

CHAPTER 6ACARPENTRY6A-01.. GENERAL

This chapter provides a list of items to check during inspection of work performed under the Carpentry section of typical contracts. The items in this chapter can be used by the inspector as a basis around which to build his own inspection checklist. The list will vary with the materials specified and with the complexity of the particular contract.

6A-02. SHOP DRAWINGS AND SAMPLES

a. Check each contract for items requiring submission and approval of shop drawings. Items requiring shop drawings will vary with the contract.

b. Items commonly requiring shop drawings include:

- (1) Exterior doors and frames. See Chapter 8.
- (2) Window frames and non-stock windows. See Chapter 8.
- (3) Completely assembled windows.
 - (A) Interior wood finish, when so specified.
- (5) Finish stair work.
- (6) All cabinet work.
- (7) Roof trusses.
- (8) Prefabricated items.

c. Remind contractor that shop drawings must be submitted and approved prior to fabrication or delivery of materials. Remember that only certain shop drawings required CO approval and the others are submitted by the contractor for information only. The action required will be given on the submittal register. See that the appropriate action has been taken.

(1) Check that all shop drawings have been submitted prior to installation or use of the item.

(2) Check all work for conformance with the approved shop drawings.

d. Remind contractor that all specified samples are required to be submitted and approved prior to delivery of materials to the site.

(1) All approved samples received by the inspection forces should be tagged as to type of use and location and stored in a readily accessible area of the field office.

(2) Check materials delivered to site against the approved samples; they shall be identical.

1 Aug 92

6A-03. LUMBER

a. Species and Grade

Check the species and grade against that specified for each use. This information should be in the "SPECIES AND GRADE TABLE" in the specifications.

b. Grade Stamp

(1) Check both finish and structural lumber for grade stamp.

(2) Stamp or mark shall agree with the rule or standard under which the material is produced.

c. Defects

(1) Check defects against the appropriate grading rules found in the appropriate inspection agency publication.

(2) Obtain copies of the grading rules and check lumber for:

(a) Tolerance of dimensions.

(b) Imperfections in excess of those allowable, as regards:

1. Checks, splits, shake, pockets.

2. Decay.

3. Grain structure.

4. Knots.

5. Percentage of hardwood or sapwood.

6. Wane (presence of bark or lack of wood).

7. Warp, crook, bow, cup.

Full definitions of the above properties or defects and other grading considerations are included in most of the grading rules handbooks.

d. Moisture Content

Check the specifications for the allowable moisture content of lumber at time of delivery and when installed.

(1) Moisture content can be readily checked in the field with a moisture meter.

(2) Moisture content can be checked in a laboratory by the oven drying process.

(3) Rules referred to in Pars 6A-03 c(1) . Whichever contains the more stringent moisture content requirements shall apply. Lumber up to 2-inch thickness, treated with a waterborne preservative, will have a moisture content not to exceed 19 percent. Lumber over 2-inch thickness including treated lumber,

will have a moisture content not to exceed 25 percent. Roof planking maximum is 15 percent.

(4) Exterior and interior finish lumber and flooring shall have not more than 12 percent moisture at time of delivery and when installed.

e. Storage

(1) Boards and Dimension Lumber

(a) Lumber stored off of ground in properly drained area?

(b) Covering adequate and ventilated to prevent increase in moisture content?

(c) Lumber stacked to prevent warp?

(2) Finish Lumber, Flooring and Mill Work

(a) May be stored at the site only in weathertight sheds and at the risk of the contractor.

(b) Should not be brought into building until plaster is dry and windows and doors are installed or temporary enclosures provided. If during heating season, either permanent or temporary heating should be provided.

f. Preservative Treatment

(1) An affidavit may be required on preservative treatment wood, stating retention, paintability, drying time, surface deposit and moisture content. A proper grade marking identification in accordance with AWPB standards is required for all pressure treated lumber.

(2) Lumber with waterborne treatment will also be marked "Dry" indicating a moisture content within the standards.

(3) When bottoms of floor framing and sub-flooring are 24" or less from earth, they shall be pressure treated.

(4) Exterior wood steps, platforms and railings shall be pressure treated.

(5) Wood members set in concrete shall be pressure treated.

(6) Wood shall be pressure treated when used for:

(a) Nailers at eave or rake of roof.

(b) Wood sleepers.

(c) Furring strips attached to interior face of exterior walls. All furring used below grade.

(7) Creosote pressure treated wood is limited in use for material in contact with soil or water.

