

OBC 2023 AND MANDATORY QUALITY CONTROL FOR TRUSS PLANTS

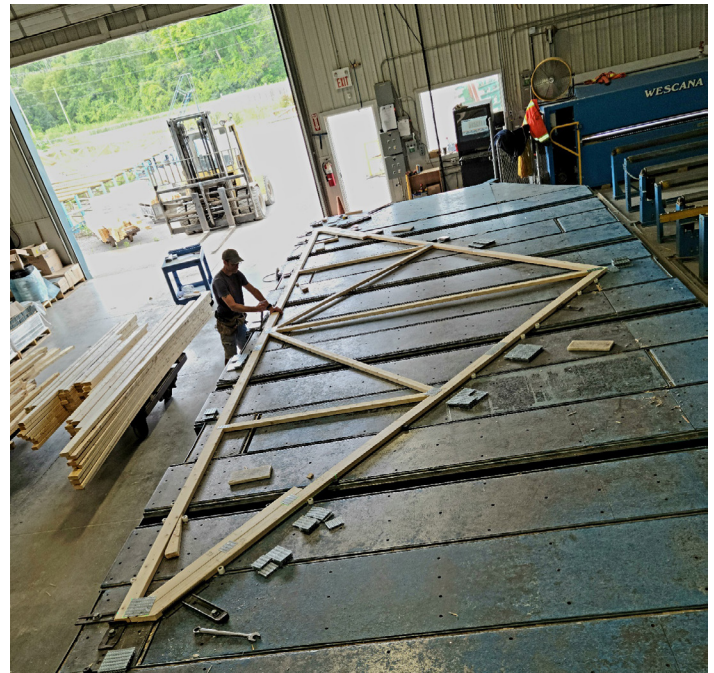


In 2024, when the next version of the Ontario Building Code (OBC) is adopted, an updated Truss Plate Institute of Canada (TPIC) 2019 design standard will mandate that all trusses designed under those provisions are to be fabricated by a manufacturing facility that has a third-party quality control program (QCP). The QCP must meet the requirements of the Canadian Wood Truss Association's (CWTA) National Quality Standard (NQS). This means that any fabricator providing trusses for structures built under OBC 2023 (small farm buildings excluded) without NQS certification will not be complying with the TPIC 2019 design standard or, ultimately, the OBC.

Questions about manufacturing tolerances and quality control are nothing new to the truss industry. In 1976, TPIC released a memo outlining its voluntary Recommended Manufacturing Standard, which provided quality control criteria to the fabricator along with a method of evaluating the finished product to the authority having jurisdiction (AHJ). In 1986, QST-86: Quality Standard for Metal Plate Connected Wood Trusses, was published in the United States and was eventually rolled into the mandatory portion of the U.S. design standard ANSI/TPI 1995.

Between 2001 and 2008, based on the work done in the United States, TPIC developed Appendix G to provide the "minimum quality manufacturing criteria" and ensure that, when trusses were built, the finished product would meet the intent of the design provisions and generate the required level of safety for the intended use. In 2008, TPIC 2007 was released with Appendix G being "recommended." In 2011, the word "recommended" was removed and the criteria became mandatory.

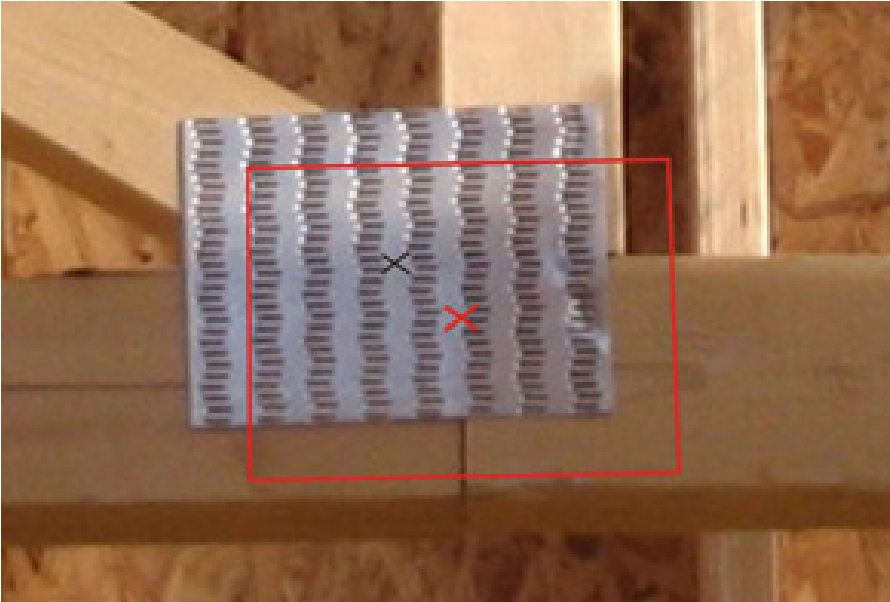
What is TPIC Appendix G? It is a portion of the standard that establishes the minimum allowances for material defects and variances in workmanship to be used when fabricating trusses. It provides the fabricator with realistic tolerances for both geometry and truss plate placement for lumber and joints that are assembled manually. For example, trusses with an overall length greater than 30 feet are permitted to be manufactured with a half-inch tolerance on total length and trusses greater than four feet high are permitted to be manufactured with a quarter-inch tolerance on total height.



