

Contact: Joan Racki

REGISTER OF UNIVERSITY OF IOWA
CAPITAL IMPROVEMENT BUSINESS TRANSACTIONS

Actions Requested: Consider approval of:

1. The following actions for the **West Campus Power Plant** project, a major capital project as defined by Board policy.
 - a. Acknowledge receipt of the University's initial submission of information to address the Board's capital project evaluation criteria (see Attachment A);
 - b. Accept the Board Office recommendation that the project meets the necessary criteria for Board consideration; and
 - c. Authorize permission to proceed with project planning, including initiation of the consultant selection process for design services for the project.

2. The following actions for the **Dental Science Building, Phase 1 - Construct Addition** project, a major capital project as defined by Board policy, with the understanding that approval will constitute final Board approval and authorization to proceed with construction.
 - a. Acknowledge receipt of the University's final submission of information to address the Board's capital project evaluation criteria for the project (see Attachment B);
 - b. Accept the Board Office recommendation that the project meets the necessary criteria for Board consideration; and
 - c. Approve the schematic design and project description and budget (\$17,000,000) for the project.

Executive Summary: The **West Campus Power Plant** project would construct a new combined heat and power (CHP) facility on the University of Iowa west campus. (See Attachment C for map with the proposed location.) The facility would be capable of generating 31.6 Megawatts of electricity, 200,000 lbs/hr of steam, and supplying this energy independent of the external electric grid that serves the University. The new CHP facility would be fueled by natural gas, with combustion turbine and heat recovery steam generators. It would be the most efficient energy plant on the University of Iowa campus.

The flooding of 2008 demonstrated the need for new, adequate, and reliable CHP facilities that are located on the west side of campus and are not vulnerable to future flooding or other dislocations from the main power plant and electrical grid connection. New steam and electrical generating capacity on the west campus mitigates risks of wind/flood/grid failure events. This project will also add capacity to the campus-wide steam system to satisfy demand projections of the future.

The estimated project cost of \$70 million would be funded from a pending federal grant and would be matched at 50% from University of Iowa Utility System Revenue Bonds. The University anticipates receiving a grant decision/announcement in October 2009. If awarded, the project would need to be delivered expeditiously. Should the project not receive grant funding, the scope of the work will be adjusted accordingly.

The **Dental Science Building, Phase 1 – Construct Addition** project would construct an addition to the existing Dental Science Building of approximately 33,400 gross square feet. The project was outlined with the University's presentation of the College of Dentistry Master Plan at the October 2007 Board meeting. The Master Plan identifies the need for substantial renovation and expansion of the Dental Science Building to more efficiently respond to the requirements of modern dental patient care (including patient accessibility and changing patient populations); medical technology and research; and the need for additional instructional space.

Approximately 80 percent of Iowa's dentists have graduated from the University's College of Dentistry, which receives approximately 125,000 annual patient visits. There are 10 departments in the College and a total of 320 pre-doctoral students and approximately 90 graduate students. Faculty members provide treatment for private patients in the Faculty Practice area.

The Dental Science Building, and its fixtures and equipment, have had few improvements since completion of construction in 1973. The development of modern, efficient, and convenient facilities is necessary for the College to continue to attract outstanding students to meet the growing need for dentists across Iowa and the nation, and to continue to attract patients to support the College's clinical operations.

The Phase 1 Construct Addition project will contain a consolidated Faculty Practice area; the departments of Special Care and Endodontics; student spaces including classrooms, study rooms and student lounge; Clinic Administration offices and building support spaces including mechanical and electrical rooms. A new accessible on-grade building entrance and site modifications will also be provided. The project cost of \$17 million will be funded by College of Dentistry gifts and clinical earnings, and University allocations from Treasurer's Temporary Investment Income or Central Building Improvement funds

Phase 2, which includes the renovation of the existing facility, is included in the recommended FY 2011 capital request for state funds. (See Agenda Item 8.)