(8) Use only waterborne pressure treated wood in contact with built-up roofing materials.

1 Aug 92

(9) Check specifications for requirement of pressure preservative treatment on exterior millwork.

(10) Check to be sure that cut surfaces are brush coated with the same preservative treatment.

6A-04. FRAMING

a. General

(1) Check framing for accuracy of line, level, fabrication and fitting. Exterior wall studs should be checked for plumbness and alignment before exterior masonry work is begun.

(2) Check connection and method of rigidly securing all members. Use NFPA*s "Manual for House Nailing" for recommended nailing schedule.

(3) Carefully check for first class workmanship as compared with applicable requirements of the American Institute of Timber Construction Publication.

(4) Do not permit the arbitrary cutting or notching of framing members.

(5) Require the framing of all openings.

(6) Check to see that a 2 inch space is maintained between chimney and timber and 4 inches between fireplace backwall and timber.

(7) Check for the leveling of timber on masonry and concrete with slate or steel shims and do not allow the use of shims on wood or metal bearings.

b. Framing Details - Check with specifications and contract and/or shop drawings.

c. Anchorage to Concrete and Masonry

(1) Is anchorage provided near the end of each section of sill or nailer as well as at the specified spacing?

(2) Are ends of every fourth joist anchored as specified?

(3) Are joists which parallel masonry walls anchored every eight feet? Are anchors extended over and fastened to three joists?

(4) Are anchors provided for window frames and door bucks?

(5) Are anchors provided for wood sleepers?

(6) Are anchors provided for plates on concrete floors?

(7) Are anchors provided for end studs of partitions abutting masonry?

d. Framing Floors, Ceilings and Roofs

(1) Are joists spaced as detailed or specified?

- (2) Check that a minimum of 4-inch bearing is provided.
- (3) Check "built-in" joists for fire cut.
- (4) Are bridging and blocking installed where shown or specified?
- (5) Is nailing of lower ends of cross bridging left until after sheathing or sub-flooring and partition framing is in place?
- (6) Check sizes of openings through joists. Is doubling up of headers and trimmers required?
- (7) Check for joist hangers where framed into headers and girders.
- (3) Are joists lapped over bearing and spiked or bolted together?
- (9) Are 2X4*s framed between joists or sleepers for support of cut ends of diagonal sub-flooring?
- (10) Check for ventilation between sleepers by notching the end blocking described in (9) above.
- (11) Where joist bear on bottom flange of steel beams, are metal ties carried across beam on every fourth joist?
- (12) Are joists doubled up under partitions which run parallel with the joists?
- (13) Are bolt heads which are countersunk below surface of nailers actually fastened to the top of steel beams or bar joists?
- (14) Are structural members framed for the passage of pipes or ducts?
- (15) Structural members shall not be cut, notched, or bored more than one-fourth their depth without adequate and approved reinforcing.
- (16) Check installation of roof nailers (vented and non-vented) , cants, and roof framing for fascias, eaves, cornices, etc. Check size, shape (groove area in vented nailers, and anchorage.

e. Wall and Partition Framing

- (1) Check stud spacing. Is it as detailed or specified?
- (2) Are top plates doubled up for bearing walls and bearing partitions?
- (3) Check for horizontal blocking.
- (4) Check specifications. Is solid bearing specified for all edges and ends of gypsum board, plywood, fiber board and similar sheet materials? If so, check for continuous blocking between studs, joists and/or furring.
- (5) See that nailing of studs to plates is sufficient to prevent twisting.

1 Aug 92

- (6) Is diagonal wind bracing called for?
- (7) Is solid blocking provided for the hanging of fixtures, handrails, cabinets, base board or wall hung heaters and similar items?
- (8) Check doubling of studs at openings.
- (9) Headers.
 - (a) Are headers for narrow openings composed of two studs set on edge?
 - (b) Are headers for wide openings constructed as detailed on the drawings?
 - (c) Check bearing of header members on studs at both ends.
- (10) Soundproof partitions
 - (a) Are split plates called for?
 - (b) Are studs staggered as specified?
 - (c) Is insulation woven in between studs as specified? Fastened only to every other stud?
- (11) Alignment of studs
 - (a) Studs shall be selected to provide true plans surfaces.
 - (b) Alignment should not vary more than 1/8-inch from the plane of the faces.
 - (c) Check after installation, for crook, bow, twist, oversized knots and other imperfections over and above previous inspections. Unsuitable material shall be repaired or removed and replaced as required by the specifications.
 - (d) For wood, dry-wall or any sheet panel surfacing, it is especially important to check every stud for plumbness and minimum crook or bow.
 - (e) Method of repair shall be restricted to an occasional stud and under no circumstances shall two or more adjacent studs be kerfed and scabbed.

