June 2024

BUILDING BLOCKS

DESIGNPRO
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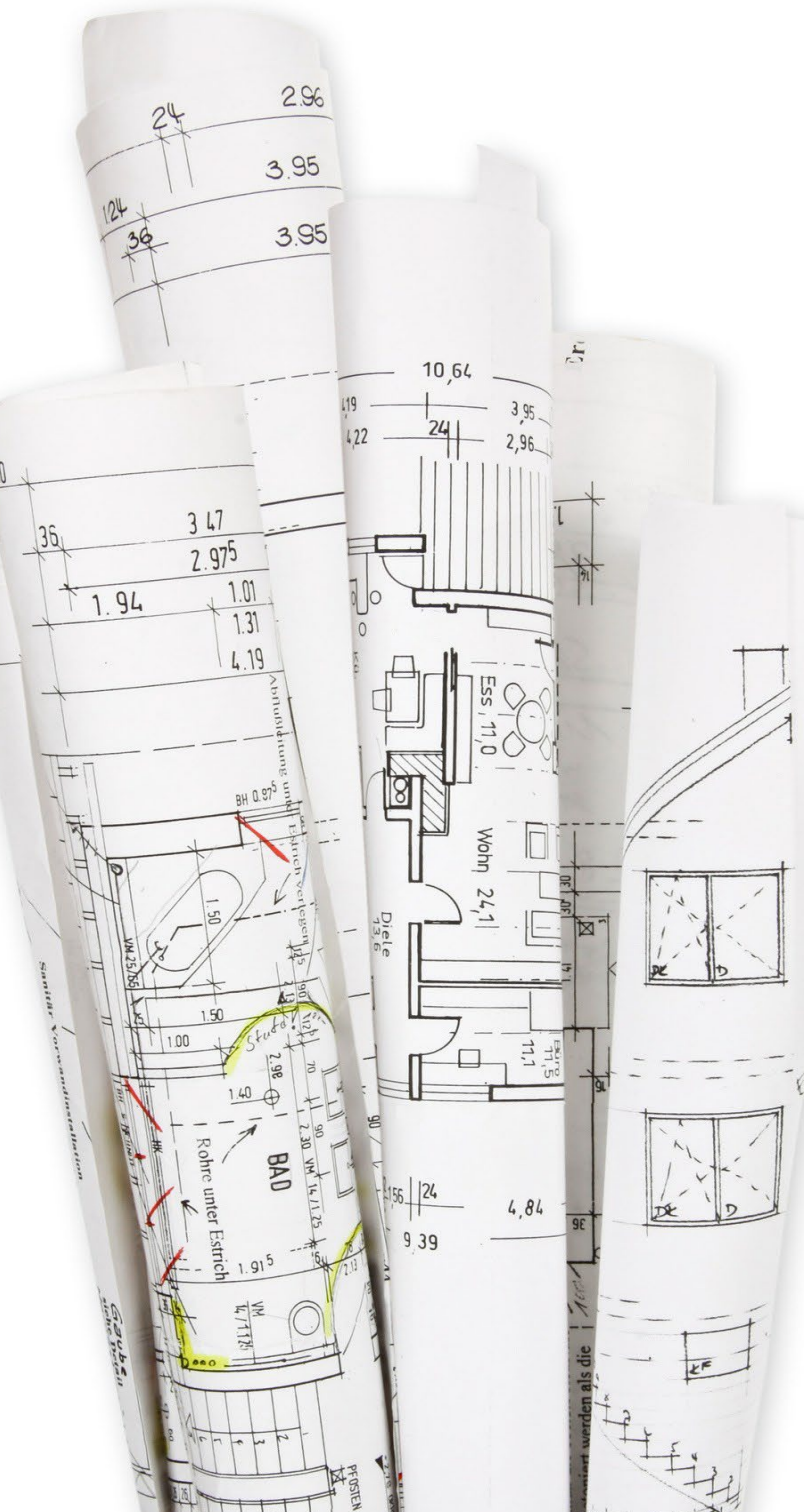


“Measured Drawings” vs. “Laser Scanning”

By: Eric O. Pempus, FAIA, Esq., NCARB
DesignPro Insurance Group

In the old days, architects and engineers (A/Es) created “measured drawings” to document existing buildings in order to renovate or remodel a structure. Measured Drawings became the base documents from which a new set of plans, such as for a repurposed project. Design professionals would utilize an existing floor plan of the building, so that the drawings could note existing dimensions and features of the structure. In the absence of existing drawings (as many older buildings’ drawings are lost or otherwise unavailable), the A/Es would create a sketch of the layout of the location of walls, doors, windows, stairways, etc. Modernly, however, with the advancements of technology, we create instruments such as “laser scanners” to document existing conditions with assumed more accuracy than Measured Drawings.

