

Position Statement on Sealed Truss Placement Diagrams for Residential Projects in the Commonwealth of Virginia

Updated August 8, 2006

Issue:

Reviewing Truss Placement Diagrams (TPD) (also known as a truss placement plan, truss layout, framing plan or framing layout) is normally the responsibility of the Building Designer or Registered Design Professional (RDP). This information is based on Virginia's Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers & Landscape Architects (APELSCIDLA) Regulations¹, the Code of Virginia², and the Virginia Construction Code³ [Part I of the 2003 edition of the Uniform Statewide Building Code (USBC)]. *Appendix A* defines some of the terminology used in this article.

Background:

The TPD is not to be viewed as an engineering document except as stated below; rather it is provided to assist the installer in properly locating the trusses within the structure. All the necessary truss engineering and analysis is found on the Truss Design Drawings (TDD).

If a TPD is provided, it is recommended that the project's Building Designer or RDP, if the local jurisdiction requires one for residential projects, review and approve the TPD to ensure that the intended load paths have not been altered.

ANSI/TPI 1 Chapter 2 (*see Appendix B*), as adopted by the USBC by reference, defines Building Designer:

ANSI/TPI 1-2002 Section 2.3.4 *Building Designer*: The Owner of the Building or the individual or organization (including either an Architect or Engineer or the Contractor) that contracts with the Owner for the design of the Building Structural System and/or who produces the Structural Design Documents.

The USBC defines RDP as follows:

REGISTERED DESIGN PROFESSIONAL. An architect or professional engineer, licensed to practice architecture or engineering, as defined under Section 54.1-400 of the Code of Virginia.

If a Truss Designer were to seal a TPD, it has been suggested that they could inappropriately be held responsible for ensuring the proper flow of loads through the truss to the bearing and support structure below the truss and into the foundation.

¹ www.state.va.us/dpor/ape_reg.pdf

² www.state.va.us/dpor/ape_main.htm

³ www.dhcd.virginia.gov/BCAR/default.htm



Prepared with assistance from the Structural Building Components Association of the Capital Area, a local chapter of SBCA.

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Truss Designers would only undertake Building Designer responsibilities under a special set of circumstances, including that they are professionally capable of taking on such responsibility and that they are properly compensated for the work.

Analysis:

Residential Construction Documents

According to the USBC Section 109.1 (*see Appendix C*):

2003 USBC 109.1 Submittal documents. ... **Note:** Information on the types of construction required to be designed by an RDP is included in the "Related Laws Package" available from DHCD.

The "Related Laws Package" available from the Virginia Department of Housing and Community Development (DHCD)⁴ contains a chart and notes for quick reference to determine in accordance with §54.1 - 402 of the Code of Virginia if an architect's or engineer's seal is required on documents for proposed construction (*see Appendix D*).

ANSI/TPI 1-2002 Chapter 2 (*see Appendix B*), which is adopted by reference in the 2003 USBC [*see Appendix C* (101.2), (2303.4), and (Chapter 35 "Reference Standards")], sets forth particular information that must also be contained in the construction documents so that the trusses can be properly designed for the residential structure. In preparing the construction documents, the Building Designer shall provide the following:

ANSI/TPI 1 Chapter 2

2.5.2 The Building Designer...shall provide the following:

- 2.5.2.1 All Structural Element and Truss orientations and locations;
- 2.5.2.2 Information to fully determine all Truss profiles;
- 2.5.2.3 All Structural Element and Truss bearing conditions;
- 2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss...
- 2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;
- 2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria...
- 2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;
- 2.5.2.8 Adequate connections between Trusses and between Structural Elements...but not Truss to Truss girder connections...
- 2.5.2.9 Permanent bracing design for the Building...and permanent bracing for all Structural Elements and Trusses...

2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System [and]...shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System.

Truss Design and Preparation of Truss Design Drawings

Assuming the requisite information is provided within the construction documents issued by the Building Designer, the Truss Designer's sole responsibility is to properly design the trusses according to this information. Once designed, a truss is then depicted on a TDD. The Truss Designer is therefore specifically responsible for the single truss design depicted on each TDD.

Who Typically Prepares Truss Placement Diagrams?

