# Land Development Considerations Lecture

## Construction Methods and Materials

Roger J. Marino, PhD, PE

# Considerations for Development

- Several considerations need to be made when considering "development" or "redevelopment" of a parcel of land

For this course:

- "Development" will be considered as the taking of a vacant parcel and constructing new buildings, access roads, parking facilities, and supporting infrastructure such as utilities (potable water, sanitary sewage, stormwater structures, electric service, gas supply, communication lines)

- "Redevelopment" will be considered as taking a parcel with existing structures and infrastructure and either replacing or modifying those existing structures, and upgrading the physical features of the site to accommodate the proposed use of the property

# Considerations for Development

The entire project can be viewed by the Developer as a "product", and they may approach the possibility of development with many of the same considerations as if one was to create a product for sale. Namely:

1. Is there a need for the product?
2. What is the cost of manufacture? (What does it cost to build the development?)
3. How much will it cost to finance the project? (How much money do they need to borrow, and what will that cost in interest, time, etc.?)
4. Will the development be similar or different than other developments in close proximity? (Does a marketing advantage exist?)
5. What are the other Developers in the area charging for the same or similar product?
6. What is the return (money to be made) on the product/ investment?

# Feasibility Study

- A Feasibility Study is then performed – which contains several components that are completed by different entities:

- The Developer will explore financing options (money lenders, interest rates, etc.) and determine if there is a need for their product.

- A Civil Engineering Firm will perform a Land Use Study to see if the Township, Municipality, County, and State will allow the proposed use.

- A Geotechnical (Soils) Engineer will perform a study of the geologic characteristics of the site.

- An Environmental Engineer will perform an Environmental Audit of the site to determine if there are any concerns present

# Type of Use?

- Residential?
- Commercial?
- Industrial?
- Mixed Use? (Combination of the above)

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(Each of these uses has its own consideration)

# Residential Development Types

- Single-family detached homes
- Duplexes
- Townhouses/ Condominiums
- Apartments
- Senior Living Single-family homes(formerly called "Retirement Villages")
- Assisted Living Facilities (formerly "Nursing Homes")

# Commercial Development Types

- Office
- Retail
- Hotel
- Hospitals
- Special Use

# Industrial Development Types

- Manufacturing
- Warehousing
- Industrial Park

(discussion of location, access, etc.)

# Review of Township Zoning/ Land Use Ordinances. Look for:

- Is the proposed use permitted?
- Are Variances required??
- Are Waivers required?
- Is a Use Variance Required?
- Which Approval Board has jurisdiction?
- (Planning Board? Bd of Adjustment/ Zoning Board?

# Hiring Professionals to Present the Project

What kind of considerations regarding hiring Design Professionals (Design Engineer, Architect, Land Use Attorney) would you make if you were the Developer and the project required variances or waivers?

(variances and waivers are exceptions to the rules)

# Hiring Professionals to Present the Project

What kind of considerations regarding hiring Design Professionals (Design Engineer, Architect, Land Use Attorney) would you make if you were the Developer and the project required variances or waivers?

Answer: If the Developer is asking for variances and waivers, it is to their advantage to retain a local engineering firm who is familiar with the Reviewing Board's positions on previous projects that requested similar deviations from the Land Use Ordinance.

# Considerations for Development

- Which Utilities are Available?
- Are there any utility capacity issues?
- Obtaining a “Letter of Availability” from each utility is critical! (and may be required by the Township/ Municipality as part of their Approval)
- The Letter of Availability assures that the utility has the capacity (sanitary sewage gallonage conveyance and wastewater treatment plant capacity, electric company kilowattage, natural gas therms) to accommodate and serve the proposed project and there are no moratoriums present.

# Environmentally-related Considerations

- Freshwater Wetlands Present? (Buffers required?)
- Endangered Species Habitat? (Flora and Fauna)
- Tidal Waters?
- Tree Preservation Required?
- Special Jurisdictions in NJ: CAFRA, Highlands, Meadowlands, Pinelands, etc.
- Superfund Site? (subject site or vicinity?)

# Topographic Considerations for Development

What kind of topographic concerns might you have? How does the topography affect the overall cost and profit of the development?

# Topographic Concerns

- Affects yielded number of potential residential units (start with +/-10% of land area dedicated to stormwater management)
- Stormwater Detention Basin to occupy land area at downslope end of site
- Slopes of parking lots and streets (min. and max.)
- Retaining walls required?
- Earthwork required? (cuts and fills – even if the earthwork is “balanced”, it would still cost money to move soil around the site)

# Geologic Concerns

Permeability? Slow draining soil? How long for detention basin to drain stormwater after rain event?

