

2. Concrete for structures over tidal water, beams and slabs within 15 feet of mean high tide and all exposed piles shall contain either 5.4

gallons per cubic yard of calcium nitrite conforming to Section 215 or 2.0 gallons per cubic yard of calcium nitrite with granulated iron blast-furnace slag (minimum 40 percent by weight) or silica fume (minimum 7 percent by weight.) conforming to Section 215.

All fully or partially embedded attachments to the prestressed concrete members required for supporting forms or stay-in-place deck panels shall be galvanized in accordance with Section 233.

(b) **Concrete admixtures** shall conform to the requirements of Section 215.

(c) **Epoxy-resin compounds** shall conform to the requirements of Section 243.

(d) **Steel reinforcement and prestressed tendons** shall conform to the requirements of Section 223 and Section 406, respectively.

(e) **Epoxy-coated reinforcing steel** shall conform to the requirements of Section 223.

(f) **Structural steel** shall conform to the requirements of Section 226.

(g) **Bedding materials and bearing pads** shall conform to the requirements of Sections 237 and 408.

(h) **Waterproofing** shall conform to the requirements of Section 416.

(i) **Hydraulic cement mortar and grout** shall conform to the requirements of Section 218.

405.03—Plant Review.

Plants that manufacture precast, prestressed concrete elements shall have PCI certification for applicable product groups and categories except that plants supplying only deck panels and piles will not be required to be certified. PCI inspection reports shall be on file at the plant and available for review by the Department. Plants that have not previously produced products for the Department will be inspected by the Engineer prior to commencement of production. The Contractor shall provide suitable office space for use by the Engineer's representatives.

The request for plant inspection shall be made by the Contractor to the Engineer at least 3 weeks prior to the start of production. As a part of the plant inspection, a meeting will be held with the producer, Contractor, Engineer, and Inspectors to discuss plant facilities, materials, production methods, drawings, and production schedules.

In order to qualify new installations for the manufacture of prestressed units other than piles, the Department may require the Contractor to test a unit that is repre-

sentative of each design type and size of unit to be manufactured. The acceptance test shall be as follows: Not more than one line of units shall be cast prior to the satisfactory completion of the acceptance test. A representative unit shall be tested in accordance with the requirements of VTM-20 in the presence of the Engineer prior to plant approval.

The unit to be tested will be selected at random by the Engineer. Jigs and load-testing equipment shall be approved by the Engineer before use. The cost of the units selected for testing and the cost of the test shall be borne by the Contractor.

405.04—Concrete Controls.

The Contractor shall provide concrete testing equipment and a Certified Concrete Technician to perform concrete acceptance tests.

During each concrete operation, at least two clusters of test cylinders shall be prepared. Each cluster shall consist of four 6 by 12-inch or six 4 by 8-inch cylinders, which shall be placed at quarter points of the casting bed and cured under the same conditions as the prestressed concrete units.

Concrete batches from which cylinders are made shall be tested for slump in accordance with the requirements of AASHTO T119 and for air content in accordance with the requirements of AASHTO T152.

The compressive strength of the concrete at strand release, as specified in Section 405.05(b), will be based on the results obtained from tests on one cylinder from each cluster.

Average values of test cylinders from each cluster will be used to determine acceptability of compressive strengths.

The Contractor shall maintain records of tensioning operations, curing temperatures, and concrete testing in a form suitable for permanent filing. Records shall be available to the Department and maintained for 10 years.

405.05—Procedures.

(a) **Forms:** Forms and centering shall be made and maintained true to the shapes and dimensions shown on the approved drawings.

Forms shall be of metal or other material that will give comparable results. Forms shall be designed and aligned so that they will not restrict the longitudinal movement of the casting when the prestressing force is transferred.

Drilled holes in bulkheads and templates shall be sized to provide for unrestricted movement of strands during tensioning.

Bulkheads may be constructed of adequately reinforced plywood. Wooden bulkheads that are warped or damaged shall not be used.

Form ties shall not be used without the approval of the Engineer.

