

There have been a lot of discussions on the different types of inspections; 100% initial plant certification inspections, normal in-plant inspections or virtual inspections. I am providing actual data showing the comparison of in-person and virtual inspections conducted by an independent agency used by HUD and four states.

I have reviewed plant audits conducted by HUD's independent contractor IBTS for the periods of 2020-2021 review cycle (virtual inspections) and 2023-2024 review cycle (in-person inspections). The inspectors conducting these audits have 30 years minimum experience in virtual and in-person audits. These virtual and in-person audits were conducted at the same manufacturing facilities during routine oversight inspections. The virtual inspection consisted of the manufacturer providing 25-30 pictures of frames, open floors, walls, ceilings, mechanical, electrical and plumbing system being sent to the inspectors prior to the virtual inspection for review. The virtual audit was a 1-1/2 to 2 hour inspection based on what was identified in the photos.

The findings are as follows:

#### 2020-2021 Review Cycle (Virtual Inspections)

56 plant audits

36 failures to conform to the standards

20 quality control system failure to conform

33 audits identified no failures to conform to the standards or system failures

#### 2023-2024 Review Cycle (In-Person Inspections)

48 plant audits

156 failures to conform to the standards

43 quality control system failures

8 audits identified no failures to conform to the standards or system failures

There were 120 more failures to conform to the standards and 23 more quality control system failures identified by in-person inspections compared to virtual inspection.

There were 33 virtual audits that did not identify any failures to conform or quality control system failures.

These findings by an independent contractor identify that the virtual inspections are not as effective in identifying failure to conform as compared to in-person inspection. In fact, 59% of the virtual inspection did not identify any non-conformances. If the photos are not provided prior to the virtual inspection for review, the number of failures to conform would be considerably less.

The purpose of the third party inspection is to monitor the quality assurance process of the manufacturer as required by most state certification programs.

The purpose of the initial 100% plant certification is to verify the manufacturer has a functioning quality continuance process so the manufacturer can produce homes in compliance with the standard.

Initial plant certification requires in-person inspecting 100% of all construction and the quality control process with qualified inspectors. ASTM E541 is a minimum standard for personnel. States like Florida, California, Texas, Ohio, Wisconsin and many more understand the importance of requiring more than ASTM E541 and for the in-plant inspectors to be certified to inspect building, electrical, plumbing and mechanical to provide a reasonable level of safety and protection of public health, general welfare and property. It is my opinion if we want the new small residential unit (tiny house) standard to be creditable and adopted by the states, we need to have the third party inspectors and plan reviews certified beyond the minimum requirements in ASTM E541.

These inspectors will normally identify 4-5 times as many failures to conform with the standards, the approved drawings, and with the quality control systems as compared to a normal inspection. The purpose of the 100% inspection is to assist the manufacturer in identifying the FTCs and quality assurance system failure and train the manufacturer's personnel.

The virtual inspection process being utilized today does not effectively evaluate the manufacturer's quality assurance systems as required by most state certification programs.

It is my opinion virtual inspection alone without periodic in-person inspections are not effective to assure compliance with the standards, approved submittal documents, or the quality assurance process and to provide a reasonable level of safety and protection of public health, general welfare and property.

The second option is for the builders or do-it-yourselfers to be under the jurisdiction of the local building official where their submittal documents and inspection will be in compliance with sections R106 and R109 of the International Residential Code.