

Building Information Modeling: Use of Laser Scans

PTI Technical Conference &
Exhibition

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What are Laser Scans?

- Permanent digital record of the dimensions and spatial relationship of objects using a line of laser light
- Provide AS-BUILTS of building elements during various stages of construction
- Take Construction AS-BUILTS to a new level
- Scans can be converted to an as-built object based BIM Model

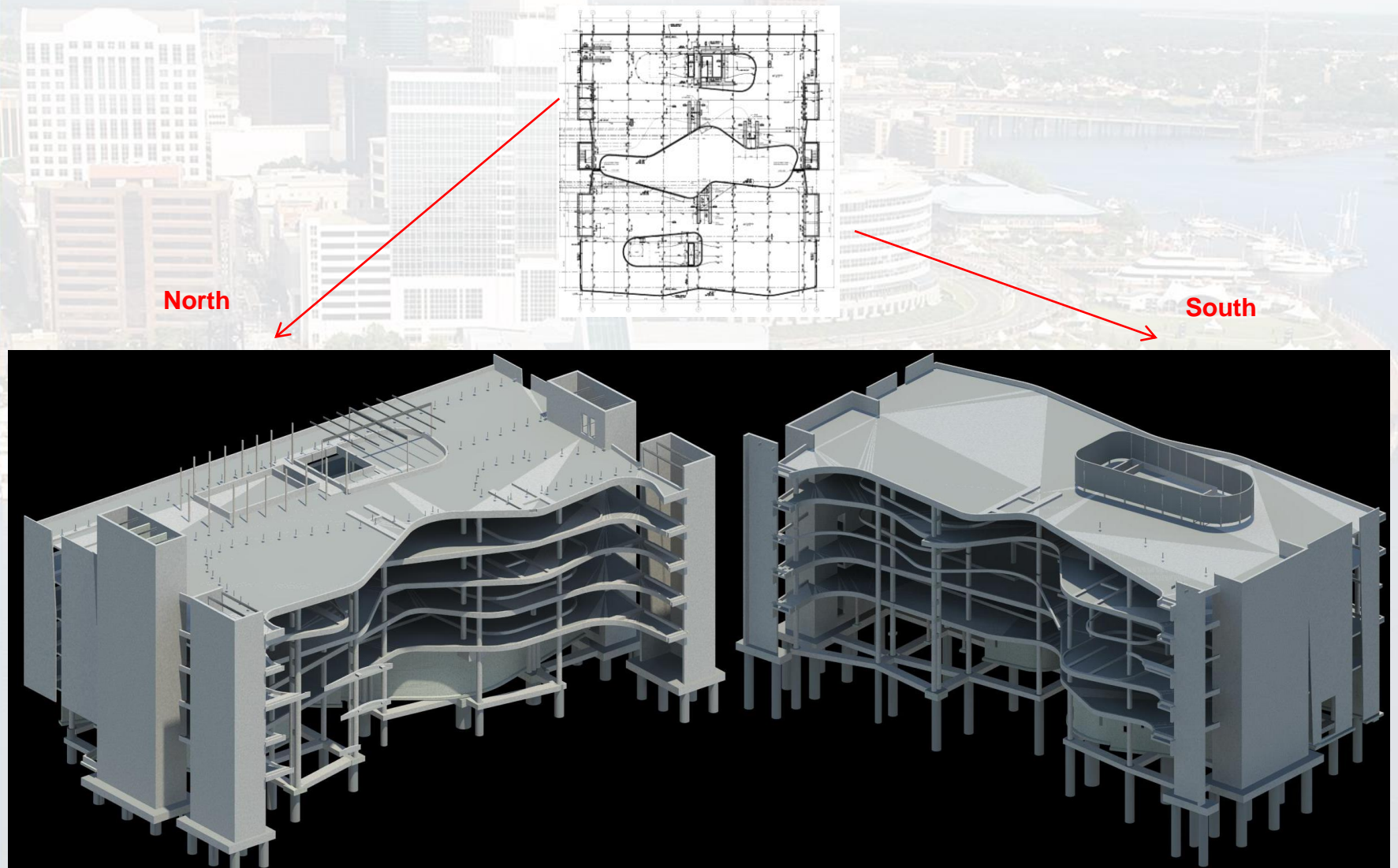
Use of Laser Scans

- Useful during various stages of construction
- Verify standards of compliance – check tolerance, nuanced code requirements, equipment clearances etc.
- Repairs, retrofits, additions & modifications, fix errors during construction
- Design validation
- Provides a **Permanent Facilities Model** for the Building Owner
- FOR CONTRACTORS: Planning, scheduling, quantity & cost – Saves \$\$\$\$\$\$

