Extreme Sewer Makeover

Integrating Technology into Construction Management to Minimize Community Impacts

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Los Osos, Calif., is an unincorporated community of approximately 5,000 homes and 15,000 residents situated on the coastline of San Luis Obispo County. It is at the southern end of Morro Bay and adjacent to the Morro Bay National Estuary and State Marine Reserve. The area became a subdivision in the late 19th century and was developed for summer homes and retreats.

Initially, sanitation needs were met primarily through individual septic systems, many on densely developed small lots, often within areas of high groundwater. Due to concerns of failing systems, and a measurable increase in pollution within the community’s groundwater supply, a completely new sewer system was deemed necessary. Once fully operational, this new collection and treatment system will reduce environmental impacts, recycle wastewater, and help restore the aquifer as a healthy source of drinking water for the community.

In 2011, following a 24-year moratorium on any new construction within the community, the county began development and design with CDM Smith on the collection system and with Carollo Engineers for the water recycling facility. To manage construction, the county hired HDR for both phases of the $183.4 million project.

The new collection system consists of:

- 49 miles of gravity sewers, sewer force mains, and recycled water mains;
- 580 maintenance holes;
- 4,700 laterals; and
- 21 pump stations.

The water recycling facility is a 1.2 million-gallon-per-day tertiary treatment plant with two recycled effluent water storage ponds. The water program will utilize 100 percent water recycling through:

- 8 acres of leach field percolation;
- 25 acres of turf irrigation; and
- 100 acres of agricultural irrigation.
Communicating Project Status

Public communication through a project website is nothing new to the engineering community; however, when a multiyear project impacts every street and every home in the community, the scope of public outreach and level of detail needed for project communications magnifies intensely.

As the project neared the construction stage, the county emphasized a high level of public involvement and transparency during construction to mitigate public sensitivities. To achieve project goals, HDR utilized a cloud-based Bentley Systems software package called EADOC. EADOC provided all-in-one, real-time construction management with a web-based GIS tool and detailed construction activity schedules using Primavera P6 scheduling software.

This comprehensive management tool provided direct access to all project information created by all the stakeholders, including the county staff, contractors, designers, and construction management team. EADOC enabled efficient electronic information exchange that reduced delays by ensuring the right information was available at the right time and place. The project designers, Carollo Engineers and CDM Smith, were in constant communication with HDR through the EADOC software.

Being able to access and view more than 18,000 project documents was extremely valuable in coordinating, collaborating, and clarifying project changes and issues. Construction issues were addressed quickly to avoid impacts on the project schedule. Compliance issues were averted by enabling the regulatory agency to access information through EADOC. By providing real-time insight into project costs, EADOC allowed HDR to identify and track risks effectively.

EADOC also enabled the project to implement a paperless workflow, which saved significant time and money. To support the GIS interface, HDR also created a website that included ESRI base map information and URL links to the construction management system. These links allowed the team and stakeholders to visually select project locations and access specific information about those locations. Information could include improvement plans, submittals, changes, photos, or any other information tagged in the EADOC system. By requiring the contractors to provide their schedules in a specific format, information provided inside the GIS was updated weekly, and this tool assisted in managing and mitigating impacts to the public. It provided the unique opportunity to publicly post the current status and plans for construction activity and other information for each block of each street, increasing public awareness and minimizing issues.

Public outreach for the 15,000 residents was provided through a series of public meetings, but information was primarily conveyed through a project website developed to convey critical information to the community. Since the new collection system impacted every resident and every street, this website provided project updates and included a map with real-time data that linked to the GIS website.
In general, the public is not concerned about the complexity or difficulty associated with gravity sewer pipeline installation. Similarly, they do not have knowledge of the complex scheduling and project management challenges presented by a project that has multiple contractors concurrently working at multiple locations within the town on any given day.

However, the general public is concerned with the inconveniences of construction, including traffic detours, lane closures, and temporary road surfaces. These are significant inconveniences that affect residential neighborhoods and business districts. The outreach program included flyers, door hangers, signage, a website with regularly updated maps and schedules, an information telephone hotline, regular office hours, and a dedicated public liaison.

Another benefit of EADOC was its use as a tool to track public comments and responses, keeping all the stakeholders aware of public concerns. At the start of the collection system project, the project’s community liaison, Michelle Houser, calculated receiving 3,500 emails or phone calls. As construction progressed, public support during all phases tended to be very good. The team is proud that the EADOC construction management website, project GIS, and public outreach website played a large role in delivering this successful project.

Future Of Opportunities for Los Osos

As the project draws to a close in 2017, it will allow further community improvements. The building moratorium had stopped almost all new development and business growth in the seaside community, including remodels and additions. This project has united the community in moving forward together. Throughout the town, spirits are on the rise, and this small eclectic beach community has seen steady progress toward much needed renewal in public infrastructure, private home improvements, and new growth in business and tourism.

The Los Osos Wastewater Collection System Project combined new and existing technologies innovatively to create an economical and cost-effective solution. Total project costs have been financed by a combination of state and federal low-interest loans and grants; the loans will be repaid by property owners. To date, the project has secured more than $20 million in grant funds, and as a result of the low-interest loans and grants, the estimated monthly project costs for a typical single-family residence has been reduced from early estimates of $200 to a current estimate of $165.

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