Details of Projects:

West Campus Power Plant

<u>Project Summary</u>			
	<u>Amount</u>	<u>Date</u>	<u>Board Action</u>
Permission to Proceed		Sept. 2009	Requested

Dental Science Building, Phase 1 – Construct Addition

<u>Project Summary</u>			
	<u>Amount</u>	<u>Date</u>	<u>Board Action</u>
College of Dentistry Master Plan Report		Oct. 2007	Received
Permission to Proceed		Feb. 2008	Approved
Initial Review and Consideration of Capital Project Evaluation Criteria		Feb. 2008	Approved
Design Professional Agreement – InVision Architecture LTD (Des Moines, IA)		Dec. 2008	Not Required*
Schematic Design		Sept. 2009	Requested
Project Description and Budget	\$17,000,000	Sept. 2009	Requested
Final Review and Consideration of Capital Project Evaluation Criteria		Sept. 2009	Requested

*Approved by Executive Director in accordance with Board procedures

The schematic design booklet is included with the Board's materials.

The addition will consist of three levels and align with the second, third and fourth floor levels of the existing building.

Level 4 will house the Faculty Practice Clinic and Administration offices. The Faculty Practice operatories now located in the departments of Clinical Research, Hygiene, Operative and Preventive Dentistry will be relocated to a central location in the new addition. This relocation will provide modern and attractive operatories and improve service for private patient care. The College increasingly relies on clinical revenue to meet College operational expenses.

Level 3 will house the departments of Special Care and Endodontics. These departments and the clinic administration offices will relocate from the south wing of the existing building to the addition, providing expansion space for other departments. Special Care will be located close to an accessible building entrance, with direct access to an adjacent patient drop off area.

Level 2 will house a new classroom, a student lounge and small group student study rooms as well as the mechanical, electrical and facilities building support rooms.

Level 1 includes an unexcavated area and mechanical access.

The exterior of the Addition will blend into and complement the existing building design, which includes poured in place concrete with deep reveals at the construction joints and a modular window wall system. The accessible entrance is detailed to match the existing concrete shafts that protrude from the building face and surround the building in a rhythmic pattern.

The square footage of the addition, which follows, is the same as included in the approved program.

Clinic Administration:	NASF	
Reception	437	
Offices	933	
Conference room	383	
Kitchenette	82	
Patio	969	
Subtotal:		2,804
College of Dentistry:	NASF	
Recycling Center	82	
Classrooms	2,356	
Student Lounge	606	
Shower Rooms	274	
Dispensary	203	
Subtotal:		3,521
Endodontic Dentistry:	NASF	
Waiting	340	<i>(680 shared with Special Care)</i>
Clinic Clerks	68	<i>(136 shared with Special Care)</i>
Operatories	1,794	
Darkroom	97	
Seminar Room	320	
Graduate Student Office	246	
Offices	534	
Laboratory	196	
Staff Room	135	<i>(270 shared with Special Care)</i>
Storage	138	
Panoramic & Cephalometric X ray Unit	82	
Subtotal:		3,950

Center for Clinical Excellence: NASF

Waiting	680
Clinic Clerks	180
Consultation Rooms	206
Radiology Rooms	101
Operatories	2,638
Laboratory	303
3DMD Room	195
Offices	545
Storage	207

Subtotal: 5,055

**Oral Pathology, Radiology,
and Medicine:**

NASF

Seminar Room	395
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Subtotal: 395

Special Care:

NASF

Waiting	340	<i>(680 shared with Endodontics)</i>
Clinic Clerks	68	<i>(136 shared with Endodontics)</i>
Operatories	1,546	
Offices	164	
Laboratory	269	
Storage	103	
Staff Room	135	<i>(270 shared with Endodontics)</i>

Subtotal: 2,625

Total Net Area: 18,350 NASF

Anticipated Gross Area: 33,424 GSF

Project Budget

Construction	\$13,187,247
Planning and design	2,584,000
Contingency	<u>1,228,753</u>
TOTAL	<u>\$17,000,000</u>

Source of Funds: College of Dentistry gifts and clinical earnings, University allocations from Treasurer's Temporary Investment Income or Central Building Improvement funds

Construction is scheduled to commence in March 2010, with completion by December 2011.

