CHAPTER 1
INTRODUCTION

There are many similarities between the functions of towns and universities. Universities, particularly large ones, often operate as autonomously as towns, with their own police departments, their own residential neighborhoods, their own public transit, and even their own power plants. Universities and towns also have similar issues such as future land use, housing and development; public services such as utilities, parks and recreational facilities and libraries; public safety; and transportation, transit & parking. At the same time there are also areas where towns and universities are different such as a university's focus on education, research, and learning facilities. Another difference is the primary planning tool; localities normally use the comprehensive plan as compared to the campus master plan for universities. It is the difference in the planning tool that this paper will explore in more detail.

The role of a comprehensive plan is generally well known. Its purpose is to provide a vision for the future and "guide the development of the community." (Levy 1988) Often the physical development of the community is the primary focus of the plan but many other aspect of the community may also be presented to ensure a more "comprehensive" view. These additional aspects could address problems or concerns (i.e. poorly design intersection or lack of affordable housing), the integration of various systems (such as population expansions effect of schools, utilities, or services), or the management of capital projects. The plan generally involves the entire locality, is long-term in that it usually looks out 20 years, and has a number of specific major areas that it addresses. Some of the major areas commonly found in comprehensive plans are: public safety, circulation, services and facilities, fiscal management, economic goals, and environmental. (Levy 1988) Additionally, most states have some form of enabling legislation that requires planning of localities.

The role of a campus master plan is not so well known. Arguably, one could ask if there is even a need to require a campus master plan at public universities (in the same way that comprehensive plans are required of most communities). I would submit that many of the reasons for a comprehensive plan for localities are the same for campuses. For example, there are obvious benefits from the integration of a university's goals and objectives with its capital projects (since capital project consume a significant portion of a university's discretionary funds). Additionally, universities may also have problems or concerns that need resolution (i.e. poorly design intersection or lack of student housing), as well as the need to integrate various systems (such as the effect of student population expansions on classroom, utilities, or services). Finally, most campuses adjoin a community and to varying degrees changes in one may have a substantial impact on the other. The planning for this impact is particularly germane in those states where localities have no authority over public universities. This independence, although highly prized by university officials, may also keeps them outside of normal state support for "communities" and excludes them from local or regional organizations (such as Metropolitan Planning Organizations).

Yet, for all these similarities there are striking differences in the plans. First, while forty states mandate some form of comprehensive planning for local government (Cobb 1998), few states mandates campus master planning and even less stipulate content. The format or contents of campus master plans are rarely specified and there appears to be little consensus on a common structure. Additionally, since the requirement for a campus master plans differ greatly from state

to state it is very unlikely that these plans achieve a high degree of "comprehensiveness." Another difference is comprehensive planning is a substantial task that is studied, developed, and promoted by professionals in urban planning. Campus master planning on the other hand appears to span several disciplines, including architecture, planning, and landscape architecture, and is not specifically the domain of a single profession. As such few academic courses cover the complexities of planning at universities.

It was the presence of this mysterious thing called a campus master plan that first sparked my interest. In 1996, as the new director of transportation for Virginia Tech, I was wrestling with the increasing demand for parking spaces. I wanted to know if the university had formally stated a priority for specific modes of transportation (pedestrian, bicyclist, transit or car) and was pleased to discover this issue was addressed in the university's master plan. At the same time I was surprised to see some obvious differences between the campus master plan and the scope and content of the adjacent town's comprehensive plan (Blacksburg, VA). Being also new to working at universities I had assumed, erroneously, that master plans were merely comprehensive plans for campuses. My knowledge of comprehensive plans led me to believe they had been sufficiently refined over the years to adequately meet the needs of their communities. As I looked at past master plans at Virginia Tech and then master plans at other universities I realized the documents varied widely in scope, content, purpose, and intent. It was the difference in the documents that caused me to wonder what was in a campus master plan.

I decided to examine four campus master plans to gain a better understanding of campus master plans particularly in the areas of uniformity and completeness. My ultimate goal is to determine whether the need exists to establish basic guidelines for campus master plans, to ensure they address the needs and issues of large campuses. I reduced the extraneous variables by looking at four US public universities that are similar in size (student population greater than 15,000), purpose (land-grant universities), and location (suburban setting): North Carolina State University in Raleigh, NC; Oregon State University in Corvallis, OR; Clemson University in Clemson SC; and Virginia Tech in Blacksburg, VA. Two of the campus master plans were prepared by internal staff and two by external consultants.

I reviewed major headings in the tables of contents of each of the plans for uniformity. To evaluate completeness I examined two separate aspects of each plan. First, I reviewed the plans for any significant discussion of six elements commonly found in comprehensive plans (shown in table 1). Certainly these six heading do not cover every aspect of planning but in concert they do provide a solid framework on which to develop a plan for a locality or a university.

Table 1
Common Elements of Comprehensive Plans

Parks and Recreational Facilities
Land Use
Housing
Utilities
Transportation & Parking
Public Safety (fire, rescue, and police)

These elements were derived from an analysis of the comprehensive plans from four localities with which I had some familiarity: Blacksburg, VA (also the site for one of the case study master plans), Gainesville, FL (home of University of Florida), College Station, TX (home of Texas A&M), and Portland, OR. My intent was to use comprehensive plans from localities

that have large universities which allowed for the existence of formal and/or informal relationships between city and university. Additionally, I choose the city of Portland because of the reputation Oregon has for progressive urban and regional planning. Finally, I felt there was value in selecting locations from different regions within the United States to avoid local similarities.