Assuming the requisite information is provided in the construction documents, TPD are prepared by component manufacturer personnel who are not typically Truss Designers. The individuals preparing TPD are trained individuals who work as truss technicians, truss take-off specialists or truss salespeople. Because these TPD are typically prepared outside the Truss Designer's scope of work, they may not be

⁴ www.dhcd.virginia.gov

reviewed or even seen by the Truss Designer and are therefore not prepared under the Truss Designer's direct supervision.

Why are Truss Placement Diagrams Prepared?

TPD are intended to assist customers, erectors and code enforcement officials in positioning or locating the trusses and related structural components supplied by the component manufacturer.

Their function is to serve as detailed installation instructions. They indicate the component manufacturer's assumed location for each truss or related component that has been designed and manufactured.

For example, a truss or related structural building component is no different than a window that is manufactured and in turn installed within a building. A window may be a highly engineered component of a house with specific installation specifications and instructions. However, there is no requirement to provide an engineer's seal on the installation instructions for windows.

To Require Truss Placement Diagrams to be Sealed Would Violate Virginia Law

Because TPD are generally neither created by nor created under the immediate personal supervision of a licensed design professional, they cannot be sealed. To require that they be sealed is contrary to Section 10-20-270 of the Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers & Landscape Architects' Regulations (*see Appendix E*), which states in pertinent part:

PART XII: STANDARDS OF PRACTICE AND CONDUCT

18 VAC 10-20-760. Use of seal. A. The application of a professional seal shall indicate that the professional has exercised complete direction and control over the work to which it is affixed. Therefore, no regulant shall affix a name, seal or certification to a plat, design, specification or other work constituting the practice of the professions regulated which has been prepared by an unlicensed or uncertified person or firm unless such work was performed under the direction and supervision of the regulant while under the regulant's contract or while employed by the same firm as the regulant. ...

The State of Virginia Does Not Require Engineering on Most Residential Structures

Requiring a TPD to be prepared and sealed by the Truss Design Engineer is contrary to Virginia law. This requirement would hold the building component manufacturing industry to a far greater standard than other similar industries.

According to Section 54.1-402 of the Code of Virginia (*see Appendix F*), residential structures can be designed by persons who are not registered design professionals as follows:

§ 54.1-402. Further exemptions from license requirements for architects, professional engineers, and land surveyors. A. No license as an architect or professional engineer shall be required...for persons who prepare plans, specifications, documents and designs for the following... :

1. Single- and two-family homes, townhouses and multifamily dwellings, excluding electrical and mechanical systems, not exceeding three stories...

The majority of residential structures are furthermore built using the prescriptive code within the building codes. Trusses are simply replacements for the prescriptively applied joists and rafters, which are also highly engineered structural elements.

When the Building Designer involved with a residential project is a RDP, it is up to them to evaluate every structural component, (e.g., rafters, joists, I-joists, and trusses) to ensure their structural adequacy and that they are applied so that the structure's protection of life/safety is assured. The placement of trusses is just one of the elements the RDP must consider. Joists, rafters, I-joists, LVL, PSL, and glulam are other equally important structural elements that must be evaluated and integrated properly. The RDP will seal all his/her engineering work. Typically, the RDP delegates the design of the trusses to a Truss

Design Engineer. The RDP will then review and approve all engineering performed by the Truss Design Engineer.

The International Code Committee (ICC) Has Recently Codified That Truss Placement Diagrams Should Not Be Sealed

The 2003 USBC does not clearly define TPD. As such, some may wrongly infer that they are part of the “Truss Design Drawings” which are defined as follows [2303.4.1 (*see Appendix C*) (2003 USBC)]:

2003 USBC 2303.4.1 Truss design drawings. Truss construction documents shall be prepared by a registered design professional and shall be provided to the building official and approved prior to installation.

To clear up any confusion on this issue, Section 2303 of the 2006 International Building Code (IBC), which is the nationally recognized model building code the USBC is based upon, has been revised to include the following regarding “Truss Placement Diagram”:

2006 IBC 2303.4.3 Truss Placement Diagram. A diagram supplied by the truss manufacturer that identifies the proposed location for each individually designated truss and references the corresponding Truss Design Drawing. The Truss Placement Diagram shall be provided as part of the Truss Submittal Package, and with the shipment of trusses delivered to the job site. Truss Placement Diagrams shall not be required to bear the seal or signature of the Truss Designer.

Exception: When the Truss Placement Diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.

This change will provide much greater clarity and better communication and will appear in the 2006 Edition of the International Building Code. Identical language has been proposed and will be included in subsequent versions of the International Residential Code.