Joints between panel forms shall be well aligned and tight, and adequate precautions shall be taken to prevent leakage of mortar. Corners or intersections of surfaces exposed in the completed structure shall be chamfered or rounded, with a width or radius of 3/4 inch. For square piles, corners shall be chamfered from 3/4 inch to 1 1/2 inches or rounded to a 2-inch radius. A smaller chamfer not less than 3/4 inch may be used if approved by the Engineer.

Void forms shall be anchored during concrete placement and secured by means other than being tied to strands.

Precast prestressed concrete box beams and flat slabs shall have one drain provided in each end of each void. The drain shall be located so that the void will drain after the unit has been installed in the structure. The device for forming the drain shall be of such material and design that the drain will not rust, stain, or otherwise disfigure the concrete and shall allow free drainage from the void.

(b) **Placing Strands and Wires and Applying and Transferring Pretension:** The Contractor may be required to submit for approval the detailed computations of gage pressures and elongations proposed.

Wires shall conform to the requirements herein for strands.

When indicated on the plans and approved by the Engineer, the Contractor may substitute low relaxation strands for stress-relieved strands or stress-relieved strands for low relaxation strands in prestressed units, provided the following conditions are met:

1. The unit is redesigned by the Contractor in accordance with the design specifications shown on the plans, including modifications by the Department.

2. There is no mixing of low-relaxation strands and stress-relieved strands within a superstructure, substructure or piles.

3. In prestressed piles, the net compressive stress in the concrete after all losses, shall equal the stress for such piles as shown on the plans, and the number and cross sectional area of the strands in each pile shall equal or exceed that as shown on the plans, in addition to the requirements specified in 1. and 2. herein.

When the Contractor elects to substitute low-relaxation strands for stress-relieved strands or stress-relieved strands for low-relaxation strands, the

design, camber calculations and working drawings shall be submitted in accordance with the requirements of Section 105.02.

Strands with kinks, bends, nicks, broken wires, scales, rust, or other defects shall not be used. The failure of one wire in a seven-wire pretensioned strand or one wire in a parallel-wire post-tensioned cable may be accepted provided the wire is not more than 2 percent of the total number of wires. Slight rusting will not be cause for rejection provided it is not sufficient to cause visible pits. Strands shall be satisfactorily cleaned before concrete operations begin.

Strands shall be placed in proper position and first tensioned individually by a force of at least 5 but not more than 25 percent of the final stressing force. This force shall not vary by more than 5 percent in any group of strands.

The final stressing of strands shall be performed by applying tension to each strand individually or to all strands as a group. The strand or strand group shall be tensioned to the total pretensioning force as indicated on the plans, with a maximum applied stress of 70 percent of the ultimate strength for stress-relieved strands and 75 percent of the ultimate strength for low-relaxation strands.

During stressing, allowance shall be made for the amount of strand anchorage slipping. The proper allowance shall be determined during trial plant operations and satisfactorily checked periodically during actual stressing operations. Strand anchorage devices of each type and source shall be checked as specified herein.

During stressing, allowance shall be made in the amount of strand elongation for the loss or gain in tension resulting from the change in temperature in the strand between the time of stressing and time of the initial set of concrete. The magnitude and method of application of this allowance shall be in accordance with the requirements of the *PCI Manual for Quality Control* (MNL-116).

A manufacturer's corresponding recommended value for the average modulus of elasticity will be used for each order of strand supplied. Consideration shall be given to the stress-strain data of tests performed on the samples.

Strands shall not be spliced within units.

Pretensioned strands shall be secured by suitable anchorage devices capable of developing at least 90 percent of the ultimate strength of the strand.

When deflected strands are tensioned in their deflected position, they shall be supported by lubricated rollers with solid bushings or other low-

friction rollers at hold-up and hold-down points. Provisions shall be made for a cover of at least 1/8 inch of concrete or epoxy mortar on metal parts of the hold-down devices remaining in beams.

The final position of strands and reinforcing steel shall be accurately maintained as shown on the plans.

