Roof replacement project safely amasses 14,600 man-hours, event-free

CLIENT:	**CONFIDENTIAL**
MARKET:	Chemical Process, Petrochemical & Refining
LOCATION:	Harve de Grace, MD
SERVICES:	Construction Safety Support
COMPLETED:	2022
VALUE CLASS:	<$100K

ABOUT: *The Client is a science company whose technologies bring benefits to many aspects of daily life. Their purpose is to bond people, ideas, and elements to reinvent progress and is a call to go beyond to reinvent future forms of progress and create sustainable shared value for all through the power of science.*

The Client's manufacturing facility in Havre de Grace needed a roof replacement of approximately 40,000 sq ft that included four separate roof sections. The roof replacement took place during Maryland's winter months of fluctuating temperatures and unpredictable precipitation.

The Havre de Grace facility's Health, Safety and Environment policy includes contractor safe work integration and required a Construction Safety Officer to ensure the facility and workers met safety protocols for this roof project. To provide a complete safety support system, TAI provided Project Management and two safety professionals.

Two kickoff meetings were conducted to align the project phases that included logistics for roof work, tear-off, debris removal, material management, and installation.

CHALLENGE

Work execution finally began in October 2021. Daily work permits were required for safety-critical processes: crane usage, hot work, and work-at-height. Training was ongoing during the project and TAI produced a project safety plan that included work specific policies and procedures with a maintenance manual to ensure the anticipated life of the new roof (approx. 30 years).

Weather was a major adversary in this project and factored into logistics, timeline and working conditions. Roof access and roofing material applications were adversely affected by temperature. In the beginning of the project, workers had to don Personal Fall Arrest System (PFAS) as the roof did not have continuous safety hand railings along the perimeter. This hindered productivity as the application of PFAS restricts mobility and created challenges with working around extended retractable lanyards. The roof was also crowded with blowers, stack support wires, electrical cable trays, HVAC/fan systems, and various other equipment – most notably a 19-ton crane that lifted 140.5 tons of roofing debris/trash off the roof onto a hydraulic pan to a waiting dump truck below.

SOLUTION

Placing a Construction Safety Officer onsite provided a safe work perspective to monitor environmental change and roofing craft activities at hand. TAI was prudent in making sure safe zones were established for each piece of equipment, material laydown area, and tear-off areas to keep workers safe.

The crews were tasked with removing snow and ice whenever it delayed the progress of the old roof tear-down to prep for days when the weather was more hospitable. The thermosetting chemicals that were used to glue the layers of roof materials to the roof were stored in a heated room. This enabled installation to continue despite the cold temperatures outside. The first layer of the Tremco roof consisted of a layer of vapor barrier (fiberglass felt), followed by a layer of insulation and then a layer of Gypsum/DenseDeck, four layers of roofing felt paper (moisture barrier), ECOlastic sealing paint, and then topped with crushed stone for final stability.

Inside the manufacturing facility, TAI worked with the Client's supervisors to cordon off interior areas, ensuring safe work zones for operations' personnel and assigned a safety observer. TAI also provided poly sheeting installed as a ceiling barrier to collect falling debris to further protect workers and process equipment.

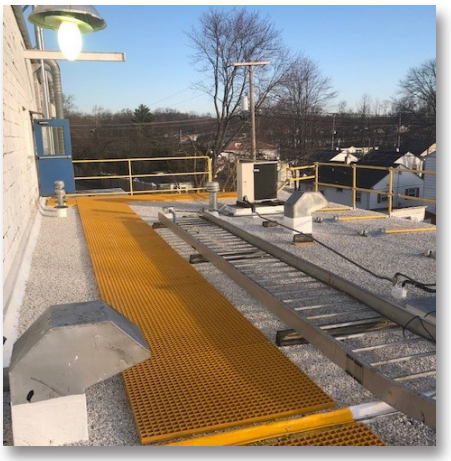
Adverse weather and myriad of equipment

Workers strip away layers of old roofing

Morning safety meeting

SOLUTION

The General Roofing Contractor installed temporary safety railings along the perimeter of the roofline, thereby freeing workers to work on the roof without fall protection. The ability to work without PFAS restriction enhanced productivity and helped deliver the project on-schedule. The GC also installed permanent safety railings along the roof perimeter and safety yellow fiberglass walkways to provide added fall protection and walking/working surfaces against slips, trips and falls to improve safety.



RESULTS

The project took six months beginning in October 2021 and commencing in March 2022. The TAI Construction Safety Officer provided HSE services from start to finish on the roof replacement project, including:

- Implementation of the construction safety plan – inclusive of all Owner and TAI requirements.
- Assurance that all contractor employees and subcontractors are properly trained in all appropriate and required safety training.
- Routine inspection of the project site, including the following: PPE compliance, crane operations, vehicle safety, fire safety, medical emergencies, housekeeping, chemical storage and barricade/signage inspection.
- Ensured reporting of all near-misses, first aid, and/or serious accidents.
- Identified ”at-risk” behavior and unsafe conditions and implemented corrective action.
- Safe work and good behavior recognition (e.g., Safety Fridays – Purchased donuts weekly to thank crew for working safely).
- All contractors and subcontractors received Safety Induction Training specific to the Site and Project.
- Site procedures to ensure that personal protective equipment (PPE), was provided and donned at all times, by everyone present on the Construction Site.

TAI supplied a full-time dedicated site Construction Safety Manager for the duration of the project. TAI also provided to the Client, an extensive site safety plan and training for this project and for the future. The TAI Construction Safety Manager worked closely with the General Contractor, specialty contractors, the Client’s Production Manager and the union representatives – to ensure all Health and Safety requirements were in compliance. By the end of the project, the roofing team safely amassed 14,600 man-hours – event-free. The key to success of this project was consistent communication, anticipation of challenges (with solutions), flexibility, troubleshooting and teamwork. Tremco inspected the final roof construction (with no punch list items!). It was a complete success!

This project is the second of its type for this client where TAI provided construction management, safety services, field engineering and project management. The recently completed project was a Plant-Wide Central Dust Collection Installation with no injuries, no near misses, and project completion on time and on budget.

Success! “Plan the work and work the plan!”