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Products and Partnerships

Power Concrete Flooring Installation

BY TOM MURPHY, VPM, LLC

“Not all installation contractors have the manpower and skill required to successfully deliver on a project of this scale.”

The pharmaceutical and diagnostic industries are unique in their importance to society. Saving lives, treating illnesses and preventing the spread of infectious diseases carries a social and moral responsibility. When new treatments and diagnostics have proven their efficacy, rapid production scale-up and facility construction is crucial to implementing these health-related technologies.

BioFire Diagnostics develops systems using polymerase chain reaction (PCR) technology to rapidly identify and screen for infectious diseases. Diagnostic results are available to clinicians within one hour for viral infections such as the novel coronavirus and influenza, and bacterial infections such as bordetella and pneumonia.

BioFire worked with FFKR Architects to design their production facility expansion in Utah. The new facility floor plan included over a quarter-million square feet of floor finishes. This expansion covered production areas for test kits and instrumentation, warehousing, freezer space, packaging, shipping and receiving, a mechanical equipment room and a machine shop. There is expected to be a variety of traffic through the expansion, from light foot traffic in clean space to heavy forklift traffic.

SYSTEM SELECTION

The flooring system selection for the new facility was based upon:

- Installation time;
- Cleanability and modest surface texture (according to SSPC Concrete Concrete Coating Texture Standard CST 1: CFT 2-3);
- Life cycle considerations;
- Aesthetics; and
- Ease of maintenance and repair.

The chemical and abrasion durability varied by area. The flooring systems specified included 210,000 square feet of methyl methacrylate (MMA) decorative flake broadcast slurry, 36,000 square feet of traffic coating,

4,000 square feet of urethane cement with quartz broadcast and 6,000 square feet of polished concrete.

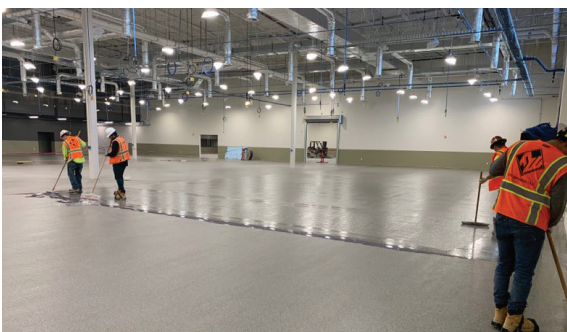
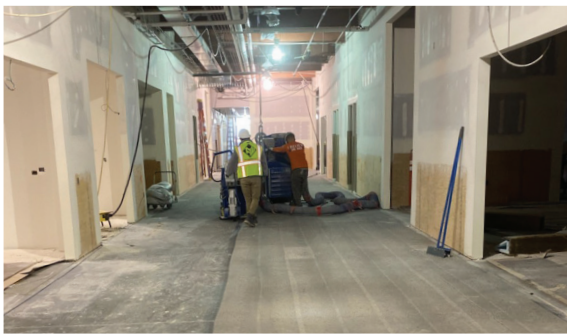
The primary flooring system material supplier was Key Resin; the systems specified were Key MMA Chip 900 System, Key Urecon SLT Quartz System with a polyaspartic topcoat, and an epoxy traffic coating. The MMA flake system was designed to have two distinct color blends without using strip dividers. The mechanical equipment room received a four-coat flexible waterproofing system with a cast-in-place cove base. The kitchen area was specified with Ucrete HP/Q urethane cement quartz broadcast from BASF and included a cast-in-place cove base.

CONTRACTORS COME THROUGH

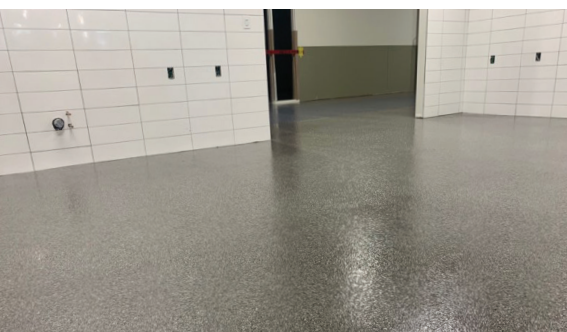
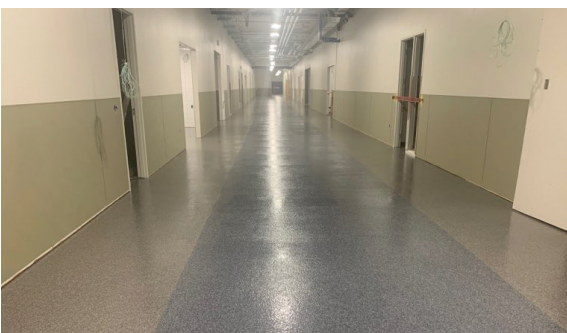
The general contractor, Okland Construction, and the owner wanted to select FW Specialties to install all of the floor finishes, but were concerned that one specialty contractor would not be able to maintain the demanding schedule for the massive scope of this project. Although FW Specialties, a company with over 35 years of experience in industrial flooring, wall coatings, polished concrete and terrazzo, was confident that they could complete the installations on schedule with their certified in-house crews, they called upon the North American Construction Technology group to support the project.

