Vessel Bunkering Using LNG

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What is Liquefied Natural Gas (LNG)?

- Natural gas, predominantly methane, cooled to -260° Fahrenheit to change phase from gas to liquid.

Why Use LNG for Bunkering Vessels?

- International Maritime Organization 2020 Sulphur cap for marine fuels lowers Sulphur Content from 3.5% to 0.5%.

- Alternative to using high Sulphur fuel oil with scrubbers or low Sulphur fuel oil.

- Reduces emissions, compared to heavy fuel oil.
  - Reduces carbon dioxide (CO2) emissions by ~23%
  - Reduces Nitrogen oxides (NOx) by ~92%
  - Reduces Sulfur oxides (SOx) by 90-95%.

Why Use LNG for Bunkering Vessels?

- 600:1 gas-to-liquid condensing ratio improves transportation and storage.
- Less impact in the event of a spill
- Plentiful domestic supply

Facility Locations

- JAX LNG Serving Tote Maritime
- Eagle LNG Partners Serving Crowley Maritime

JAX LNG Vicinity Map

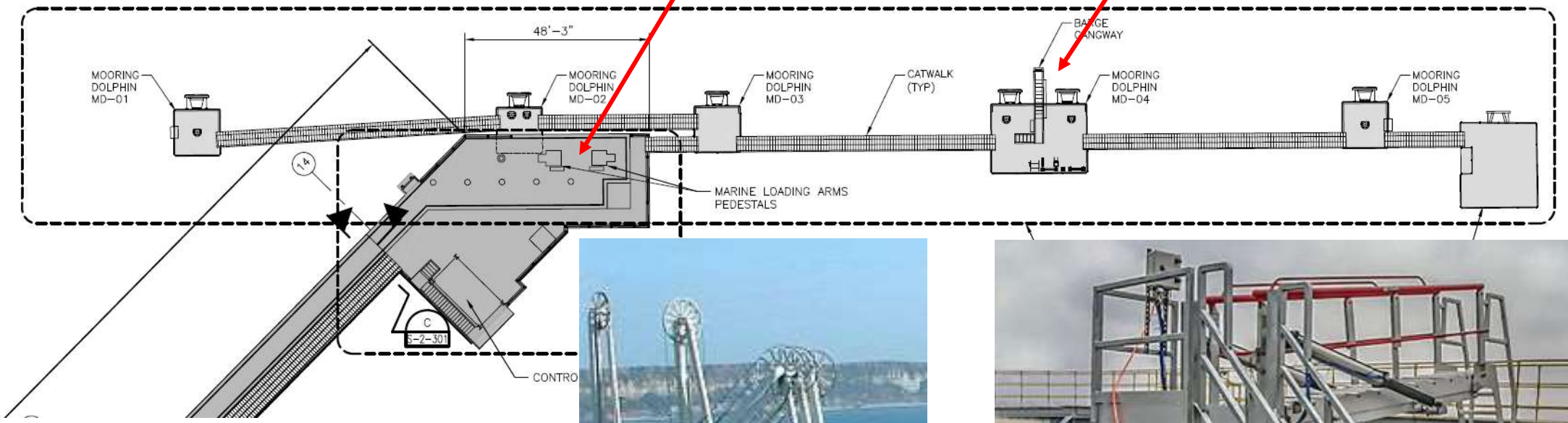
JAX LNG

- 120,000 Gallon/Day Production
- 2,000,000 Gallon Storage
- Truck Loading
- Bunker Barge Loading

