

This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies wood, plastic and composite fastenings. These products are manufactured by USP Structural Connectors. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 06 05 23 WOOD, PLASTIC, AND COMPOSITE FASTENINGS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies structural connectors including:
1. Joist hangers.
 2. Holdowns.
 3. Angles, straps and hurricane ties.
 4. Anchors and foundation straps.
 5. Post and column caps and bases.
 6. Fasteners.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections:

Specifier Note: Include in this Article only those sections that directly affect the work of this section. Do not include Division 00 or Division 01 sections since it is assumed that all technical sections are related to all project Division 00 and Division 01 sections to some degree.

1. Section [03 30 00 - Cast-in-Place Concrete] [_____].
2. Section [06 17 00 - Shop-Fabricated Structural Wood] [_____].
3. Section [06 10 00 - Rough Carpentry] [_____].

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Section 01 42 19 - Reference Standards may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

1.02 REFERENCES

- A. ASTM International (ASTM):
1. ASTM A36/A36M Standard Specification for Carbon Structural Steel.
 2. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 3. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 4. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 5. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated

(Galvannealed) by the Hot-Dip Process.

6. ASTM A1011/A1011M Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
7. ASTM D1761 Standard Test Methods for Mechanical Fasteners in Wood.
8. ASTM D7147 Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers.

B. International Code Council Evaluation Service (ICC-ES):

1. AC-13 Joist Hangers and Similar Devices.
2. AC-155 Hold-downs (Tie-downs) Attached to Wood Members.
3. AC-233 Alternate Dowel-type Threaded Fasteners.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Section 01 33 00 - Submittal Procedures.

1.03 ACTION SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Section [01 33 00 - Submittal Procedures] [_____].
- B. Product Data: Submit manufacturer's product data and installation instructions for each connector. Include the following information as requested:
 1. Model identification number.
 2. Dimensions.
 3. Description.
 4. Manufacturer's SPEC-DATA® product sheet.
- C. Shop Drawings:
 1. Submit dimensioned drawings with connection details. Include following information:
 - a. Model type.
 - b. Connector and elements to be connected.
 - c. Clearances.
 - d. Spacing.

1.04 INFORMATION SUBMITTALS

- A. Quality Assurance:
 1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
 2. Manufacturer's Instructions: Manufacturer's installation instructions, manufacturer's instruction sheets and manufacturer's operation manual.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Control Article. Retain or delete as applicable.

- B. Manufacturer's Field Reports: Indicate compliance with performance requirements.

1.05 CLOSEOUT SUBMITTALS

- A. Closeout Submittals: Submit following:
 1. Warranty: Warranty documents specified.
 2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Section [01 78 00 - Closeout Submittals] [_____]. Include:
 - a. Methods for maintaining installed products.

1.06 QUALITY ASSURANCE

- A. Qualifications:
 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 2. Manufacturer Qualifications: Company with sufficient capacity to produce and deliver required connectors without causing delay in work and be:
 - a. Capable of providing field service representation during installation and approving application method.
 3. Fabricator Qualifications: Fabrication performed in quality controlled manufacturing environment by experienced fabricators with references indicating satisfactory fabricating experience as required for this project.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Section 01 41 00 - Regulatory Requirements. Repetitive statements should be avoided.

B. Regulatory Requirements:

1. In accordance with Section [01 41 00 - Regulatory Requirements] [_____].
2. In accordance with ICC, state and local, municipal code requirements.

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section [01 31 19 - Project Meetings] [_____].

1.07 DELIVERY, STORAGE & HANDLING

A. General: Comply with [01 61 00 - Common Product Requirements] [_____].

B. Ordering:

1. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Delivery, Storage and Protection:

1. Deliver, store and handle in accordance with Section [01 61 00 - Common Product Requirements] [_____].
2. Verify packaging is intact to protect against dirt and moisture during transit and outdoor storage.
3. Unpack and inspect connectors. Report damage immediately.
4. Store in clean, dry location with uniform temperature to prevent condensation and protect from exposure to dirt, fumes, water, corrosive substances and physical damage.

D. Waste Management and Disposal:

Specifier Note: Environment: The disposal of packaging waste into landfill site demonstrates an inefficient use of natural resources and consumes valuable landfill space. Specifying appropriate packaging and construction waste management and disposal procedures may contribute to points required for LEED® construction project certification.

1. Separate waste materials for [Reuse] [And] [Recycling] [_____] in accordance with Section [01 74 19 - Construction Waste Management and Disposal] [_____].
2. Remove from site and dispose of packaging materials at appropriate recycling facilities.
3. Collect and separate for disposal [Paper] [Plastic] [Polystyrene] [Corrugated cardboard] [_____] packaging material [In appropriate onsite bins] [_____] for recycling.

