

Grounds Maintenance Programs

APPA Institute for Facilities Management
Course 203

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AIA
Continuing
Education
Provider

Course Description

203 Grounds Maintenance Programs APPAU Sept 2019

Examine the basic issues related to an effective grounds maintenance program: turf and plant materials, necessary equipment, organization and staffing requirements, and grounds design guidelines. The presentation will include discussion of staff training and technical requirements, planning and scheduling landscape activities, inspections and quality control, and customer relations. Explore various contracting alternatives.

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Learning Objectives

- Part I – The Basics
 1. Purpose & Organizational Goals
 2. Maintenance Levels, Parts & Priorities
 3. Organizational Structures
 4. Resources
 - Facilities, Equipment, Financial

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Learning Objectives

- Part II – The Complex
 5. Staffing
 6. Snow Removal
 7. Athletics & Synthetic Turf
 8. Discussion

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Purpose of Grounds Management



62% of high school seniors were most influence by the appearance of the building and grounds during their visit to college campus.

How Do Students Choose a College, 1986, Carnegie Foundation for the Advancement of Teaching



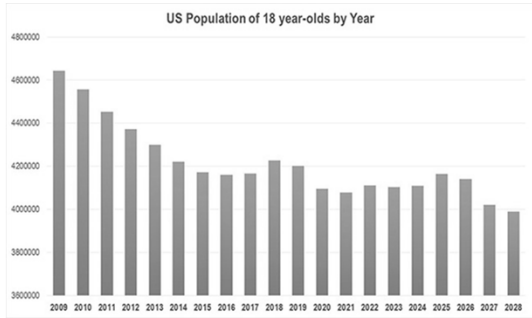
Students visit an average of 10 college campuses.

National Association of College Admissions Counselors

47 % of students said the campus visit was the most influential factor in their college selection.

2009, How Students Really Decide; College Selection From the Inside. Zinch.com





Fewer Students with the Ability to Pay

There are 4.34 Million 18-Year-Olds in the United States

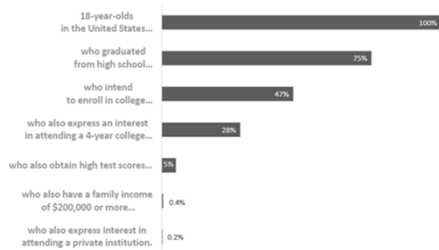
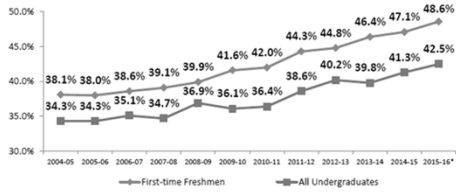


Figure 1. Average Institutional Tuition Discount Rate, by Student Category³



Source: 2015 NACUBO Tuition Discounting Study, various years. Data as of the fall of each academic year.
*Preliminary estimate.

6 out of 10 institutions had tuition discount rates that put them at risk for losing net revenue per full-time equivalent for every new student they enroll

• Organizational Goals/Mission

- Marketing
- Low Cost
- Safe
- Functional
- Attractive
- Educational Resource



What is your VISION?

APPA Grounds Maintenance Levels

- Level 6 – Natural areas
- Level 5 – Minimum-level
- Level 4 – Moderately low-level
- Level 3 – Moderate-level
- Level 2 – High-level
- Level 1 – State-of-the-art

What level is your school?

Parts & Priorities

- **APPA Level 3 - Clean & Green**

- Litter Collection

- 2-3 /wk



Parts & Priorities

- **Level 3 - Clean & Green**

- Snow Removal



Parts & Priorities

- **Level 3 - Clean & Green**

- Mow, Blow & Go

- Mow 1 /10 days

- 1 fertilization/yr

- Litter 2-3 / wk



Parts & Priorities

- **APPA Level 2 – *The Academic Village***

- Turf Management
 - Mow 1/wk
 - Fertilize 1+/yr
 - Irrigation
 - Weed Control
 - Seed, Seed, Seed!