LNG Loading Pier

LNG LOADING ARMS

ACCESS GANGWAY

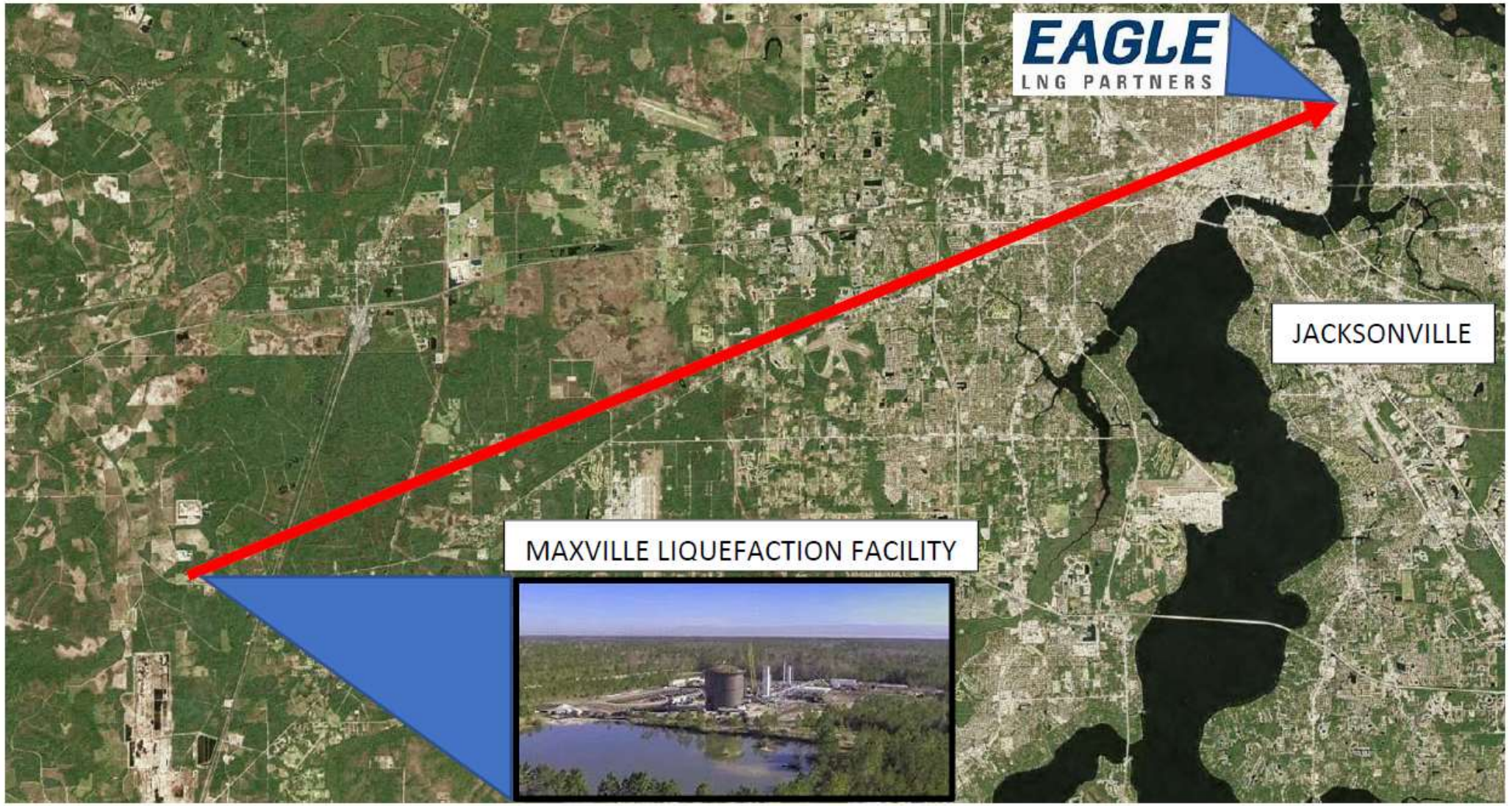


TO LANDSIDE SPILL CONTAINMENT PIT