Conclusion:

The Virginia professional engineering law and the IRC provide the basis upon which to evaluate the need to provide an engineer’s seal on a TPD. Based on this evaluation, TPD do not require a professional engineer’s seal.

Appendix A⁵

Definitions:

- a. Architect:** Any licensed design professional practicing architecture who designs all or a part of the Building Structural System and/or who produces all or part of the Construction Documents and which may include all or part of the Structural Design Documents.
- b. Bottom Chord:** Inclined (e.g., scissors truss) or horizontal member that establishes the bottom of a truss, usually carrying combined tension and bending stresses.
- c. Building:** Any structure used or intended for supporting or sheltering any use or occupancy.
- d. Building Structural System:** The completed combination of Structural Elements, Trusses, connections and systems, which serve to support the Building's self weight, the applicable live load(s), and environmental loads.
- e. Building Designer (See also Registered Design Professional):** Individual or organization having responsibility for the overall building or structure design in accordance with the state's statutes and regulations governing the professional registration and certification of architects or engineers. This responsibility includes but is not limited to foundation design, structural member sizing, load transfer, bearing conditions, and the structure's compliance with the applicable building codes. Also referred to as registered architect or engineer, Building Designer, and registered Building Designer.
- f. Construction Documents:** Written, graphic and pictorial documents, including the Structural Design Documents, prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a permit and constructing a building.
- g. Contract:** A legally recognized document between two or more parties that includes the agreement between the Truss Manufacturer and its customer which sets forth the terms and conditions and scope of responsibilities applicable to the Truss Manufacturer.
- h. Contractor:** The Owner of the Building or the individual or organization who contracts with the Owner and is responsible for the construction of the Building Structural System in accordance with all Legal Requirements. The term "Contractor" shall include those subcontractors who have a direct contract with the Contractor to perform all or a portion of the storage, handling, installation, and bracing (temporary and permanent) of the Trusses.
- i. Conventional Light-frame Wood Construction:** A type of construction whose primary structural elements are formed by a system of repetitive wood-framing members. This includes wood Truss construction.
- j. Cross Bracing:** Bracing installed in the web member plane of trusses to transfer lateral loads out of the truss system and up into the roof and down into the ceiling diaphragms.
- k. Diagonal Bracing:** Used in conjunction with lateral bracing to transfer brace forces into the supporting structure. Diagonal braces are installed in the same plane as lateral bracing but at 45-degree angle to the lateral brace.
- l. Engineer:** Any Licensed Design Professional practicing engineering who designs all or a part of the Building Structural System and/or who produces all or a part of the Structural Design Documents.
- m. Gable End Frame:** A component manufactured to complete the end wall of a building. The bottom chord of the gable end frame is continuously supported by the end-bearing wall. Verticals between the top and bottom chords are typically spaced at 24" on center. The verticals function as load carrying members and as attachment members for sheathing or other end wall coverings. The gable end frame must be incorporated into the end shear wall by the Building Designer.
- n. Hip Roof:** Roof system in which the slope of the roof at the end walls of the building is perpendicular to the slope of the roof along the sides of the building.
- o. Jurisdiction:** The governmental unit that has adopted this standard under due legislative authority.
- p. Lateral Bracing (also Continuous Lateral Bracing):** Members installed at right angles to a chord or web member of a truss to provide stability to the truss.
- q. Legal Requirements:** Applicable provisions of all statutes, laws, rules, regulations, ordinances, codes, or orders of any governmental authority or Jurisdiction of the United States of America, any state, and any political subdivision or quasi-governmental authority or Jurisdiction of any of the same, including, but not limited to, departments, commissions, boards, bureaus, agencies, counties, municipalities, provinces, and other instrumentalities.
- r. Local Building Official:** The officer or other designated authority charged with the administration and enforcement of the applicable building code, or a duly authorized representative, who in accordance with the Legal Requirements

⁵ Definitions taken from IBC 2003 or ANSI/TPI 1-2002 Chapter 2, adopted by reference in IBC 2003. (See IBC 102.4, 2303.4, 2306.1, Chapter 35)

may impose requirements on Truss Manufacturers and Truss Designers relating to the Trusses and the Truss Submittals.

s. Permanent Bracing: Bracing installed to provide support at right angles to the plane of the truss to hold it in its assumed design position. Permanent bracing stays in place for the life of the structure. The Building Designer may design the permanent bracing to resist lateral forces imposed on the completed building by wind load or seismic load.