Second, I compared the documents against a basic set of evaluation criteria for plans. The criteria, which are listed in the table 2, are excerpts from "General Plan Evaluation Criteria" by William Baer. Baer argues convincingly that "Criteria are needed for what the plan as a document should include, and how its professional competence should be judged." (Baer, 1997) It's not enough to simply have a plan unless one can determine whether the plan is any good. Baer's list consisted of over 60 items gathered from recent literature regarding plan evaluation and was intended to ensure there are no "serious errors in omission." I have reduced this list to a more manageable size (14 items) by selecting what I felt was an adequate sampling of the Baer's detailed criteria.

Table 2
Evaluation Criteria

- **Data and Methodology**
    1. Presents a wide range of data
    2. Data sources are cited
    3. Methodology is cited.
- **Adequate Context**
    4. Role of A&E is explained
    5. Background information is provided
    6. Purpose is explained
- **Valid Procedure**
    7. Who formulated the plan is identified
    8. How they were selected is explained
    9. Method of involvement is identified
- **Implementation Guidance**
    10. Priorities are listed
    11. Cost of implementation is addressed
    12. Cost of non-implementation is considered
    13. Time span is presented
    14. Responsible parties are identified.

It is my belief that an analysis of the both uniformity and completeness will provide an important insight into the nature of campus master plans as they currently are found in American public universities. Before we examine the case studies I think it is important to review the development of campus master planning in the United States to better understand their evolution.

CHAPTER 2
HISTORY AND REVIEW OF PERTINENT LITERATURE ON CAMPUS MASTER PLANNING

The history of campus master planning is almost as old as colleges and universities in America. In many ways the development of master plans has mirrored the evolution of institutions of higher learning for the last 200 years. The process began in the early 1800s with many of the first institutions of higher learning mirroring the British tradition of an academic community consisting of three main components: classrooms, resident halls, recreational facilities (Turner 1984). Early campus planners were architects by profession and focused their "planning" on the design and placement of new buildings. An example of this was Benjamin Henry Latrobe who would eventually became involved in campus designs at eight colleges in the early 1800s. His emphasis was on a large, all-inclusive structure with only scant attention to the surround grounds. (Turner 1984)

The progressive nature of the early United States helped shape the evolution of American colleges from the very beginning. That can be most evidently seen in the unique design of the University of Virginia by Thomas Jefferson who advocated the idea of an "academical village." Jefferson wrote in 1805:

> Large houses are always ugly, inconvenient, exposed to the accident of fire, and bad in cases of infection. A plain, small house for the school and lodging of each professor is best. These connected by covered ways out of which the rooms of students should open would be best. These may be built only as they shall be wanting. In fact a university should not be a house but a village. (Letter of January 5, 1805, to L. Tazewell)

Universities further evolved with the adoption of the Land Grant College Act (or Morrill Act) in 1862. One of the key components of this act was to promote a more practical form of higher education involving more than the classic studies found at many of the "elitist" private institutions. More specifically, the act promoted education in agriculture, science, and engineering (Turner 1984). Additionally, the Land Grant College Act endorsed a more democratic approach to higher education, with schooling for all social classes and the right to choose a course of study.

This approach sparked the interest of the prominent landscape designer Frederick Law Olmsted. Olmsted's role in designing new campuses would change the landscape for campus master planning by shifting the focus from buildings located in isolated locations to educational neighborhoods integrated into the larger community (in this way reflecting the more open nature of education). This concept was exemplified in his 1865 ground-breaking design of a new college in California on farmland that adjoined the San Francisco Bay, soon to be called Berkeley. Olmsted's design envisioned a more natural, park-like campus with many smaller buildings located along meandering roads. Master planning at colleges now involved the design of entire communities and not just the location of future buildings.

Another major turning point for campus planning was the "City Beautiful" movement that came out of the Chicago Fair (Columbian Exposition in 1893). Although the City Beautiful movement is often seen as the start of the urban planning profession it also had an impact on campus master planning. Some of the principles of City Beautiful, such as monumental design centered on a unifying theme, were incorporated into college campuses (Hamlin 1903). Articles

began to appear in the early 1900s discussing the role of planning at universities and often stressed the need for a unifying architectural style for the many disparate structures on campus. There was even developed a general scheme for an appropriate campus design consisting of an open space with structures placed around it (in squares or rectangles) along a long axis which might open onto a view or a community (Turner 1984). A newly established sense of urgency was generated among the more elite schools to develop or update their master plans.