The tensioning system shall be equipped with a pressure gage indicating the jack pressure to an accuracy of within 2 percent of the pressure corresponding to the full prestress tension in the strand. Gages shall be recalibrated at least once every 6 months and any time the gaging system appears to be giving erratic or erroneous results or if the gage indication and elongation measurements indicate materially different stresses. Gages, jacks, and pumps shall be calibrated as a system in the same manner in which they are used in tensioning operations. Calibration shall be performed by an approved testing laboratory or approved calibration service, and a certified calibration curve shall accompany each tensioning system. Load, as measured by gage pressure, shall not vary from that measured by elongation by more than 5 percent. Elongation measurements shall be taken as checks on the final pressure gage reading. Elongation shall be measured to a precision of 1/4 inch. During stressing, elongation and pressure readings shall be recorded by the Contractor.

Tension in the strands shall not be transferred to the concrete in the unit until the concrete has attained a compressive strength of at least 3,500 pounds per square inch for piles and 4,000 pounds per square inch for other units. When multiple-strand detensioning is used, strands shall be transferred gradually, simultaneously, and equally to the concrete.

When the single-strand release method is used, strands shall be released by heating near the end of each unit in accordance with the Contractor's sequence and schedule. Individual jack release or burning may be used for strands at the dead or live end of the bed. Strands to be released in each step of the sequence shall be burned apart between beams before the next step is begun. No more than two strands shall be included in each step of the pattern.

Strands shall not be burned quickly but shall be heated with a low-oxygen flame played along the strand at least 5 inches until the metal gradually loses its strength and failure of the first wire in each strand occurs after the torch has been applied for at least 5 seconds.

The schedule for single-strand detensioning of units having deflected strands shall incorporate the following:

1. Straight strands located in the upper flange of the unit shall be released first.

2. Tension in the deflected strands at the ends of bed and uplift points shall be released in sequence.

3. Hold-down devices for deflected strands shall be disengaged, and hold-down bolts shall be removed from units.

4. The remaining straight strands of the pattern to be detensioned individually shall be released in sequence.

If it is desired to release hold-down devices prior to releasing tension in deflected strands, this may be permitted (1) if the weight of the prestressed unit is more than twice the total of the forces required to hold strands in the low position, or (2) if weights or other approved vertical restraints are applied directly over the hold-down points to counteract uplifting forces, at least until the release of deflected strands has proceeded to such a point that the residual uplifting forces are less than 1/2 the weight of the unit.

Failure to follow these procedures may result in rejection of units.

(c) **Placing Concrete:** The procedure and equipment for handling, placing, and consolidating shall be such that a uniformly dense and high-grade concrete is obtained in all parts of the unit under all working and weather conditions.

When placing concrete in continuous horizontal layers in forms for precast I-beams, succeeding layers shall follow the preceding layer before any initial set takes place. Concrete in bottom slabs of precast prestressed box beams shall be placed before void forms are positioned. Concrete may be placed in forms for piling and precast slab units in one continuous horizontal layer.

The use of external vibration will be at the option of the Contractor. Improper placing and vibrating may be cause for rejection.

(d) **Removing Forms:** Forms for units being moist cured may be removed when concrete reaches a strength of 1,500 pounds per square inch.

After forms are removed, units will be inspected to determine acceptability. Patching of any surface irregularities, especially those resulting from honeycombing, shall be performed only after inspection.

(e) **Finishing:** Holes and voids in the surface of concrete resulting from bolts, ties, or large air pockets shall be wetted and filled with mortar having the same proportion of fine aggregate and cement as in the concrete, after which exposed mortar surfaces shall be finished smooth and even with a wood float.

If finishing work is necessary, the exterior face of exterior beams shall be finished free from blemishes and then rubbed with burlap. Holes or voids having a depth or diameter greater than 1/2 inch on the interior face of exterior beams, on both faces of interior beams, or on piles shall be filled and finished.

Surfaces to be repaired and finished shall be kept wet for at least 1 hour before hydraulic cement mortar is applied. Immediately following patching work, repaired areas shall be cured for at least 48 hours. The wet cure may be accomplished by the use of steam, wet burlap, or continuous spray wetting, or liquid membrane-forming compound may be used on non-composite surfaces. Epoxy may be used and shall be applied and cured in accordance with the manufacturer's recommendations.