EXAMPLE of Laser Scans

- SEE VIDEO (insert video clip)

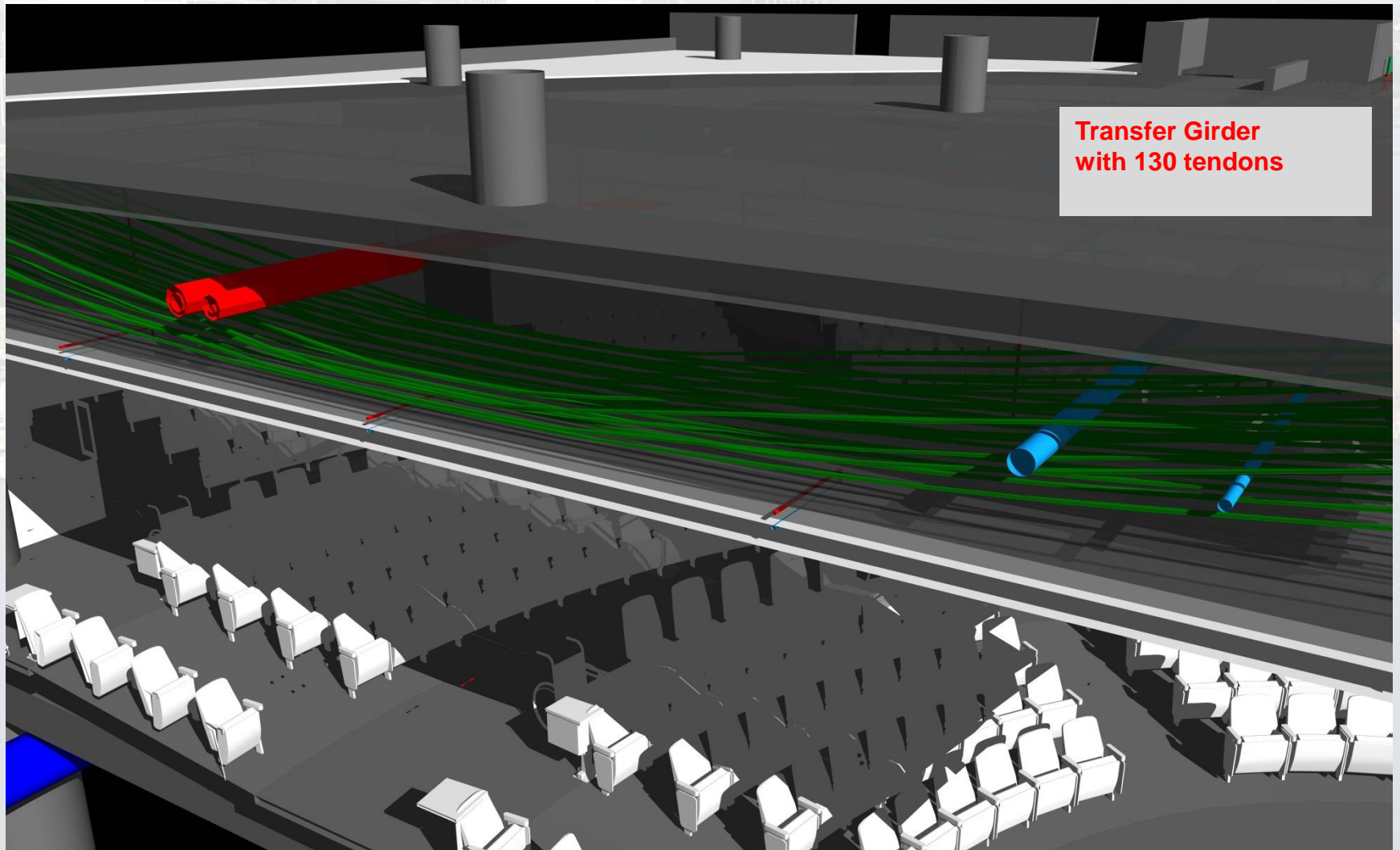
University of Arizona - ENR II Building



Extracted Pictures from Laser Scan



University of Arizona - ENR II Building



Extracted Pictures from Laser Scan