Specifier Note: Coordinate article below with Conditions of the Contract and with Section 01 78 36 - Warranties.

1.08 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract and Section [01 78 36 - Warranties] [_____] for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Ensure manufacturer has minimum [5] [_____] years experience in manufacturing.

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.02 STRUCTURAL CONNECTORS

A. Manufacturer: USP Structural Connectors.

1. Contact: 14305 Southcross Drive, Burnsville, MN 55306; Telephone: (800) 328-5934; Fax: (507) 364-8762; E-mail: info@uspconnectors.com; website: www.uspconnectors.com.

B. Proprietary Products:

1. Joist Hangers:

Specifier Note: Repeat the following article when more than one anchor type is required for project.

- a. Type: [Dimensional Lumber] [EWP] [Glulam].

- 1) Thickness: [10 gauge (3.57 mm)] [12 gauge (2.78 mm)] [14 gauge (1.98 mm)] [16 gauge (1.59 mm)] [18 gauge (1.27 mm)].

Specifier Note: Many hangers are offered in Triple zinc material. See manufacturer's literature for complete information.

- b. Material: [A36] [A653] [See manufacturer's literature].
- c. Finish: G90 galvanizing, Triple Zinc (G185).

Specifier Note: When specifying the triple zinc option, add -TZ to the model number. Common product series include JUS, HUS, HD, THO, TFL, and THF. Refer to manufacturer's literature.

- d. Acceptable Products: USP model numbers or series [_____].

2. Holdowns:

Specifier Note: Repeat the following article when more than one anchor type is required for project.

Specifier Note: Refer to manufacturer's literature for product material specifications, finish and thickness.

- a. Material: [A36 Steel] [A1011 Steel] [A653].
- b. Finish: [G90 galvanizing] [Triple Zinc (G185)] [hot-dip galvanized] [Primer].
- c. Thickness: [10 gauge (3.57 mm)] [12 gauge (2.78 mm)] [14 gauge (1.98 mm)] [16 gauge (1.59 mm)] [18 gauge (1.27 mm)].

Specifier Note: When specifying the triple zinc option, add -TZ to the model number. When specifying the hot-dip galvanized option, add -HDG to the model number. Common product series include PHD, TDX, and UPHD. Refer to manufacturer's literature.

- d. Acceptable Products: USP model numbers or series [_____].

3. Angles, Straps and Hurricane Ties:

Specifier Note: Refer to manufacturer's literature for product material specifications, finish and thickness.

- a. Material: [A36 Steel] [A1011 Steel] [A653].
- b. Finish: [G90 galvanizing] [Triple Zinc (G185)] [Primer].
- c. Thickness: [10 gauge (3.57 mm)] [12 gauge (2.78 mm)] [14 gauge (1.98 mm)] [16 gauge (1.59 mm)] [18 gauge (1.27 mm)] [20 gauge (1.13 mm)].

Specifier Note: When specifying the triple zinc option, add -TZ to the model number. Common product series include RS, CMST, LSTA, MSTA, ST, KST, MSTC, MPA, AC, SPT, and RT. Refer to manufacturer's literature.

- d. Acceptable Products: USP model numbers or series [_____].

4. Anchors and Foundation Straps:

Specifier Note: Repeat the following article when more than one anchor type is required for project.

Specifier Note: Models TA51, TA71 are available in triple zinc.

Specifier Note: Foundation anchor model FA3 is available in triple zinc. Purlin anchor models PA18, PA23, PA28, PA35, PAT35 are available in triple zinc. Embedded Truss Anchor models HLPTA75, HTA20, HTA24, HTA20-18, HTA16-18, TA20R, TA20, TA22, TA24, TAPL16 are available in triple zinc. HPA35 is available in hot-dip galvanized.

- a. Material: [A36 Steel] [A1011 Steel] [A653].
- b. Finish: [G90 galvanizing] [Triple Zinc (G185)] [Primer].
- c. Thickness: [7 gauge (4.76 mm)] [10 gauge (3.57 mm)] [12 gauge (2.78 mm)] [14 gauge (1.98 mm)] [16 gauge (1.59 mm)] [18 gauge (1.27 mm)].

Specifier Note: TA series straps are designed to anchor rim joists to concrete block foundations. HPAHD, MPAHD and PAHD42 are designed to anchor wood framing to poured concrete foundations. LSTAD STAD Hold Down straps are designed for anchoring wood framing to concrete foundation; they have high uplift capacity.

Specifier Note: When specifying the triple zinc option, add -TZ to the model number. Common product series include FA, PA, TA, HTA, STAD, HPAHD.

