Columbia University
Graduate School Of Architecture, Planning & Preservation
Urban Planning Program

PLA6330 **Site Planning and Support Systems for Development** Fridays 9 - 11
Graham L. Trelstad, AICP Fall 2017

COURSE SYLLABUS

A. Purpose and Objectives of the Course

Human settlements are created and communities structured mostly by private individuals or firms constructing buildings on parcels—as long as the sites are accessible, somehow related to nodes of other urban activity, and equipped with support services. In the United States, this practice has been called "site planning" or "subdivision" and has created millions of houses and thousands of commercial centers around all American metropolitan areas and cities since World War II. The results have been roundly criticized from an urbanistic point of view; however, the public preference is still strongly in favor of this type of development. We should be able to do this job well, and seek methods through which a better environment, at affordable costs, can be built.

The specific techniques that planners and developers can employ toward achieving good site development are discussed, and a reasonable degree of skill in application is expected to be obtained by the students. The course could also be called "municipal engineering," although it has a wider perspective than is usually understood by that technical term. To take specific physical actions alone is not enough – they also need to be understood in terms of their effectiveness and efficiency. Their relationship to neighboring units and the community at large are important as well.

The specific objectives of the course are:

- to offer the students adequate knowledge as to what actually exists, can happen, and is likely to occur in the physical urban environment (as well as on specific sites);
- to describe the process through which new land is transformed into habitable districts;
- to give the students a full understanding of what services and actions are desirable or required, and what they do; and
- to provide most of the necessary tools that will enable planners/designers and developers to operate constructively and professionally in their fields (and to judge when the need for assistance by specialist arises).

B. Scope of the Course

The overall purpose of physical planning and site development is to achieve a livable and healthful urban environment, which becomes built gradually by private and public actions. Significant control can be provided and guidance achieved through regulations and the construction and management of public works and service systems – mostly as a responsibility of public bodies. Private development will actually build the communities, and draw upon the communal services, which may or may not be available (or quite often may not be available at a sufficiently high quality and quantity). In the latter cases, developers themselves can or must build the infrastructure. In all instances, the public and private sectors should be cognizant of cost effectiveness and the long-range implications of current decisions.

The character of the built environment ranges from the highest density commercial core to houses on large lots in exurbia. Much is deliberately planned and built as projects, other development happens in an uncoordinated fashion – a sequence of actions by individuals not connected by any plan. Infrastructure (i.e., support systems) provides access, circulation, utilities, supply and waste removal systems, telecommunications, and other basic amenities.

Human life and well-being still depend on the natural environment, and advantage can be taken of various beneficial conditions of nature. But frequently – while one should never sin against Mother Nature (she always gets even) – specific modifications and improvements are necessary to overcome hostile characteristics, particularly those exacerbated by thoughtlessness or selfish actions. The latter condition is made particularly serious due to high densities and large population aggregations that require massive volumes of supply and generate huge amounts of waste.

Practically all urban needs have to be supplied "artificially." For example, elaborate mobility systems and services have to be constructed and operated to allow urban operations beyond the pre-industrial walking scale. Managerial and regulatory systems affect properties and attempt to control their use. Every site, even a difficult one, can be developed, generally speaking. In many instances, however, the costs to the owner and the community can become exorbitant, and cost-effectiveness is always a fundamental concern.

While the need for some sort of utility services has existed ever since the first settlements, modern systems are almost invariably less than a century old. Our society has developed an acute sense of the environment, and is facing today a major rebuilding task of obsolescent facilities. Private developers, whatever their own attitudes may be, are asked to participate in these efforts. This charge or challenge extends much beyond getting a project built cheaply and quickly.

The professional planner is involved in several different capacities in the development process. Planners can represent: the public sector in guiding and reviewing development applications; the private sector in formulating site plans and preparing technical studies; or the not-for-profit/community sector in providing guidance to community groups in their consideration of future development.

This course will provide a broad-based understanding of the multiple issues at play in site design, which will later be enhanced by professional practice and observation. From this course, the student should be comfortable performing certain design studies, arriving at various layouts and design, and completing several types of calculations and estimates. The student should also be able to grasp the consequences of various actions, to gauge what can and cannot be done effectively, and to be able to communicate with technical experts.