JAX LNG

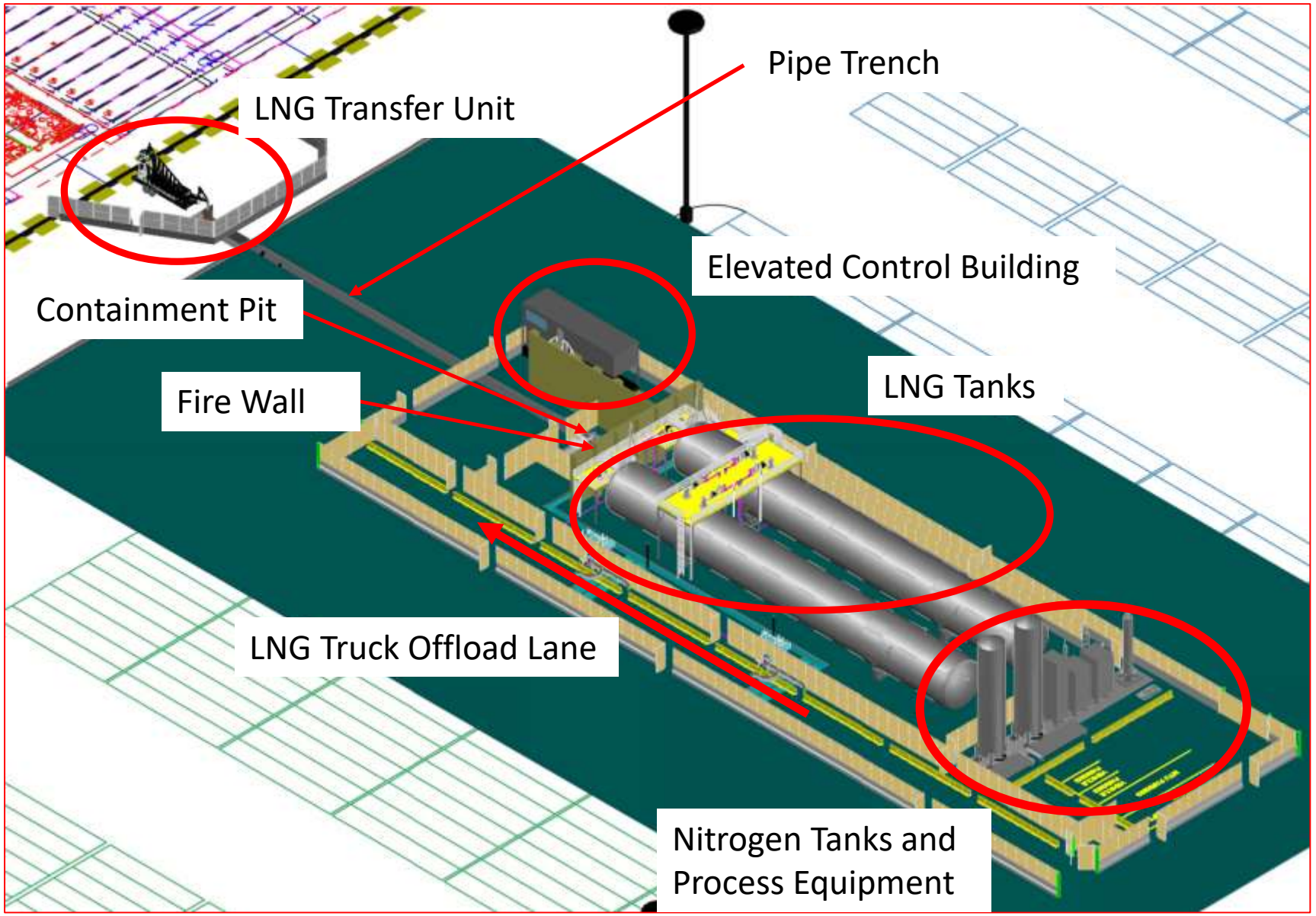
- LNG Bunker Barge with 580,000 Gallon Storage