t. Piggy Back Truss: Truss made in two pieces usually consisting of a hip type truss with a triangular cap fastened to it. Designed when shipping or manufacturing limitations are affected by overall truss height.

u. Owner: The individual or organization who owns the Building, and: (a) either designs and prepares, or retains the Building Designer to design and prepare, the Building's Structural System and the Structural Design Documents; and (b) either constructs, or retains the Contractor to construct, the Building's Structural System.

v. Registered Design Professional (See also Building Designer): An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or Jurisdiction in which the project is to be constructed.

w. Span: Horizontal distance between outside edges of exterior bearings.

x. Structural Building Components: Specialized structural building products designed, engineered and manufactured under controlled conditions for a specific application. They are incorporated into the overall building structural system by the Building Designer. Examples are wood or steel roof trusses, floor trusses, floor panels, wall panels, I-joists, or engineered beams and headers.

y. Structural Design Documents: Written, graphic and pictorial architectural or structural documents, specifications and addenda prepared or assembled for the overall construction of the Building Structural System, which are part of the Construction Documents.

z. Structural Element: A single joist, rafter, beam, or other structural member (not including the Trusses) designed by others and supplied for the Building Structural System by either the Truss Manufacturer or others.

aa. Structural Element Submittals: Documentation relating to the Structural Elements that are supplied by the Truss Manufacturer, if required by the Contract, to the Local Building Official, Owner, Building Designer and/or Contractor for their review and/or approval.

bb. Temporary Bracing: Bracing installed for the purpose of holding trusses true to line, dimension and plumb. In addition, temporary bracing holds trusses in a stable condition until permanent truss bracing and other permanent components that contribute to the overall rigidity of the roof or floor are in place. Temporary bracing may consist of ground bracing, continuous lateral sheets or ties, diagonals, cross bracing or similar items. See WTCA's BCSI 1-03 for more information.

cc. Top Chord: Inclined or horizontal member that establishes the top member of a truss.

dd. Truss: An individual metal plate connected wood component supplied for the Building Structural System.

ee. Truss Designer: The individual or organization responsible for the design of Trusses.

ff. Truss Design Drawing: The written, graphic and pictorial depiction of an individual Truss.

gg. Truss Manufacturer: An individual or organization engaged in the manufacturing of Trusses.

hh. Truss Placement Diagram: The illustration supplied by the Truss Manufacturer identifying the location assumed for each Truss, which references each individually designated Truss Design Drawing.

ii. Truss Submittals: The Truss Design Drawings, and the Truss Placement Diagram if required by the Contract, submitted by the Truss Manufacturer to the Local Building Official, Owner, Building Designer and/or Contractor for their review and/or approval.

jj. Web Member: Members that join the top and bottom chords to form the triangular patterns typical of trusses. These members typically carry axial forces.

Appendix B

The language in RED signifies sections of the code or law that have been used in the foregoing document to make it easier for the reader to see the language in context.

ANSI/TPI 1-2002

National Design Standard for Metal Plate Connected Wood Truss Construction

Chapter 2 – Standard Responsibilities in the Design Process Involving Metal Plate Connected Wood Trusses

2.5 BUILDING STRUCTURAL SYSTEM DESIGN DOCUMENTS

- 2.5.1 The Building Designer, through the Structural Design Documents shall provide that the Structural Elements and Trusses shall not be subjected to adverse influences including, but not limited to moisture, temperature, and corrosive chemicals and gases. This provision shall specifically include notice for the Truss Designer of environments expected to result in wood moisture content exceeding 19 percent, and temperatures and/or corrosion potential that are unusually high relative to typical wood buildings.
- 2.5.2 The Building Designer, through the Structural Design Documents shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and for developing the design of the Trusses for the Building, and shall provide the following:
- 2.5.2.1 All Structural Element and Truss orientations and locations;
- 2.5.2.2 Information to fully determine all Truss profiles;
- 2.5.2.3 All Structural Element and Truss bearing conditions;
- 2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss including, but not limited to, loads attributable to: roof, floor, partition including any directions other than given in ANSI/TPI 1-2002, mechanical, fire sprinkler, attic, storage, rain loads and ponding, design wind speed and exposure category, snow, snow drift, unbalanced snow load, and seismic forces;
- 2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;
- 2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria per ANSI/TPI 1-2002;
- 2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;
- 2.5.2.8 Adequate connections between Trusses and between Structural Elements, including Truss to Structural Element connections, but not Truss to Truss girder connections except such connections that are excluded from the scope of the Truss Designer's responsibilities.
- 2.5.2.9 Permanent bracing design for the Building, including bracing to resist wind, seismic, or other lateral forces, and permanent bracing for all Structural Elements and Trusses. The permanent bracing design shall incorporate the continuous lateral chord and web member bracing that is designated on the individual Truss Design Drawings into the overall bracing for the entire Building Structural System.
- 2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System or the adequacy of the Structural Design Documents. The Building Designer shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System.

