

FRAMES AND JAMBS

SECTION
900

Section 900 Selection and Specification Checklist

Because most architecture, specification, and design firms have electronic master specifications in place, the AWI and AWMAC offer this quick checklist. A review of these items may help the design and specification team issue a complete and accurate contract document and avoid missing things vital to the successful completion of the project. The checklists are not considered a part of the Quality Standards for the purposes of compliance.

Part 1. GENERAL

1.1. REFERENCES

- A. AWI/AWMAC Quality Standards Illustrated (QSI), current edition

1.2. SUBMITTALS

A. Shop drawings:

- Submit two copies; one of which will be returned with reviewed notations prior to commencement of work under this section.
- Indicate plans and elevations, materials, surface grain directions, profiles, assembly methods, joint details, fastening methods, accessories, hardware, compliance with specified fire-retardant treatments, preservative treatments, and schedule of finishes.

B. Finish samples:

- When appropriate, submit one or more samples of veneer-on-substrate, 200 x 250 mm [8 x 10"] illustrating expected range of component finish color and/or grain.
- When appropriate, submit one or more samples of solid lumber, 300 square centimeters [50 square inches] illustrating expected range of component finish color and/or grain.
- The sample shall bear identification of the project, architect or designer, general contractor, woodwork manufacturer, items to which the finish applies and the system utilized to attain the finish.

1.3. QUALITY ASSURANCE

- A. Perform work in accordance with [Premium] [Custom] [Economy] Grade quality

- B. Work in this section shall comply with the specified Grade(s) of Work and Section (s) of the current edition of the AWI/AWMAC Quality Standards Illustrated.

1.4. QUALIFICATIONS

- A. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified.

- B. Manufacturers who are members in good standing of the Architectural Woodwork Institute (AWI) or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and are familiar with this Standard.

1.5. DELIVERY, STORAGE AND HANDLING

- A. Protect work from moisture damage according to QSI, Section 1700, Installation.

Part 2. PRODUCTS

2.1. MANUFACTURERS

- A. Manufacturers who are members in good standing of the Architectural Woodwork Institute (AWI) or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and are familiar with this Standard.

2.2. LUMBER

- A. Softwood Lumber: If a particular species is desired, specify here.

- For exposed surfaces:
- For semi-exposed surfaces:
- For concealed surfaces:

- B. Hardwood Lumber: If a particular species is desired, specify here.

- For exposed surfaces:
- For semi-exposed surfaces:
- For concealed surfaces:

2.3. PANEL PRODUCTS

- A. Softwood plywood: Not usually used for in fine architectural woodwork, but specify here if part of the design aesthetic.
- For exposed surfaces:
 - For semi-exposed surfaces:
 - For concealed surfaces:
- B. Hardwood plywood: Made with medium density particleboard or fiberboard (MDF) core for interior use or moisture-resistant core stock for exterior use; specify face veneer species here.
- For exposed surfaces:
 - For semi-exposed surfaces:
 - For concealed surfaces:
- C. High-pressure decorative laminate (HPDL), specify by brand name and design name/part number.
- For exposed surfaces:
 - For semi-exposed surfaces:
- D. Core material for veneered or laminated components, if other than QSI standards:
- For exposed surfaces:
 - For semi-exposed surfaces:
- E. Solid surface materials, Thermoplastic sheets, Acrylic or methacrylate sheets, Solid phenolic core, or any other special panel product, specify by brand name and design name/product number.

2.4. WOOD TREATMENT

- A. List the specific local requirement for fire retardant treatment, if any.
- B. List the specific chemical and process for preservative treatment, if any.

2.5. GLAZING, HARDWARE, AND ACCESSORIES

- A. If glass is to be supplied by woodworker, the materials and requirements should be listed here.
- Wood stops shall conform to the QSI for the Grade of Work specified.
 - Finish coats on glazed exterior work, if any, shall be allowed to flow on to the glass.
- B. Fasteners: Size and type to suit application. Weather resistant if exterior. The QSI does not set standards for fasteners.
- C. Hardware, if not specified by brand name and part number, shall be mill option to meet QSI minimums.

2.6. FABRICATION

- A. Fabricate to [Premium] [Custom] [Economy] Quality Standards.
- B. Shop prepare and identify components of assemblies for matching during site assembly.
- C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- D. Select a joinery technique, or leave it up to the manufacturer to choose from QSI compliant methods.

2.7. FINISHING MATERIALS AND APPEARANCE

- A. List the name of the finish system (topcoats) to be used from Section 1500
- B. List the sheen desired: [Flat] [Satin] [Semi-gloss] [Gloss].
- D. List the special or extra steps and/or products to be used, such as bleach, distressing, filler, glaze, shading, stain, toner or washcoats.

2.8. FINISHING REQUIREMENTS

- A. Sand work smooth and set exposed nails [and screws].
 - For opaque finishes, apply wood filler in exposed nail [and screw] indentations and sand smooth.
 - For transparent finishes, use wax or burn-in filler which blends with surrounding color and sheen, often after stain and before final top coat.
- B. When combining wood and laminates or other specialty products, careful consideration must be given to finishing specifications. Responsibility for finish wood parts should be clarified by the design professional here.
- C. Finish work in the factory in accordance with Section 1500.
- D. [Prime paint] [Seal] surfaces in contact with cementitious materials.