Tote Maritime's Temporary LNG Bunkering Station

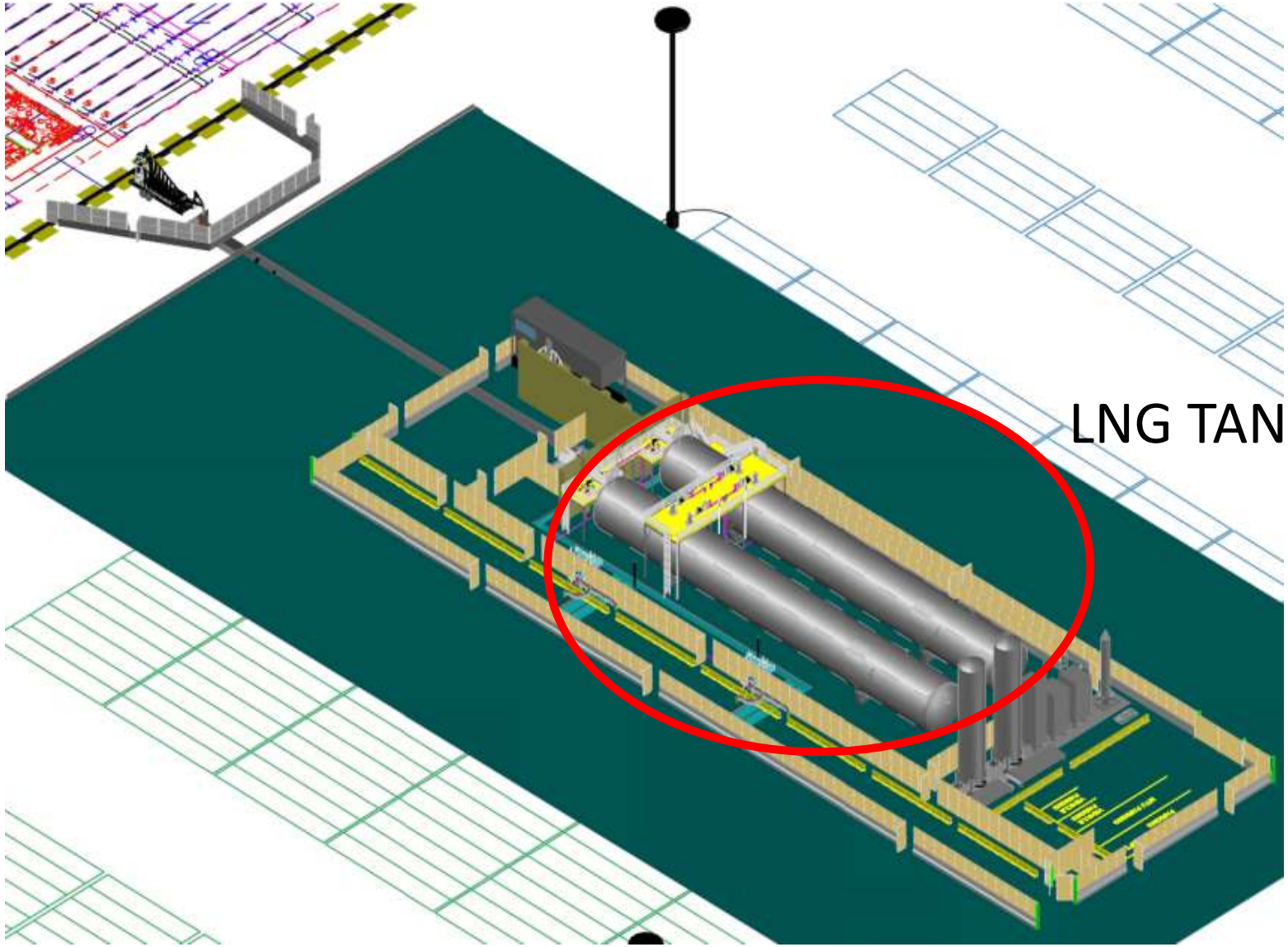


Eagle LNG Vicinity Map

Marine Terminal Fuel Depot



Phase 1 – Tank Delivery and Installation



Piles for Tank Supports

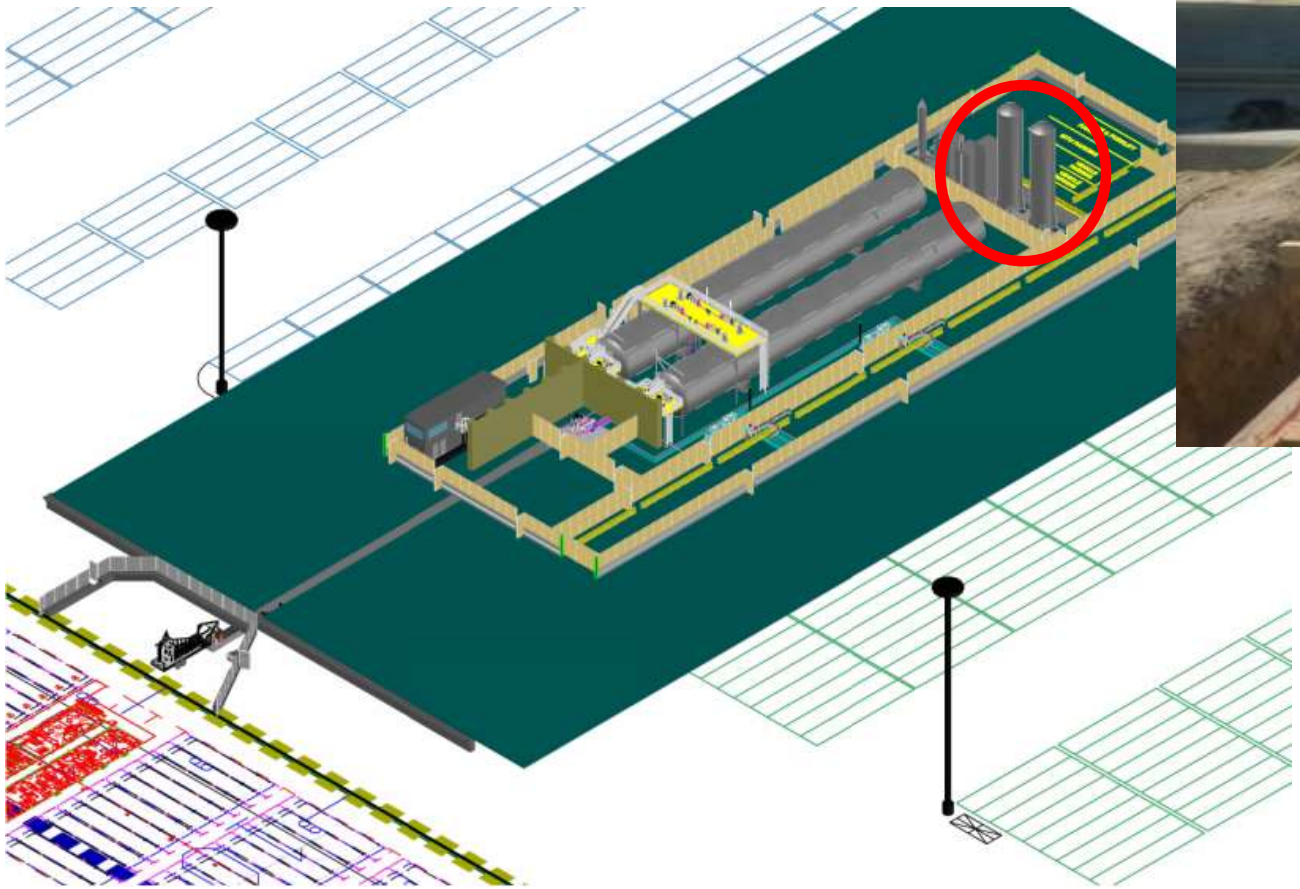
Offloading 250,000 Gallon LNG Storage Tank

