

North Carolina Board of Examiners for Engineers and Surveyors

Signing and Sealing Building Imaging Modeling/Integrated Project Delivery (BIM/IPD) Projects Guidelines

(These guidelines are in effect until ~~December 31, 2017~~ June 30, 2018 and will be reviewed prior to that time for any revisions)

The North Carolina Board of Examiners for Engineers and Surveyors is providing this document to serve as an interpretative guide for the proper signing and sealing of building imaging modeling/integrated project delivery (BIM/IPD) projects to comply with The Engineering and Surveying Licensing Act, G.S. 89C. The variation in specific organization and services requires that these general guidelines be applied to the specific facts for each project, taking into account the requirements in the Board Rules in 21NCAC 56.1103 for certifying documents and 21NCAC 56.0701(c)(3) for responsible charge. The NC Board of Architecture (NCBA) and the NC Board of Examiners for Engineers and Surveyors (NCBEES) approved a Pilot Program that examined the use of seals in a BIM/IPM environment.

This document is intended to offer guidance to Professional Engineers and Professional Land Surveyors (hereinafter “licensees”) and their firms that are practicing in North Carolina who wish to use a Building Information Modeling execution plan coupled with an Integrated Project Delivery contract. (BIM/IPD). This guidance may also apply to any project delivery method employing three dimensional modeling software to virtually construct all building components by a collaborative team based process from design start to construction completion.

This does not apply to projects using BIM or IPD individually, using BIM without IPD or an equivalent collaborative delivery process that does not utilize both BIM and IPD.

Definitions:

- **BIM:** model based technology linked with a data base of project information, using three dimensional, real time dynamic modeling software, to plan all building construction. The model encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.
- **IPD:** a project delivery method that integrates key participants (owner, architect, engineer, surveyor, contractor, code official, et al.), systems, business structures and practices into a process that collaboratively plans and constructs facilities. The

collaborative process begins in early design and continues through all phases of design, fabrication and construction.

- (1) Use of the Professional Seal and Signature on BIM-IPD Documents Confirming Project Development. At a point in project development agreed to by the Authority Having Jurisdiction (AHJ) and owner's team, per the owner's agreement with the project team members, the licensee shall affix a digital seal and signature to only that part of the model for which they are responsible.
 - a. A digital archive "snapshot" of the licensee's final product at the completion of that project phase must be retained in the model as an unalterable record.
 - o *Commentary -Model programming assures that issuing the Digital Archive as an export keeps the format in a "read-only" state, meaning that changes cannot be made. It also allows the AHJ to accept models from different authoring systems in the future and be trained in a neutral platform that is a free viewer.*
 - b. The digital archive shall be formatted per the requirements below:
 - o 2D DWF, 3D DWF, & NWD exports from the native authoring software (Autodesk Revit) and will contain a digital signature issued by a public certification authority (VeriSign or Thawte). The naming of proprietary software refers to current commercially available programs that satisfy the intentions of this guidance, it is not intended to represent that those are the only programs capable of meeting the requirements. Similar or equivalent software is acceptable provided it is capable of DWF exports that can be digitally signed and authenticated by a verifiable source.
 - c. The digital signature shall contain a statement listing the scope of the licensee.
 - d. The digital archive must be submitted to the AHJ for initial code review and secure storage on an AHJ managed and secure "read only" website.
- (2) Use of Digital Signature on Other Benchmark Documents. For other benchmark documents not included in a project phase completion information set, the licensee shall affix a digital signature to the document. (refer to 21 NCAC 56.1103(e) Requirement for and Use of Professional Seal)
 - o A digital archive "snapshot" of the licensee benchmark documents must be retained in the model as an unalterable record.
- (3) Collaboration. The methods of collaboration should be at the discretion of the licensee and the other team members.
- (4) Professional review of others' documents. When the licensee is required by the owner's agreement to review the contractor's drawings (shop drawings) for general conformance with the plans and specifications, the review by the licensee shall not constitute taking of responsibility for the documents and the licensee shall sign and seal, disclaiming that it is only as to general conformance with the plans and specifications unless they were

prepared under the responsible control of the licensee as set forth in 21 NCAC 56.0701(c)(3).

- (5) Changes during construction. It is recognized that the owner's full design team will work with a mix of professionally sealed information sets, as well as other model information, inputted by other project team members. When changes occur in the construction strategy that are deemed significant enough to require supplemental documents from the design professionals regardless of type, the professional may rely on the information from others in the model (including the contractor's team), so long as the professional clearly indicates the modifications made, his/her responsibility for it and seals only his/her work.