

Mass Timber QC/QA Checklist

This internal note specifies the items checked during the design, manufacturing and machining of Nordic products supplied for mass timber construction. This checklist is non-exhaustive and is subject to change.

Design and Engineering

ACTIVITY	CRITERIA
Design and engineering	
Calculation notes, as required	Per code requirements
Shop drawings	Internal review
Erection plans	Approved by the client
CAD files for fabrication	Per approved drawings

Nordic Lam+ Manufacturing

Production line testing monitor production variables that affect bond line quality. Face joint, edge joint and end joint strength and durability are monitored daily by physical tests. Lastly, the finished production is inspected to ensure accuracy of fabrication, dimensions within the specified tolerances and, if used, proper end and/or surface sealing. The Nordic Lam+ products are subject to regular audits by APA, in accordance with the in-plant manufacturing standard approved by APA. Routine audits include inspection of the manufacturing process and evaluation of the in-plant QA program with defined sampling to verify conformance to industry standards for lumber grade and glue bond quality.

The Nordic Lam+ products meet the requirements of CAN/CSA O177, Qualification Code for Manufacturers of Structural Glued Laminated Timber. Although the plant does not manufacture glulams under CAN/CSA O122, Structural Glued-Laminated Timber, the manufacturing practices are consistent with the CSA standards.

ACTIVITY	CRITERIA
In-line tests	
Dimensions	Per CSA O122 Standard
Moisture content	Per CSA O122 Standard
Surfacing	Per CSA O122 Standard
Temperature	Per CSA O122 Standard
End joints	Per CSA O122 Standard
Edge joints	Per CSA O122 Standard
Face joints	Per CSA O122 Standard
Adhesive mixing	Per CSA O122 Standard
Adhesive spread	Per CSA O122 Standard
Assembly time	Per CSA O122 Standard
Pressure	Per CSA O122 Standard
Temperature	Per CSA O122 Standard
Physical tests	
Face joint bonding	Per CSA O122 Standard
Edge joint bonding	Per CSA O122 Standard
End joint bonding	Per CSA O122 Standard
Proof loaded end joints	Per CSA O122 Standard
Integrity of adhesive bonds	Per CSA O122 Standard
Laminating lumber, ft	Per CSA O122 Standard
Laminating lumber, MOE	Per CSA O122 Standard
Final inspection	
Dimensions (width, depth and length)	Per CSA O122 Standard
Shape, camber and squareness	Per CSA O122 Standard
Type, quality and location of bond lines	Per CSA O122 Standard
Appearance grade	Per CSA O122 Standard
Lumber species and placement of grades	Per CSA O122 Standard
Moisture content	Per CSA O122 Standard
Adhesive type	Per CSA O122 Standard
Bond line	Per CSA O122 Standard
Application of appropriate marks	Per CSA O122 Standard

Nordic X-Lam Manufacturing

Production line testing monitor production variables that affect bond line quality. Face joint and end joint strength and durability are monitored daily by physical tests. Lastly, the finished production is inspected to ensure accuracy of fabrication, dimensions within the specified tolerances and, if used, proper end and/or surface sealing. The Nordic X-Lam products are subject to regular audits by APA, in accordance with the in-plant manufacturing standard approved by APA. Routine audits include inspection of the manufacturing process and evaluation of the in-plant QA program with defined sampling to verify conformance to industry standards for lumber grade and glue bond quality.

ACTIVITY	CRITERIA
In-line tests	
Dimensions	Per ANSI/APA PRG 320 Standard
Moisture content	Per ANSI/APA PRG 320 Standard
Surfacing	Per ANSI/APA PRG 320 Standard
Temperature	Per ANSI/APA PRG 320 Standard
End joints	Per ANSI/APA PRG 320 Standard
Face joints	Per ANSI/APA PRG 320 Standard
Adhesive mixing	Per ANSI/APA PRG 320 Standard
Adhesive spread	Per ANSI/APA PRG 320 Standard
Assembly time	Per ANSI/APA PRG 320 Standard
Pressure	Per ANSI/APA PRG 320 Standard
Temperature	Per ANSI/APA PRG 320 Standard
Physical tests	
Face joint bonding	Per ANSI/APA PRG 320 Standard
End joint bonding	Per ANSI/APA PRG 320 Standard
Proof loaded end joints	Per ANSI/APA PRG 320 Standard
Integrity of adhesive bonds	Per ANSI/APA PRG 320 Standard
Final inspection	
Dimensions (thickness, width and length)	Per ANSI/APA PRG 320 Standard
Shape, straightness and squareness	Per ANSI/APA PRG 320 Standard
Type, quality and location of bond lines	Per ANSI/APA PRG 320 Standard
Appearance classification	Per ANSI/APA PRG 320 Standard
Layup	Per ANSI/APA PRG 320 Standard
Moisture content	Per ANSI/APA PRG 320 Standard
Application of appropriate marks	Per ANSI/APA PRG 320 Standard

Steel Components Manufacturing

The verifications below apply for internal and/or external manufacturing. Nordic Structures makes sure to validate the certification of the incoming materials and/or the work of subcontractors. Other verifications may be necessary according to the specifications defined in the contractual agreement. The steel products fabricated by Nordic Structures are subject to semi-annual audits by a qualified welding engineer (Division 2).

ACTIVITY	CRITERIA
Materials	
Bills of materials	Per approved drawings
Mill tests	Per specifications
Welded steel construction	
Qualified welding supervisor	Per CSA W47.1 Standard
Qualified tack welders, welders and/or welding operators	Per CSA W47.1 Standard
Qualified welding procedures	Per CSA W47.1 Standard
Quality of welds	Per CSA W59 Standard
Dimensional tolerances – Welded structural members	Per CSA W59 Standard
Dimensional tolerances – Structural members	Per CSA W59 Standard
Painting and galvanizing	
Surface preparation	Per specifications
Galvanization, as required	Per CAN/CSA G164 Standard
Sandblasting	SSPC Surface Preparation Standards
Paint thickness	Per manufacturer's recommendations
Visual inspection	Per industry standards and approved drawings

Machining

ACTIVITY	CRITERIA
Fabrication	
Machining (measurements)	Per approved drawings
Visual inspection	Per approved drawings