

Forest Friendly Development: A Case Study from Oak Terrace Preserve, North Charleston, South Carolina

Oak Terrace Preserve is a 55-acre sustainable redevelopment project located in the Noisette Community. Noisette is a large (3,000 acre) redevelopment project targeted for restoration as a sustainable community. The project is being implemented through a unique public-private partnership with the City of North Charleston as owner and the Noisette Company, LLC providing turnkey development management. Oak Terrace Preserve has attracted attention for its environmentally sensitive approach to community development. The development features fully green sustainable features in home construction, along with pocket parks, public space, a unique storm water management system, and an extensive tree preservation program that has retained more than 600 trees on site.

The Oak Terrace Preserve project will consist of approximately 300 single-family homes and 74 townhomes when completed. The project is designed to provide affordable housing (prices starting in the \$200,000s), while promoting sustainable design and implementation. Development activity commenced in mid-2006 and Phase I infrastructure was complete in mid-2007.



Phase I consists of 120 single-family and 36 townhome lots. It is anticipated that home building activity in Phase I will continue through 2008. Phase II and III development and infrastructure will begin in late 2008 or early 2009 and continue through 2009. The current absorption and sales information is listed in Table 1.

Table 1. Sales Information for Oak Terrace Preserve

Lots under contract: 93
Lots sold: 50
Homes under contract: 7
Homes sold: 26
Average sales price: \$237,404
Average \$/square foot: \$144
(as of September 1 , 2008)



An important aspect incorporated into the Oak Terrace Preserve project was the retention of its tree resources. The team identified early in the development process that one of the site's greatest assets was its tree population. Prior to development, Oak Terrace Preserve was home to over 600 trees, many of them grand trees (24" diameter or larger). These included massive oaks, magnolias and other old-growth trees that are rarely found in a new community. Preservation and management of the trees was

given top priority, and a certified arborist performed a major survey and assessment of the trees prior to construction. All the trees were documented by location, size, species, and health, and each tree was given a grade from A (very healthy) to F (dead or dying). All D's and F's were removed prior to construction and all A's, B's, and C's were pruned, fertilized and had their roots aerated. The special attention given to the healthiest trees increased their resistance to construction disturbance. A database was created to track the trees at the site and provide information about their size and condition.

	A	B	C	D	E	F	G	H	I	J
1	Century Oaks Tree Report									
2										
3	Statistical Summary									
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Grade	Count	Average Dia.	Max Dia.	Min Dia.	Mode Dia.
All	588	25	83	9	18
A	97	26	83	10	13
A > 23"	85	40	63	24	33
B	172	27	63	10	18
B > 23"	79	34	66	24	38
C	233	25	66	9	18
D	54	21	47	10	20
F	32	20	46	10	13

Raw Data									
					DRIP LINE (FT)				
TALLY	GRADE	METER	SPECIES	N	E	S	W	COMMENTS	
2050	C	16.5	WATER OAK	5	17	22	17		
2051	A	43	LIVE OAK	29	24	44	41		
2052	A	21.5	LIVE OAK	24	26	10	6		
2053	C	12.5	PECAN	17	16	8	15		
2054	C	11	MAPLE	16	14	14	4		
2055	C	13	MAPLE	11	13	17	13		
2056	B	20	GUM	26	25	18	19		
2057	C	16	GUM	16	17	17	19		
2058	C	20	GUM	15	17	20	20		
2059	C	12	WATER OAK	19	15	11	18		
2060	D	15	WATER OAK	8	19	15	21	SIDEWALK	