Appendix C

Virginia Construction Code
[Part I of the 2003 edition of the Uniform Statewide Building Code (USBC)]
Chapter 1 ADMINISTRATION
SECTION 101: GENERAL

101.2 Incorporation by reference. Chapters 2 – 35 of the 2003 International Building Code, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the USBC. The term "IBC" means the 2003 International Building Code, published by the International Code Council, Inc. Any codes and standards referenced in the IBC are also considered to be part of the incorporation by reference, except that such codes and standards are used only to the prescribed extent of each such reference. In addition, any provisions of the appendices of the IBC specifically identified to be part of the USBC are also considered to be part of the incorporation by reference.

Note 1: The IBC references the whole family of International Codes including the following major codes:

- 2003 International Plumbing Code
- 2003 International Mechanical Code
- 2002 National Electrical Code
- 2003 International Fuel Gas Code
- 2003 International Energy Conservation Code
- 2003 International Residential Code

Note 2: The International Residential Code is applicable to the construction of detached one- and two-family dwellings and townhouses as set out in Section 310. In addition, since Chapter 1 of the IBC is not incorporated as part of the USBC, any reference to a provision of Chapter 1 of the IBC in the provisions of Chapters 2 – 35 of the IBC is generally invalid. However, where the purpose of such a reference would clearly correspond to a provision of Chapter 1 established herein, then the reference may be construed to be a valid reference to such corresponding Chapter 1 provision.

Chapter 1 ADMINISTRATION
SECTION 109: CONSTRUCTION DOCUMENTS

109.1 Submittal documents. Construction documents shall be submitted with the application for a permit. The number of sets of such documents to be submitted shall be determined by the locality. Construction documents for one- and two-family dwellings may have floor plans reversed provided an accompanying site plan is approved.

Exception: Construction documents do not need to be submitted when the building official determines the proposed work is of a minor nature.

Note: Information on the types of construction required to be designed by an RDP is included in the "Related Laws Package" available from DHCD.

2003 International Residential Code
Chapter 5
FLOORS

R502.11 Wood trusses.

R502.11.1 Design. Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

R502.11.4 Truss design drawings. Truss design drawings, prepared in compliance with Section R502.11.1, shall be provided to the building official and approved prior to installation. Truss design drawing shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Slope or depth, span, and spacing;
 2. Location of all joints;
 3. Required bearing widths;
 4. Design loads as applicable;
 - 4.1 Top chord live load (including snow loads);
 - 4.2 Top chord dead load;
 - 4.3 Bottom chord live load;
 - 4.4 Bottom chord dead load;
 - 4.5 Concentrated loads and their points of application;
 - 4.6 Controlling wind and earthquake loads.
 5. Adjustments to lumber and joint connector design values for conditions of use;
 6. Each reaction force and direction;
 7. Joint connector type and description (e.g., size, thickness or gauge); and the dimensioned location of each joint connector except where symmetrically located relative to the joint interface;
 8. Lumber size, species and grade for each member;
 9. Connection requirements for:
 - 9.1 Truss-to-truss girder;
 - 9.2 Truss ply-to-ply;
 - 9.3 Field splices.
 10. Calculated deflection ratio and/or maximum description for live and total load;
 11. Maximum axial compression forces in the truss members to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss drawing or on supplemental documents; and,
 12. Required permanent truss member bracing location.
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2003 International Residential Code
Chapter 8
ROOF-CEILING CONSTRUCTION

R802.10 Wood trusses.

R802.10.1 Truss design drawings. Truss design drawings, prepared in conformance with Section R802.10.1, shall be provided to the building official and approved prior to installation. Truss design drawings shall include, at a minimum, the information specified below. Truss design drawing shall be provided with the shipment of trusses delivered to the job site.