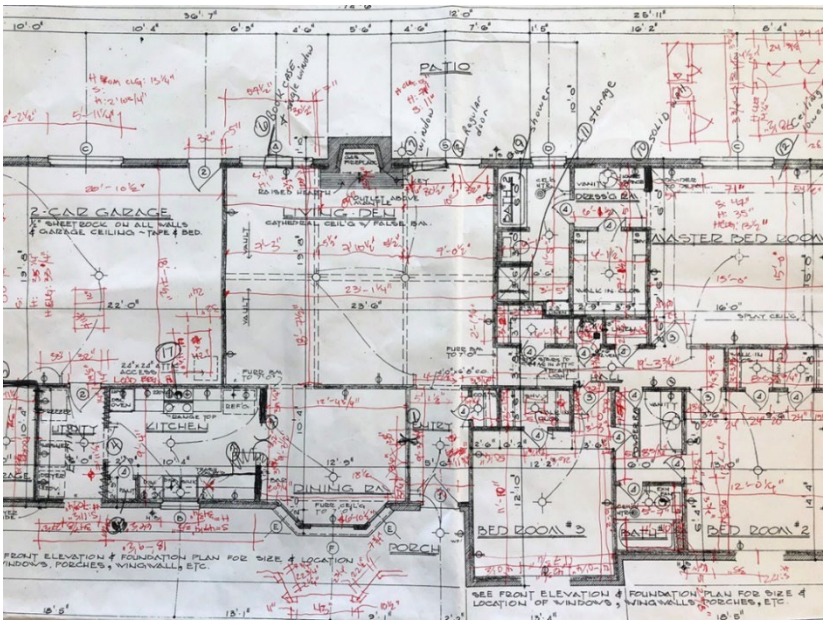
IN THIS ISSUE:

MEASURED DRAWINGS

Defined as:

They are prepared during the process of undertaking a renovation or documentation of an already existing building. They are derived from the measurements taken of a standing building. These measurements and drawings are created from on-site project data.

Measured Drawings are not needed in new construction. They are contemplated in both the American Institute of Architects' (AIA) and Engineer Joint Contract Documents Committee's (EJCDC) model agreements as an additional service, apart from the basic professional scope of services of an A/E.



https://www.lifeofanarchitect.com/as-built-drawing-adventure/

Standard Form of Agreement Between Owner & Architect B101. They are included in Article 4 – Supplemental & Additional Services

ARTICLE 4 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 4.1 Supplemental Services

§ 4.1.1 The services listed below are not included in Basic Services but may be required for the Project. The Architect shall provide the listed Supplemental Services only if specifically designated in the table below as the Architect's responsibility, and the Owner shall compensate the Architect as provided in Section 11.2. Unless otherwise specifically addressed in this Agreement, if neither the Owner nor the Architect is designated, the parties agree that the listed Supplemental Service is not being provided for the Project.

(Designate the Architect's Supplemental Services and the Owner's Supplemental Services required for the Project by indicating whether the Architect or Owner shall be responsible for providing the identified Supplemental Service. Insert a description of the Supplemental Services in Section 4.1.2 below or attach the description of services as an exhibit to this Agreement.)