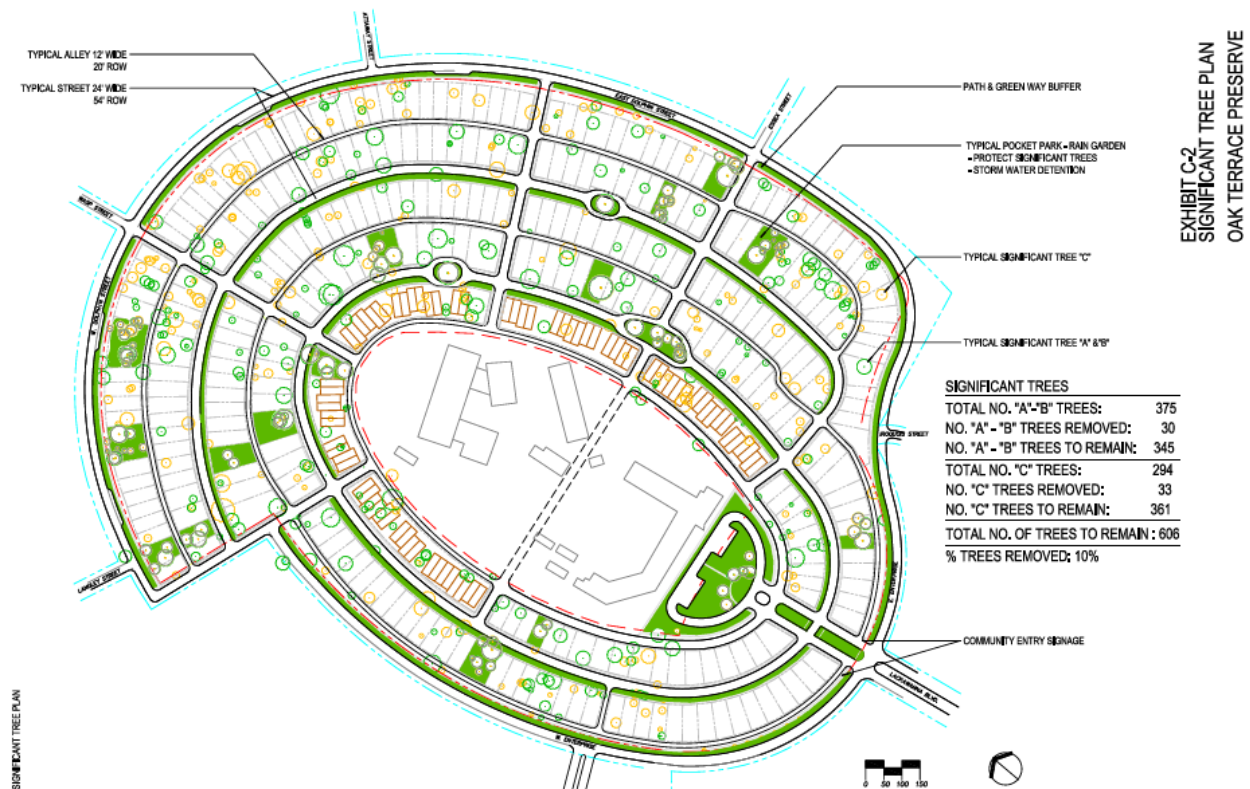
The importance of tree protection and preservation is stressed even more during site construction. Trees were protected using chain link fence attached to metal posts driven into the ground. The fence was placed to protect the critical root zone which was calculated using the outer perimeter of the tree canopy. The company uses a 25% rule with regards to encroachment on tree root zones. This means that no more than 25% of the critical root zone should be disturbed due to construction. Any removal of fencing that occurred in order to provide utilities or housing was done under the supervision of a certified arborist, and all contractors working at Oak Terrace Preserve are required to have an arborist on their staff for the duration of construction. Potential tree conflicts are dealt with in a systematic, step-by-step manner as outlined below:



1. Contractor encounters a situation where the projected path of a new utility or roadway will encroach upon the drip ring of a tree. Contractor is instructed to STOP construction and contact the Project Engineer and Project Arborist.
2. The team meets on-site with the contractor to observe and assess the conflict.
3. One of two solutions is typically recommended:
 - a. The contractor is instructed to proceed with installation per plan with the Project Arborist present while construction takes place within the drip ring to insure any root pruning is done properly.
 - b. The Project Engineer prepares and issues a new design to the contractor in order to avoid the tree.

Tree preservation remains of high concern during homebuilding activity. Generous building setback provisions were achieved through a special zoning process called a Planned Development District (PDD). Minimum setbacks were decreased on all sides of the lot in order to provide maximum flexibility to accommodate trees. All homebuilding site plans are reviewed prior to the start of construction by a Design Review Board to ensure tree encroachment is minimized. When a homebuilder proposes significant encroachment of a tree it must be accompanied by an approval letter from a certified arborist.

The tree preservation efforts show the project team's dedication to retaining their tree resources. The City of North Charleston's tree protection ordinance requires that all significant trees (healthy trees over 10 inches in DBH) be flagged and shown on building site plans. Removal of significant trees within the building and driveway footprint is permitted, but no more than 25 % of significant trees outside of the building footprint can be removed, except by order of the Zoning Administrator and by recommendation of the City Horticulturist. The Oak Terrace Preserve project far exceeded this goal and removed only 8 % of the trees receiving an A and B grade and 11 % of the trees with a grade of C. This fits in with the values of sustainability espoused by the Noisette Company. The figure below shows the significant tree plan for the project and how many trees were preserved due to the care taken to protect forest resources.



The Oak Terrace Preserve project has also incorporated trees into its innovative storm water management system. Oak Terrace Preserve will have a more natural and sustainable storm water management system than is typically designed in today's master planned communities. The system at Oak Terrace uses a combination of linear bioswales, rain gardens, temporary pocket park detention, and pervious alleyways. The linear bio-swale runs continuously parallel to one

side of all asphalt streets in the community. The streets are slightly sloped (about a 2% grade) towards the 15 foot-wide, v-shaped bio-swale built out of an engineered soil that is designed to be porous. Native plants and trees that are tolerant of periodic inundation will be planted in the swale to absorb much of the water that enters it. The engineered soil and plants will reduce the velocity of the water, allowing for filtering of pollutants and recharging of groundwater.

Oak Terrace Preserve has proved to be an extremely popular location for people to live due to its tree preservation efforts. A poll of residents found that the presence of trees in the development was one of the top three reasons for selecting to buy at Oak Terrace Preserve. Homeowners in the development have also taken on the role of tree protection advocates themselves, often reporting to the Noisette Company if they believe that current construction is encroaching unnecessarily on trees in the development.

For additional information on the Oak Terrace Preserve development, contact:

Elias Deeb, Project Manager
Noisette Company
North Charleston, SC
edeeb@noisettesc.com

or see:

<http://oakterracepreservesc.com/> or <http://www.noisettesc.com/>

Developed by the Center for Watershed Protection, 8390 Main Street, 2nd Floor, Ellicott City,
MD 21043