1. Slope or depth, span, and spacing;
2. Location of all joints;
3. Required bearing widths;
4. Design loads as applicable;
 - 4.1 Top chord live load (including snow loads);
 - 4.2 Top chord dead load;
 - 4.3 Bottom chord live load;
 - 4.4 Bottom chord dead load;
 - 4.5 Concentrated loads and their points of application;
 - 4.6 Controlling wind and earthquake loads.
5. Adjustments to lumber and joint connector design values for conditions of use;
6. Each reaction force and direction;
7. Joint connector type and description (e.g., size, thickness or gauge); and the dimensioned location of each joint connector except where symmetrically located relative to the joint interface;
8. Lumber size, species and grade for each member;

9. Connection requirements for:
 - 9.1 Truss-to-truss girder;
 - 9.2 Truss ply-to-ply;
 - 9.3 Field splices.
10. Calculated deflection ratio and/or maximum description for live and total load;
11. Maximum axial compression forces in the truss members to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss drawing or on supplemental documents; and,
12. Required permanent truss member bracing location.

R802.10.2 Design. Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.

Part IX Referenced Standards
Chapter 43

TPI	Truss Plate Institute 583 D'Onofrio Drive, Suite 200 Madison, WI 53719	
	Standard reference number	Referenced in code section number
TPI 1—2000	National Design Standard for Metal-plate-connected Wood Truss Construction	R502.11.1, R502.11.2, R802.10.2, R802.10.3, R802.11.1

Appendix D

Virginia Department of Housing and Community Development
 Division of Building and Fire Regulation
 Building and Fire Code Related Laws Package

A/E SEAL ON DRAWINGS

The purpose of these charts and notes is for quick reference to determine in accordance with § 54.1 - 402 of the Code of Virginia if an architect's or engineer's (A/E) seal is required on documents for proposed construction.

CHART A - GENERAL DESIGN

A proposed structure which is classified within any of the categories marked "Yes" requires an A/E seal on the documents. Separate requirements apply as to when the electrical, plumbing or mechanical systems in such structures require an A/E seal (see Charts B and C).

GROUP	BRIEF DESCRIPTION	AREA (SQ. FT.)			HEIGHT (STORIES)	
		5,000 OR LESS	5,001 TO 15,000	OVER 15,000	3 OR LESS	OVER 3
A ¹	ASSEMBLY	YES	YES	YES	YES	YES
B	BUSINESS	-	YES	YES	-	YES
E	SCHOOLS & DAY CARE CENTERS	YES	YES	YES	YES	YES
F	FACTORY & INDUSTRIAL	-	-	YES	-	YES
H	HIGH HAZARD	YES	YES	YES	YES	YES
I	INSTITUTIONAL	YES	YES	YES	YES	YES
M	MERCANTILE	-	YES	YES	-	YES
R-1	HOTEL, MOTEL & DORMITORY	YES	YES	YES	YES	YES
R-2 ⁷	MULTI-FAMILY RESIDENTIAL	-	-	YES	YES	YES
R-3	2 FAMILY ATTACHED	-	-	YES	-	YES
R-4	RESIDENTIAL ASSISTED LIVING	-	-	YES	-	YES
R-5	1 & 2 FAMILY DWELLINGS	-	-	YES	-	YES
S	STORAGE (NON-FARM)	-	-	YES	-	YES
U	UTILITY & MISCELLANEOUS	-	-	YES	-	YES
ALL	INTERIOR DESIGN	SEE NOTE NUMBER 4				

Notes: (Apply the following notes to all categories as applicable.)

1. Churches are exempt if building does not exceed 5,000 square feet or three stories, and the occupant load does not exceed 100.
2. A local building code official may require an A/E seal even if not required to do so by this chart.
3. The law requires that, where an A/E seal is not present, the plans must be signed by the individual (not company) responsible for the design, including the individual's occupation and address.
4. Additions, remodeling or interior design defined under § 54.1-400 of the Code of Virginia might not require an A/E seal. For construction, additions or remodeling resulting in a change in occupancy, occupancy load, modification to the structural system, change in access or egress or an increase in fire hazard an A/E seal is required in accordance with § 54.1-400, although notes 1 and 2 still apply.
5. Any unique design of structural elements for floors, walls, roofs or foundations requires an A/E seal, regardless of whether or not the remainder of the plans require such certification.
6. Buildings, structures, or electrical and mechanical installations which are not otherwise exempted but which are of standard design, provided they bear the certification of a professional engineer or architect registered or licensed in another state, and provided that the design is adapted for the specific location and conformity with local codes, ordinances and regulations, and is so certified by a professional engineer or architect licensed in Virginia may not require an A/E seal.
7. One exit and three stories or less Group R-2 buildings would normally be exempted from an A/E seal except where required by Note 2. Most all other three stories or less Group R-2 multi-family buildings are required by the building officials to have A/E seals for the construction documents.

