



Creating Better Spaces

Smart cities go beyond technology

By Dan Naumovich

The smart city concept—using technology to collect and analyze data that can be used to improve how a city functions—dates back to the 1960s. The term itself was coined around the dawn of the Web 2.0 era, in the mid-aughts, when the industry focus turned to usability and interoperability. For those who envisioned a complete transformation of how a city is built, looks and operates—something along the lines of those “city of the future” renderings once popular in comic books—it may seem that we’re still light years away from the smart city age. But the transformation is well under way, although today, it isn’t being driven by technology.

“We’re not building smart cities from the ground up, where we have no infrastructure to contend with, especially here in North America. We’re dealing with roads and electrical and water infrastructure and a built environment that has been around well before the internet even existed, so we’re talking much more of an evolutionary journey,” says Rick Huijbregts, smart cities global lead for Stantec. “And I think most cities start to realize that, frankly, it’s not about the technology at all. It is about delivering value, creating

better spaces and transforming our lifestyle.”

The City of Markham, a suburb of Toronto, is a good example of the mindset needed to successfully integrate the smart city approach into the fabric of a community—in this case, one that has been around since the late 1800s. Rather than setting sights on a destination, at which point Markham can proudly add “A Smart City” to its welcome signs, Stantec’s team is helping the community develop a strategy and a roadmap that recognizes that this is an ongoing journey—the goal being to introduce solutions that are both sustainable and adaptable as society and technology advance into the future, while improving livability and creating opportunity along the way.

Huijbregts believes that four foundational building blocks must be in place before a community can begin its smart city transformation. The first is to embrace a people-centric and purpose-driven approach, rather than starting with a technology that may end up being a solution in search of a problem. “The conversation must begin with, ‘How do we make better places? How do we build better places to work, live, learn and play?’ Then we can discuss

design and engineering and the planning and technology. We have a lot of tools we can use, but it must start with an understanding of what you’re trying to create and for whom,” he says.

The second foundational element is grounded in collaboration. A municipal government, no matter how forward-thinking, cannot go it alone. Nor can a technology company, regardless of how much money it has to invest. Success can be achieved, however, by creating collaborative ecosystems that include government and businesses across economic sectors, while harnessing the insights and ingenuity from academics, researchers, innovators and social and public services, such as libraries, schools, retirement homes and community centers. “There’s that saying that if you want to go fast, you go it alone. But if you want to go far, you do it together. So, for this to be sustainable, you need to create a collaborative ecosystem,” says Huijbregts.

Cities must also revisit their policies and regulations—the third building block in the foundation. Ordinances written and enacted in a predigital world may create unnecessary roadblocks that prevent initiatives from fully developing. Legacy processes

such as procurement, which traditionally favors the low bidder, must be rethought to consider the critical role that innovation, creativity and experience play when vision and technology are being solicited. New rules concerning privacy and rethinking right-of-ways must also be top of mind.

The fourth and final building block is digital infrastructure and connectivity. This calls for an open architecture digital utility; connectivity standards; innovative operating systems; machine learning and analytics; and, of course, cyber security. Smart city solutions are driven by vast amounts of data that must be vigilantly protected against breaches and attacks. Even the perception that residents' personal information could be compromised is enough to derail an initiative.

"Security needs to be addressed upfront," Huijbregts advises. "When streetlights and fire hydrants and

everything else is connected, if something critical like the water infrastructure gets hacked, then everything will come to a grinding halt. For this reason, cyber security is a major topic in the digital infrastructure conversation."

Once the four foundational blocks—and the right conditions—are in place, the possibilities for a community's smart transformation are almost boundless. Not only for things such as improving water quality, improving emergency response times and mitigating the impacts of natural disasters, but also broader goals, such as revitalizing a town's economy and promoting equity and inclusion. As Huijbregts concludes, "It has to become a part of the DNA of how a community works. It needs to be designed into buildings, roads, utilities and public services. People need to be engaged. And then, when you add the technology, it becomes a real catalyst for transformation." ♦

Rebuilding Old San Juan's Pier 3 With Nucor Skyline Spiralweld Pipe

Pier 3 in San Juan, Puerto Rico, is home to cruise ships in transit that stop in for the day. The pier, built in 2004 on concrete piles, sustained heavy damage in 2019, when a troubled ship made an emergency stop and collided with it.

The Puerto Rico Ports Authority (PRPA) awarded the contract for the emergency repair of Pier 3 to Del Valle Group, LLC, out of Toa Baja, Puerto Rico. The impact of the ship affected the pier's mooring dolphins and the concrete columns supporting the mooring dolphins, bollards and walkways, which collapsed on impact, falling into the sea.

Del Valle Group called upon Nucor Skyline for their expertise in international and marine-based projects. Nucor Skyline produced the 500-plus tons of 30x0.500 spiralweld pipe piles needed for the repairs to Pier 3. The 120-ft length pipe had the top half coated with coal tar epoxy and the bottom half was bare. The project consisted of removing 90 tons of collapsed structures from the seabed; reconstruction of the two mooring dolphins and collapsed concrete piles with steel pipe piles; and the repair of other systems affected by the collision.

To learn more about using steel pipe piles for your next international project, visit www.nucorskyline.com. ♦



Nucor Skyline spiralweld pipe piles being driven to repair Pier 3 in Old San Juan, Puerto Rico.

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