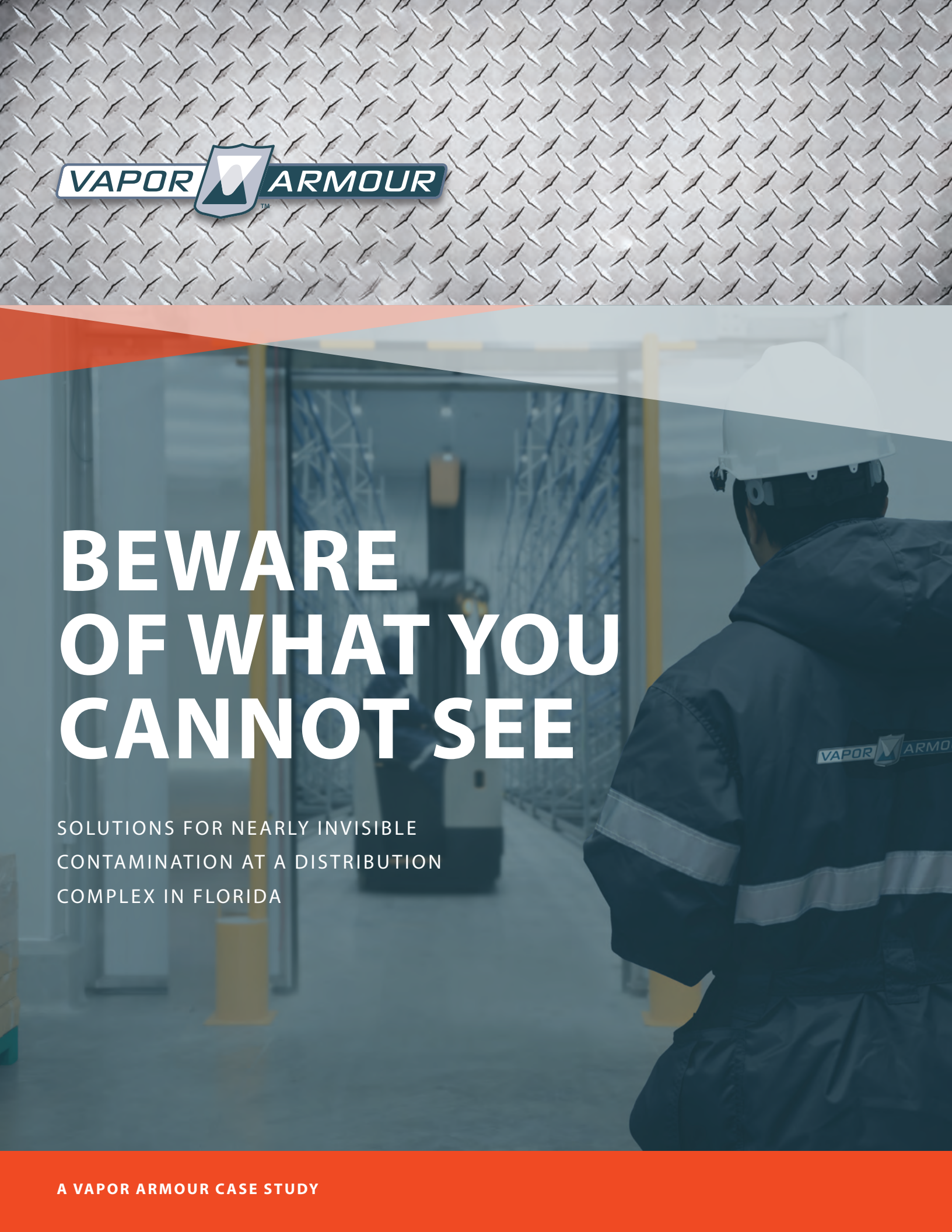