Part 3. EXECUTION

3.1. EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are in place and ready to receive this work.

3.2. INSTALLATION

- A. Install work in accordance with [Premium] [Custom] [Economy] Grade, Section 1700, QSI.
- B. Set and secure materials and components in place, plumb and level.

3.3. ADJUSTING

- A. Adjust work under provisions of Section [] of the contract documents.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.4. CLEANING

- A. Clean work under provisions of Section [] of the contract documents.

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General Criteria

900-G-1

Scope

Includes:

Interior and exterior frames and jambs for doors, sidelights, louver frames, transoms, and borrowed lights, fire-rated door jambs and frames.

Wood-veneered jambs and frames.

Specialty units such as elliptical, segment or full circle head, arched, peaked, Gothic, irregular, and divided entrance frames.

Excludes:

Interior trim, casings, and loose jamb extensions for these frames covered in Section 300, Standing and Running Trim.

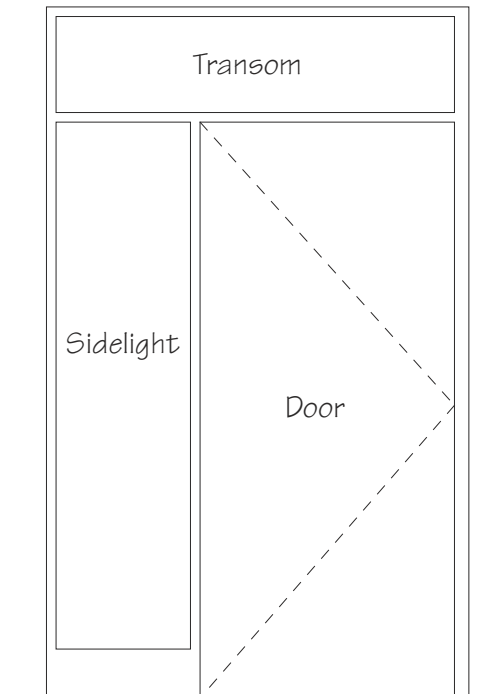
Transom and sidelight sash and window frames covered in Section 1000, Windows.

Doors for these frames covered in Sections 1300, Flush Doors, and Section 1400, Stile and Rail Doors.

Ornamental trims, pediments, pilasters covered in Section 700, Ornamental Woodwork.

Commodity frames purchased directly without the benefit of selection and production under these Quality Standards.

Machining of door frames for hardware supplied by others.



Frame, Transom, Sidelight - Figure 900-01

900-G-2

Specification Requirements

GRADE MUST BE SPECIFIED

The Quality Standards Illustrated (QSI) provide for three grades: Premium, Custom, and Economy.

Premium Grade

The Grade specified when the highest degree of control over the quality of workmanship, materials, installation and execution of the design intent is required. Usually reserved for special projects, or feature areas within a project.

Custom Grade

The grade specified for most conventional architectural woodwork. This Grade provides a well-defined degree of control over the quality of workmanship, materials and installation of a project. The vast majority of all work produced is Custom Grade.

Economy Grade

The Grade which defines the minimum expectation of quality, workmanship, materials, and installation within the scope of these standards.

Prevailing Grade

When the Quality Standards are referenced as a part of the contract documents and no Grade is specified, Custom Grade standards shall prevail. In the absence of specifications, material shall be mill option lumber or veneers suitable for opaque finish.



Technical Criteria

900-T-1

Exterior Frames and Interior Jambs

Hardwood and softwood members exceeding dimensions defined in Section 100 should be glued for width and thickness to maintain stability.

If total length exceeds the available length of the species as defined in Section 100, members can have plant prepared joints for plant or field assembly, depending on building access and site conditions.

Exposed portions of frames are those which are visible after assembly and installation.

900-T-2

Specification Requirements

Architect or Design Professional shall ...

- specify the Quality Grade required;
- specify the species and type of cut;
- specify the type of wood frame (split jamb, rabbeted, T-groove, planted stop);
- specify the ornamental details and joinery which affect the aesthetics and function;
- specify the fire retardant rating, if required;
- specify the preservative treatment for exterior use, if required.

