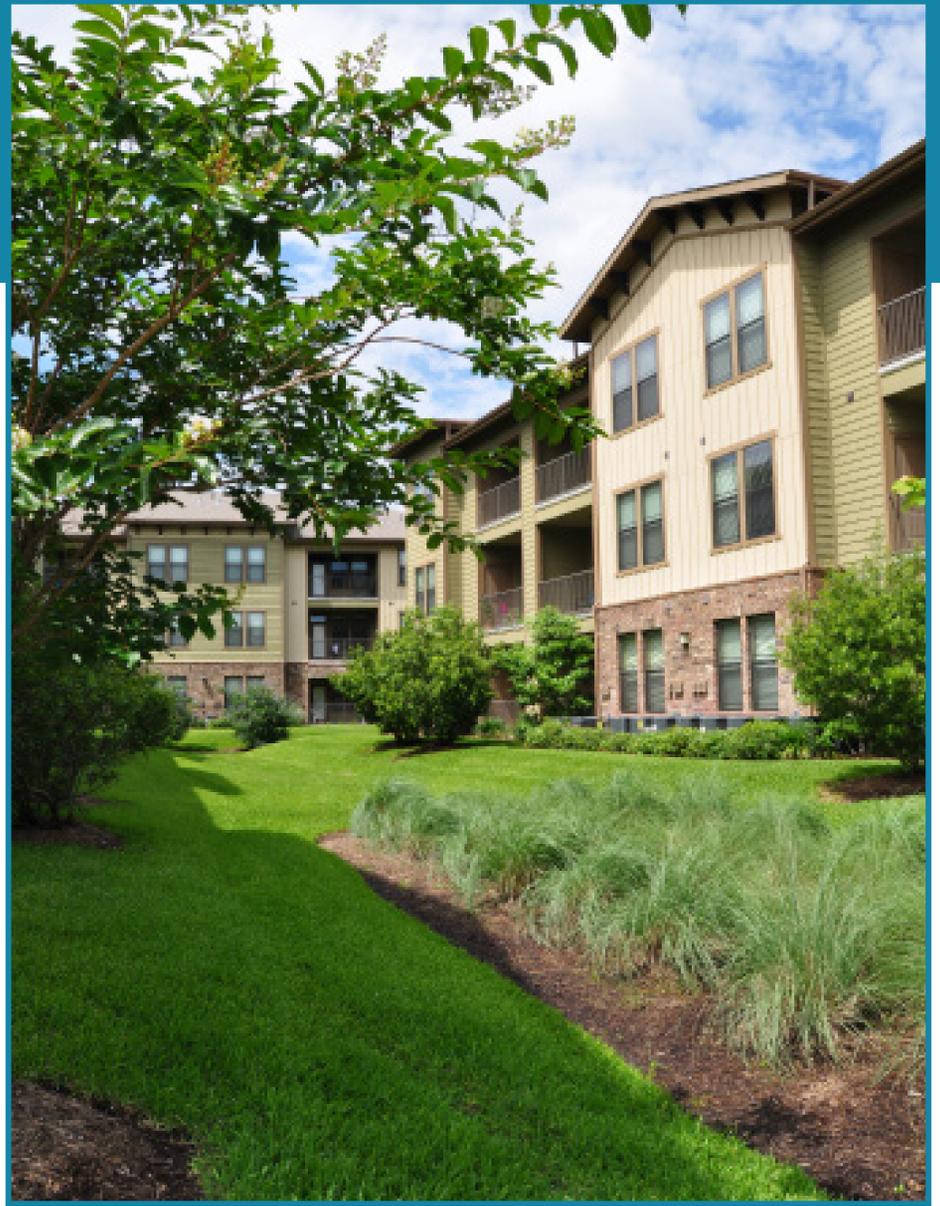


# QUEENSTON MANOR APARTMENT HOMES



## PROJECT OVERVIEW

### SUSTAINABILITY STARS AWARDED:

INSPIRATION STAR, INTEGRATION STAR,  
INVESTIGATION STAR, & INVESTMENT STAR

PROJECT TYPE: LID

LOCAL PERMITTING ENTITY: HARRIS COUNTY

PROJECT COST (LID FEATURES): \$799,500

SITE SIZE: 7.4 ACRES

PROJECT OWNER: ACADEMY DEVELOPMENT

PROJECT ENGINEERS: EHRA ENGINEERING

**SUSTAINABILITY FEATURES:** USE OF MULTIPLE LID TECHNIQUES YIELD REDUCTION IN THE OVERALL DETENTION STORAGE REQUIREMENT AND VALUABLE ACREAGE TO BE REGAINED FOR DEVELOPMENT USING BEAUTIFIED SWALES THROUGHOUT THE COMMUNITY.

## BENEFITS & ADDED VALUE

The Queenston Manor LID solution is designed to look just like any other apartment project. The areas between apartment buildings would have been grass-filled open space even without LID. All residents likely see is an attractive lawn. That was exactly the goal behind the placement of the stormwater raingardens and the plant and grass choices within them. The same goes for the cisterns beneath the property's parking spaces. Queenston Manor is an example of ordinary looks but exceptional stormwater engineering.

## SPECIAL TERMS DEFINED:

**LID:** Low-Impact Development is a term used to describe a land planning and engineering design approach to manage stormwater runoff within green infrastructure. LID mimics natural pre-development drainage flows by slowing stormwater runoff.



# STAR REVIEW

## ★ INVESTIGATION STAR

EHRA's Engineers, Planners, and Hydrologists developed a LID solution to literally save the project after industry detention standards wouldn't do. By analyzing the storage capacities and release rates of the LID features, it was determined that raingardens positioned between apartment buildings, pervious pavement parking areas, and a final end-of-system raingarden to further slow stormwater runoff would adequately serve the site. The LID solution allowed for 2 additional buildings (48 more apartment units) and associated parking to be put on site.

## ★ INVESTMENT STAR

EHRA's LID solution was modeled using EPA-SWMM software and included a system of 54 drainage nodes and links, and 3 outfalls into the adjacent HCFC channel.

## ★ INTEGRATION STAR

The LID elements included 4 raingardens, 11 permeable paver parking areas with underground cisterns, and 3 outfall locations, all connected with maximum 6" diameter PVC pipes.

## ★ INSPIRATION STAR

EHRA Engineering participated in the Houston-Galveston Area Council (H-GAC) "Designing for Impact" program consisting of a lecture, site tours, and a printed guide to LID techniques and projects in the Greater Houston area. H-GAC recognized that Queenston Manor's LID solution included innovative adaptations of established LID practices tailored to Houston's