Loading Tank onto Goldhofer Trailer

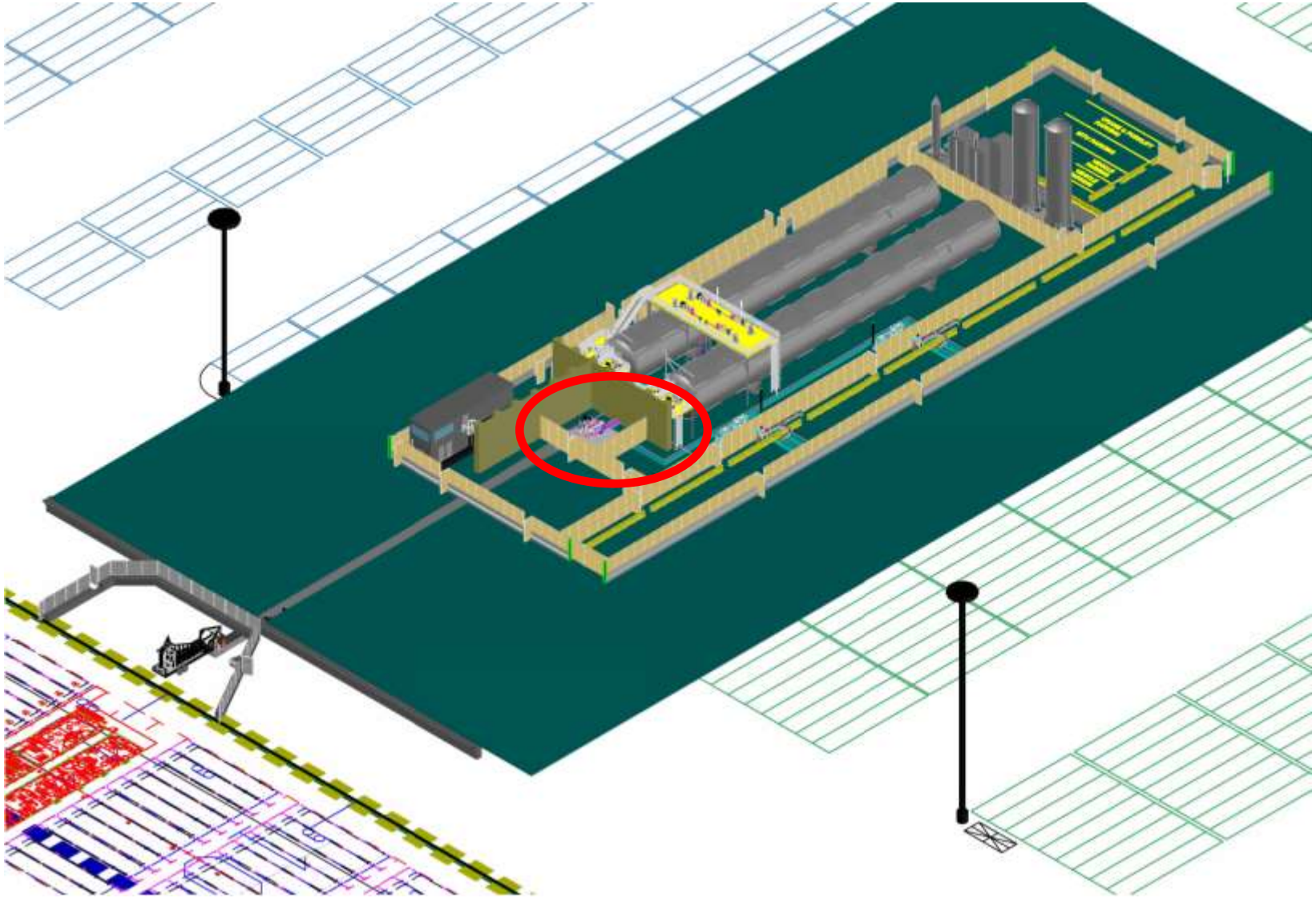
Hauling Tank to Foundations

Setting Tank with Gantry System

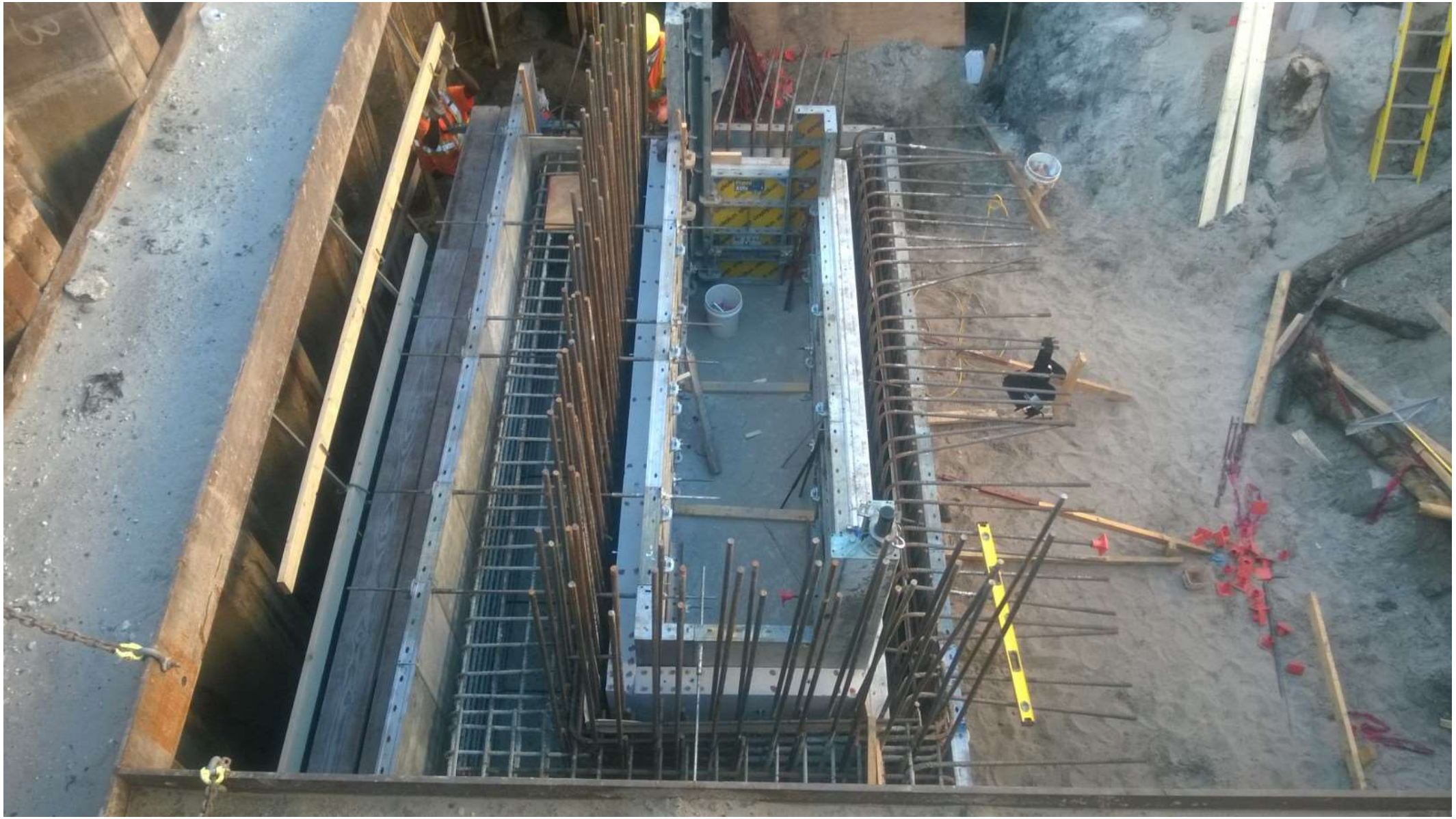
Nitrogen Tanks



Containment Pit