Supplemental Services	Responsibility (*Architect, Owner, or not provided*)
§ 4.1.1.1 Programming	
§ 4.1.1.2 Multiple preliminary designs	
§ 4.1.1.3 Measured drawings	
§ 4.1.1.4 Existing facilities surveys	
§ 4.1.1.5 Site evaluation and planning	
§ 4.1.1.6 Building Information Model management responsibilities	
§ 4.1.1.7 Development of Building Information Models for post construction use	
§ 4.1.1.8 Civil engineering	
§ 4.1.1.9 Landscape design	
§ 4.1.1.10 Architectural interior design	
§ 4.1.1.11 Value analysis	

Agreement Between Owner & Engineer for Professional Services, EJCDC E-500. They are included in Exhibit A – Engineer's Services

PART 2 – ADDITIONAL SERVICES

A2.01 *Additional Services Requiring Owner's Written Authorization*

A. If authorized in writing by Owner, Engineer shall provide Additional Services of the types listed below. These services are not included as part of Basic Services and will be paid for by Owner as indicated in Exhibit C.

1. Preparation of applications and supporting documents (in addition to those furnished under Basic Services) for private or governmental grants, loans, or advances in connection with the Project; preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for the Project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the Project.

2. Services to make measured drawings of existing conditions or facilities, to conduct tests or investigations of existing conditions or facilities, or to verify the accuracy of drawings or other information furnished by Owner or others.

LASER SCANNERS

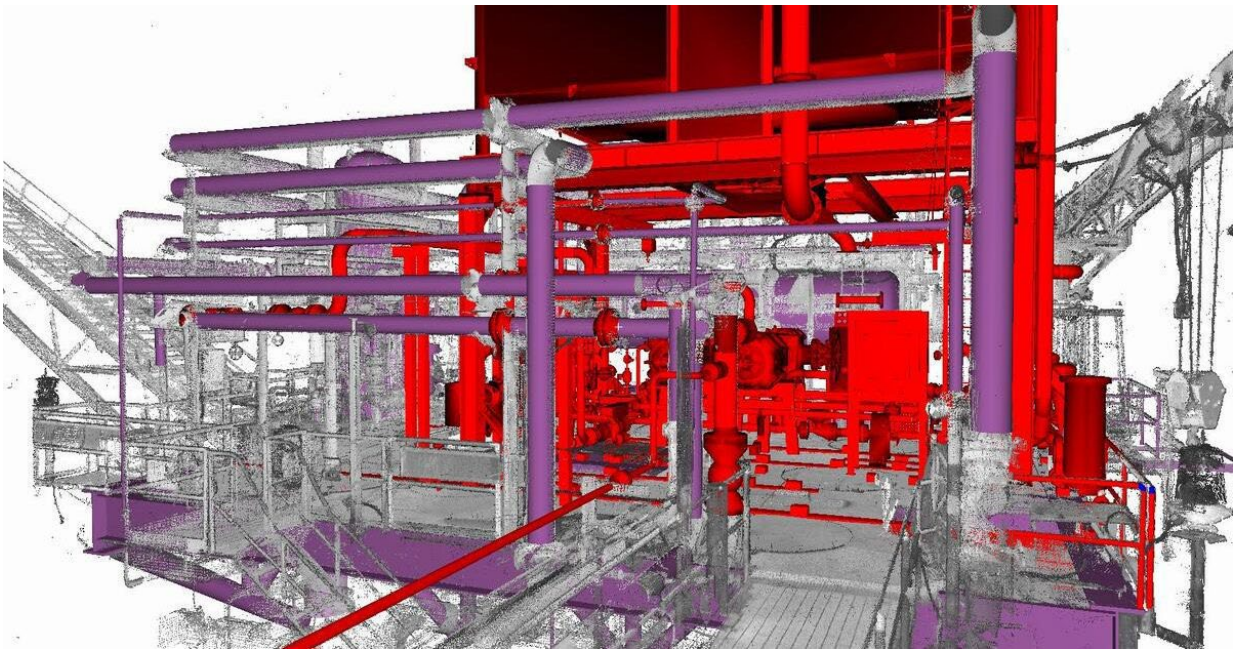
Defined as:

> Within the field of 3D object scanning, laser scanning (also known as LiDAR—Light Detection and Ranging) combines controlled steering of laser beams with a laser rangefinder. By taking a distance measurement at every direction the scanner rapidly captures the surface shape of objects, buildings and landscapes.