The next substantial effect on colleges and universities and their plans came from the post WWII student boom. The late 1940s saw explosive growth in the population of students, changes in the focus of universities to take advantage of new federal research grants, and a more diverse student body with middle class and co-ed students. Massive growth caused city-like problems on campus such as vehicle traffic congestion and increased conflicts over land-use as once rural campuses became increasingly surrounded by towns and cities. The post WWII time period saw campus master planning evolve from the more formal "classical" designs of the City Beautiful movement to an approach for managing future growth. This change came from the general uncertainty of the future (thus limiting the time-line for planning) and the realization that many of the magnificent master plans of the past several decades had never been implemented. Joseph Hudnut, a prominent architect of the 1940s wrote:

> Let's imagine the university, as a city planner imagines the city, as a growing organism whose form lies partly in the past, partly in the future. Our university will never be completed…If we make a master plan then, it must be in such general terms as will admit of new interpretations and unexpected developments. (Hudnut 1947, p. 90)

The evolution of campus planning in the 1940s and 50s was captured in the first modern text on the subject: Richard Dober's *Campus Planning*, written in 1963. This book was a significant departure from past discussion because of its focus on the planning process and not on architectural style. In many ways the Dober text promoted the transition of campus master planning from the realm of architects to planners.

Dober saw master plans falling in three basic categories based upon the planning horizon: short (5 years), middle (10 years), or long (20 years) (Dober 1963). He also identified nine basic elements that all master plans should consider. These demonstrate Dober's emphasis on physical planning and his detailed analysis of the basic functional areas of a university community:

- Instructional Facilities
- Libraries and Museums
- Housing
- Sports, Recreation and PE
- Institutional Services
- Utilities
- Extra-curricular Activities
- Circulation and Parking
- Research (Dober 1963)

Dober's work ushered in a pragmatic approach to campus master plans that was distinct from, but similar to, urban planning. At the same time there remained a wide degree of interpretation on what constituted a master plan.

The amount of current literature dedicated to campus master planning remains scarce. Articles where some aspect of master plans is discussed occasionally get published in professional journals, such as *Planning for Higher Education*. A lot of the campus planning field is dominated by private consultants, with little interest shown by academics. Some of this may be the lingering result of a historical divergence of professional disciplines in this small field. Architects have historically dominated the planning and design of campuses. For a time period landscape architecture, under the leadership of Olmsted, influenced the field with the eventual participation by planning professionals. In the end campus master planning has never been "claimed" by any of these professions so it remains a field full of diverse ideas.

CHAPTER 3
GENERAL REVIEW OF THE FOUR CAMPUS MASTER PLANS

Four public land-grant universities were selected as case studies for the evaluation of their campus master plans. Universities that are similar in nature were selected to reduce extraneous variables. I sought to gain similarity by achieving commonality in purpose, size and setting. I selected land-grant universities because these institutions have a unique history and mission which creates a fairly common pattern in the purpose and organization of the schools. The size was based upon student population, which is a relatively uniform means of measurement, with a criteria of 15,000 students or greater. This size complemented land-grant universities since most are large schools that offer a wide range of degrees. Finally, I sought rural or suburban settings, rather than urban, to avoid planning constraints that might occur when a campus is located deep within the fabric of a major urban area.

The method of plan development was also a factor in selecting the case study sites. The intent was to select master plans that used different methods of preparation and development from each other to provide a more diverse analysis. Most plans can be divided into two major categories: either internally developed using resources found at the institution (staff and faculty of the school), or externally developed by hiring a consultant. For this analysis two of the cases have internally developed plans and two have external plans. Additionally, diversity in consultants was desired so I selected two firms which have been significant players in the campus master planning business for many years: Dober, Lidsky, Craig & Associates, and Sasaki Associates, Inc. I believe there is value in selecting case studies produced by internal and external resources to achieve a better representation of what is currently in use at colleges and universities. I have no way of knowing if there are basic differences in master plans based solely upon who produced them (although I think it would make an interesting study). I do suspect, based upon anecdotal evidence, that consultants who specialize in master plans do on average prepare more complete documents than internally developed plans.

Based upon the factors listed above the following four universities were selected for the case studies:

- **North Carolina State University** is located in a suburban setting in Raleigh, North Carolina, which has a population of 317,000 as of 2003. NC State has a student population of 29,800. It has an internally prepared master plan which was completed in 2000.
- **Oregon State University** is located in a suburban setting in Corvallis, Oregon, which has a population of 50,000 as of 2003. Oregon State has a student population of 19,000. It has an internally prepared master plan which was completed in 2003.
- **Clemson University** is located in a rural setting in Clemson, South Carolina, which has a population of 12,000 as of 2000. Clemson University has a student population of 17,000. Its master was completed in 2002 by Dober, Lidsky, Craig, & Associates.
- **Virginia Tech** is located in a rural setting in Blacksburg, Virginia, which has a population of 39,000 as of 2000. Virginia Tech has a student population of 26,000. It has an externally prepared master plan completed in 1995 by Sasaki Associates.

Each of the four case studies will be examined using an identical data collection protocol, outlined in Table 3. The data collection protocol was designed to answer my research question: Do campus master plans at public universities in United States lack uniformity, and are they

incomplete, particularly when addressing "community" type issues that are commonly found in Comprehensive Plans?

Shown below in Table 3 is the collection protocol. The results from the data collection are reviewed in the next chapter.

Table 3
Campus Master Plan Evaluation Protocol

Campus Master Plans Lack Uniformity

Review tables of content for variations in what constitutes a major heading:

- Review major heading content/definition of headings to de-conflict semantic issues
- Identify similarities and differences among four case studies.