Suitability of Soil? (soil that needs to be removed to support structures above such as buildings and roads)

Rock or ledge to be removed?

Water yield (potable wells?)

Septic systems?

Environmental Contamination? Remediation required?

# Concept Sketches included in Feasibility Study

In order for the Developer to make an informed decision as to the viability of constructing a project, one part of the Feasibility Study is the preparation of a Concept Plan by the Design Engineer.

The Concept Plan is essentially a rough sketch of the layout of the proposed development, to include:

For commercial properties: proposed building location, parking, access aisles, stormwater management basin and access to the site from nearby roadways.

For residential properties: proposed building lot layout, roadways, stormwater management basin and access to the development from nearby roadways.

# How are Concept Sketches Useful?

The Developer uses the Concept Sketches to determine the following:

For commercial properties: The allowable square footage of the proposed building (critical in that commercial buildings are usually rented to tenants by the square foot)

For residential properties: The number of allowable residential lots can help determine the overall profitability of the project.

Other considerations for both uses: square yardage of roadway or parking lot pavement and concrete curbing required; total number of residential rental units, etc.

# Preparing a Concept Sketch (Commercial Use)

In determining the allowable (final) commercial building footprint, the following elements of the Township/ Municipal Land Use Ordinance and other jurisdictional entities are considered:

- Required property line setback distance (to be discussed in a future lecture)
- Required % of green space onsite
- Maximum % allowed impervious area (lot coverage)
- Required number of parking spaces for the land use
- Required loading zone
- Environmentally-sensitive areas on or near the site

# Preparing a Concept Sketch (Residential Use)

In determining the allowable (final) number of residential lots, the following elements of the Township/ Municipal Land Use Ordinance and other jurisdictional entities are considered:

- Required "bulk schedule" quantities such as: minimum lot size, width, area, depth (to be discussed in a future lecture)
- Size and location of stormwater basin
- Area to be occupied by roadways throughout the development
- For other residential development (such as townhouses/condominiums or apartments), the required number of parking spaces is a consideration

# Brief Discussion/ Review of Developmental Layouts

(considerations at the Planning Stage – why do developments look like they do? “How did they get that layout?”)

# Examples of Developmental Layouts

When laying out residential developments, you are looking to obtain the greatest "lot yield" – meaning the greatest number of allowable lots that can be obtained after subdividing a larger lot. This is why residential developments are called "subdivisions".

In order to get the best lot yield, you start sketching from the property lines (called the "outbound") and then work toward the center of the property. The greatest lot yield would occur if the property was a square.

# Examples of Developmental Layouts

View the following photos of residential subdivisions and consider that they were laid out from the outside in.

Look for waterways and environmentally-sensitive areas that may affect the building lot and roadway layout.

Occasionally, roadways are given a curvilinear shape in order to provide character to the development (but recall that the developer is looking to yield as many lots as possible to yield the greatest profit – so there is also a balance between the two goals).

# Examples of Developmental Layouts – Example 1

**Little Boxes On The Hillside** by tj.blackwell
https://wordpress.org/openverse/image/440900b9-41cc-4d07-8dc3-7cc2b6184b47

# Examples of Developmental Layouts – Example 2

**Aerial view of residential development near SeaTac** by D Coetzee
https://wordpress.org/openverse/image/893060b1-7529-4517-8f4a-272eff9685f7


**Suburban Cornrows** by [jan buchholtz](https://wordpress.org/openverse/image/551b13b6-d8c3-4e65-8bb3-72e796721b5f)
https://wordpress.org/openverse/image/551b13b6-d8c3-4e65-8bb3-72e796721b5f

The next photo shows an anomaly in the roadway called a “bumpout”. What purpose do you think the bumpout serves?

**Photo by Scott Blake**

https://unsplash.com/photos/IWiiwnmzbjs

The bumpout is there to provide adequate frontage to the adjacent properties (as required in the Land Use Ordinance). Otherwise, you would yield less lots on that corner.

Consider that lot lines are laid out perpendicular to straight roadways and radially on curved roads.

Let’s hypothetically compare two layouts with and without the bumpout:

**Lot yield with bumpout**

**Lot yield without bumpout (1 lot less because there is not enough required frontage to meet code)**