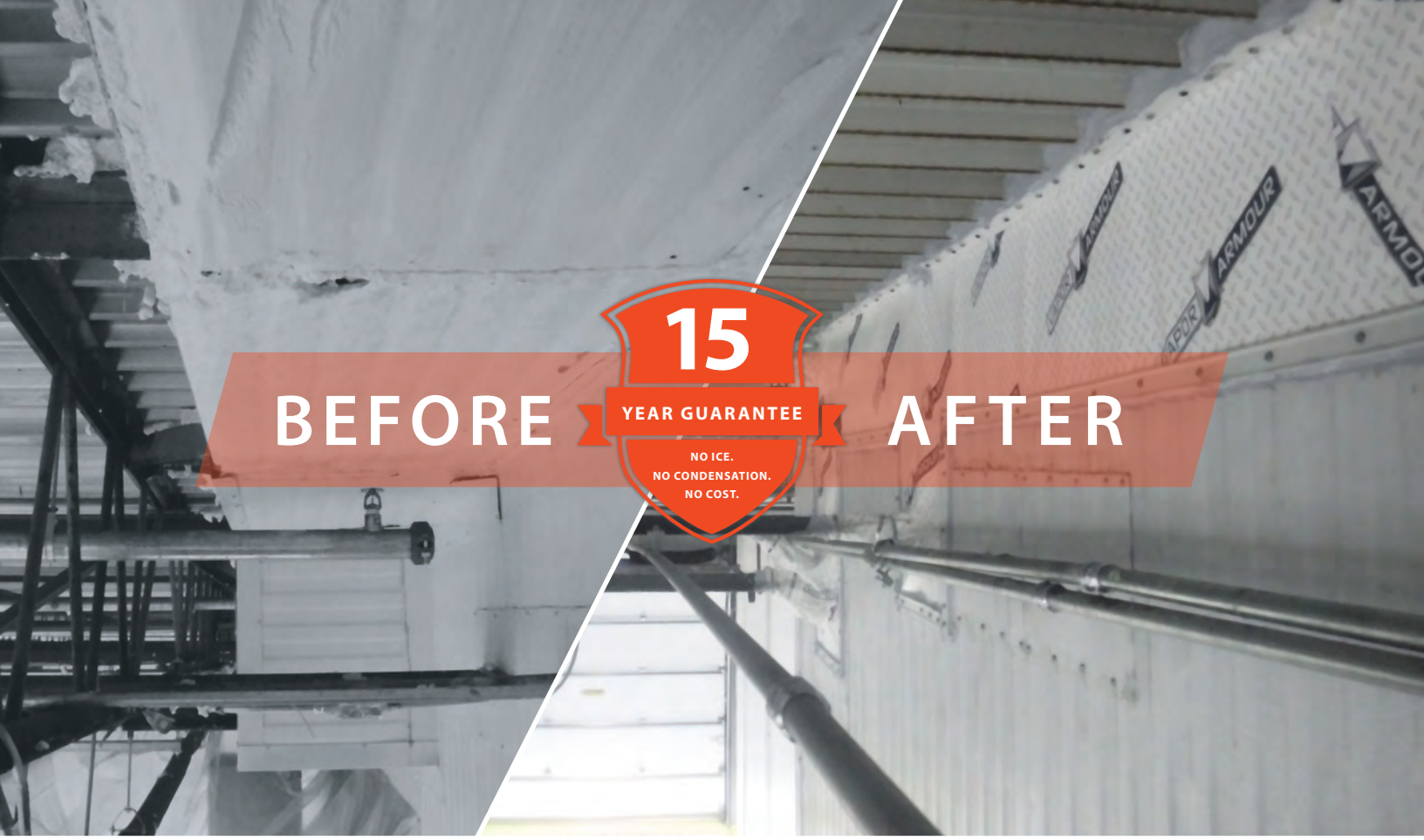