Specifier Note: When specifying straps from either the LSTAD or STAD series that are to be used for anchoring rim joists, add -RJ to

the model number.

d. Acceptable Products: USP model numbers or series [_____].

5. Post and Column Caps and Bases:

Specifier Note: Repeat the following article when more than one column base type is required for project.

Specifier Note: Column Bases models from Series KCB are available in rough/full sizes.

a. Material: [A36 Steel] [A1011 Steel] [A653].

b. Finish: [G90 galvanizing] [Triple Zinc (G185)] [Primer].

c. Thickness: [7 gauge (4.76 mm)] [10 gauge (3.57 mm)] [12 gauge (2.78 mm)] [14 gauge (1.98 mm)] [16 gauge (1.59 mm)] [18 gauge (1.27 mm)].

Specifier Note: When specifying the triple zinc option, add -TZ to the model number, and when specifying the hot-dip galvanized option, add -HDG to the model number. Common product series include PA, CBS, CBSQ, KCB, KCBQ, PCM, EPCM, KCC, and KCCQ.

d. Acceptable Products: USP model numbers or series [_____].

6. Fasteners:

a. Wood Screws:

1) Self-drilling, 1/4 inch (6.4 mm) Grade 5, yellow zinc dichromate.

2) Acceptable Material: USP WS series wood screws.

Specifier Note: Refer to manufacturer's literature for nail sizes required for connectors specified.

b. Nails:

1) [_____ inch (_____ mm) diameter, _____ inches (_____ mm)] long, [Hot-dip galvanized] [Stainless steel] [_____].

2) Acceptable Material: USP model number NA [_____].

c. Anchor Bolts:

1) [Steel] [Hot-dip galvanized].

Specifier Note: When specifying the hot-dip galvanized option, add -HDG to the model number.

2) Acceptable Material: USP model number STB [____], AB [_____].

2.03 SOURCE QUALITY CONTROL

A. Ensure structural connectors are from single manufacturer.

Specifier Note: Edit Paragraph below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Section 01 25 13 - Product Substitution Procedures.

2.04 PRODUCT SUBSTITUTIONS

A. Substitutions: [In accordance with Section 01 25 13 - Product Substitution Procedures] [_____]] [No substitutions permitted].

PART 3 EXECUTION

3.01 INSTALLERS

A. Provide experienced and qualified technicians to carry out installation of structural connectors.

3.02 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and USP Structural Connectors' SPEC-DATA sheets.

3.03 EXAMINATION

A. Site Verification of Conditions:

1. Examine substrates and connecting elements for damage prior to installing connectors. Ensure components and

conditions are in compliance with manufacturer's requirements, installation tolerances and other conditions affecting performance.

2. Correct unsatisfactory conditions prior to installation.

3.04 PREPARATION

- A. Coordinate installation of connectors with other construction trades.

3.05 INSTALLATION

- A. Refer to manufacturer's literature for installation and maintenance instructions.
- B. Comply with manufacturer's recommendations for attachment locations unless otherwise indicated or specified.
- C. Use specified fasteners and fasten as directed in manufacturer's chart.
- D. Follow manufacturer's spacing guidelines.
- E. Ensure minimum edge distances are maintained.
- F. Install moisture barrier where recommended by manufacturer.
- G. Comply with manufacturer's nailing schedule unless alternative provided by designer.
- H. Maintain recommended embedment depth.
- I. Install column/post bases with base flush to concrete.

3.06 FIELD QUALITY CONTROL

- A. Site Tests, Inspection:
 1. Inspect completed assembly for proper level and alignment, after installation and prior to final acceptance. Report component damage to [Supplier] [_____].

Specifier Note: Use the following Articles only when manufacturer's field services are desired to verify the quality of the installed components. Establish the number and duration of periodic site visits required by manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.

- B. Manufacturer's Field Services: Have manufacturer's technical representative schedule site visits to review work as follows:
 1. After delivery and storage of products.
 2. When preparatory work for which work of this Section depends is complete, but before installation begins.
 3. [Weekly] [2 times] [_____] during progress of work [at [25%] and [60%]] [_____] of completion.
 4. Upon completion of work, after cleaning is carried out.

3.07 ADJUSTING

- A. Adjust installed items for proper function.

3.08 FINAL CLEANING

- A. Proceed in accordance with Section [01 74 23 - Final Cleaning] [_____].
- B. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.09 PROTECTION

Specifier Note: Coordinate the following Article with Section 01 76 00 - Protecting Installed Construction.

- A. Protect installed product from damage during construction in accordance with Section [01 76 00 - Protecting Installed Construction] [_____].

END OF SECTION