Campus Master Plans are Incomplete When Compared to Basic Comprehensive Plan

Review tables of content for the appearance of the six relevant comprehensive plan elements:

- Parks and Recreational Facilities
- Land Use
- Housing
- Utilities
- Transportation & Parking
- Public Safety (fire, rescue, and police).

And When Compared to Evaluation Criteria

- Data and Methodology; wide range of data, cited data sources, cited methodology.
- Adequate Context; role of A&E explained, background info provided, purpose explained.
- Valid Procedure; who formulated the plan, how were they selected, method of involvement.
- Implementation Guidance; priorities listed, cost of implementation vs non-implementation considered, time span presented, responsible parties identified.

CHAPTER 4
CASE STUDY RESULTS BY CAMPUS MASTER PLANS

North Carolina State University (NCS)

North Carolina State University's master plan was developed using internal resources. It is called a "physical" master plan -- "A Campus of Neighborhoods and Paths" -- as opposed to a campus master plan which is the more common description, and one used by the other three sites. These two factors (neighborhoods and paths) are indicators of the focus of this planning document: specifically to guide the future physical development of campus centered on campus neighborhoods and the paths that link them. In the context of this plan, the term neighborhood refers to "human scale places where individuals can form a lasting personal connection to [the] … university" (pg 3). The term path means "a system of footpaths, streets, and transit … a pedestrian-oriented network" (pg 3). A review of the table of contents in table 4 shows a section of the plan devoted to "precinct plans", a unique feature of this document.

Table 4
Uniformity Evaluation – Variations in Table of Contents
NC State University

INTRODUCTION
- Chancellor's Message
- Acknowledgments
- Overview
- Table of Contents
- The Path to This Physical Master Plan

1. FOUNDATIONS
- Introduction
- Campus Vision
- Guiding Principles
- Design Guidelines and Standards
- Campus Neighborhoods
- Campus Paths

2. CAPITAL IMPROVEMENT PLAN
- Projections
- Space Needs Analysis
- 10-Year Capital Plan

3. CAMPUS DESIGN PLANS
- Neighborhoods & Activities
- Campus Paths and Shared Open Spaces
- Transportation
- Vehicular Circulation, Parking, and Transit
- Landscape
- Natural Systems and Tree Corridors
- Infrastructure Systems:
  - Chilled Water, Central Steam Distribution, Primary Electric and Telecommunications
- Existing Space Assignments

4. PRECINCT PLANS
- Centennial
- South
- Central
- North
- West

5. APPENDIX
- Key Terms

Planning recommendations for the neighborhoods are described through a series of drawings and maps. It was developed internally but provides little explanation as to who actually prepared the document.

An examination of table 5 shows an absence of three of the six core elements (i.e., Land Use, Housing & Public Safety). "Parks" was addressed in the section of the plan titled "Natural Systems and Tree Corridors," but there was no mention of recreational facilities. Both Utilities and Transportation/Parking were discussed in detail. In the second evaluation for completeness (table 6) the master plan from NC State fared poorly with only three out of the 13 categories present: purpose, background info, and who formed the plan.

Table 5 Completeness Evaluation –Compared to Core Comprehensive Plan Elements		
CORE HEADINGS	RATING	NC STATE
Parks and Recreational Facilities	I	Addressed Parks in the section on *Natural Systems and Tree Corridors.* No specific mention of Recreational Facilities but does address it in some of the precinct plans.
Land Use	M	No Land Use analysis conducted.
Housing	M	No Housing analysis conducted.
Utilities	P	Utilities analysis conducted in the sections called: *Infrastructure Systems: Chilled Water, Central Steam Distribution, Primary Electric, and Telecommunications.*
Transportation & Parking	P	Transportation & parking analysis conducted in the sections called: *Transportation* *Vehicular Circulation, Parking, and Transit*
Public Safety (fire, rescue, and police)	M	No Public Safety analysis conducted
Note: P= present, M=missing, I=incomplete		

Table 6 Completeness Evaluation – Compared to Planning Evaluation Criteria		
PLANNING EVALUATION CRITERIA	RATING	NC STATE
Data & Method:		The Master Plan contained very little data. It relied on diagram, maps, and illustrations to present its recommendations with only modest text.
Range of Data	M	
Cited Sources	M	
Methodology Explained	M	
Adequate Context:		There was no consultant used to prepare the Master Plan.
Role of Consultant	N/A	
Purpose Explained	P	
Background Information	P	
Valid Procedures:		The Master Plan did list the members of its planning committee but provided no further details.
Who Formed Plan	P	
How Selected	M	
How Were They Involved	M	
Implementation Guidance:		No implementation guidance was provided.
Priorities Listed	M	
Cost to Implement	M	
Cost Not to Implement	M	
Time Span	M	
Identify Responsible Parties	M	
Note: P= present, M=missing, I=incomplete, N/A= Not Applicable		

Oregon State University (OSU)

Oregon State University also had an internally prepared master plan. The master plan has more text and data than diagrams and maps, and it appears to be partially tailored to meet code requirements for the adjacent town of Corvallis. A review of the table of contents in table 7 shows a major section of the plan devoted to a listing of guiding principles and the polices that would presumably implement them.