Appendix E

Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers & Landscape Architects (APELSCIDLA)
Regulations
PART XII: STANDARDS OF PRACTICE AND CONDUCT

18 VAC 10-20-760. Use of seal.

A. The application of a professional seal shall indicate that the professional has exercised complete direction and control over the work to which it is affixed. Therefore, no regulant shall affix a name, seal or certification to a plat, design, specification or other work constituting the practice of the professions regulated which has been prepared by an unlicensed or uncertified person or firm unless such work was performed under the direction and supervision of the regulant while under the regulant's contract or while employed by the same firm as the regulant. If a regulant is unable to seal completed professional work, such work may be sealed by another regulant only after thorough review and verification of the work has been accomplished to the same extent that would have been exercised if the work had been done under the complete direction and control of the regulant affixing the professional seal.

B. A regulant shall apply a stamp or a preprinted or electronic seal to final and complete original cover sheets of plans, drawings, plats, technical reports and specifications and to each original sheet of plans, drawings or plats, prepared by the regulant or someone under his direct control and personal supervision.

1. All seal imprints on the cover or first sheet of final documents shall bear an original signature and date. "Final Documents" are completed documents or copies submitted on a client's behalf for approval by authorities or recordation. In such cases, the cover sheet of the documents or copies shall contain a list of drawings included in the set on which a seal, original signature and date shall be affixed for all regulated disciplines. Every page of the submission, other than the cover, may be reproduced from originals which contain the seal, original signature and date by each discipline responsible for the work.

a. An electronic seal, signature and date is permitted to be used in lieu of an original seal, signature and date when the following criteria, and all other requirements of this section, are met:

1. It is a unique identification of the professional;
2. It is verifiable;
3. It is under the professional's direct and sole control;
4. It is linked to the document file in such a manner that changes are readily determined and visually displayed if any data contained in the document file was changed subsequent to the electronic seal, signature and date having been affixed to the document; and
5. Changes to the document after affixing the electronic seal, signature and date shall cause the electronic seal, signature and date to be removed or altered in such a way as to invalidate the electronic seal, signature and date.

b. In addition, once the electronic seal, signature and date is applied to the document, the document shall be in a view-only format if the document is to be electronically transmitted.

2. Incomplete plans, documents and sketches, whether advance or preliminary copies, shall be so identified on the plan, document or sketch and need not be sealed, signed or dated.

3. All plans, drawings or plats prepared by the regulant shall bear the regulant's name or firm name, address and project name.

4. The seal of each regulant responsible for each profession shall be used and shall be on each document that was prepared under the regulant's direction and for which that professional is responsible. If one of the exemptions found in § 54.1-402 of the Code of Virginia is applicable, a professional licensed or certified by this board shall nevertheless apply his seal to the exempt work.

5. Application of the seal and signature indicates acceptance of responsibility for work shown thereon.

6. The seal shall conform in detail and size to the design illustrated below and shall be two inches in diameter. The designs below may not be shown to scale:



* The number referred to is the last six-digit number as shown on the license or certificate. The number is permanent. Leading zeros contained in the six-digit number may be omitted from the seal.

Appendix F

Code of Virginia

Title 54.1 – Professions and Occupations

Chapter 4 - Architects, Engineers, Surveyors, Landscape Architects and Interior Designers

§ 54.1-402. Further exemptions from license requirements for architects, professional engineers, and land surveyors.