Parts & Priorities

- **Level 2 – *The Academic Village***

- Tree management
- Shrub plantings
- Litter, 5 days/wk



Parts & Priorities

- **APPA Level 1 – *The Campus Garden***

Annual & Perennial Flowers



Parts & Priorities

- **APPA Level 1 – *The Campus Garden***
– Botanical Gardens & Arboreta



Parts & Priorities

- **APPA Level 1 – *The Campus Garden***
– Arboriculture
– Tree inventory & appraisal



- **Miscellaneous Services**

- Landscape Construction
- Landscape Architecture
- Site Furnishings



- Miscellaneous Services

- Pavement Management
- Waste & Recycling
- Composting



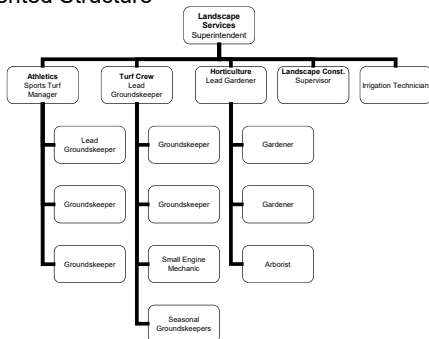
- Conflicting Services

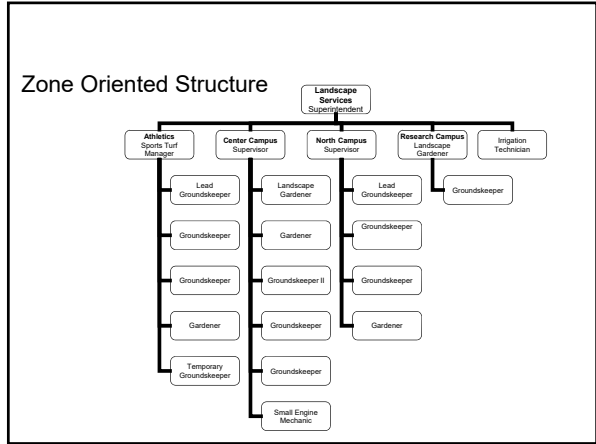
- Moving & Setups
- Labor Shop



-The tyranny of the urgent trumps the completion of the important.

Task Oriented Structure





Organizational Structures

<u>Task</u>	<u>Zone</u>
• More efficient use of labor	• Less efficient use of labor
• More efficient use of equipment	• More equipment required
• Less ownership	• More ownership = pride
• May be less pride	• More accountability
• Easier to train employees	• May create silos
• More monotony	• More training required
	• Greater job satisfaction

Resource Requirements

- **Facilities**
 - Equipment shop
 - Covered storage
 - Bulk materials storage
 - Holding nursery

Resource Requirements

- **Equipment**

- Reel & Rotary Mowers



Electric Equipment



Resource Requirements

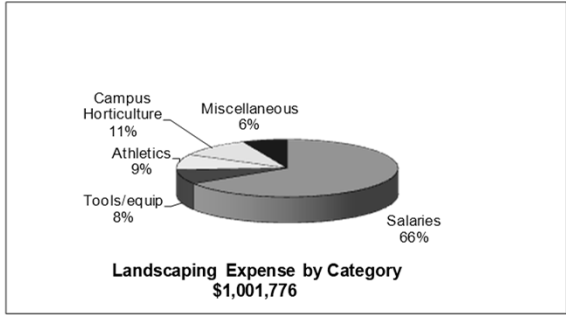
- **Equipment**

- Spreaders / sprayers
- Miscellaneous

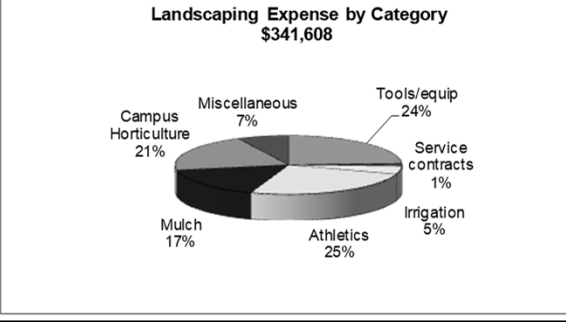
~ 5%-10% of op. budget
in capital equipment
annually



Resource Requirements - Financial



Resource Requirements - Financial



Resource Requirements - Financial

- The 95/5 rule
 - 95 % of the grounds budget is taken by tasks that only 5% of the customers notice.
 - But 95% of the customers notice what we spend only 5% of the grounds budget on.