Piles specified on the plans as being subject to tidal waters shall be finished in accordance with the requirements of Section 404.03(i).

Tops of prestressed deck panels shall receive a finish having pronounced grooves. Grooves shall be approximately 1/8 inch in depth and 1/8 inch in width, with a spacing of not more than 1 inch. Other groove patterns proposed by the Contractor that promote bonding may be used upon approval by the Engineer.

Units that are to be made composite with subsequently placed concrete shall be finished by striking off the top of forms. As soon as the condition of the concrete permits and before it has fully hardened, dirt, laitance, and loose aggregate shall be removed from the surface by means of a wire brush, which shall leave the coarse aggregate slightly exposed or otherwise roughened. If concrete has been allowed to harden so that it is impossible to remove laitance and roughen the top surface of units by brushing, the surface shall be cleaned and prepared for bonding by chipping.

Except in piles, ends of strands shall be allowed to cool to normal temperature after cutting and then shall be covered with at least 1/8 inch of epoxy mortar or other material approved by the Engineer. After mortar is allowed to cure, the entire end of the unit shall be covered with epoxy, Type EP-3T.

Care shall be taken in cutting or burning ends of strands to prevent damaging the concrete surface.

(f) **Protecting and Curing:** Prestressed concrete shall be cured by being kept moist at temperatures that will promote hydration. Proper curing by any method requires that moisture is retained for complete hydration and the formation of surface cracks attributable to rapid loss of water is prevented while concrete is plastic. Prior to concrete placement, procedures for retaining moisture shall be approved by the Engineer. Moist curing shall continue until such time as the compressive strength of concrete

reaches the strength for detensioning. Moist curing shall commence as soon as possible following the completion of surface finishing.

The Contractor shall have the option of using steam curing in lieu of moist curing in accordance with the following:

1. The design concrete mixture shall be proven adaptable for steam curing, using the same cure as proposed for the routine manufacture of prestressed concrete units.

2. The Contractor shall be responsible for the quality of concrete placed in any weather or atmospheric condition. At the time of placement, concrete shall have a temperature of 40 degrees F to 90 degrees F when concrete is moist cured. If accelerated curing is used, the temperature of the concrete at placement shall be 40 degrees F to 100 degrees F. Mixing limitations shall be in accordance with the requirements of Section 217.09.

3. An initial set of a nominal 500 pounds per square inch, determined by the penetration resistance test, shall be obtained prior to the introduction of steam. The penetration resistance test shall be performed in accordance with the requirements of ASTM C403. Forms shall be covered after surface finishing of the concrete, including the delay period before introduction of steam.

4. The temperature rise in the curing enclosure shall be uniform, with a rate rise of not more than 80 degrees F per hour. Concrete shall be cured at a steam temperature of not more than 180 degrees F, with the steam temperature uniform throughout the curing enclosure, and with a variation of not more than 20 degrees F. Approved recording thermometers shall be placed so that temperatures can be recorded at a minimum of two uniformly spaced locations in each curing enclosure.

5. Steam curing shall be maintained until such time as the compressive strength of the concrete attains that specified on the plans for detensioning.

6. Steam curing shall be performed under a suitable enclosure to retain the live steam at 95 percent relative humidity and minimize heat losses. Enclosures shall allow free circulation of steam. Steam jets shall be positioned so that they will not discharge directly on concrete, forms, or test cylinders.

7. Concrete test cylinders shall be subject to the same curing conditions as the units.

8. Immediately after steam curing is terminated, forms shall be loosened and the stress load on the stressing strands shall be released while the concrete is still hot.

(g) **Waterproofing:** Units so designated on the plans shall be waterproofed in accordance with the requirements of Section 416.

(h) **Handling, Storing, and Erecting:** Units shall be adequately separated in storage immediately following removal from beds to facilitate repair of surface blemishes and make inspection of finished surfaces possible.

Care shall be taken in handling and storing units to avoid damage to concrete. Concrete shall have attained the minimum 28-day design compressive strength before structural units are shipped to the project site.

Piles shall not be driven until at least 7 days after the date concrete is cast and has attained the minimum design compressive strength.