C. Student Requirements

Each student is expected to assimilate the available knowledge and experience at a level required of a professional planner.

Specifically, the course requirements are:

- Design layouts for two commercial, three residential, and one mixed-use project through weekly design exercises.
- Preparation of a written site analysis and development feasibility report.
- Attendance at at least one Planning Board meeting and a written summary of the proceedings and your observations.
- Observation of at least one suburban community and written and graphic summary of the patterns of development.
- Attendance and participation in class.
- Final examination (open notebooks).

Weekly assignments are listed in the Course Outline, below, in the week in which they are assigned. Assignments are due by the end of the next lecture. Additional information on assignments is provided in CourseWorks.

D. Reading Assignments

The principal textbooks for the course are Planning and Urban Design Standards (PUDS) by the American Planning Association (Wiley, 2006), Land Development Handbook, 2nd ed. (LDH) by The Dewberry Companies (McGraw-Hill, 1996), and The Subdivision and Site Plan Handbook (SSPH) by D. Listokin and C. Walker (Rutgers, 1989). These books are available at the Reserve Desk in Avery Library and copies of PUDS and LDH have been ordered at the Columbia Bookstore. LDH is available as an electronic resource through CLIO. Much of, but not all of, PUDS is available through Google books. Sadly, SSPH is out-of-print at this time. Both PUDS and LDH are quite expensive but either would serve as a good desk reference now and in the future. PUDS may have broader applicability to the planner and to planning practice than LDH.

As you will quickly see, PUDS is an excellent source for quick reference. The articles are short and often-times primarily graphic in nature. PUDS will provide you with grounding in the issues, but not necessarily in-depth information. LDH, on the other hand, is highly technical and goes into exhaustive detail on engineering principles. (Its perspective on certain planning issues, especially as they apply in the northeastern United States, is questionable and will be the subject of discussion in lecture). I have assigned readings from each book to allow you to get the overall picture from PUDS, to explore more detailed information in LDH, and to prompt you to compare the different perspectives of the writers. The readings from LDH assigned for the class on "Engineered Systems" will apply to our discussions and your assignments for several classes. You may consider spreading those reading assignments across several weeks if necessary. I do not expect that you will commit to memory all of the detailed formulae and specifications contained in LDH. I do expect that you will browse through this material to familiarize yourself with the general nature of the subject matter such that you have an overall appreciation for the issues at hand. You will not be tested on specific methods of calculation or on numeric values or standards from the readings. Those values or calculations that you will be required to know will be discussed in lecture.

SSPH deserves reading as it provides a general overview of the site plan and subdivision design from the perspective of regulation and process as the planner understands it. It is, perhaps, a good hybrid of the basic level of information provided in PUDS with the more detailed information in LDH.

Other reading assignments are given to explore the evolving practice of site planning, especially in suburban and rural areas. Kevin Lynch and Gary Hack's Site Planning (MIT Press, 1984) is a classic work in the literature and should be read. Two books, in particular, provide excellent coverage of site planning and design in rural areas: Rural by Design (APA Planners Press, 1994) and Conservation Design for Subdivisions (Island Press, 1996) both by R. Arendt. Copies of each of these books are on Reserve in Avery Library and have been ordered at the bookstore.

Additional readings have been noted in the course outline for your further consideration. While I strongly encourage you to at least peruse these works, I do not expect you to read every single page I have assigned. Let your level of curiosity dictate your reading list. From time to time I will provide guidance on what I feel to be the most valuable or interesting reading for each upcoming lecture.

D. Course Outline and Reading Assignments

1. The Context of Site Planning and the Role of the Planner

Overview of Course
Evolution of Site Planning
Definitions and Practice of Site Planning
Objectives of Site Planning
Role of the Planner

Readings

Lynch	Site Planning	Chs. 1-3, 6
Garvin	The American City	Chs. 1, 2
LDH	1: Overview of Land Development Process	3-18

2. The Dimensional Context & How to Read a Plan

Tools of Site Planning/How to Read a Plan
Types of Development
Scale of Site Planning
Understanding Density

Readings

PUDS	Mapping; USGS Topographic; Cadastral Maps	527-535
	Building Types	185-202
	Places and Districts: Neighborhoods	409-414
	Places and Districts: Commercial Corridors	418-420
	Scale and Density	468-471
LDH	38: Types of Drawings Used in Land Development	961-983

Assignment
Saturday, September 16: White Plains walking tour.

