

### Project Spotlight

#### Horizon Bay Congregate Living Facility Tampa FL

##### Design & Construction Team

Engineer: Fuxan Engineering Inc., Odessa, FL  
Contractor: Ripa & Associates, Tampa, FL

##### Project Background

The Horizon Bay Congregate Living Facility, Large Group Care Facility is a 5 story, 30,000 SF building constructed on a block bordered by West Azeele Street, West Horatio Street, South Boulevard, and South Brevard Street in Tampa, FL. When plans and permitting were completed, site work provisions included 5 Type C inlet structures to capture stormwater and pipe it to 6,572 CF 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 design engineer Fuxan Engineering of Odessa, FL. An overflow pipe led to storm sewers, but the majority of the stormwater would be infiltrated back into the ground; a common Low-Impact-Development (LID) practice in Florida that serves to help recharge the aquifer. A plastic chamber system was originally proposed for the underground detention system. Oldcastle Precast offered the Owner and Engineer a value engineering proposal to use the Storm Capture Module system in place of the plastic chambers.



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##### A Better Solution, Both Short and Long Term

There were several key factors that influenced the Owner and Engineer to choose the Storm Capture Module system.

First and foremost had to do with the project's location; a very dense area of Old Tampa. The proposed building would occupy most of the developed site. Green space and parking were hard to come by and the engineer and owner were looking for ways to increase green space.

Another space-related concern was that all available site area was going to be needed for construction traffic and to be used as a lay-down area during the one year construction duration. Since the detention system was going to be needed to manage stormwater runoff during construction, it was to be installed during the first phase of construction. The Storm Capture Module system is ideally suited for this type of application since its stand-alone, traffic bearing design does not rely on final paving and associated stone underlayment for structural capacity. Conversely, due to structural concerns, the typical footprint of an underground plastic system is off limits during construction until final base and paving are completed. Since the Storm Capture Modules are constructed of high-strength structural 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 decision to use Storm Capture:

- Smaller footprint with more storage capacity
- No inspection ports to break or pieces to replace during construction
- Modular design allows 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 5 inlet structures originally required with the plastic chambers since the Storm Capture Modules allow direct entrance of stormwater through 3 grates.

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#### The Final Solution

The completed system design for Horizon Bay included 37 Storm Capture Modules. Each module is constructed of precast reinforced concrete with interior dimensions of 6'x12'x2.5' tall, with open bottom for infiltration. Modules were installed on a setting bed of 7" of clean #57 stone.

Four of the modules incorporated standard inlet grates to allow stormwater direct entry 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 are used for direct access to the modules for inspection and cleaning as needed.

Each module has large conveyance windows into adjacent modules to allow flow equalization, as well as access for maintenance.



#### Construction and Results

Construction of the site began in October of 2009. After one day for excavation and site preparation, which included placement of the 7" stone layer, the thirty seven 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" pre-formed butyl sealant, as well as an 8" wide butyl/fabric joint wrap.

Backfilling was accomplished during an additional day. 8 to 10 inches of limerock base were placed over the modules and served as the roadway surface during construction. After the majority of 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 is scheduled to open for residents in early 2011.

This was the first project where Ripa Construction used the Storm Capture Module system. According to their project managers, the modules were key in providing access for 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 hard, 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 more competitive at future bid times.