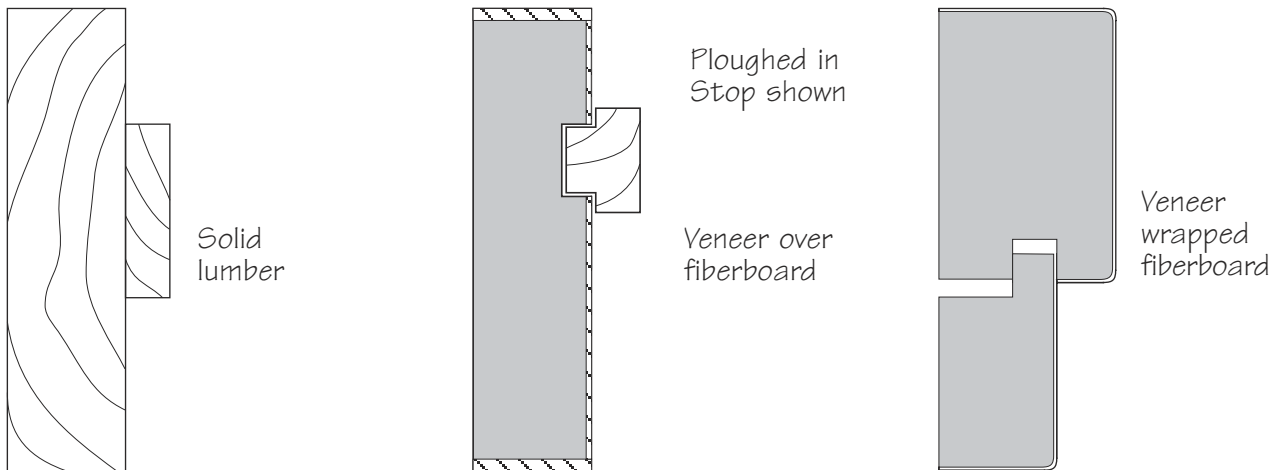
900-T-3

Materials

In the absence of specifications, the following standards will apply. Where more than one method or material is listed for a Grade, manufacturers will supply their choice from the alternatives.

Materials	Premium		Custom		Economy	
	Transparent	Opaque	Transparent	Opaque	Transparent	Opaque
Lumber (see Section 100)	I	II	II	II	II	II
Panel Products (see Section 200)						
Core	Fiberboard (Veneer only by direct specification)	Fiberboard (Veneer only by direct specification)	Fiberboard (Veneer only by direct specification)	Fiberboard recommended (Veneer permitted)	Fiberboard recommended (Veneer permitted)	Fiberboard or veneer
Face: Veneer grade for transparent finish and Material for opaque finish	"AA" face veneer	"B" veneer, plain fiberboard or medium density overlay	"A" face veneer	"B" veneer, plain fiberboard or medium density overlay	"B" face veneer	"B" veneer, plain fiberboard or medium density overlay

900



Materials - Figure 900-02

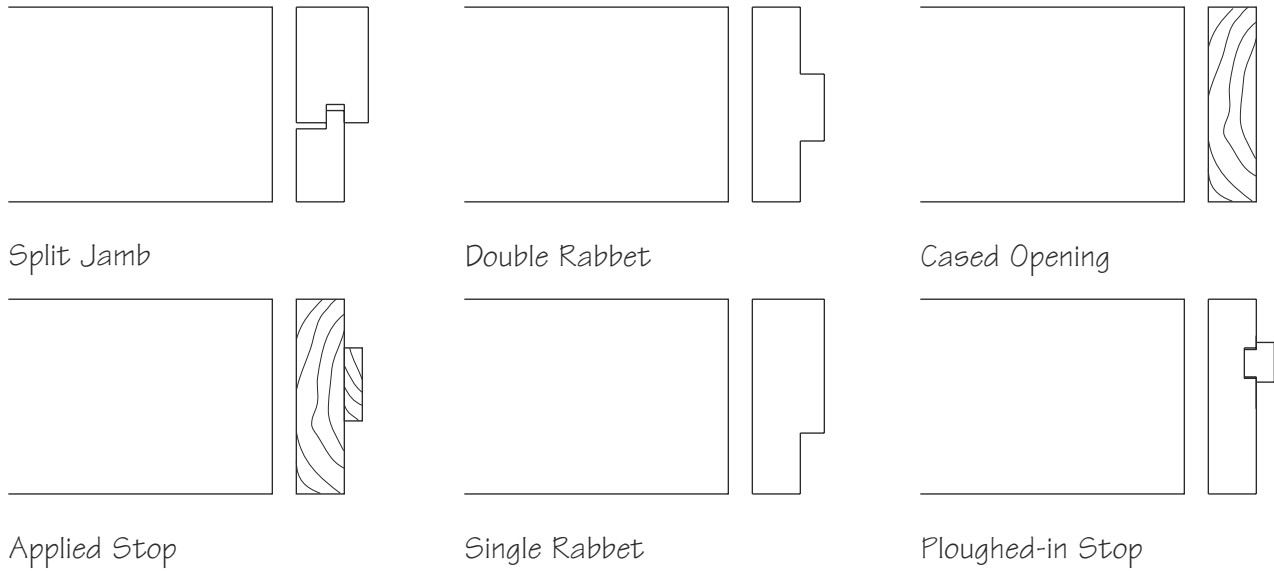
900-T-4

Workmanship

In the absence of specifications, the following standards will apply. Where more than one method or material is listed for a Grade, woodworkers will supply their choice from the alternatives.