Table 8 shows a significant absence of core elements with only one present (transportation and parking). A closer examination of the plan reveals that some of the other core elements are addressed (albeit incompletely) in the Principles and Policies section. In the second part of the completeness evaluation (table 9) the Oregon State plan fared poorly with three of the 13 criteria present (purpose, background info, & who formed the plan). The plan did have a section on implementation; however it dealt with interaction with the city's land development code. This section did not address the five criteria for implementation guidance.

Table 7
Uniformity Evaluation – Variations in Table of Contents
Oregon State University

1. INTRODUCTION
Purpose and overview, history, planning principles, process and organization.
2. CMP PRINCIPLES AND POLICIES
Principles and policies to direct future campus development.
3. PROJECTED FACILITY NEEDS
Identifies enrollment growth potential and development facility needs.
4. CAMPUS GROWTH
Identifies campus sectors and outlines sector development policies.
5. DESIGN STANDARDS
Establishes design guidelines as they relate to site and building design, and preservation of natural resources.
6. TRANSPORTATION PLAN
Provides transportation system analysis and a transportation improvement plan.
7. PARKING PLAN
Provides parking facility analysis and a parking facility improvement plan.
8. IMPLEMENTATION
Contains implementation proposal in the form of a revised OSU Development District to be adopted by the City of Corvallis.
APPENDICES

Table 8 Completeness Evaluation – Compared to Core Comprehensive Plan Elements		
CORE HEADINGS	RATING	OREGON STATE UNIVERSITY
Parks and Recreational Facilities	M	No Parks and Recreational Facilities analysis conducted.
Land Use	M	No Land Use analysis conducted.
Housing	M	No Housing analysis conducted.
Utilities	M	No Utilities analysis conducted.
Transportation & Parking	P	Transportation & parking analysis conducted in the sections called: *Transportation Plan* *Parking Plan*
Public Safety (fire, rescue, and police)	M	No Public Safety analysis conducted.
P= present, M=missing, I=incomplete		

Table 9 Completeness Evaluation – Compared to Planning Evaluation Criteria (OSU)		
PLANNING EVALUATION CRITERIA	RATING	OREGON STATE UIVERSITY
Data & Method:		The Master Plan contained good data with sources often cited.
Range of Data	M	
Cited Sources	M	
Methodology Explained	I	
Adequate Context:		There was no consultant used to prepare the Master Plan.
Role of Consultant	N/A	
Purpose Explained	P	
Background Information	P	
Valid Procedures:		The Master Plan did list the members of its planning committee but provided no further details.
Who Formed Plan	P	
How Selected	M	
How Were They Involved	M	
Implementation Guidance:		Implementation guidance was provided but only for implementing the plan in accordance with City of Corvallis Land Development Code. None of the five criteria were addressed.
Priorities Listed	M	
Cost to Implement	M	
Cost Not to Implement	M	
Time Span	M	
Identify Responsible Parties	M	
Note: P= present, M=missing, I=incomplete, N/A= Not Applicable		

Clemson University (CU)

The campus master plan at Clemson University was developed by the consulting firm of Dober, Lidsky, Craig & Associates. The plan is presented in large format (11 x 17) consisting primarily of photographs, maps and diagrams with little text. Almost all the key data is presented visually with little numerical information or explanation of methodology. This master plan (see table 10) contains an extensive section on Campus Analysis which examines, in a very visual way, a wide array of factors from land use to pedestrian circulation. This plan compares favorably to the core comprehensive plan elements (as shown in table 11) with only one missing heading (Public Safety). Two other elements were incompletely addressed with Transportation not containing any substantive analysis of roadways and Parks and Recreation containing no discussion of recreational facilities.

Table 12 shows the Clemson Master Plan contained four of the 14 criteria with an additional criterion incomplete. The plan presented a fair amount of data but only provided an incomplete review of the methodology that was used to analyze the data.

Additionally, the plan contained the purpose, background info, and who formed the plan.

Table 10
Uniformity Evaluation – Variations in Table of Contents
Clemson University

1. EXECUTIVE SUMMARY
- Mission and Purpose
- Planning Context
- Planning Process
- Campus Master Plan Overview
- Campus Master Plan Phasing - Areas of Emphasis

2. TERMS OF REFERENCE
- Agenda for Planning
- Survey of Faculty, Staff, and Students
- Facility Requirements

3. CAMPUS ANALYSIS
- Campus and Environs Analysis
- Context/Environs
- University Property
- Land Use
- Topography
- Predominant Use Main Campus
- Predominant Use Campus Area
- Existing Campus Zones
- Budget Center Use
- Vehicular Circulation
- Parking Use
- Pedestrian Circulation
- Contact Hours
- Students in Residence
- Potential Building Sites
- Ravenel Site Capacity

4. PROGRAM, SPACE, AND FACILITY STUDY
- Programmatic Analysis
- Space Utilization Study
- Existing Facilities Survey

5. CAMPUS MASTER PLAN
- Campus Design Issues
- Johnstone Redevelopment
- Landscapes and Open Space
- Circulation Routes
- Campus Design Alternatives
- Infrastructure
- Illustrative Campus Master Plan