BEWARE OF WHAT YOU CANNOT SEE

SOLUTIONS FOR NEARLY INVISIBLE CONTAMINATION AT A DISTRIBUTION COMPLEX IN FLORIDA

A VAPOR ARMOUR CASE STUDY



The Problems

After meeting with the leaders of this Florida facility, Vapor Armour learned of the following concerns:

PROBLEM #1
Visible ice build-up around the ammonia pipes at the roof juncture

PROBLEM #2
Minor ice build-up at the loading dock

The Solutions

SOLUTION: STEP #1
Install Vapor Armour™ vapor barrier to the Main Freezer, Ice Cream Freezer and Loading Dock perimeters and dividing wall

SOLUTION: STEP #2
Install Pipe Lock™ vapor barrier to the 15 pipe stands and remove all contaminated roof insulation and replace with XPS

SOLUTION: STEP #4
Re-roof the entire facility in PVC roofing membrane

PHYSICAL PLANT SPECS

A 98,400 sq. ft. multi-temperature distribution center:

- Main Freezer and Ice Cream Freezer - 40,346 sq.ft.
- Ice Cream Freezer - 7,750 sq. ft.
- It was determined that there were at least 326,000 lbs. (163 tons) of ice on the roof.

INDUSTRY-LEADING APPROACH

Vapor Armour performed a free, invasive Forensic Evaluation of the facility, and took Thermal Images and Core Samples to determine the extent of the issues.

Forensic Evaluation

It is more important than ever for us to maintain a food-safe facility and maintain our budgets to comply with the USDA, FDA, and Insurance Audits — and all of that is possible with Vapor Armour's Free Virtual Forensic Evaluation. For this Florida facility, here's what we did:

STEP 1: VISUAL INSPECTION

Customer was correct: our VISUAL inspection indicated some minor icing inside the freezers and some build-up on the loading docks and around the ammonia piping.

STEP 2: THERMAL IMAGING

The Thermal Imaging showed quite a different story.

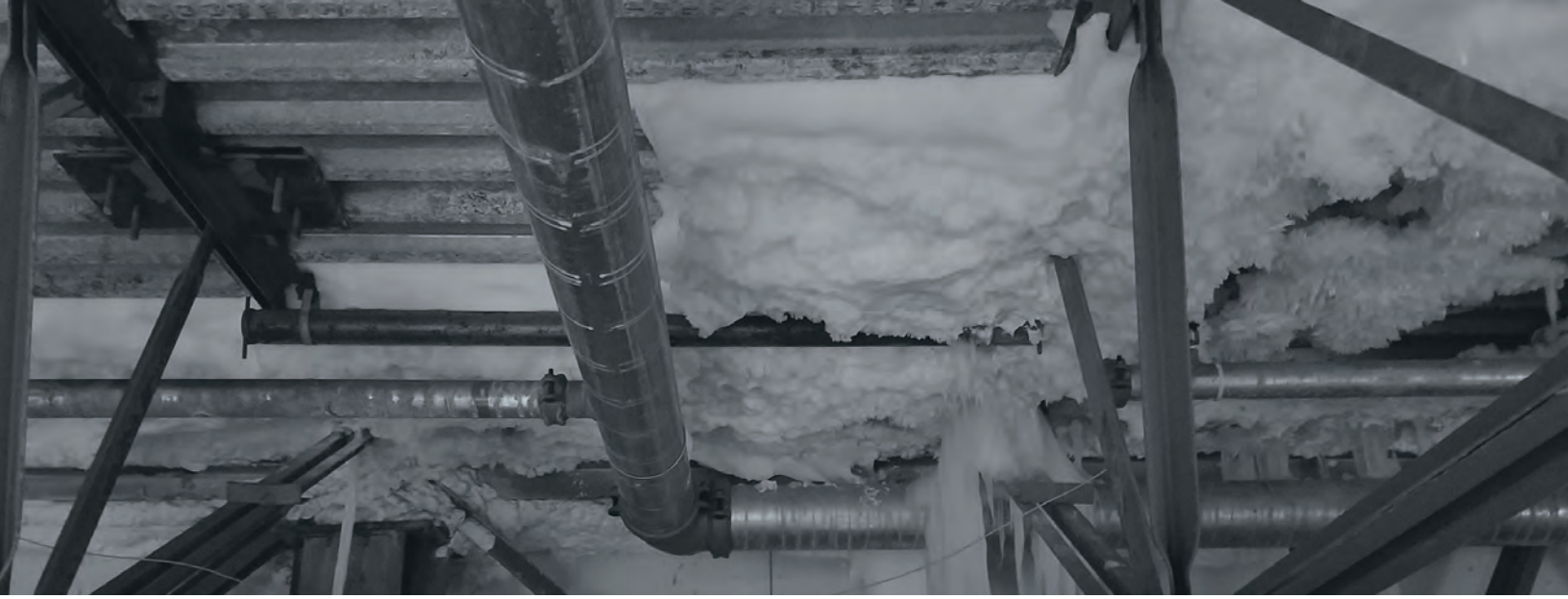
A. All the Ice Cream Freezer's inside ceiling was completely "hot" - meaning that the WHOLE ceiling was 15° and at points 20° warmer than the -20° temperature required, although no ice was visible. It was obvious from the thermal imaging that the roof deck was completely ice contaminated.