Metro-North Railroad Harlem Line train to Southeast – leaves Grand Central Terminal at 10:51 and Harlem/125th Street at 11:01. Arrives White Plains 11:27.
Return trip from North White Plains station on either the 12:59, 1:06, 1:34, or 1:59 trains.

3. Understanding & Managing Natural Systems

Soils & Groundwater
Topography & Grading
Hydrology
Vegetation & Habitat

Readings

PUDS	Water	107-134
	Land	135-147
LDH	17: Environmental and Natural Resources	301-317
	24: Grading and Excavation	545-573 only
	39: “Problem Soils” to “Summary”	1031-1045

Assignment
Prepare a slope diagram.

4. Engineered Systems I

Stormwater Management
Water Supply
Wastewater Treatment

PUDS	Stormwater Overview, Runoff, and Recharge	336-339
	Stormwater Treatment	340-342
	Stormwater Drainage and Flood Management	343-344
	Water Supply	345-346
	Water Storage and Distribution	350-352
	Wastewater Overview	324-325
	Wastewater Collection Systems	326-328
LDH	28: Water Supply and Treatment	745-770
	22: Design of Stormwater Management Facilities	475-487, 510-533
	29: Erosion and Sediment Control	771-826
	26: Water Distribution	649-659, 677-684
	25: Wastewater Collection	595-600, 639-647
	27: Wastewater Treatment	705-721, 721-743
SSPH	Water Supply	71-76, 342-351
	Sanitary Sewer	76-77, 351-360
	Stormwater	78, 360-375

5. Engineered Systems II

Road Design & Layout
Complete Streets
Traffic Calming

Readings

PUDS	Hierarchy of Streets and Roads	226-228
	Street Networks and Street Connectivity	229-232
	Traffic Calming	238-241
LDH	20: Suburban Street Design	355-406
SSPH	Streets	40-65, 293-335

Assignment

Prepare cross-sections of representative road types.

6. Approaching the Site & Regulatory Context

Comprehensive Plan
The Regulatory Context: Zoning, Subdivision, and Environmental Regulations
The Process – Site Plan & Subdivision
Site Analysis

Readings

PUDS	Environmental Site Analysis	460-462
	Urban Analysis	463-467
SSPH	Design and Improvement Standards; Site Design	23-40, 189-204
PUDS	Zoning Regulation	593-596
	Subdivision Regulation	597-598
	Planned Unit Development	599-600
	Innovations in Local Zoning Regulations	601-603
	Participation	46-67
	Staff Reports for Development Proposals	650-651
	Site Plan Review	652-654
LDH	Part II: Feasibility and Site Analysis	19-31
	2: Comprehensive Planning and Zoning	33-60
	3: Site Plan Ordinances, Subdivision Regulations, and Building Codes	61-66
	6: Engineering Feasibility	93-107
	11: The Rezoning Process	169-187
	12: Development Patterns and Principles	193-221
	16: Preliminary Engineering	295-300
Garvin	The American City	Ch. 16

Assignment

Prepare a one-page written site analysis.

7. Residential Subdivision I

The Yield Plan
Initial Layout of Roads, Lots, and Open Space

Readings

SSPH	Procedure	1-22, 175-188
LDH	Review previous readings from "Engineered Systems"	
	32: Subdivision Submittals	857-865
	33: Plan Submittal, Review, and Approval Process	867-879

Assignment

Prepare <u>two</u> traditional residential subdivision layouts: A. ¼-acre lots with municipal water and sanitary sewer service; B. 1-acre lots with individual on-site septic systems and wells.