Lifting and support points for units other than piles and deck panels shall be as shown on the plans or not less than 6 inches or more than 2/3 of the depth of the unit from the end of the unit. Piles and deck panels shall be supported and lifted at points shown on the plans. The Contractor shall be responsible for the design and safety of the lifting device used.

Requests to use lifting or support points other than those indicated must be accompanied by computations showing that stresses are within the allowable range, using 50 percent of the dead load as an impact factor.

Units that have been damaged in handling shall be satisfactorily repaired.

Shear keys required between adjacent units, recesses at ends of transverse ties, holes for anchor bars, and other recesses shown on the plans shall be filled with mortar conforming to the requirements of Section 218. Mortar shall be applied in one continuous operation for each span.

Where waterproofing material is to be applied to tops of units in the field, longitudinal joints shall be sufficiently smoothed to prevent damage to the material.

Struts and diaphragms between spread units may be cast separately or monolithically with the deck slab. If the Contractor casts struts and diaphragms separately from the slab, the age or compressive strength of the concrete in the struts or diaphragms shall conform to the requirements for I-beams in Section 404.03(j) before deck slab concrete is placed. If the Contractor casts struts and diaphragms monolithically with the slab, each prestressed concrete beam shall be placed and restrained in such a manner that the beam will not be canted during construction of the struts, diaphragms, and slab. The Contractor's method for maintaining acceptable vertical alignment of beams shall be subject to the approval of the Engineer.

Bearing surfaces of units shall be parallel to the bottom surface of the unit or as specified on the plans. Attached bearing assemblies shall be fabri-

cated so that their bottom bearing surfaces shall lie in truly horizontal planes in their erected position. Metal bearing plates or bottoms of precast beams that are to bear on elastomeric pads shall be coated with epoxy, Type EP-2, EP-4, or EP-5, and then surfaced with a No. 36 to No. 46 silicon carbide or aluminum oxide grit.

Ends of beams, at ends of spans, and diaphragms shall be vertical.

405.06—Tolerances.

The limits of tolerance do not necessarily represent fully acceptable construction; they are the limits at which construction may become unacceptable. In general, workmanship shall be at a level of quality that will be well within the tolerance limits.

(a) **Precast Prestressed Concrete I-Beams and T-Beams:**

Characteristics	Value
Depth (overall)	±1/4 inch
Width (flanges and fillets)	±1/4 inch
Width (web)	±1/4 inch
Length of beam	±1/8 inch/10 ft or 1/2 inch, whichever is greater
Exposed beam ends (deviation from square or designated skew)	Horizontal ±1/4 inch, vertical ±1/8 inch/ft of beam height
Side inserts (spacing between centers of inserts and from centers of inserts to ends of beams)	±1/2 inch
Bearing plate (spacing from centers of bearing plates to ends of beams)	±1/2 inch
Stirrup bars (projection above top of beam)	±3/4 inch
Stirrup bars (longitudinal spacing)	±1 inch
Horizontal alignment (deviation from straight line parallel to center line of beam)	Max. 1/8 inch/10 ft
Camber differential between adjacent beams of same type and strand pattern	1/8 inch/10 ft or max. 1/2 inch (at time of erection)
Camber differential from computed camber	±50 percent (at time of erection)
Center of gravity of strand group	±1/4 inch
Center of gravity of depressed strand group at end of beam	±1/4 inch
Position of hold-down points for depressed strands	±6 inch
Position of handling devices	±6 inch