f. Sheathing and Planking

- (1) Check sheathing or planks against specification requirements for type of material, thickness, width, and length.
- (2) Are sizes and lengths of nails or fasteners as specified?
- (3) Check whether horizontal or diagonal application is required.
- (4) Do end joints occur only over framing members, and are boards accurately sawed? Sheathing will extend over top and bottom plates.
- (5) Is specified sheathing paper being installed as soon as practical after sheathing installation?

(6) Check fastening to every bearing for specified number of nails at specified spacing.

(7) Check plywood sheathing for type, grade, and thickness required.

(8) Check for required space at plywood joints.

(9) Wood Sheathing

(a) Are all courses driven up tight?

(b) Are joints staggered with at least two boards between joints?

(10) Is 1/8-inch expansion allowance made at edges and ends of fiberboard sheathing?

(11) Joint edges of gypsum/board sheathing shall be in light contact.

(12) Four-foot wide gypsum/board and fiberboard will be installed vertically. Also, check for diagonal wind bracing requirement.

g. Sub-Flooring and Underlayment

(1) Installation is similar to sheathing. Provide space for 1/4-inch clearance at walls.

(2) Be sure that underlayment joints are offset from parallel sub-flooring joints.

(3) When combination sub-floor is used support all joints except tongued and grooved edges.

(4) Surfaces, including joints and fastener locations, shall be smooth for finish flooring.

h. Furring Strips

(1) Provide "a true even plane for finish material."

(2) The true plane cannot be achieved by nailing furring directly to framing members and then applying finish.

(3) Check with straight edge and/or stringline.

(4) Shim between furring and framing as necessary to produce a "true even plane." This is necessary on walls as well as ceilings.

(5) Furring strips are "wood nailers" and are required to have pressure preservative treatment when fastened to the inside face of exterior masonry or concrete and when located below grade.

6A-05. EXTERIOR FINISH

a. Determine material type, grade, and length of boards to be used, and condition of material.

1 Aug 92

b. Pre-finished siding shall be sealed and finished exactly as specified. Check the certification for exceptions.

c. Inspect for excessive bowing, warping, or damages of such items as trim and siding.

d. Check for workmanship such as sawing, fitting, appearance and location of splicing, coping, shouldering, mitering, excess splices, etc.

e. Fastening of pine-finished siding shall be exactly as directed by the siding manufacturer.

f. Are end joints of siding made at supports?

g. Check trim installation for specified nailing, joining, fitting and caulking for water-resistance.

h. Has preservative treatment been provided as specified?

i. Are exposed nails set and putty stopped?

j. Are door- and window-trim and moldings in single lengths?

k. Are joints of built-up members staggered?

l. Are joints in exterior millwork constructed so as to be weather tight?

a. For wood shingles, check to assure that:

(1) Starter courses doubled.

(2) Weather exposure, as specified.

(3) Nailing is 1" above butt line of the next course.

(4) Joints are kept offset from the previous course.

n. Examine specifications for application of wood shingles. OCE guide does not allow direct nailing on 5/16" plywood.

o. Check for priming of all sides and edges of exterior wood work. This applies especially to the backside of fascia, soffits, and trim.

6A-06. INTERIOR FINISH

a. Ensure the correct quality of each piece of material used.

b. Are grounds provided to which to nail trim?

c. Are exposed surfaces sanded smooth?

d. Are backs of trim, to be installed against wood or plaster, hollow?

e. Are joints tight, sawed and fitted accurately, and made to conceal shrinkage?

- f. Are finish nails used to secure trim set for putty stopping?
- g. Are door- and window-trim, pilasters, newels and posts of single lengths?
- h. Are bases set in place after floor is laid?
- i. For wood finish flooring, is shoe mold nailed to base only?

6A-07. MILLWORK

a. General - Check millwork upon arrival at jobsite against specifications and details of shop drawings and/or contract drawings. Closely check workmanship.

b. Is preservative treatment required for any components, especially those to be in contact with concrete or masonry?

c. Check for water-repellent preservative requirements.

d. Inspect condition of materials, warps, splits, and damages.

e. Ensure that back-priming has been accomplished where specified.

f. Have anchors been provided as specified or detailed?

g. Are fastenings the type, size and spacing specified, or shown?