B. Although no ice was visible, Thermal Imaging indicated that ice had formed in the perimeter of the main freezer in 1-2-foot lines AND on the dividing wall in 12 -15-foot swaths. The ice in the Main freezer deck was growing out from the perimeter of the building towards the middle of the roof deck. We concluded it was growing at a rate of 2 feet per month.

STEP 3: CORE SAMPLING

We needed to confirm the roof deck status below the surface by drilling cores through the roof membrane to the roof deck and viewing the samples – we needed to cut core samples. We drilled 70 such core samples. Core sampling showed that:

- The Ice Cream Freezer's roof insulation and deck (114' x 68') was in its entirety iced in – the insulation, we thought, was about 75% contaminated,
- The Main Freezer's roof insulation and deck was ice bound all the way around its perimeter (2' x 1,176);
- Main Freezer's roof insulation and deck at the dividing wall between the Main Freezer and the Loading Dock was ice bound from its base to a minimum of 12 feet onto the roof deck to as much as 15 feet, (15' x 320')
- Each of the 15 ammonia piping clusters was ice-bound at a 6 to 8-foot area around the pipes (15 x 10' x 10')
- The loading dock perimeter was water saturated (2'x 408)

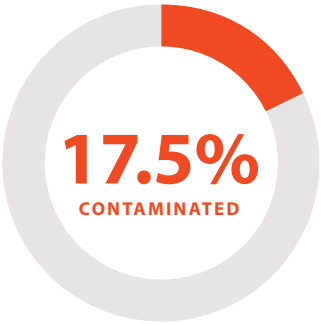


Key Findings & Extent of the Concern

From the Forensic Evaluation, it was determined:

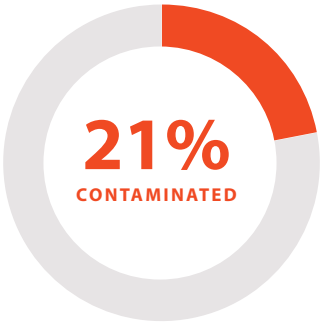
CONCERN #1

As stated previously, of the Ice Cream Freezer's roof deck's 7,750 square feet, 100% was ice contaminated.



CONCERN #2

Of the Facility's total roof deck's 98,400 Square Feet, at least 17,220 square feet (17.5%) was contaminated.