(b) **Precast Prestressed Concrete Box Beams and Flat Slabs:**

Characteristics	Value
Depth (top slab)	+1/2 to –1/4 inch
Depth (bottom slab)	0 to +1/2 inch
Depth (overall)	±1/4 inch
Width of web or thickness of sidewalls	±3/8 inch
Width (overall)	+1/8 to –1/4 inch
Length	±1/8 inch/10 ft or 1/2 inch, whichever is greater
Void position (longitudinal)	±1/2 inch adjacent to tie holes ±1 inch adjacent to end block
Square ends (deviation from square)	±1/4 inch
Skew ends (deviation from designated skew)	
Skew angle equal to or less than 30°	±1/4 inch
Skew angle greater than 30°	±1/2 inch
Horizontal alignment (deviation from straight line parallel to center line of unit)	Max. 1/8 inch/10 ft
Gap between adjacent units	Max. 1/2 inch
Tie rod tubes (spacing between centers of tubes and from centers of tubes to ends of units)	±1/4 inch
Tie rod tubes (spacing from centers of tubes to bottom of beam)	±1/4 inch
Camber differential between adjacent units	Max. 1/4 inch (at time of erection)
Camber differential between high and low units in same span	Max. 3/4 inch (at time of erection)
Camber differential from computed camber on plans	±50 percent (at time of erection)
Side inserts (spacing between centers of inserts and from centers of inserts to ends of beams)	±1/2 inch
Stirrup bars (projection above top of beam)	±3/4 inch
Stirrup bars (longitudinal spacing)	±1 inch
Center of gravity of strand group	±1/4 inch
Center of gravity of depressed strand group at end of beam	±1/4 inch
Position of hold-down points for depressed strands	±6 inch
Position of handling devices	±6 inch

(c) **Prestressed Deck Panels:**

Characteristics	Value
Width (perpendicular to strand)	0 to +1/2 inch
Length (in direction of strand)	0 to 1/2 inch
A distance of at least 1/2 in shall be maintained between deck panel and shear connectors or shear reinforcing steel connecting deck panel to beam.	
Depth	0 to +1/4 inch
Distance between center line of strands and bottom of panel	0 to –1/4 inch

(d) **Prestressed Concrete Piling:**

Characteristics	Value
Width or diameter	–1/4 to +3/8 inch
Head out of square	1/16 inch/12 inch of width
Length of pile	±1 1/2 inch
Horizontal alignment (deviation from straight line parallel to center line of pile)	Max. 3/16 inch/20 ft of length Max. 1/8 inch in 10-ft chord Max. 1/16 inch in 1 ft
Void location	±1/4 inch
Stirrup bars or spiral position	±1 inch
Center of gravity of strand group	±1/4 inch
Position of handling devices	±6 inch

405.07—Measurement and Payment.

Prestressed concrete piles will be paid for in accordance with the requirements of Section 403.08.

Prestressed concrete structural units that are to be incorporated in the completed structure will be measured in units of each, complete-in-place, and will be paid for at the contract unit price per each.

These prices shall include manufacturing and furnishing units complete-in-place in the structure; mortar seals on ends of units; structural and reinforcing steel for connecting units to struts and diaphragms; reinforcing, structural, and prestressing steel embedded in units, including dowels in place and bearing pads or bearing devices, post-tensioning fittings, strands, and rods; grouting; joint fillers and sealers; waterproofing applied to structural units at the prestressing plant; hauling; handling; and treatment.

Prestressed concrete panels will be measured in square feet of surface area, complete-in-place, and will be paid for at the contract unit price per square foot. This price shall include manufacturing, furnishing, and installing.

Payment will be made under:

Pay Item	Pay Unit
Prestressed concrete (Shape, beam, description of cross section, and length)	Each
Prestressed concrete slab (Width, depth, and length)	Each
Prestressed concrete panel (Depth)	Square foot

SECTION 406—REINFORCING STEEL

406.01—Description.

This work shall consist of furnishing; coating, if required; and placing reinforcing steel or wire mesh used in concrete operations, except prestressed strands and wires, in accordance with these specifications and in reasonably close conformity to the lines and details shown on the plans.

406.02—Materials.

(a) **Steel used for reinforcement** shall conform to the requirements of Section 223. Except for spiral bars, bars more than 1/4 inch in diameter shall be deformed bars.

(b) **Epoxy-coated bars** shall conform to the requirements of Section 223.

(c) **Welded wire fabric** shall conform to the requirements of Section 223.

(d) **Bar mat reinforcement** shall conform to the requirements of Section 223.

406.03—Procedures.

(a) **Order Lists and Bending Diagrams:** Copies of order lists and bending diagrams shall be furnished the Engineer when required.

(b) **Protecting Material:** Reinforcing steel shall be stored on platforms, skids, or other supports that will keep the steel above ground, well drained, and protected against deformation.