Typical truss assembly, courtesy of Peterborough Truss & Floor Ltd.

For lumber on edge, design provisions account for truss plates located horizontally and/or vertically a quarter-inch or rotated five degrees from their design position by ensuring a minimum reserve design strength of 10 per cent in all joints ($JSI \leq 0.90$). For truss plates that are placed over knots, wane or other types of unsound wood, fabricators are required to consider the teeth in those locations as ineffective, resulting in truss plates typically being upsized when this occurs.

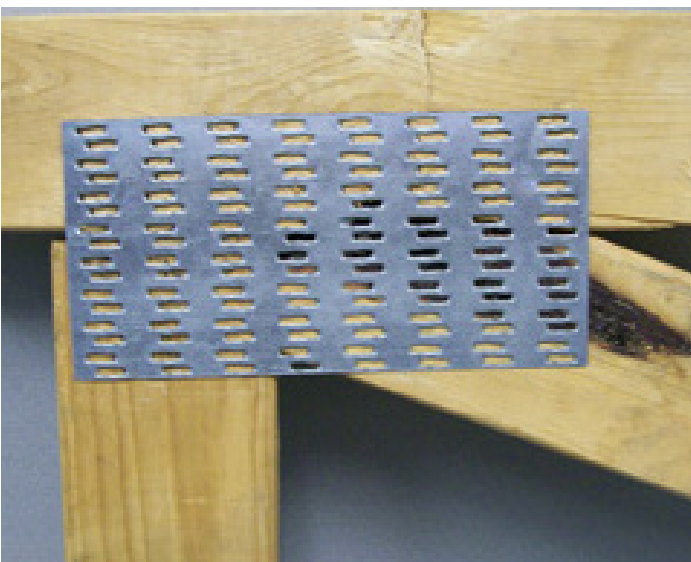
In 2011, though TPIC was now mandating manufacturing tolerances, there was no way of guaranteeing that fabricators were conforming with Appendix G. As a result, CWTA formed a task group to create a National Quality Standard (NQS) that could be implemented by the industry. In 2013, the CWTA NQS was released in time for inclusion into TPIC 2014, where it was "recommended" that truss plants have a quality control program that conformed to the CWTA NQS. As this recommendation did



Truss plate located incorrectly horizontally and vertically

not have the desired effect, it was agreed that, for TPIC 2019, the wording in the standard would be changed from “should” to “shall,” meaning that compliance with the CWTA NQS in the NBC 2020 (OBC 2023) would finally become mandatory.

For the fabricator, the CWTA NQS provides the basic requirements to demonstrate conformance with Appendix G. Truss fabricators must have and follow an approved quality assurance manual that details their in-plant manufacturing processes, such as lumber utilization, connector plate installation, dimensional tolerances, repairs, and handling and storage of finished product. Ongoing documented in-



Truss plate located over lumber defect where teeth are ineffective

plant inspections and semi-annual outside third-party audits are mandatory to ensure continued compliance with the NQS. Both the approved quality assurance manual and the outside third-party auditors are required to be approved by the regional association. In Ontario, that falls under the jurisdiction of the Ontario Structural Wood Association (OSWA) through their Plant Quality Program.

The OSWA Plant Quality Program was rolled out in 2021, ensuring truss fabricators in Ontario had adequate time to become certified prior to the adoption of the next Building Code. This program, broken into seven parts, details what the truss plant must do to become certified, along with how to maintain their certification. Minimum qualifications for third-party auditors ensure the use of licensed professional engineers experienced in truss design or truss manufacturing throughout the certification

and maintenance processes. A transparent auditing program outlined in Part G provides a clear method to both the fabricator and the auditor to verify compliance and a minimum passing score of 80 per cent is required.

How does one know if a truss plant has a quality control program that meets the requirements of the NQS? For plants located in Ontario, proof of certification under the OSWA Plant Quality Program can be found on the OSWA website (www.oswa.ca), or the OSWA Plant Certification document may be found in the truss submittal package. For plants located outside of Ontario, certification through the regional association in that province is required.

Ensuring trusses are manufactured by a fabricator who has a recognized quality control program is essential to attain the level of safety and performance expected by the construction industry. In 2024, it will finally become a mandatory part of the Building Code. ■

The Ontario Structural Wood Association was formed in 2016, as a direct spin-off from the Ontario Wood Truss Fabricators Association that has been around since 1982. To learn more about OSWA please visit our web site at oswa.ca and or reach out directly to Mike Phillips at the OSWA office.

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