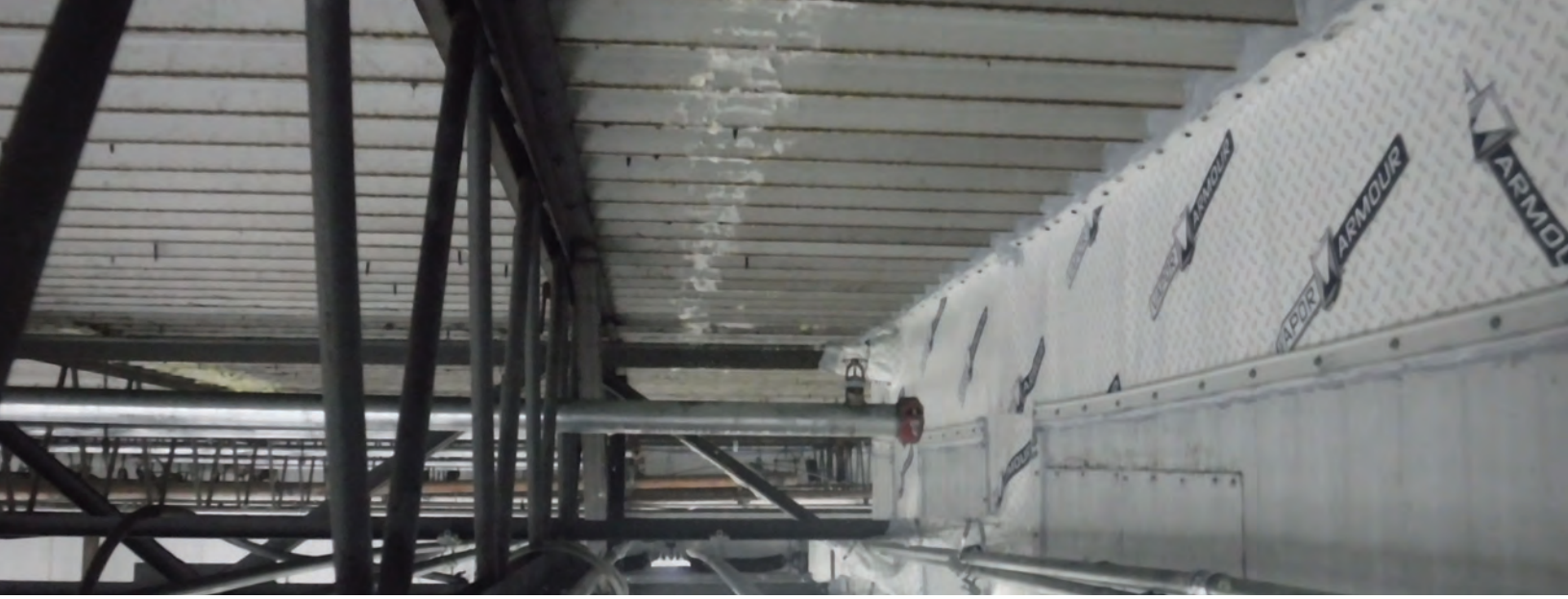


CONCERN #3

Of the Main Freezer and Ice Cream Freezer's roof deck's 48,096 square feet, at least 10,336 square feet (21%) was ice contaminated.

CONCERN #4

With the help of customer's personnel and structural engineer, it was determined that there were **326,000 LBS. OF ICE** on the roof. It was a concern that the **STRUCTURAL ROOF LOAD WAS BEING STRESSED** and there was a concern that the Ice Cream Freezer **ROOF ICE WEIGHED OVER THE ALLOWED STRUCTURAL ROOF LOAD**.



Project Results

We can discuss the results from this project in at least 5 variants: Specific Concerns recalculated to actual, Future Results, Energy Savings, ROI, and FSMA regulatory compliance.

ACTUAL CONCERNS

Upon further investigation, Vapor Armour determined that the roof load was actually stressed another 38% over what was first calculated.

FUTURE RESULTS

We provided a Building Envelope 20-year Systems Warranty, ensuring the building envelope will be free from leaks, contaminated insulation, ice and condensation for 20 years.

ENERGY SAVINGS

The reduction in energy usage attributable to Vapor Armour vapor barrier installation was over 50%. This represents a yearly savings of at least $650,000 per annum.