A. No license as an architect or professional engineer shall be required pursuant to § 54.1-406 for persons who prepare plans, specifications, documents and designs for the following, provided any such plans, specifications, documents or designs bear the name and address of the author and his occupation:

1. Single- and two-family homes, townhouses and multifamily dwellings, excluding electrical and mechanical systems, not exceeding three stories; or

2. All farm structures used primarily in the production, handling or storage of agricultural products or implements, including, but not limited to, structures used for the handling, processing, housing or storage of crops, feeds, supplies, equipment, animals or poultry; or

3. Buildings and structures classified with respect to use as business (Use Group B) and mercantile (Use Group M), as provided in the Uniform Statewide Building Code and churches with an occupant load of 100 or less, excluding electrical and mechanical systems, where such building or structure does not exceed 5,000 square feet in total net floor area, or three stories; or

4. Buildings and structures classified with respect to use as factory and industrial (Use Group F) and storage (Use Group S) as provided in the Uniform Statewide Building Code, excluding electrical and mechanical systems, where such building or structure does not exceed 15,000 square feet in total net floor area, or three stories; or

5. Additions, remodeling or interior design without a change in occupancy or occupancy load and without modification to the structural system or a change in access or exit patterns or increase in fire hazard; or

6. Electric installations which comply with all applicable codes and which do not exceed 600 volts and 800 amps, where work is designed and performed under the direct supervision of a person licensed as a master's level electrician or Class A electrical contractor by written examination, and where such installation is not contained in any structure exceeding three stories or located in any of the following categories:

a. Use Group A-1 theaters which exceed assembly of 100 persons;

b. Use Group A-4 except churches;

c. Use Group I, institutional buildings, except day care nurseries and clinics without life-support systems; or

7. Plumbing and mechanical systems using packaged mechanical equipment, such as equipment of catalogued standard design which has been coordinated and tested by the manufacturer, which comply with all applicable codes. These mechanical systems shall not exceed gauge pressures of 125 pounds per square inch, other than refrigeration, or temperatures other than flue gas of 300° F (150 degrees C) where such work is designed and performed under the direct supervision of a person licensed as a master's level plumber, master's level heating, air conditioning and ventilating worker, or Class A contractor in those specialties by written examination. In addition, such installation may not be contained in any structure exceeding three stories or located in any structure which is defined as to its use in any of the following categories:

a. Use Group A-1 theaters which exceed assembly of 100 persons;

b. Use Group A-4 except churches;

c. Use Group I, institutional buildings, except day care nurseries and clinics without life-support systems; or

8. The preparation of shop drawings, field drawings and specifications for components by a contractor who will supervise the installation and where the shop drawings and specifications (i) will be reviewed by the licensed professional engineer or architect responsible for the project or (ii) are otherwise exempted; or

9. Buildings, structures, or electrical and mechanical installations which are not otherwise exempted but which are of standard design, provided they bear the certification of a professional engineer or architect registered or licensed in another state, and provided that the design is adapted for the specific location and for conformity with local codes, ordinances and regulations, and is so certified by a professional engineer or architect licensed in Virginia; or

10. Construction by a state agency or political subdivision not exceeding \$75,000 in value keyed to the January 1, 1991, Consumer Price Index (CPI) and not otherwise requiring a licensed architect, engineer, or land surveyor by an adopted code and maintenance by that state agency or political subdivision of water distribution, sewage collection, storm drainage systems, sidewalks, streets, curbs, gutters, culverts, and other facilities normally and customarily constructed and maintained by the public works department of the state agency or political subdivision.

B. No person shall be exempt from licensure as an architect or engineer who engages in the preparation of plans, specifications, documents or designs for:

1. Any unique design of structural elements for floors, walls, roofs or foundations; or

2. Any building or structure classified with respect to its use as high hazard (Use Group H).

C. Persons utilizing photogrammetric methods or similar remote sensing technology shall not be required to be licensed as a land surveyor pursuant to subsection B of § 54.1-404 or 54.1-406 to: (i) determine topography or contours, or to depict physical improvements, provided such maps or other documents shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination, or (ii) graphically show existing property lines and boundaries on maps or other documents provided such depicted property lines and boundaries shall only be used for general information.

Any determination of topography or contours, or depiction of physical improvements, utilizing photogrammetric methods or similar remote sensing technology by persons not licensed as a land surveyor pursuant to § 54.1-406 shall not show any property monumentation or property metes and bounds, nor provide any measurement showing the relationship of any physical improvements to any property line or boundary.

Any person not licensed pursuant to subsection B of § 54.1-404 or 54.1-406 preparing documentation pursuant to subsection C of § 54.1-402 shall note the following on such documentation: "Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination."

D. Terms used in this section, and not otherwise defined in this chapter, shall have the meanings provided in the Uniform Statewide Building Code in effect on July 1, 1982, including any subsequent amendments.



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