Resource Requirements

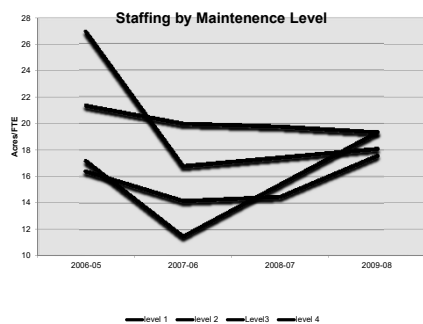
- **Staffing** - Comparative issues
 - Climate
 - Quality & expectations
 - Landscape style
 - Volume of use
 - Campus setting
 - Area measurements



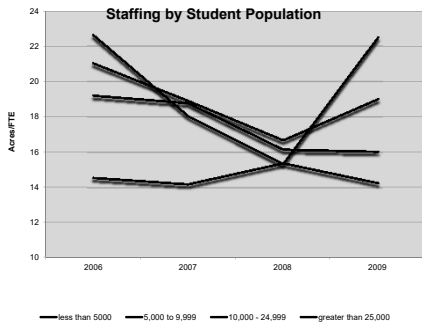
Staffing

- Data Sources
 - APPA Facilities Performance Indicators (FPI)
 - Operational Guidelines for Grounds Management - APPA

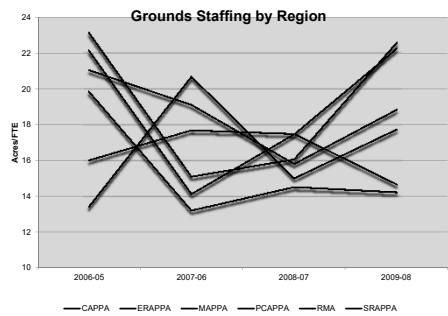
APPA FPI



APPA FPI



APPA FPI



Turf Maintenance - Open Area							1 year =	weeks	84.9 Ac		
LABOR	Levels of Maintenance			Total min/whk	Total hrs/yr	Labor \$/yr					
	High	Medium	Low								
	#Ac	#Ac	#Ac								
Mow											
72" rider	36.00 305.00	8.5	16.00 0.00	5.30 0.00	305.00	204.00		\$3,090.00			
16" walking	13.00 868.00	76.0	6.50 0.00	3.25 0.00	868.00	658.00		\$9,680.00			
Fertilize PTO	15.00 0.00	0.75 63.36	84.5	0.38 0.00	0.00	63.36	42.25	\$633.75			
Weed Control	130.00 0.00	3.25	0.00	0.00	0.00	0.00	0.00	\$0.00			
Overseed	48.00 0.00	1.20	0.00	0.00	0.00	0.00	0.00	\$0.00			
Irrigate	60.00 0.00	4.50	0.00	0.0	0.00	0.00	0.00	\$0.00			
Aerial	60.00 0.00	3.00	1.50	0.00	0.00	0.00	0.00	\$0.00			
TOTAL						904.92		\$13,673.75			
MATERIALS											
LABOR	Levels of Maintenance			Total min/whk	Total hrs/yr	Fuel gal/yr	# Nitrogen Gal	Waste #			
	High	Medium	Low								
	#Ac	#Ac	#Ac								
Mow											

Resource Requirements

- APPA Staffing Level 1
 - High use/
high visibility areas,
3 – 7 Acres / FTE



Resource Requirements

- APPA Staffing Level 2
 - Medium use & visibility areas,
7 - 14 Acres / FTE



Resource Requirements

- APPA Staffing Level 3-4
 - Low use areas,
14- 100 Acres / FTE



Resource Requirements

- Staffing
 - Athletic fields – NCAA
 - 1 – 3 Fields/ FTE



Resource Requirements

- Staffing
 - Athletic fields – Recreational
 - 3 - 6 Fields/ FTE



Resource Requirements

- Staff Training
 - Professional degree
 - Hands on
 - Both management & technical
 - See peer institutions
 - Mentoring

Snow Removal



Snow Removal - Response Plans

- By Priority
- By Zone
- By Equipment Assignment



Reasonable and Defendable

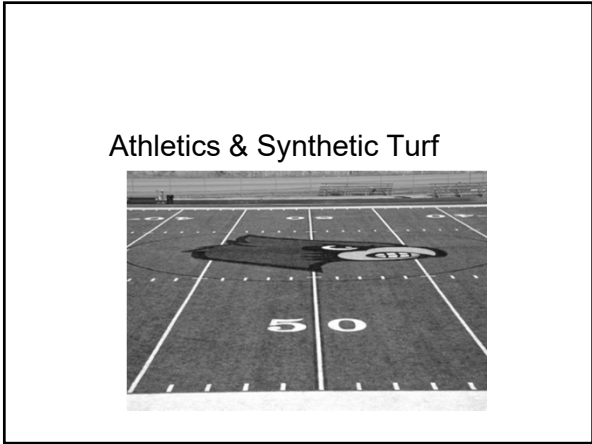
Snow Removal

- Equipment









Professional Sports Field Management

- Manage for Student Athlete Safety

-Coach Communications
-Team Member 16/7



Professional Sports Field Management

Considerations

- Capital cost
- Life cycle cost
- Maintenance needs
- Multiple lines
- Painting and scrubbing
- Surface temperature
- All weather use
- Number of uses
- Injury & playability
- Coach preferences