Workmanship	Premium		Custom		Economy	
	Transparent	Opaque	Transparent	Opaque	Transparent	Opaque
Finish Condition	Transparent	Opaque	Transparent	Opaque	Transparent	Opaque
Cut of lumber	Plain sawn	Plain sawn	Plain sawn	Plain sawn	Plain sawn	Plain sawn
Finger-jointed lengths	Not permitted		Not permitted		Permitted	
Cut of veneer	Plain sliced	Mill option	Plain sliced	Mill option	Plain sliced	Mill option
Kerfed or backed out back	Mill option		Mill option		Mill option	
Minimum Thickness Related to Frame Type						
Split jamb	19 mm [3/4"] thin member		19 mm [3/4"] thin member		17 mm [11/16"] thin member	
Rabbeted frame	38 mm [1-1/2"] total thickness		33 mm [1-5/16"] total thickness		27 mm [1-1/16"] total thickness	
Cased opening	27 mm [1-1/16"]		19 mm [3/4"]		17 mm [11/16"]	
Applied stop (generally used only on interior frames)	Not applicable in this Grade, but may be specified if desired		32 mm [1-1/4"] total thickness of assembly (19 mm [3/4"] jamb + 13 mm [1/2"] applied stop)		27 mm [1-1/16"] total thickness of assembly (17 mm [11/16"] jamb + 9 mm [3/8"] applied stop)	
Ploughed-in stop	40 mm [1-9/16"] total thickness of assembly (27 mm [1-1/16"] jamb + 19 mm [3/4"] stop let into 6 mm [1/4"] groove)		32 mm [1-1/4"] total thickness of assembly (19 mm [3/4"] jamb + 19 mm [3/4"] stop let into 6 mm [1/4"] groove)		32 mm [1-1/4"] total thickness of assembly (19 mm [3/4"] jamb + 19 mm [3/4"] stop let into 6 mm [1/4"] groove)	
Preservative Treatment (Exterior Frames Only)						
All finish conditions and frame types	Exposed and concealed exterior members shall be treated as defined in Section 100					
Fasteners and Adhesives (Exterior Frames Only)						
All finish conditions and frame types	Nails and screws used for assembly in redwood, cedar and cypress species shall be galvanized steel or aluminum					
	Moisture-resistant Type I assembly shall be used for exterior frames					

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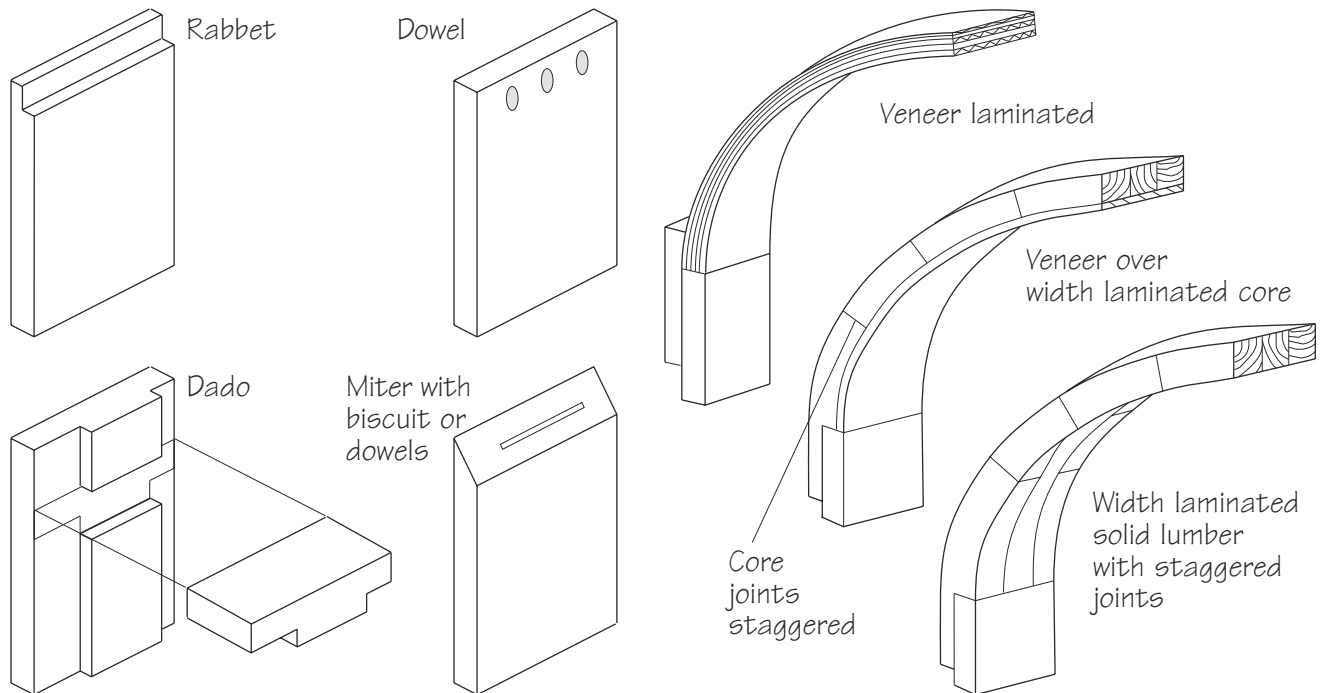
Frame and Jamb Profiles - Figure 900-03

900-T-5

Machining and Joinery

In the absence of specifications, the following standards will apply. Where more than one method or material is listed for a Grade, woodworkers will supply their choice from the alternatives.