6. DESIGN PRINCIPLES, GUIDELINES, AND STANDARDS
- Design Principles, Guidelines, and Standards

ACKNOWLEDGMENTS

Table 11 Completeness Evaluation –Compared to Core Comprehensive Plan Elements		
CORE HEADINGS	RATING	CLEMSON UNIVERSITY
Parks and Recreational Facilities	I	Addressed Parks in the section on *Landscapes and Open Space.* No Recreational Facilities analysis conducted.
Land Use	P	Land Use analysis conducted in the section on *Land Use*.
Housing	P	Housing analysis conducted in the section on *Students in Residence*
Utilities	P	Utilities analysis conducted in the section on *Infrastructure*.
Transportation & Parking	I	Transportation and Parking analysis conducted in the sections on *Vehicular Circulation, Parking Use & Pedestrian Circulation.* Did not address roadway issues.
Public Safety (fire, rescue, and police)	M	No Public Safety analysis conducted.
Note 1: P= present, M=missing, I=incomplete		

Table 12 Completeness Evaluation –Compared to Planning Evaluation Criteria		
PLANNING EVALUATION CRITERIA	RATING	CLEMSON UIVERSITY
Data & Method:		The Master Plan contained good data but sources were not cited. There was a general overview of methodology.
Range of Data	P	
Cited Sources	M	
Methodology Explained	I	
Adequate Context:		The role of the consultant was not explained but the purpose was identified as well as good background information.
Role of Consultant	M	
Purpose Explained	P	
Background Information	P	
Valid Procedures:		The Master Plan did list the members of its planning committee but provided no further details.
Who Formed Plan	P	
How Selected	M	
How Were They Involved	M	
Implementation Guidance:		No implementation guidance was provided.
Priorities Listed	M	
Cost to Implement	M	
Cost Not to Implement	M	
Time Span	M	
Identify Responsible Parties	M	
Note: P= present, M=missing, I=incomplete, N/A= Not Applicable		

Virginia Tech (VT)

Table 13
Uniformity Evaluation – Variations in Table of Contents
Virginia Tech

INTRODUCTION
MASTER PLAN SUB-COMMITTEE
EXECUTIVE SUMMARY
1. EXISTING CONDITIONS/BACKGROUND to the PLAN
- Existing Conditions
- Background to the 1994 Master Plan

2. CAMPUS FACIIITIES PROGRAM
- Enrollment
- Spaces Needs Projections
- Space Provision Strategy

3. FRAMWORK for CAMPUS DEVELOPMENT
- Background: The 1983 Plan
- Major Determinants
- Plan Framework for the 21st Century
- Development Sites
- Future Growth Strategy
- External Development Factors

4. CIRCULATION & PARKING
- Introduction
- Pedestrian Circulation System
- Vehicle Circulation
- Public Transport Route/stops
- Access & Wayfinding
- Campus Parking
- Parking & Traffic Management Actions
- Long-term Roadway & Parking Recommendations

5. UTILITIES INFRASTRUCTURE
- Introduction
- Storm Water Management
- Sanitary Sewer System
- Water Distribution System
- Steam Distribution System
- Chilled Water System
- Electrical System
- Communication Network Services (CNS)
- Gas Distribution System

6. KENTLAND
- Existing Conditions
- Recommendations

7. IMPLEMENTATION
- Master Plan Phasing/Sequencing
- Landscape Improvements
- Property Acquisition

DESIGN GUIDELINES
- Landscape Guidelines
- Architectural Guidelines

Virginia Tech's master plan was prepared by the consulting firm of Sasaki Associates. The table of contents (table 13) is extensive, with Circulation & Parking and Utility Infrastructure playing a large role. The master plan also contains very detailed design guidelines for both landscape and architecture. The design guideline section provides a wide array of instruction on everything from specific tree and shrub species to appropriate doors and window designs.

The Virginia Tech master plan contained two of the six comprehensive plan elements with Utilities and Transportation & Parking. It also contained incomplete information when it provided data about parks but not recreational facilities. This information is presented in table 14. The completeness evaluation continued in table 15 with six of the fourteen criteria present. Specifically the plan covered: range of data, purpose, background, who formed the plan, implementation priorities, and implementation time span.

Table 14 Completeness Evaluation – Compared to Core Comprehensive Plan Elements		
CORE HEADINGS	RATING	VIRGINIA TECH
Parks and Recreational Facilities	I	Addressed Parks in the section on *Landscapes Improvements.* No Recreational Facilities analysis conducted.
Land Use	M	No Land Use analysis conducted.
Housing	M	No Housing analysis conducted.
Utilities	P	Utilities analysis conducted in the section on *Utilities Infrastructure*.
Transportation & Parking	P	Transportation and Parking analysis conducted in the chapter on *Circulation & Parking.*
Public Safety (fire, rescue, and police)	M	No Public Safety analysis conducted.
Note 1: P= present, M=missing, I=incomplete		