NACT is a collaborative membership organization of experienced contractors, architects, chemical producers, and formulators bringing value to facility owners, local communities and the environment by identifying and delivering the latest technologies with expert installation across North America. The organization is uniquely positioned to serve geographically diverse applications and individual projects requiring substantial resources or diverse talents.

Multiple NACT contractor members submitted supporting commitments to manpower if and when the project demanded. This reassurance gave Okland Construction and the owner confidence to award the entire contract to FW Specialties.



Surface preparation included heavy shot-blasting before installation of a moisture retarder and a urethane cement slurry for moisture vapor mitigation. Finally, the MMA slurry was applied.



After all of the different systems had been applied, the finished floors were flat, glossy and durable, satisfying the facility owners.

“It is one of the flattest floors I have ever been a part of in over 30 years of flooring work.” — Scott Carey, FW Specialties

OVERCOMING ONSITE CHALLENGES

Areas to receive coating systems were prepared by heavy shot blasting to CSP 6–7. All drains and terminations were key-jointed to a minimum of 3/4-inch deep by 1-1/2 inches wide. This attention to surface preparation pays dividends in preventing application problems and post-installation bond issues.

Before coating started there was an immediate issue. Although a moisture retarder was installed below the 6- and 8-inch concrete slabs, the moisture level reading was over 97% relative humidity. This required the additional step of moisture vapor mitigation application of 1/8-inch of urethane cement slurry prior to the MMA slurry install. The installation expertise and the cure speed of the resins allowed the project to stay on schedule.

As with any project, the devil was in the details. The scope and speed of these installations required FW Specialties to stage and coordinate multiple crews. In addition, the MMA system used on the project is a fast-set chemistry requiring efficiency and planning to maintain a wet edge for seamless tie-ins, clean terminations and rapid paint-chip broadcasting.

This summertime installation, with temperatures exceeding 90 F, exacerbated the issue of “cold” seaming large, wide-open areas—not only with the MMA system, but also with the urethane cement and polyaspartic top-coat. A refrigerated trailer was used to maintain the material at cooler temperatures, adding a couple of extra minutes of working time. FW Specialties developed unique proprietary methods for managing and accelerating applications, keeping the project on schedule while improving the overall finish quality and consistency.

CONCLUSION

Projects of this scope require advanced project management experience. In addition, handling

and applying rapid-set chemistries such as MMA, urethane cement and polyaspartic coatings in hot summertime temperatures requires even greater skill. Installing any seamless floor coating requires specialty skills and know-how. Not all installation contractors have the manpower and skill required to successfully deliver on a project of this scale. Industry associations, such as SSPC: The Society for Protective Coatings, provide flooring installation specialist training and certification, offering valuable hands-on experience with floor coating standards, equipment and products that can prepare applicators for real-world field installations.

As this project wraps up and BioFire begins to move into the new expansion, the owner and general contractor are extremely satisfied with the installation and the professional expertise of FW Specialties.

“Through rigorous mock-ups with the project stakeholders, the suggestion of an MVT primer and aggressive scheduling, all of [our] concerns were mitigated, resulting in a top-notch installation,” said John Erickson from Okland Construction. “BioFire has commented several times regarding the quality and workmanship of the MMA flooring. FW Specialties should be proud of what they achieved on this project.”

“It is one of the flattest floors I have ever been a part of in over 30 years of flooring work,” added Scott Carey, FW Specialties’ Project Manager.

This project was successful because all parties worked together planning, resolving issues and innovating installation. BioFire clearly stated their requirements, FFKR worked with Key Resin to specify the correct systems to meet the performance and installation schedule, and FW Specialties brought it all together with experienced installation teams and innovative production methods. **PSP**

ABOUT THE AUTHOR

Tom Murphy provides consulting and inspection services to the floor coating industry and is an active participant in driving industry standards and training through international associations. He has a Master’s degree in biochemistry from Creighton University and an MBA from the Keller Graduate School of Business Management.

While at Sherwin-Williams from 1994 through 2013, Murphy was vice president of marketing for the General Polymers brand of seamless flooring products and concrete repair materials. He worked with SSPC to establish the industry’s third-party training and certification for installation and inspection of seamless floor coatings (SSPC-C 10/SSPC-C 11). Murphy also chairs and participates on several committees associated with the building guides and standards for concrete repair, surface preparation and protection.

Murphy is a founding member of Resin Flooring International, an international organization whose goal is to raise the quality of seamless flooring through trade training and licensing. This is an umbrella organization promoting existing resources throughout the world, while driving the development and implementation of world-class training, certification and standards.