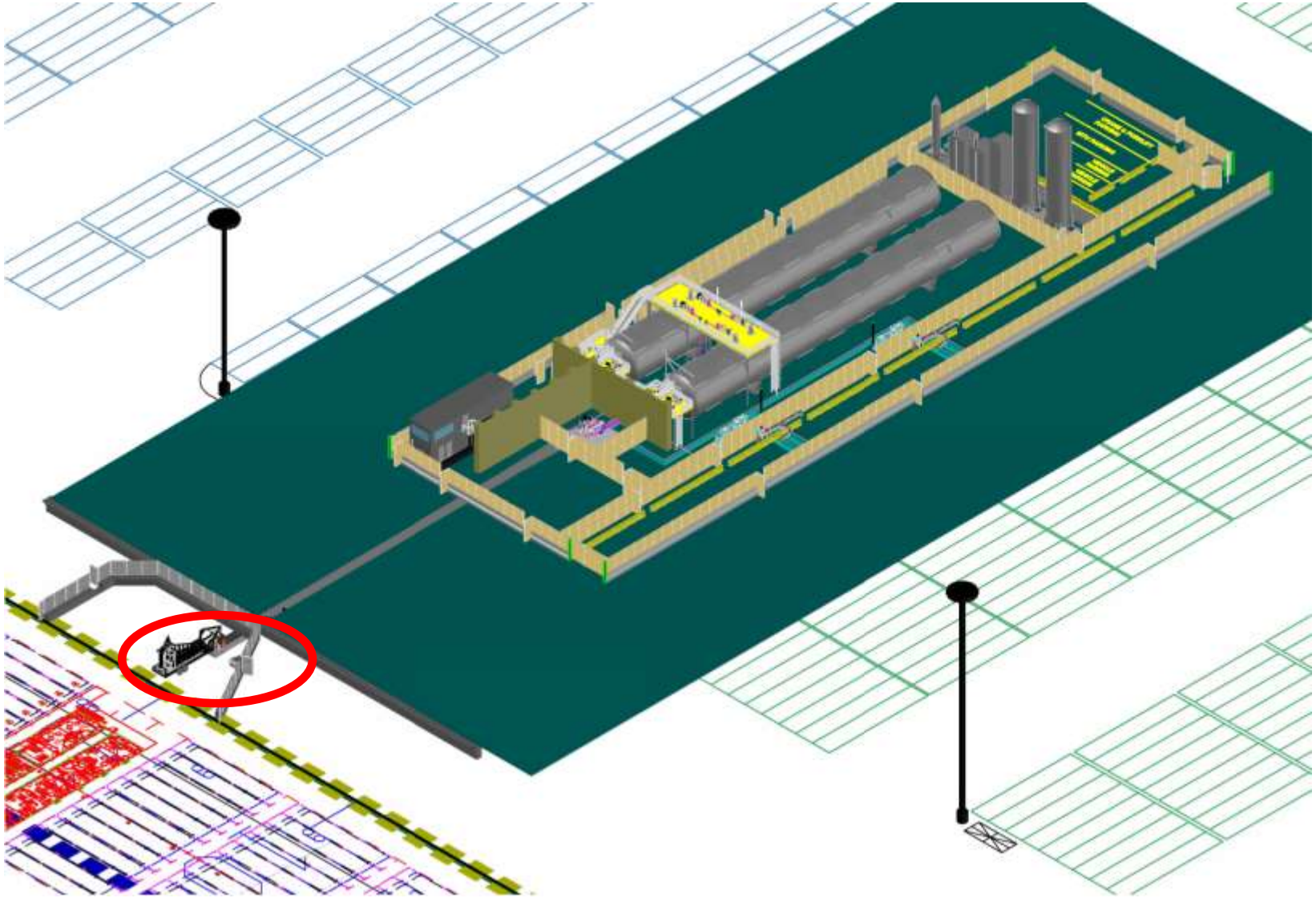


Containment Pit Sump



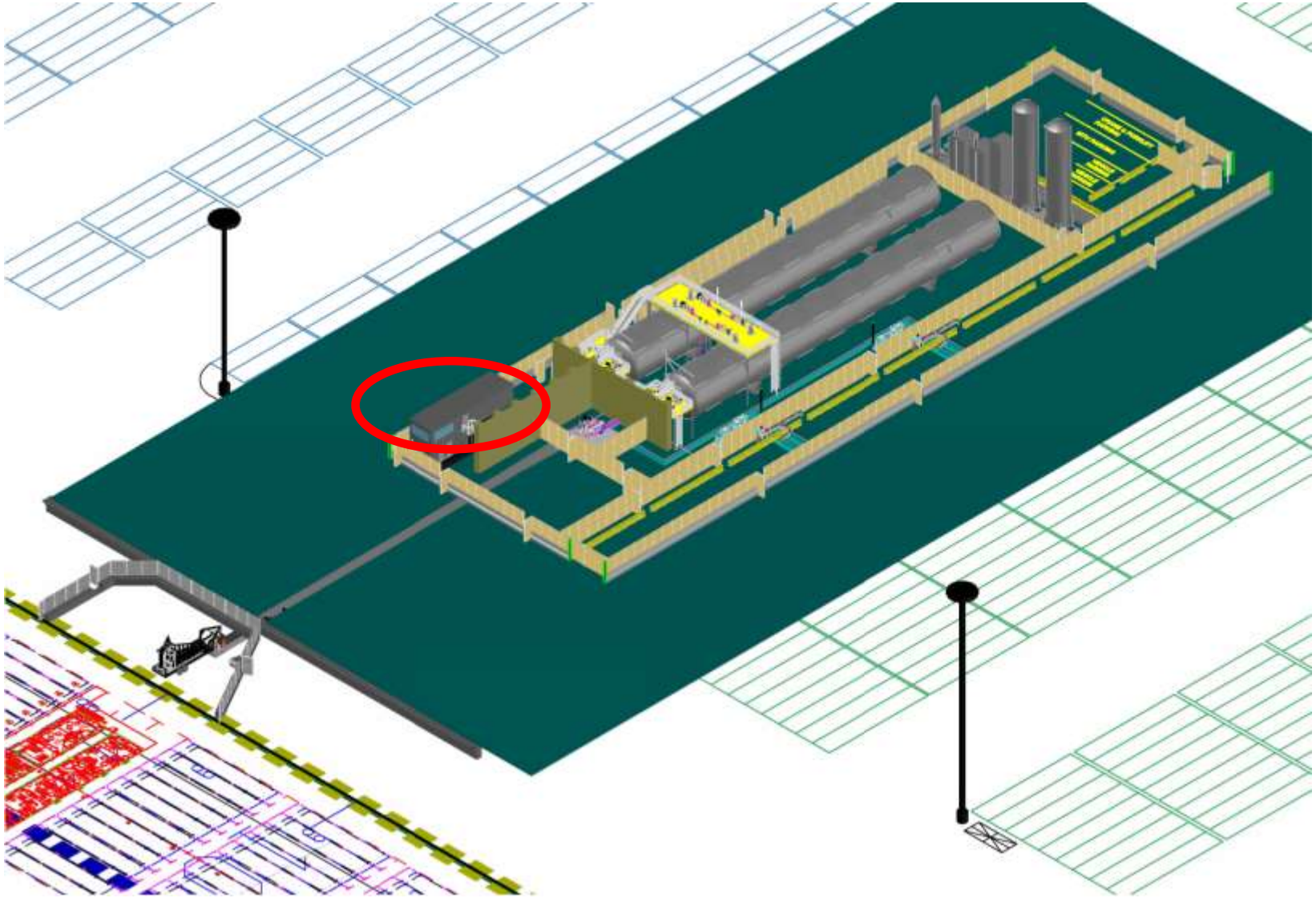
Containment Pit Floor

Pipe Trench



Pipe Trench and Crane Beam Rebuild

Control Building



Control Building