The concept of 3D laser scanning traces back to the early 1960s when researchers experimented with laser technology to measure distances and create 3D representations of objects. These early efforts laid the foundation for what would eventually become a game-changing technology. The use of laser scanning reduces data collection errors and the need to revisit a site due to missed detail. Primarily, it is used to develop 3D scans (or models) of building elevations, floor plans, tunnel profiling and motorway/rail bridges as well as mapping topography.

https://www.gp-radar.com/article/top-3-industries-for-3d-laser-scanning-services

It is a distance-measuring technique that measures the travel time of a light pulse to and from an object and converts this to a distance. It is a distance-measuring technique that measures the travel time of a light pulse to and from an object and converts this to a distance. LiDAR and laser scanning are terms often used interchangeably, but they can have nuanced differences based on their application context. LiDAR is a broader term that encompasses the use of laser technology to measure distances and is used in various contexts, including airborne and terrestrial applications. With LiDAR, laser light is sent from a source (transmitter) and reflected from objects in the scene. The reflected light is detected by the system receiver and the time of flight (TOF) is used to develop a distance map of the objects in the scene.



https://sellmostmk.pics/product_details/41534886.html

IN CONCLUSION

Measured drawings will still exist for the purpose of remodeling or renovating existing buildings. Mainly because of the cost of laser scanners versus a hand sketch of an existing building. The cost of LiDAR—Elon Musk's thoughts on the technology, from "The Verge:"

> It's a remarkable reversal for Tesla, which has famously winnowed down over the years the number of sensors it uses to power its advanced driver-assist features like Autopilot and Full Self-Driving—features that Musk has constantly sold as a precursor to a fully autonomous vehicle fleet. Later this year, Tesla is expected to reveal a robotaxi prototype on which Musk is betting the future of his company.
>
> Musk's LiDAR allergy was even on display during Tesla's own quarterly earnings call, in which he boasted about how his vehicles only rely on camera-based vision systems to power their driver-assist features. "It is obvious that our solution with a relatively low-cost inference computer and standard cameras can achieve self-driving," Musk said. "No LiDAR, no radars, ultrasonic. Nothing."

https://www.theverge.com/2024/5/7/24151497/tesla-lidar-bought-luminar-elon-musk-sensor-autonomous

This quote is from the article "Elon Musk, Lidar Hater, Is Probably Going To Use Lidar In Teslas"
By Andy Kalmowitz
May 8, 2024

About the Author of this Risk Management Building Block Article

As a risk manager for the last 18 years for the design profession, Eric has experience in professional liability insurance and claims, architecture, engineering, land use, law, and a unique background in the construction industry. Prior to risk management, he has 25 years of experience in the practice of architecture/engineering, and as an adjunct professor teaching professional practice courses at the undergraduate and graduate levels for the last 35 years at Kent State University's College of Architecture & Environmental Design.

As a Fellow of the American Institute of Architects and AIA National Ethics Council 2021 Chair, he has demonstrated his impact on architectural profession. He has presented numerous loss prevention and continuing educational programs to design professionals since 2000 on topics of ethics, contracts, and professional practice in various venues across the United States and Canada. He is a former member and chair of his city's Board of Zoning & Building Appeals for 24 years, and is a licensed architect, attorney, and property & casualty insurance professional.

His educational background includes a JD from Southwestern University School of Law, Los Angeles; Master of Science in Architecture from University of Cincinnati; and BA in psychology/architecture from Miami University, Oxford, Ohio.

The above comments are based upon DesignPro Insurance Group's experience with Risk Management Loss Prevention activities and should not be construed to represent a determination of legal issues but are offered for general guidance with respect to your own risk management and loss prevention. The above comments do not replace your need for you to rely on your counsel for advice and a legal review, since every project and circumstance differs from every other set of facts.

MARK YOUR CALENDARS FOR ERIC'S UPCOMING CONTINUING EDUCATION PROGRAMS:

Speaking Engagements:

September 15 - 17, 2024, Bridge Park in Dublin, Ohio
Intersecting Conflicts: A Fiduciary Duty to a Client & Your Duty to the Public's HSW
Monday, Sept. 16, from 8:00-9:00 a.m.

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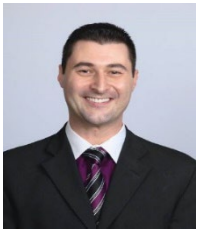

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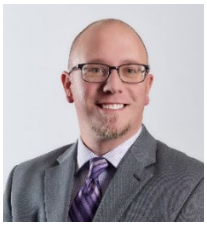

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