University of Arizona - ENR II Building

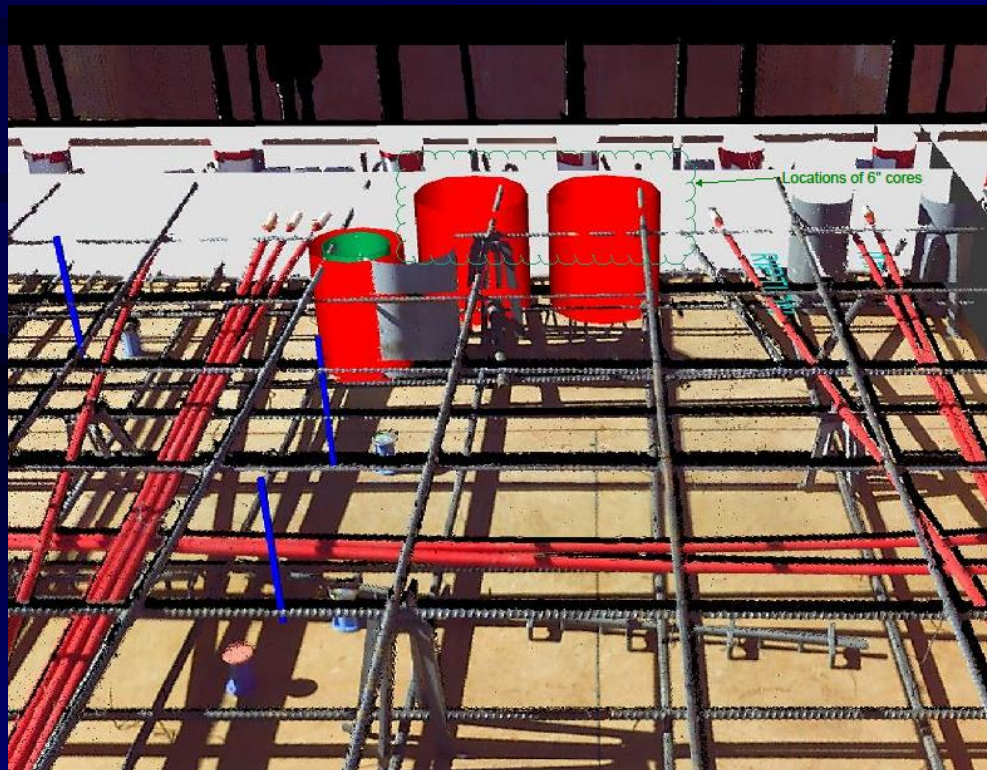


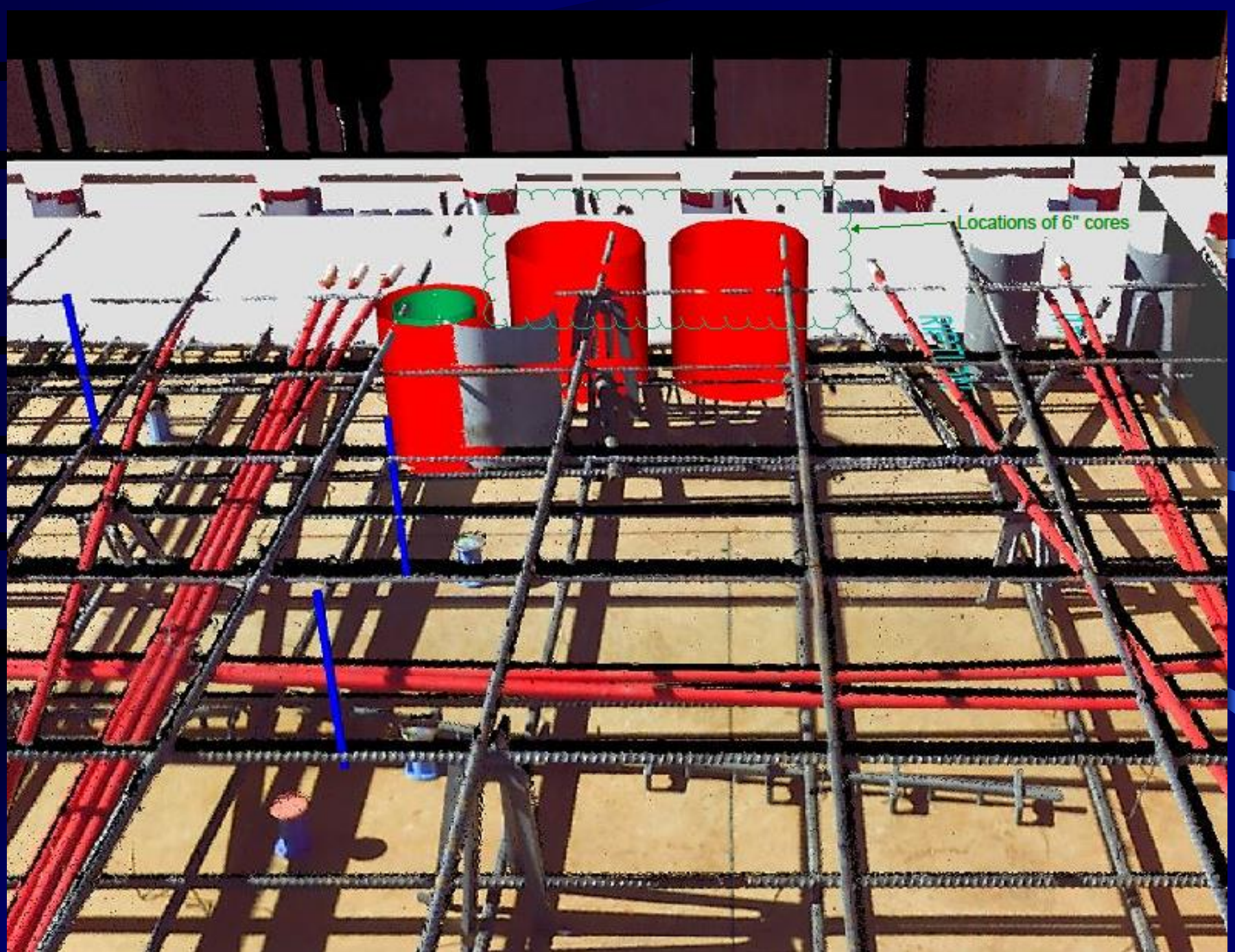
Use of Laser Scans – Example#1

- Fix errors during construction

Reference Drawings S326, PL 122 and attached Laser Scan Photo.

2 6" sleeves were missed during the concrete placement of Level 2 South. The Mechanical contractor is requesting that 2 cores be drilled in the locations shown in the laser scan photo. Note that this effect steel reinforcement as shown in photo. Please confirm that 2 cores can be drilled in locations shown.