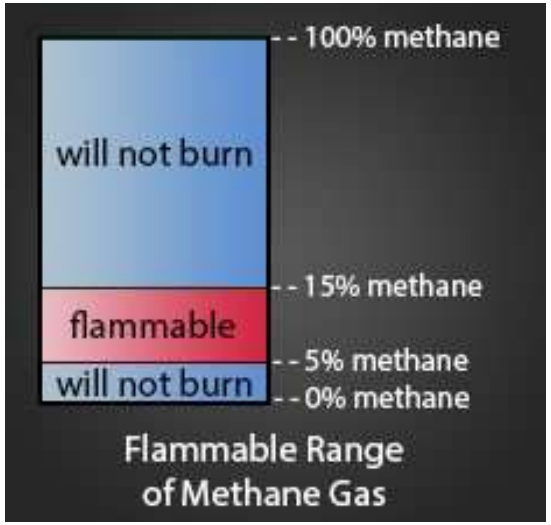
Control Building & Truck Offload Lane

Truck Offload Lane

Panoramic View

Safety

- Minimal pressure in the tank
- Vaporizes when spilled
- Limited window for combustion
- Robust emergency shutdown system (flame detectors, gas detectors, low temperature sensors, and emergency stops with PLC control)
- Vapor dispersion modeling and mitigation
- Expanding foam fire suppression
- Pittsburgh Corning FOAMGLAS blocks




Questions?