Sylvia’s Top 5 “Musts” in Plan Reading and Analysis

Educational Workshop
For Land Use Board Volunteers and Planners

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SNHPC
Sylvia’s Five “Musts” in Plan Reading and Analysis

1. Understand that a 2 dim. plan depicts a 3 dim. world.
2. Learn engineering terms and graphic symbols.
3. Color your plans to better understand them.
4. Understand all plan elements to ensure you can make sound judgments.
5. Utilize staff and consulting experts to discuss concerns and red flags. (Ask questions, demand answers.)
Top 5 “Musts” in Plan Review and Analysis

1) Understand that a two dimensional plan depicts a three dimensional world. Know the area that will be impacted so you can better visualize the project and its impact. If you can, VISIT THE SITE!
What Information Is Provided During Site Plan Review?

Play with scale

Vicinity Map  Aerial View

Courtesy of Google Maps or Bing.com
Get to Know the Site

Visit the site: virtually and with your feet, so you can visualize proposed changes

Bird’s Eye View
Take 60 seconds to learn about a site!
Reading Two Dimensional Plans in a Three D. World
Practice Visualizing What the Bird’s Eye View May Look Like.
Remember the Context of the Three Dimensional World

CHECK LIST OF POTENTIAL ISSUES:

- Traffic Circulation
- Pedestrian Safety
- Access Points
- Storm Water
- Water/Waste Water
- Landscape/Lighting
- Compatibility
- Within the Goals of the Master Plan

Change the Scale and Take a Step Back
Top 5 “Musts” in Plan Review and Analysis

1) Understand that a two dimensional plan depicts a three dimensional world.

Suggestion: Ask developer for an aerial view of site, schedule site visit.
Top 5 “Musts” in Plan Review and Analysis

1. Understand that a 2 dimensional plan depicts a 3 dimensional world.

2. Learn engineering terms, graphic symbols and plan types.
Engineering Terms

- Locus Map, Existing Conditions
- Contour Lines, Percent Grade, Topography, Spot Grades,
- Cross Section, Road Profile, Road Centerline, Cut & Fill
- Detention Pond, HISS (soils) Map, Swale, Culvert, Rain Garden, Headwall, Rip-Rap
- Construction Sequence, Erosion and Sediment Control
What Do All The Lines Mean
The Legend and Graphic Symbols

Conventional Symbols and Line Weights for Landscape Working Drawings

Line Symbols (construction plans)

- Existing contours
- Proposed contours
- Property line
- Center line
- Easement
- Fence line
- Utility line
- Buildings

Object lines, material edges, and level changes

Pattern lines (joints, docking, others)

Extension lines

Dimension lines

Point Symbols (site plans)

- Utility pole
- Light
- Hydrant
- Manhole
- Catch basin

Water
Gas
Familiarize Yourself With Various Types of Plans and Perspectives

- Bird’s Eye View
- Plan Perspective
Slopes- You know more than you think you know

Which way would you go down?
Identifying Signature Contours

- Steep Slope
- Summit
- Saddle between two summits
- Ridge
- Gulley
- Valley
- Gentle Slope
- Water
Learning to Read Contour Lines

- Contour lines represent a specific elevation typically above sea level. 
- The elevation along the line remains constant, therefore, contour lines never cross.
Grading Basics

The steepness of a surface is generally measured in % grade (slope) and is the ratio of the elevation change per the horizontal distance traveled.

Questions to Ask:
1. How steep is it?
2. Will the slope cause problems?
3. What about runoff?
Slope Equation

Slope is the ratio of the elevation change per the horizontal distance traveled.

Rise (height difference between contours)
Run (Distance between contours)

Rise/Run = Slope or % grade

Ex: 2 ft/10 ft = .2 or 20 % slope
Grading, Drainage and Percent Slopes

Slope Ratios, Percent Grade or Slopes

3 to 1 slope
4.5% slope
2:1 slope
Recognizing Contour Signatures
Contour Signature for Swale & Cross Sectional View

- Water flows downhill
- Swales point uphill

Swale transition around a slab
Cross Section

Allows you to see elevation changes as if you cut through the desired section
Cross Section

A graphical representation of a vertical section of a portion of the plan, cut at a right angle through the desired area.
Road Profiles: Road Center line, Existing vs. Proposed Contours, Cut & Fill

- Solid Line = Proposed
- Dashed Line = Existing
Drainage Elements: Detention Pond, Forebay, Spillway, Culvert, Swale…
Pop Quiz: Identify The Symbol