8. Residential Subdivision II

Conservation Subdivision Design
Alternative Wastewater and Stormwater Practices
Creating Meaningful Open Spaces

Readings

PUDS	Conservation Development	453-455
	Natural Wastewater Treatment Systems	334-335
	Transfer of Development Rights	610
	Open Space Preservation Techniques	616-617
	Farmland Preservation	618-620
Arendt	Conservation Design, Entire Book, but esp. Ch. 5	
Arendt	Rural by Design, Ch. 5, "Residential Development…"	67-75
	Rural by Design, Ch. 10, "Affordable Housing"	149-177
	Rural by Design, Ch. 11, "Street Design…"	178-191
	Rural by Design, Ch. 13, "Sewage Disposal"	209-225
	Rural by Design, Ch. 14, "Encouraging Open Space Design"	226-248
	Rural by Design, Ch. 15, "Requiring Open Space Design"	249-262
	Rural by Design, Ch. 20, "Residential Cases"	315-359

Assignment

Prepare a Conservation Design Subdivision.

9. Commercial Development I

Types of Development
Primary Considerations in Design
Parking Layout

Readings

PUDS	Industrial Parks	440-441
	Office Parks	442-443
	Main Streets	444-446
	Considerations for Determining Parking	245-246
	Shared Parking	247
	Parking Space Dimensions/Parking Lot Design	253-258
	Vehicle Turning Radii	236-237
SSPH	Parking	65-70, 336-342

Assignment

Prepare a schematic site plan for a single commercial use.

10. Commercial Development II

Refining the Design of Commercial Properties
Suburban Redevelopment
Design Considerations for Rural Communities

Readings

Dunham-Jones	Retrofitting Suburbia	
PUDS	Pedestrian Friendly Streets	242-244
	Walkability	478-480
	Streetscapes	491-500
	Design Guidelines	655-658
Arendt	Rural by Design, Ch. 8, "Commercial Infill"	103-110
	Rural by Design, Ch. 9, "Development in Town Centers and Along Highways"	113-148
	Rural by Design, Ch. 21, "Town Center Cases"	360-371
	Rural by Design, Ch. 22, "Roadside Commercial Cases"	372-393

Assignment

Prepare a schematic commercial site plan for a series of adjoining properties.

11. Mixed-Use Development

Defining Mixed-Use Development
New Urbanism
Traditional Neighborhood Development
Form-Based Zoning
Transit-Oriented Development

Readings

PUDS	Mixed-Use Development	447-449
	Transit-Oriented Development	450-452
Duany	Suburban Nation, Appx. A, "The TND Checklist"	254-252
	Suburban Nation, Appx. B, "The Congress for New Urbanism"	253-261
Katz	The New Urbanism	ix-xlii
Calthorpe	The Next American Metropolis	52-112
Bohl	Place Making, Ch. 3, "Timeless Design Principles…"	56-79
	Place Making, Ch. 4, "Emerging Formats…"	80-129
	Place Making, Ch. 8, "A Compendium…"	276-305
Schwanke	Mixed-Use Development Handbook, Ch. 4	137-166
	Mixed-Use Development Handbook, Ch. 5	167-234

Assignment

Prepare a concept plan for a mixed-use development project.

12. Green Design & Site Planning in a Regional Context

A. Green Design

Organic Design
Leadership in Energy and Environmental Design (LEED)
Low Impact Development (LID)

Readings

Alexander	The Timeless Way of Building (skim) See note opposite Table of Contents.	
	A Pattern Language (skim)	ix-xliv
Whyte	The Social Life of Small Urban Spaces	
PUDS	LEED	481-483
USGBC	LEED-ND (www.usgbc.org)	

B. Site Planning in a Regional Context

Duany	Suburban Nation, Chs. 1, 2, 10, 11	
Ewing	Best Development Practices (skim)	
Campoli	Above and Beyond	
Klemens	Nature in Fragments, Chs. 1, 2, 13-16	

Assignment

Explore "organic" patterns of development.

13. Paying for Development

Impacts on Community Services
Cost of Community Services
Adequate Public Facilities Ordinances
Rate of Development Bylaws
Impact Fees, Exactions, and Proffers
Tax Increment Financing

Readings

SSPH	Off-Tract Improvements	81-86, 375-378
PUDS	Adequate Public Facilities	604-605
	Impact Fees	609
	Capital Improvement Programs	637-638
	Tax Increment Financing	641-643
	Business Improvement Districts	646-647
LDH	4: Exactions, Infrastructure Enhancements, and Fees	67-71