48% ROI

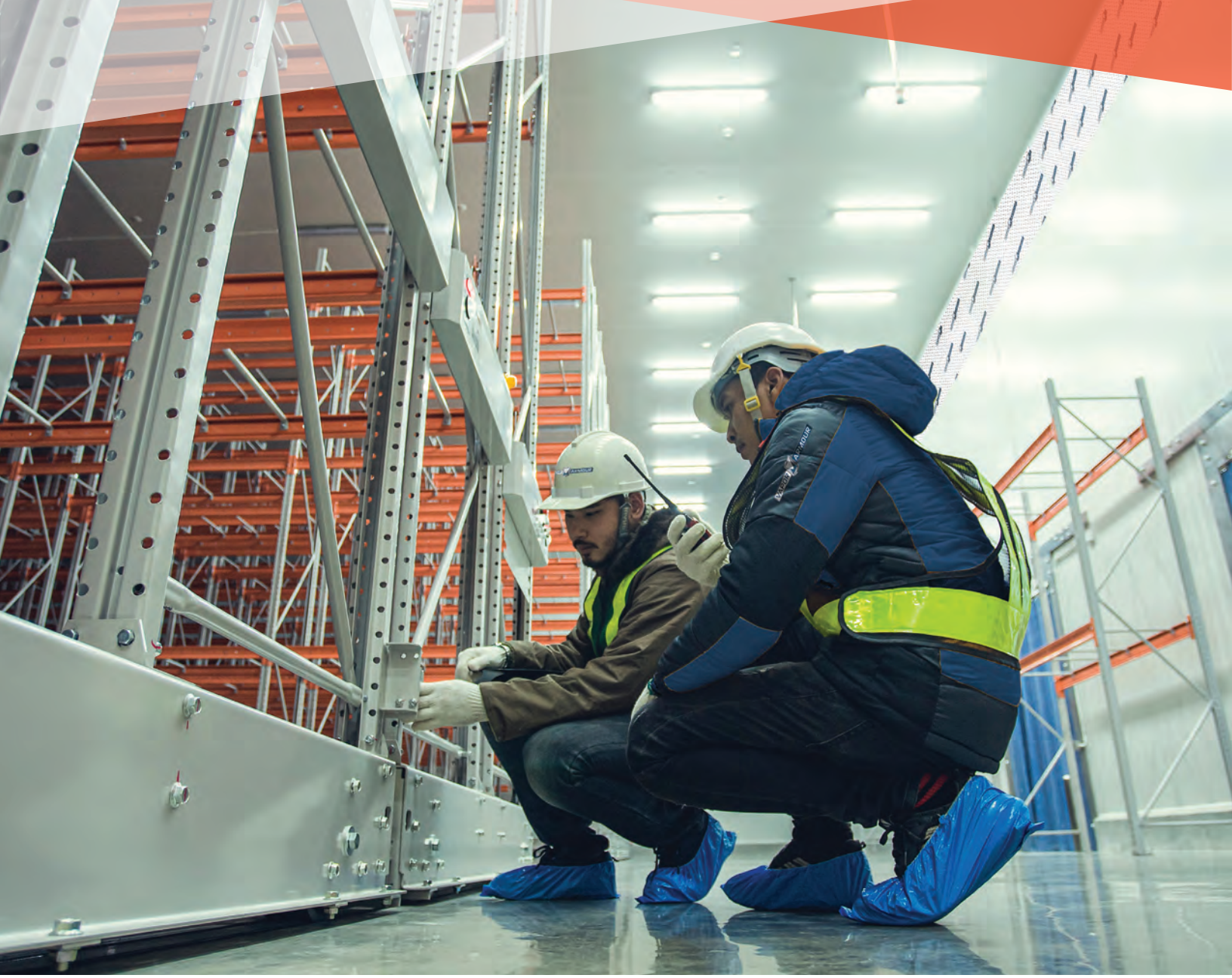
PAYBACK IN JUST 25 MONTHS

RETURN ON INVESTMENT

Based on a simple pay back analysis (ROC), the cost of the project divided by the energy savings alone gives a payback of 25 months.

FSMA & OTHER REGULATORY COMPLIANCE

With this VA building envelope replacement and 20-year warranty, Ice or Condensation caused by vapor leaks or vapor barrier discontinuity is eradicated and the building is FSMA Compliant.



In Summary (What Lies Below the Surface)

This Case Study shows that even though less than 1% of this contamination was visible to the naked eye; over 450,000 lbs. of contaminated insulation needed to be removed and the building structural load was stressed. The consequences of even a partial collapsed roof would be catastrophic to customer's stellar reputation, its employees, and its customers.

The solution was a Vapor Armour Installation that took less than 50 calendar days (including Christmas and New Year holidays). The payback was immediate in Energy Savings (48% ROI and 25 months) and the results are guaranteed for 20 years. The cost/benefit analysis does not take into account the risk of incurring Federal FSMA sanctions, OSHA violations, and building integrity is maintained.