Legend:
- Existing Contour
- Proposed Contour
- Tree line
- Edge of Wetlands
- Rock Wall
- Property Line
- Guard Rail
- Silt Fence
- Fence Line
Top 5 “Musts” in Plan Review and Analysis

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What the Planning Board May See

No Details = No concerns, No problems, No questions.
What is Hidden Between the Lines

- Color Aids the Reviewer in Site Analysis
- Demonstrates Issues to Planning Board
  - Creates Negotiating Tool
Graphically Outline the Issues

- Road Circulation
- Lot Lines
- Natural Characteristics: Steep Slopes, Wetlands
- Drainage and Grading $\Rightarrow$ Erosion
- Proposed Building & Septic Systems
Bring the plan to life by first coloring in lot lines, roadways, and natural features.
Examine the topography to get an understanding of drainage.
Examine the topography to get an understanding of drainage.

Locate Highest Elevation

Identify Existing Drainage Flow Pattern

River and wetlands are the lowest elevations
Highlight steep slopes utilizing available soils information.

- Steep Slopes > 15%
- Very Steep Slopes > 25%
Identify Problem Areas

In this case, two wide, steep ravines are identified.
Now analyze the plan with all the information.
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In order to understand plan details; visit sites before, during, and after construction.
Boundary Pins, Flagging and Stakes
Underground Utilities

- Electrical
- Telephone & Cable
- Gas
- Water
- Sewer
- Fire Cistern
- Drainage
- Irrigation
Sidewalks and Curbing
Construction Sites and Erosion Control

You can never have too much erosion control.

Depending on the type of soil, once suspended by rainwater, soil may always be in suspension.
DRAINAGE SYSTEMS

Grass-lined swale and culvert

Sheet flow over gravel

Culvert headwall with riprap channel
Detention Ponds

Forebay, Spillway, Headwall, Outlet Structure, Rip-rap
Big Culverts, Little Bridges & Dams

Box culverts, bottomless culverts, wildlife friendly, fish passage friendly culverts...
Plans and Thinking Seasonal Issues
Snow Removal – possible conflicts with utilities, landscaping, and uses on site
LANDSCAPING ESSENTIALS:

- Planting Requirements
- Planting Schedule
- What to Plant
- Other Details
Planting Schedule and Plan

### Landscape Legend

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<th>Symbol</th>
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<th>Botanical Name</th>
<th>Common Name</th>
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<td>ACER RUBRUM 'RED SUNSET'</td>
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<td>VIBURNUM TRILOBUM</td>
<td>AMERICAN CRANBERRY BUSH</td>
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<td>18&quot; TO 24&quot;</td>
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Use Internet to Learn About Plants

Synonym: Fothergilla gardenia
Common name: Dwarf witch-alder
Flowers: White (Spring)
Size: 3-4 ft.
Light: Best fall color when planted in full sun.

The foliage is distinctive and attractive throughout the season, and turns bright orange-red by mid-November. Every year in late April, the first sight of its little moppy flowers comes as a welcome surprise.
Understanding How Plants Will Grow

- Growth Characteristics
- Spacing
- Planting Conditions
- Planting Pattern
Plow and Salt Damage
Cul-de-sac Plantings

- Salt tolerant
- Draught Tolerant
- Maintenance Consideration
- Safety
Retaining Walls: Field Constructed and Designed
Screens

- Dumpsters
- Commercial/residential mutual boundaries
- Outdoor storage
- Electrical Systems
- “Undesirable neighbors”
Lighting the Pros and Cons

- Safety
- Advertisement
- Character
  - verses
- Glare
- Night Sky
- Wildlife Interference
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(Ask questions, demand answers.)
Types of Plans

- Locus Plans
- Site Plans
- Subdivision Plans
- Road Profiles
- Utility Plans
- Grading and Drainage Plans
- Landscape Plans
Expertise Needed in Reading Plans

- Surveying
- Civil Engineering
- Traffic Analysis
- Drainage & Erosion Control
- Wetland Science
- Landscape Architecture
- Lighting
Recognize Red Flags – Analyze Facts, Listen to Your Intuition, Ask Questions !!!

Examples of Red Flags

1. Road slopes are > 5% -7%
2. Driveways >10% can be hazardous in winter conditions.
3. Swales or ditches > 5% will tend to erode unless erosion control methods are used.
Good Luck and Remember the 5 “Musts” in Plan Reading

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