Oldcastle Infrastructure™
A CRH COMPANY

SAVINGS ON THE HORIZON

for StormCapture® System at Horizon Bay

Tampa, FL

Horizon Bay is a five-story, 30,000-square foot shared living facility in Tampa, Florida. Once engineering plans and permitting were completed, site work provisions called for five inlet structures to capture stormwater and redirect it to 6,572-cubic feet of stormwater detention under the parking area at the northeast corner of the property. Due to limited available space, underground detention was the only practical choice according to the design engineer Fuxan Engineering of Odessa, Florida. An overflow pipe led to storm sewers, but most of the stormwater would be infiltrated back into the ground, a common Low-Impact Development (LID) practice in Florida to help recharge the local aquifer. Although a plastic chamber system was originally specified for the underground detention system, Oldcastle Infrastructure proposed the stronger StormCapture® precast concrete system instead.

A BETTER SOLUTION

There were several key factors that influenced the owner to ultimately select the StormCapture system. First and foremost was the project's location - a very dense area of Old Tampa. The proposed building would occupy most of the developed site, making open space and parking hard to come by, and the engineer and owner were both looking for ways to increase "green" space.

Another space-related concern was that all available area was going to be needed for construction traffic and to be used as a lay-down area during the year-long construction. Since the detention system was going to be needed to manage stormwater runoff during construction, it needed to be installed during the first phase of construction. The StormCapture system is ideally suited for this type of application since its a stand-alone,

DESIGN & CONSTRUCTION TEAM

Engineer
Fuxan Engineering, Inc.

Contractor
Ripa & Associates

Precastor
Oldcastle Infrastructure, Orlando

traffic-bearing design does not rely on final paving for structural integrity. Conversely, due to structural concerns, the typical footprint of an underground plastic system is usually off-limits during construction until the final base and paving are completed. Since the StormCapture modules are constructed of high-strength precast concrete, their ability to support traffic allowed a 50% reduction in thickness of base rock required between the pavement and modules, as well as a 20% reduction under the modules, as compared to the originally planned plastic chambers.

Accessibility for long-term maintenance, as well as the following points, factored into the final decision to use the StormCapture system:

- Smaller footprint with more storage capacity
- No inspection ports to break or pieces to replace during construction
- Modular design allowed flexible, best-fit configuration to provide for more landscaped space
- Much more rapid installation due to elimination of select backfill requirements, as well as reduced number and square foot of modules to get same storage capacity
- Elimination of the five inlet structures originally required with the plastic chambers since the StormCapture modules allow direct entrance of stormwater runoff through three grates

THE FINAL SOLUTION

The completed system design included 37 StormCapture modules in total. Each module was constructed of precast reinforced concrete with interior dimensions measuring 6′ wide by 12′ long by 2.5′ tall, with open bottoms for infiltration. Modules were installed on a setting bed of 7-inches of clean #57 stone.

Four of the modules incorporated standard inlet grates to allow direct entry of runoff from the parking lot into the system. This eliminated the need for the four separate inlet structures originally designed into the project. A precast splash pad was installed below each inlet grate to prevent scour of the bedding material. In addition, the inlet grates could be used for direct access to the modules for inspection and cleaning, as needed. Each module also had large conveyance windows into adjacent modules to allow flow equalization, as well as access for maintenance.

CONSTRUCTION & RESULTS

Construction of the site began in October 2009. After one day for excavation and site preparation, which included placement of the 7-inch stone layer, the 37 modules were installed over the course of one-and-a-half days. All top and perimeter joints between modules received a layer of 3/4-inch pre-formed sealant, as well as 8-inch wide fabric joint wrap.

After backfilling, a lime rock base was placed over the modules that served as the roadway surface during construction. After construction was completed, the lime rock base was re-graded, and then asphalt was installed. The entire facility was completed in the fall of 2010 and opened for residents in early 2011.

This was the first project where Ripa & Associates used the StormCapture module system. According to their project managers, the modules were key in providing access to a very limited site, and did not require ongoing maintenance or cleanout during construction. The initial savings experienced from the reduction of aggregates in the foundation, backfill and under the pavement are measurable, tangible costs. Ripa believes that coupling those savings with the experience they gained in the ease and speed of installation and lack of construction maintenance will make them even more competitive on future projects.

About Oldcastle Infrastructure

Oldcastle Infrastructure, A CRH Company, is the leading provider of building materials, products and services for infrastructure projects to several market sectors nationwide, including: Building Structures, Communications, Energy, Transportation and Water.

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