Machining	Premium	Custom	Economy
Plant Machining Considerations			
Sizing	Plant sized except where field adjustments required	Plant sized except where field adjustments required	Shipped oversize for cutting and fitting in the field
Joinery and Assembly Considerations			
Dadoed, doweled, mitered or rabbeted joints	Plant prepared and assembled in sections as large as practical for safe transportaion and installation	Plant prepared and bundled in sets appropriately labeled for the jobsite	Shipped loose without preparation
Curved jambs or heads	Veneer-laminated or veneer-laminated over bandsawn width-laminated low density lumber	Bandsawn from solid stock and width-laminated with end joints of laminations staggered	Not applicable
Glass and Glazing			
All Frames and Lites	Trim glazed openings with wood mouldings of the profile indicated in the contract documents, removable one side. In the absence of specifications, profile shall be mill option. Removable stop to be placed on the exterior face of the fixed glazed frame when mounted in exterior openings.		
Wood Moulding Glass Stop	Plant prepared, one side installed, other side tacked in place	Plant prepared and bundled in sets appropriately labeled for the jobsite	Shipped loose without preparation



Joinery - Figure 900-04

900-T-6

Smoothness of Exposed Surfaces (Minimum Requirements)

Smoothness Table	Premium		Custom		Economy	
	Transparent	Opaque	Transparent	Opaque	Transparent	Opaque
Sharp edges (Arris)	Eased with fine abrasive		Eased with fine abrasive		Mill option	
Top flat surfaces	150 grit		120 grit		100 grit or 15 KCPI	
Moulded surfaces	120 grit		minimum 20 KCPI			
Shaped surfaces	120 grit		minimum 20 KCPI			
Turned surfaces	120 grit		100 grit			
Sanding cross scratches	None allowed	Not to exceed 6.4 mm [.25"]	None allowed	Not to exceed 6.4 mm [.25"]		

NOTE: No tearouts, knife nicks, or hit-or-miss finish allowed. No knife marks allowed where sanding is required. Surface variations as a result of multiple tool passes treated as turned surfaces above. Glue and filler, if used, must be inconspicuous and sanded as smoothly as the surrounding surface. Sanding before final stain and/or finish should be a consistent grit and scratch pattern, as it influences blend of color and sheen between components. Top Flat Surfaces are those which which can be sanded with a drum or wide belt sander. Turnings are customarily sanded on the lathe, and will exhibit cross scratches.

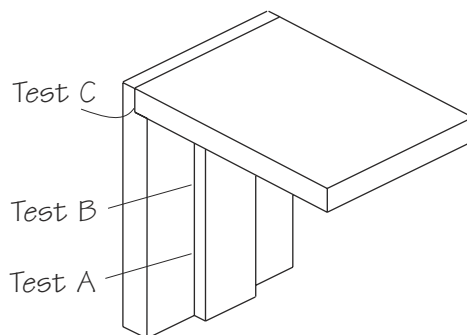
Before finishing, all exposed portions of architectural woodwork shall have handling marks or effects of exposure to humidity or moisture removed by a thorough uniform final sanding. The sanded surface shall then be cleaned and dust free, prior to proceeding with the first step in the finishing process. Veneer sand-through, with veneer sanded to the point where cross banding or core is visible, and/or core telegraphing (variation from a true plane in excess of 0.25 mm [0.010"] in any 76 mm [3"] span) is not allowed in any Grade.

900-T-7

Tightness of Plant Assembled Joints

NOTE: Maximum gap between exposed components shall be tested at points designed to join; where members contact or touch.

Tightness of Plant Assembled Joints	Premium		Custom		Economy	
	Interior	Exterior	Interior	Exterior	Interior	Exterior
Maximum gap: Test A	0.4 mm [.015"] wide by 20% of joint length	0.6 mm [.025"] wide by 30% of joint length	No plant assembly		No plant assembly	
Maximum gap: Test B	.4 mm [.015"] x 76 mm [3"], and no gap may occur within 1829 mm [72"] of a similar gap	.6 mm [.025"] x 152 mm [6"], and no gap may occur within 762 mm [30"] of a similar gap				
Maximum gap: Test C	0.4 mm [.015"]	0.6 mm [.025"]				
Flushness variation	0.03 mm [.001"]	0.4 mm [.015"]				



900-T-8

Selection for Grain and Color

For Transparent finish, adjacent members shall ...

- Premium Grade: ... be well matched for grain and color.
- Custom Grade: ... be compatible for color.
- Economy Grade: ... not be selected.

Visible finger joints not permitted in Premium and Custom Grades. No selection for grain or color is required for opaque finish in any Grade.

Field Assemblies

Selection of adjacent members for compatibility is the responsibility of the installation contractor.

900-T-9

Labeled (Fire-Rated) Jamb Assemblies

AWI Wood Type 20-minute-rated frames can only be manufactured and labeled under license from Underwriters Laboratories (UL) or Intertek Testing Services (ITS). Engineering details for 3'-0" x 8'-0" and 4'-0" x 8'-0" frames at neutral pressure have been tested by AWI and are available as a member service. Other designs and details may require testing or specific authorization from UL or ITS.

In Canada, labeled 20-minute fire rated wood doors, wood door frames, and sidelight assemblies are available in standard profiles from a very limited number of architectural woodwork manufacturers. Also, only limited species are available. The design authority should check with the supplier before specifying.



Compliance Criteria

900-C-1

Tests for Smoothness of Exposed Surfaces

KCPI (Knife Cuts Per Inch) can be determined by holding the surfaced board at an angle to a strong light source and counting the visible ridges per inch, usually perpendicular to the profile.

SANDING can best be checked by sanding a sample piece of the same species with the required grit of abrasive. Observation with a hand lens of the prepared sample and the material in question will offer a comparison of the scratch marks of the abrasive grit. Reasonable assessment of the performance of the finished product will be weighed against absolute compliance with the standard.