Table 15 Completeness Evaluation – Compared to Planning Evaluation Criteria		
PLANNING EVALUATION CRITERIA	RATING	VIRGINIA TECH
Data & Method:		The Master Plan contained good data but sources were not cited nor was there a review of methodology.
Range of Data	P	
Cited Sources	M	
Methodology Explained	M	
Adequate Context:		The role of the consultant was not explained but the purpose was identified as well as good background information.
Role of Consultant	M	
Purpose Explained	P	
Background Information	P	
Valid Procedures:		The Master Plan did list the members of its planning committee but provided no further details.
Who Formed Plan	P	
How Selected	M	
How Were They Involved	M	
Implementation Guidance:		Implementation guidance was provided but only regarding priorities and time sequence.
Priorities Listed	P	
Cost to Implement	M	
Cost Not to Implement	M	
Time Span	P	
Identify Responsible Parties	M	
Note: P= present, M=missing, I=incomplete, N/A= Not Applicable		

CHAPTER 5
CROSS CASE ANALYSIS OF CAMPUS MASTER PLANS

The purpose of a cross-case analysis is to evaluate the individual case studies against each other to identify variations. The cross-case analysis examines both the uniformity and completeness of the master plan. The first area of evaluation is uniformity, as demonstrated by the four tables of content. Table 16 below identifies variations in major heading by listing the frequency in each plan (i.e. found in all four, only found in two, etc). There were a combined total of 15 different major headings in the four case studies. Of the 15, only one was found in all four of the plans (Facilities, Program & Enrollment Projections). In fact there was wide variation in the tables of content indicating, among other things, a broad lack of uniformity in what master plans identified as important (or at least important enough to merit a specific section of the plan). That is not to say, for example, that Transportation or Circulation & Parking issues were only addressed in two plans since the heading was only listed in Oregon State and Virginia Tech's plans. This area was in fact covered in all four plans, but was only listed as a major heading in two tables of contents.

The lack of uniformity in the tables of contents is best exemplified by the finding that only three headings were found in the majority of the plans (in three or four plans) whereas 11 are found in only two or fewer plans. This inconsistency leads to confusion in understanding the focus and organization of master plans as a whole. It also makes it more difficult to understand the logic used to develop the new plans since it may not be clear what areas (major headings) were analyzed in these documents.

Table 16
Uniformity Evaluation – Frequency of Major Headings in All Tables of Content

FOUR	THREE	TWO	ONE
Facilities, Program & Enrollment Projections or 10 Year CIP	Introduction (OSU, VT, NCS)	Executive Summary (CU, VT)	Existing Conditions (VT)
	Design Standards or Guidelines (OSU, CU, VT)	Campus Master or Design Plan by Area or Precinct (CU, NCS)	Master Plan Sub-Committee (VT)
		Implementation (OSU, VT)	Utilities Infrastructure (VT)
		Transportation or Circulation & Parking (OSU, VT)	Framework for Development (VT)
		Planning Principles or Foundation (OSU, NCS)	Campus Analysis (CU)
			Terms of Reference (CU)
			Campus Growth (OSU)
Total: 1	**Total: 2**	**Total: 5**	**Total: 7**

OSU: Oregon State University; CU: Clemson University; VT: Virginia Tech; NCS: North Carolina State University

The second area of evaluation is to assess completeness by reviewing the plans for a detailed discussion of the six comprehensive plan elements (table 17). Clemson University appears to have the most complete document as compared to the others being evaluated when viewed by each school's plan (with three present and two incomplete). Virginia Tech and NC State have identical evaluations (with two present and one incomplete) and Oregon State is most deficient with only one comprehensive plan elements present.

If we examine in detail the above results based upon core elements (as opposed to schools) we see a couple of obvious points. The most significant point is the total absence of planning consideration regarding public safety. This is surprising considering the high value that colleges and universities place on ensuring their campuses are safe places to live and work. Almost as significant in their absence (missing from three out of four plans) is the lack of planning in Land Use and Housing. The two categories that are found in most of the plans (in various degrees of details) are Transportation & Parking and Utilities planning. These are areas of major importance to campuses and therefore usually play a substantial role in master plans. The last element is Parks and Recreational Facilities, and here the evaluation is less clear. While three of the four plans addressed this with some degree of detail (usually consisting of discussion about preserving open spaces or park-lands) none conducted a thorough assessment of the recreational facilities to include intramural sports as well as inter-collegiate athletics facilities.

Table 17
Completeness Evaluation –Compared to All Core Comprehensive Plan Elements

CORE HEADINGS	NC State	OSU	Clemson	Virginia Tech	**Total Present**
Parks and Recreational Facilities	I	M	I	I	**0**
Land Use	M	M	P	M	**1**
Housing	M	M	P	M	**1**
Utilities	P	M	P	P	**3**
Transportation & Parking	P	P	I	P	**3**
Public Safety (fire, rescue, and police)	M	M	M	M	**0**

P= present, M=missing, I=incomplete

The final area of evaluation was to assess completeness by comparing the documents against a basic set of evaluation criteria for plans. The list of 14 criteria is shown below in table 18 along with all four case studies results. The master plans all performed poorly when evaluated against this set of criteria. The plan from Virginia Tech met the most criteria but still had only six of the 14 items. The other three plans had relatively the same results with all plans addressing purpose, background, and identity of who formed the plan (OSU had four present and NC State & Clemson had three). All the plans were weak in explaining methodology and citing data sources. They also failed to address specific needs of implementation to include cost (both to implement and not to implement) and the identification of responsible parties. It's worth noting that even though the Oregon State plan had a chapter dedicated to implementation it only addressed the incorporation of their master plan into the locality's land development code.

