Open Space Design

Practice Description

Open space design is an alternative site planning technique that concentrates development to preserve open areas and green space. This is a rethinking of typical residential site development practices in that it gives extra consideration to preserving the natural integrity of the site. By keeping some areas in an undeveloped state, this design strategy can reduce negative impacts from stormwater such as increased runoff from impervious surfaces and pollutant inputs. Open space design has been shown to reduce construction costs while increasing property values because of the desirable open space amenity that is preserved. Other costs associated with additional stormwater management measures, clearing costs, and downstream flooding due to increased runoff volumes can also be reduced using open space design.

Planning Considerations

The many misconceptions about open space design can be obstacles to its implementation. Some developers fear that designing to preserve open space will lead to longer plan reviews, higher costs, and lower market value. However, open space design can actually provide cost savings, as less area is cleared and fewer interventions are needed to manage stormwater. One open space development example (Liptan and Brown, 1996) demonstrated a cost savings of $800 per lot for site development. Other studies report cost savings for infrastructure ranging from 11 to 66%. Local ordinances may need to be revised to remove restrictions that stand in the way of implementing essential components of open space design.

According to the Center for Watershed Protection, open space designs have the following water quality advantages relative to a conventional development:

- Reduced impervious cover.
- Reduced pollutant loads to streams and other water resources.

- Reduced potential pressure to encroach on resource buffer areas.
- Reduced soil erosion potential by reducing the amount of clearing and grading on the site.
- Preservation of green space.
- Preservation of open space for recreation.
- Lower capital cost of development.
- Lower stormwater-management costs by concentration of runoff in one area and reducing runoff volumes.
- A wider range of feasible sites to locate stormwater BMPs.
- Lower costs of future public services needed by the development.
- Possible increase in property values.
- Creation of urban wildlife habitat "islands."
- Support for other community planning goals, such as pedestrian movement, neighborhood enhancement, farmland preservation, affordable housing, and architectural diversity (CWP, 1998).

The first step for many jurisdictions to encourage open space developments is to adopt a local ordinance that permits open space design in conventional residential zones, or to amend their current zoning ordinances to accomplish that goal. Essential elements of such an ordinance are described in the Design Criteria, Implementation, and Maintenance sections that follow. The Center for Watershed Protection has also developed an Open Space Model Ordinance to serve as a template for jurisdictions who wish to adopt such an ordinance (CWP, not dated). Whatever the method used to implement open space designs, it should include long-term provisions for the acceptable use and maintenance of the land that is preserved. With the proper regulations in place, the developer must create and follow a site plan for the project that meets the criteria below.

Design Criteria

Flexible Development Regulations

To implement open space design, the land use ordinance governing the area must allow for variations in site layout to help achieve a more compact development. Flexible and smaller lot sizes, varying setbacks, and frontage distances for the residential zone are

some of the specific features that a developer working within an open space framework will need (USEPA, 2006b).

Open Space and Natural Area Conservation Requirements

An open space design reduces the level of impervious cover as compared to a conventional development and preserves the maximum acreage for natural area conservation. To achieve stormwater benefits, the majority of the preserved open space must be contiguous. Some strategies to minimize the amount of paved area are unpaved walkways and the use of permeable paving materials. Open space can also be maximized by requiring narrower streets, smaller building setbacks, and shared driveways.

Consolidation and Use of Open Space

The typical open space development creates 10-50% less impervious cover and reduces the need to clear and grade 35-60% of the site. The remaining open space can serve multiple functions. The site layout may preserve some areas to meet environmental requirements for stormwater management and conservation and others to provide future residents with attractive recreational amenities. Some of the high-priority uses for the preserved open space are

- Resource buffers,
- High-quality forest resources,
- Individual trees,
- Critical habitat areas,
- High-quality soil resources (CWP, not dated)

Implementation

Delineation of Boundaries

The boundaries of designated open space areas, recreation areas, stormwater management facilities, and green space shall be clearly delineated on plans, including record plats, and marked to distinguish these areas from private property. Development in designated open spaces in the future is prohibited.

Density of Development

The total number of residential units allowable within an open space development shall not exceed the number of units that would otherwise be allowed in the existing zoning district using conventional development.

Preservation of Open Space

The majority of the land preserved for open space should be contiguous to achieve the maximum environmental and recreational benefits. The model ordinance proposes that up to 50% of open space be preserved as green space. If open space design is used as a BMP for stormwater management, all Mississippi state design, construction, maintenance, and public safety requirements must be met.

Common Problems

It is sometimes difficult to convince developers to adopt an open space design because of a concern that it will be both more expensive to develop and less marketable. The land use ordinances governing open space design must therefore foster development that

meets market demands while protecting the environment. Decisions also need to be made about the locations where it is most beneficial to direct open space development. Finally, the issue of management is crucial to the long-term success of open space design. Long-term maintenance is primary among the concerns, but the developer must also delegate the necessary authority for managing issues such as liability and emergency vehicle access to a responsible entity in the public or private sector.

Maintenance

Once established, common open space and natural conservation areas must be managed by a responsible party able to maintain the areas in a natural state in perpetuity. Typically, the open space is protected by one of these three strategies: a legally enforceable deed restriction, a conservation easement enforced by a local government or land trust, or maintenance agreements. In most communities, the authority for managing open space falls to a homeowner or community association or a land trust.

When managing open space as a natural area, annual maintenance costs are very low. The annual maintenance cost for managing an acre of natural area is less than $75 (CWP, 1998). It may be useful to develop a habitat plan for natural areas that may require periodic management actions.