Operations Costs Natural Field

McKinnon Field-Game Field (6 FB Games, 2 Soccer Games, 6 Fall Practices, 3 Spring Practices)

	Material Qty	Material Cost	Hours	Costs	Personnel	Total Per Event Costs	Frequency During Year	Total Labor Costs	Total Costs
Events:									
Paint Football Field Lines	5	\$313	3	\$75	6	\$763	15	\$6,750	\$11,438
Paint Football Colors-Logos etc.	5	\$313	4	\$100	4	\$713	6	\$2,400	\$4,275
Paint Middle Logo	2	\$125	1	\$25	1	\$150	8	\$200	\$1,200
Paint Soccer Lines	2	\$125	3	\$75	2	\$275	2	\$300	\$550
Mowing After Ice Cleanup	5	\$18.75	3	\$75	1	\$93.75	17	\$1,275	\$1,593.75
Divot Repairs	4	\$64	2	\$50	2	\$164	17	\$1,700	\$2,788
Event Setup/Breakdown			3	\$75	2	\$150	18	\$4,800	\$2,850
TOTAL EVENT		\$9,219		\$724		\$1,190		\$13,475	\$24,694
Maintenance:									
Mowing	5	\$18.75	3	\$75	1	\$93.75	180	\$13,500	\$16,875
Perforing	6	\$120	1	\$25	1	\$145	40	\$1,000	\$1,600
Aerating	15	\$56.25	6	\$150	2	\$356.25	6	\$1,800	\$2,137.50
Sand Topdressing	1	\$500	3	\$75	1	\$575	10	\$750	\$5,750
Verticutting	15	\$56	6	\$150	2	\$356.25	3	\$900	\$1,068.75
Rolling Field	10	\$38	4	\$100	1	\$137.50	1	\$100	\$137.50
Sodding	5000	\$4,500					Contracted Out	1	\$4,500
Overseed Rye costs \$85 per 1000	17	\$671.50	2	\$50	1	\$721.50	1	\$50	\$721.50
Chemical Removal of Rye	1	\$216	2	\$50	1	\$266	1	\$50	\$266
TOTAL MAINTENANCE		\$19,105.25						\$18,150	\$37,255
TOTAL OPERATIONAL COSTS		\$28,324.50						\$33,625	\$61,950

Operational Costs Synthetic

Synthetic Use-Football 15 uses, Women's Lacrosse 11 uses, Soccer 2 uses										
	Material Qty	Material Cost	Hours	Costs	Personnel	Total Costs Per Event	Frequency During Year	Total Labor Costs	Total Costs	
Annual Maintenance:										
Painting Soccer Lines	2	\$260	4	\$60	3	\$440	1	\$180	\$440	
Painting Lacrosse Lines	2	\$260	4	\$60	3	\$440	3	\$540	\$1,320	
Scrubbing Paint From Field	11	\$715	8	\$120	4	\$1,195	4	\$1,920	\$4,780	
Sanitizing Field	2	\$125	4	\$60	1	\$185	18	\$1,080	\$3,330	
Dragging Field	3	\$11.25	3	\$45	1	\$56.25	30	\$1,350	\$1,687.50	
Grooming Field	3	\$11.25	4	\$60	1	\$71.25	6	\$360	\$427.50	
Goal Area Replacement	510	\$13,260	Contracted Out					1		\$13,260
	Total Operational Costs	\$19,815						\$5,430	\$25,245.00	

Synthetic vs. Natural Life cycle costs

COST COMPARISON OVER A 10 YEAR PERIOD FOR THE McKinnon Field												
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total Costs	Total Together
McKinnon-Natural Grass												
Operational Costs	\$81950	\$81950	\$81950	\$81950	\$81950	\$81950	\$81950	\$81950	\$81950	\$81950	\$819,500	\$819,500
Capital Costs	\$42,500	\$69,500	\$42,500	\$42,500	\$42,500	\$69,500	\$42,500	\$42,500	\$142,500	\$42,500	\$579,000	\$1,198,500
McKinnon-Synthetic												
Operational Costs	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$25,500	\$255,000	\$255,000
Capital Costs	\$78,000	\$78,000	\$78,000	\$78,000	\$78,000	\$78,000	\$78,000	\$78,000	\$78,000	\$500,000	\$1,202,000	\$1,457,000

This concludes The American Institute of Architects Continuing Education Systems Course

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Discussion & Questions

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