900-C-2

Tightness and Flushness of Plant Assembled Joints

Joint tightness and/or flushness will meet the standard when tested with a feeler gauge at the points indicated in the il-

lustration. Joint length will be measured with a ruler with a minimum division of 1 mm [$1/16$ "] and calculations made accordingly. Reasonable assessment of the performance of the finished product will be weighed against absolute compliance with the Standard.



Design Ideas

900-D

Freedom of Expression

This section shows a few frame design ideas. It makes no pretense of being complete. It's here for the reader to use as a starting place. The exercise of personal creativity is the essence of fine architectural woodwork.

Custom-designed woodwork gives you complete freedom of expression.

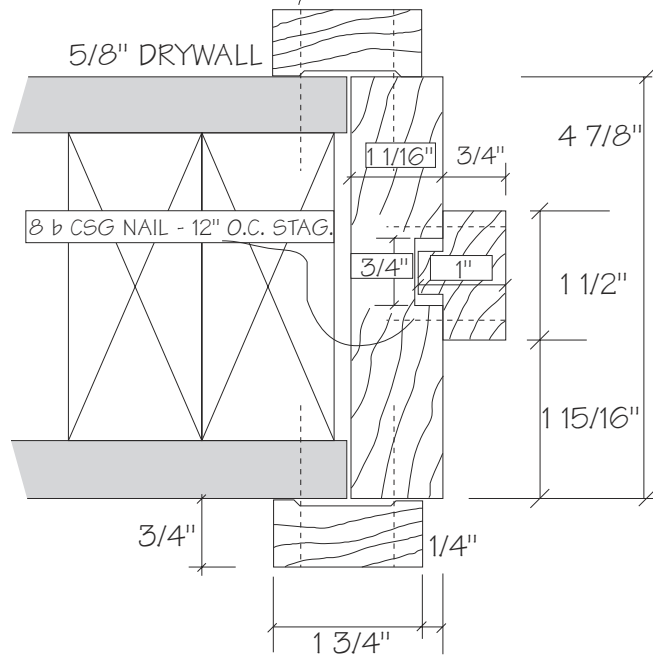
- Design flexibility: The use of custom-designed woodwork in a building allows the design professional freedom of expression while meeting the functional needs of the client. A custom-designed building is enhanced by the use of custom-designed woodwork.
- Cost effective: Custom woodwork does compete favorably with mass-produced millwork, and offers practically limitless variations of design and material. Most woodwork lasts the life of the building - quality counts.
- Complete adaptability: By using custom woodwork, the architect or designer can readily conceal plumbing, electrical and other mechanical equipment without compromising the design criteria.
- No restrictions: Custom architectural woodwork permits complete freedom of selection of any of the numerous hardwoods and softwoods available for transparent or opaque finish. Other unique materials available from woodwork manufacturers require no further finishing at all, such as plastic laminates and decorative overlays. These materials can be fashioned into a wide variety of profiles, sizes, and configurations. The owner and design professional have the best of both worlds - high quality and freedom of choice.
- Dimensional flexibility: Since custom woodwork is normally produced by a specialty architectural woodwork firm, dimensions can easily be changed prior to actual fabrication, if required by job conditions. Special situations such as designing for the handicapped can readily be accommodated by the custom architectural woodwork manufacturer.
- Quality assurance: Adherence to the QSI and specifications will provide the design professional a quality product at a competitive price. Use of a qualified AWI/AWMAC member firm will help ensure the woodworker's understanding of the quality level required.

900-D-1
20-Minute Wood Frames

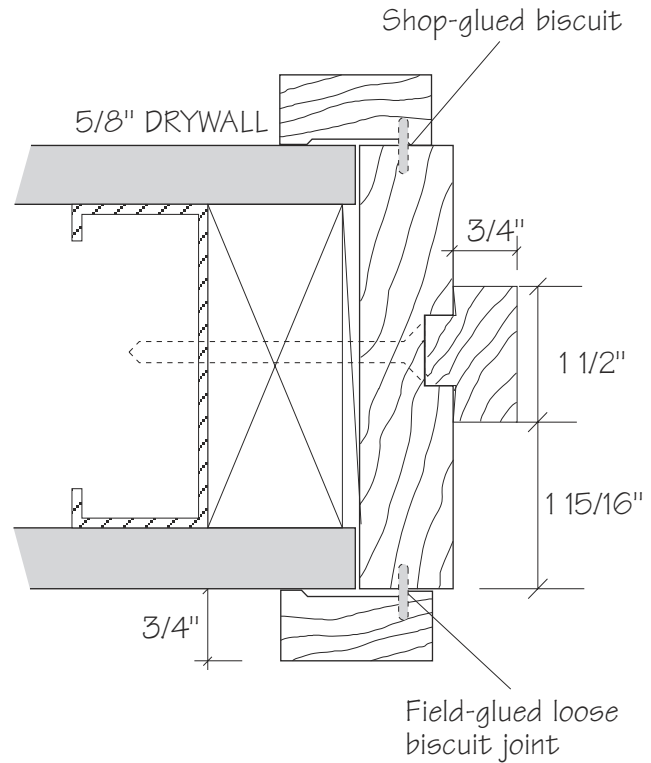
Some woodwork manufacturers are licensed to fabricate and label 20-minute-rated wood frames for use in combination with 20-minute wood doors. A variety of species are available. New designs and fire ratings on wood frames are being developed by individual manufacturers. Neither AWI nor AWMAC sets standards for these frames. Consult with your woodwork manufacturer on availability.