Use of Laser Scans – Example#2

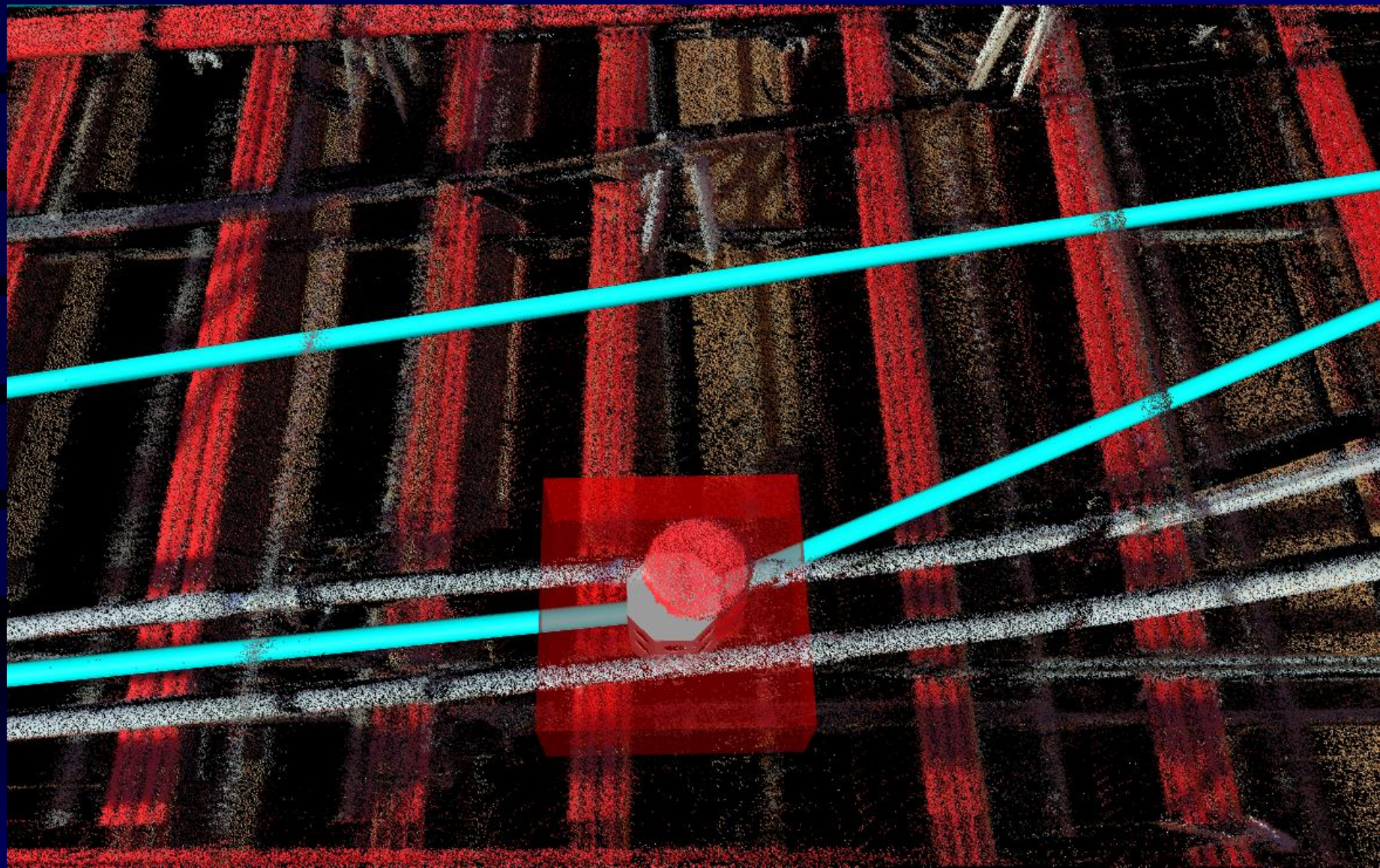
- Fix repairs during construction

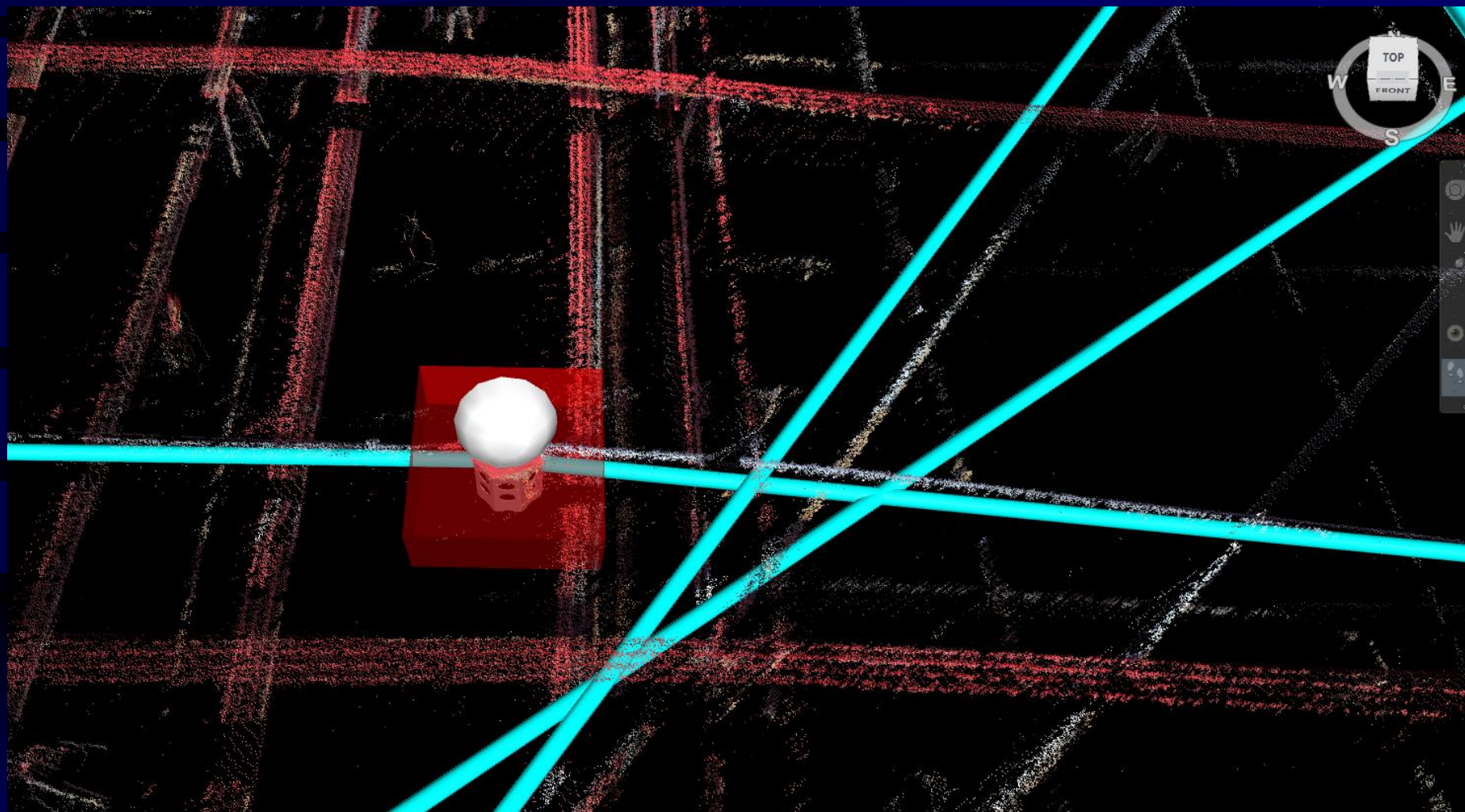
Question

Reference attached images

Three electrical conduits have broken off in the concrete deck pour at the electrical box. Is it acceptable to repair the conduits with the following procedure?

- 1 - Review laser scanner with Dallas and verify there are no PT cables above the box. (photos are attached).
- 2 - Shoot the total station point on the deck.
- 3 - Core a 6" diameter hole 4" deep.
- 4 - Chip away concrete on broken conduit.
- 5 - Clear and repair broken conduit.
- 6 - Patch the hole





Use of Laser Scans – Example#3

- Additions or modifications during construction

Question

Reference MH162 and attached sketches.

The roof level ducts installed per plans are in conflict with the roofing manufacturers specifications. A minimum of 12" is needed between the ducts and the parapet walls. The new locations (on attached sketch) have been coordinated with the 3D laser scans to eliminate conflicts with the post tensioned cables.

Please confirm that the locations specified in the attached sketches for saw cutting are acceptable.

Please provide details for relocating the exhaust fans on the roof if necessary, and all under deck and above ceiling modifications.

West Side Duct
Blockout at Roof



Dimensions are from the
inner face of concrete
walls