Additionally, none of the plans provided details about planning committees in particular how individuals were selected and what role they played. In the final analysis eight of the 14 items were not found in any of the plans.

Table 18
Completeness Evaluation – Compared to All Planning Evaluation Criteria

PLANNING EVALUATION CRITERIA	NC State	Oregon State	Clemson University	Virginia Tech	**Total Present**
Data & Method:					
Range of Data	M	M	P	P	**2**
Cited Sources	M	M	M	M	**0**
Methodology Explained	M	I	I	M	**0**
Adequate Context:					
Role of Consultant	N/A	N/A	M	M	**0**
Purpose Explained	P	P	P	P	**4**
Background Information	P	P	P	P	**4**
Valid Procedures:					
Who Formed Plan	P	P	P	P	**4**
How Selected	M	M	M	M	**0**
How Were They Involved	M	M	M	M	**0**
Implementation Guidance:					
Priorities Listed	M	M	M	P	**1**
Cost to Implement	M	M	M	M	**0**
Cost Not to Implement	M	M	M	M	**0**
Time Span	M	M	M	P	**1**
Identify Responsible Parties	M	M	M	M	**0**

P= present, M=missing, I=incomplete, N/A=non-applicable

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

As a former professor of mine used to say when I came up short on an academic pursuit - "There is room for improvement." As with most everything in life there is room for improvement in the uniformity and completeness of campus master plans. Based upon the four master plans, we now know there is wide variation on what these documents are providing their readers. This paper has shown the lack of uniformity in basic areas such as tables of contents. Additionally it has shown a broad lack of completeness in core comprehensive plan elements and in planning evaluation criteria. The conclusion of this evaluation is that these plans are to varying degrees interesting and insightful, but generally lack some basic areas of good planning. The absence of any discussion of public safety is the most provocative factors but there are many more issues that deserve discussion.

The plans generally (with the exception of Clemson University) make little effort to use land use analysis for current or future growth management. This has been a fundamental tool for planners for many decades and has relevance in most campus environments, particularly in the development of new land. Detailed housing planning as well as parks and recreational facilities were absent from most of the plans. Additionally, a brief review of evaluation criteria for plans uncovered a general lack of information in some of the more basic areas such as data & methods, procedures for planning committees, and implementation guidance. All these findings support the need for a more uniform and complete approach to campus master planning.

American colleges and universities have historically retained a high degree of freedom and sought to maintain the intellectual independence needed to function effectively in an open society. It is therefore not surprising that the freedom and independence found at most public universities is also found in their approach to campus master planning. I would agree, up to a point, that no two schools are alike and therefore any attempt at creating a rigid structure for campus master plans is inflexible, unrealistic and unproductive. At the same time almost all public institutions of higher learning share similar basic goals such as advancing the knowledge of society at large and experience similar problems such as traffic congestion. Additionally, colleges and universities have a professional obligation to consider certain key aspects of planning when considering the future of their school such as public safety and could benefit from a general format which identify a suite of basic areas from which they can choose those most applicable for their unique environment. This would prevent the hodge-podge of areas currently found in campus master plans and assist campus planners in ensuring they, at the very least, address the basic areas of need.

As a side note, I believe master plans could be further improved with the integration of all "strategic" plans at universities. I didn't gather specific data on this issue but there was anecdotally evident that campus master plans are focused primarily on physical planning. At the same time most universities also have academic strategic plans and at times even business (fiscal) strategic plans. All these plans are interdependent yet none of the four case study master plans were integrated with the academic strategic plans. If a university has an academic goal to improve research capabilities there will almost certainly be a need to construct new infrastructure & facilities (labs, utilities, roads, etc). In the same way if the campus master plan identifies a need to expand parking and transportation this should only be done after identifying where the academic growth will take place. Equally problematic is the lack of coordination with the

surrounding locality.[1] I believe a strong case can be made for the better coordination of a university's master plan with the adjacent locality's comprehensive plan. These are both areas that beg for a more detailed evaluation.

My recommendation is the development of a general format for campus master planning for public colleges and universities. I would suggest that professional associations such as the American Planning Association, the American Society of Landscape Architects or the American Institute of Architects are best suited to take on this task in a thorough and inclusive manner. This format could then be used as a basic guideline for campus planning professional as they undertake the recurring task of master planning. The new format will empower the planner with the background knowledge needed to make an informed decision on what major areas are addressed in the master plan. It will also improve the uniformity of the plans which will enhance their usefulness and functionality. Improved uniformity will also make it easier to understand the basic purpose of the plan and how it's organized. This, in turn, will increase its usefulness to other users who will now have a better understanding of the document. It is my belief that the long and storied history of campus mater planning can only be enriched with the formal development of a uniform and comprehensive campus master planning format.

[1] The exception to this is Oregon, where public universities are included in the locality plan and must answer to the locality for planning purposes.

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