IMPORTANT: Only firms licensed by Underwriters Lab (UL) or Warnock-Hersey (WHI) under their respective labeling programs are authorized to attach the 20-minute label. If this label will be required by the local code officials, it is the obligation of the design professional to so specify, and the obligation of the purchaser to assure supply by a properly licensed firm. Certificates of occupancy may be withheld or withdrawn for failure to follow these guidelines.

8-10 b CSG NAIL - 12" O.C. STAG.

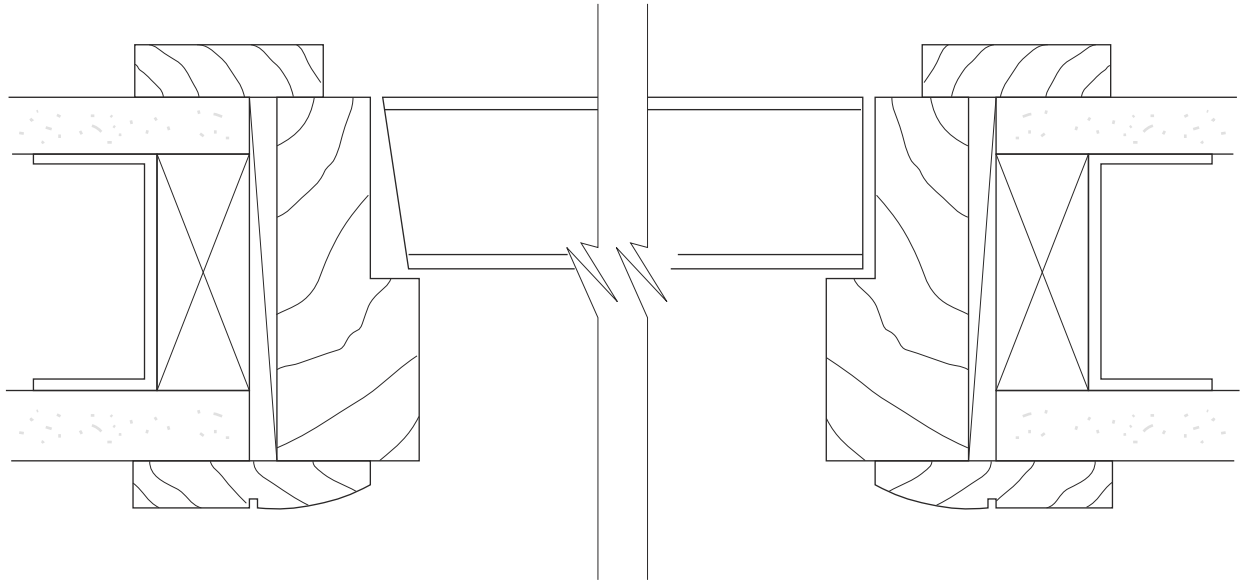


900-D-2
No Visible Fastening

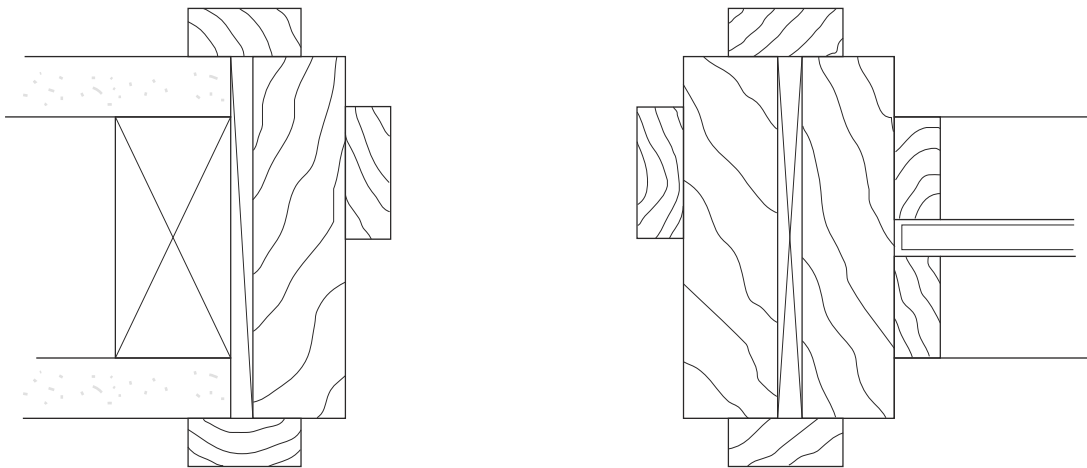


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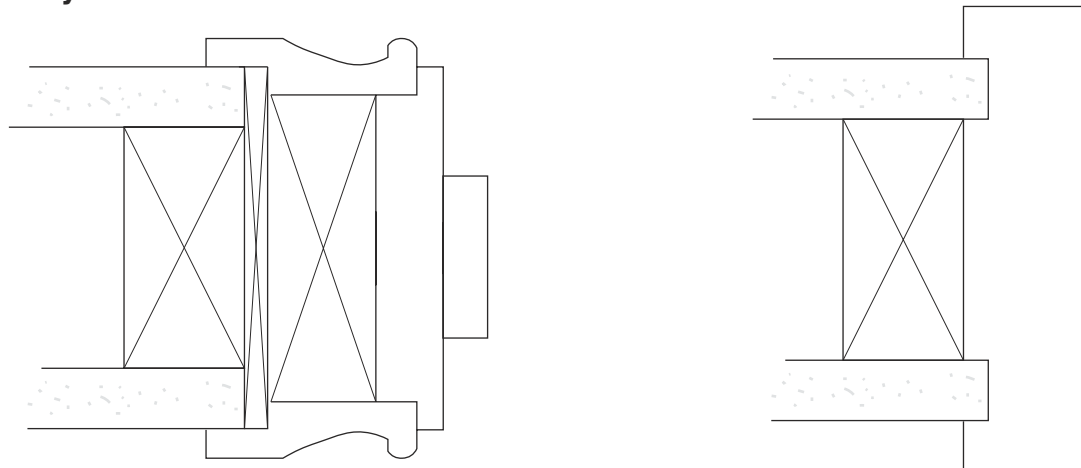
900-D-3
Rabbeted Jamb

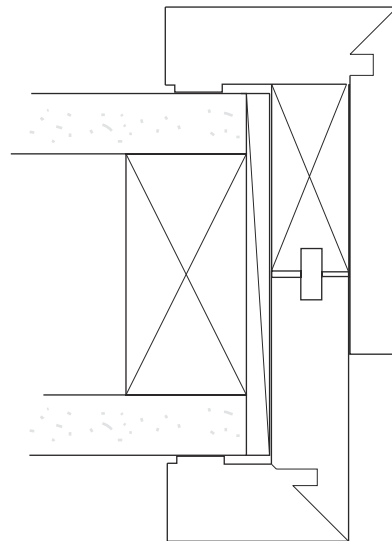
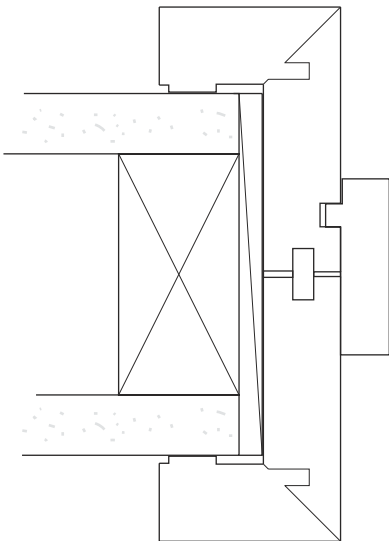
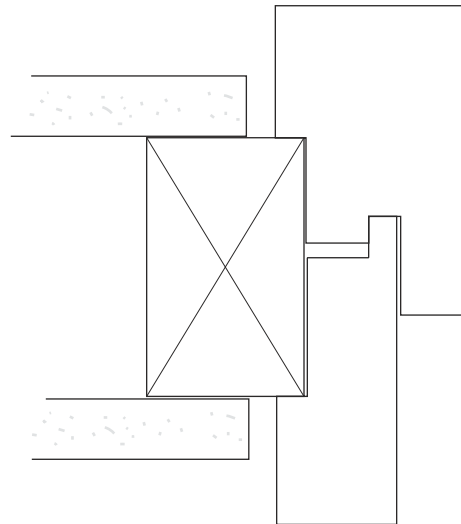
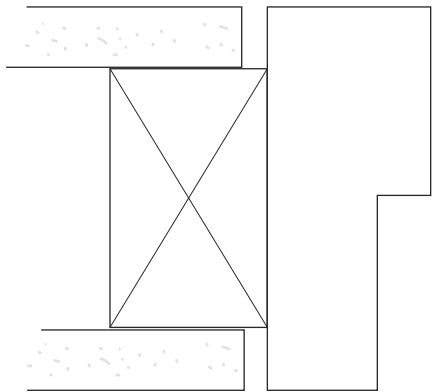
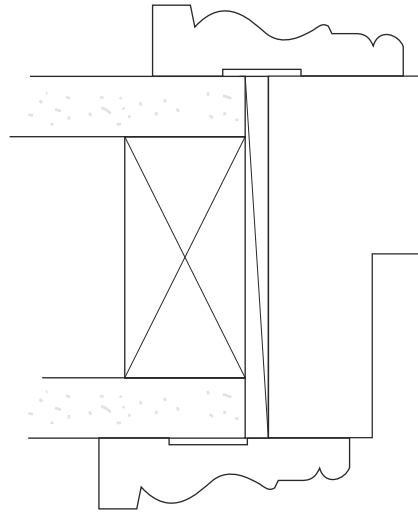
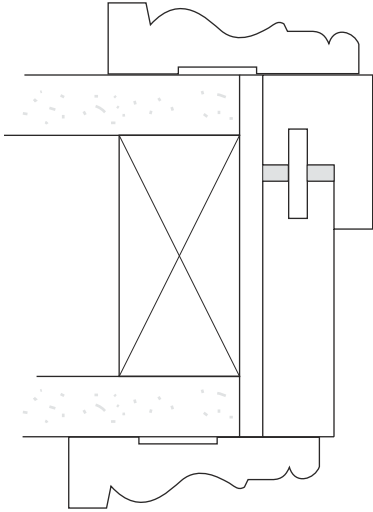


900-D-4
Jamb at Lite



900-D-5
Alternate Layouts





900