Attachment A
West Campus Power Plant

Responses to Board Evaluation Criteria for Major Capital Projects

Fulfillment of
Mission and
Strategic Plan

This project constructs a new combined heat and power (CHP) facility on the University of Iowa west campus. The facility will be 80% efficient, capable of 31.6 MW of electric generation, 200,000 lbs per hour of steam generation, and will be capable of supplying this energy independent of the external electric grid. The new CHP facility will use natural gas fuel and be based on a combustion turbine generator with a heat recovery steam generator (CT-HRSG).

In June 2008, the University of Iowa experienced unprecedented flooding from the Iowa River which bisects the campus. The Main Power Plant and steam tunnels were shut down, resulting in a total loss of steam service to the entire campus. The total loss of steam, and steam generated chilled water production capacity, severely threatened both medical and scientific research, as well as routine campus business and activities. While temporary systems were constructed, emergency steam production at the University of Iowa Hospital and Clinics allowed for continued operation of the medical complex.

This natural disaster demonstrated the need for new, adequate, and reliable combined heat and power facilities that are located on the west side of campus and are not vulnerable to future flooding. New steam and electrical generating capacity on the West campus mitigates risks of wind/flood/grid failure events. This project will also add capacity to the campus wide steam system, satisfying projected firm capacity shortfall projections based on campus growth in years to come.

In addition to addressing natural disaster risks from wind and flood damage, this project is necessary for the University utility system to have adequate firm production capacity to serve the main campus and UIHC complex. The concept of firm capacity (production capacity that remains if the largest single unit is taken out of service) is used to determine the minimum acceptable production capacity for utility systems such as steam, chilled water, electric, etc. The following Figure 1 (Steam Production Capacity) illustrates firm capacity of the steam production assets in each of three cases. The line representing projected peak steam production required is based on a continued campus growth rate of 200,000 gross-square-feet per year. Boilers 7, 8, 10, and 11 are the permanent University assets installed at the Main Power Plant. "TBs" 1 & 2 are temporary boilers, also installed at the Main Power Plant. Boilers 10 and 11 are solid fuel boilers – all other units are natural gas fired. "UIHC" is a new 50,000 lbs per hour boiler currently being installed in the Pomerantz Family Pavilion. It is scheduled to be connected to the steam distribution system (or stand alone) and operational in November 2009. The end of useful service life for boilers 10 and 11 is assumed to be 40-years (2017 for boiler

10 and 2026 for boiler 11). An assumption that the useful service life of these units can be extended beyond 40-years with upgrades and repairs is made in cases 2 and 3.

Alternatives Explored

The following Figure 1 presents two firm capacity alternatives to the status quo (Case 1). In all cases, the temporary boilers are assumed to be unavailable beyond 2013 (for graphic presentation simplicity). Case 2 which assumes both boiler upgrades for boilers 10 and 11, as well as a new 200,000 lbs per hour heat recovery steam generator (represented by this project). Case 2 projects satisfactory firm capacity to 2024. Case 3 assumes that west campus backup power needs are met with a simple cycle combustion turbine, and west campus steam production is satisfied from two temporary boilers; also, boilers 10 and 11 are upgraded to maintain useful service life beyond 40-years. This alternative is projected to be deficient in steam production capacity in 2013 – in reality temporary boilers would continue to provide steam capacity beyond 2013, and provide satisfactory firm capacity to 2018. This action would extend Case 3 firm capacity sufficient to meet needs to 2018. Case 1 and Case 3 alternatives are not recommended because they do not extend adequate firm capacity far enough into the future, nor do they present a permanent solution to west campus steam capacity needs.

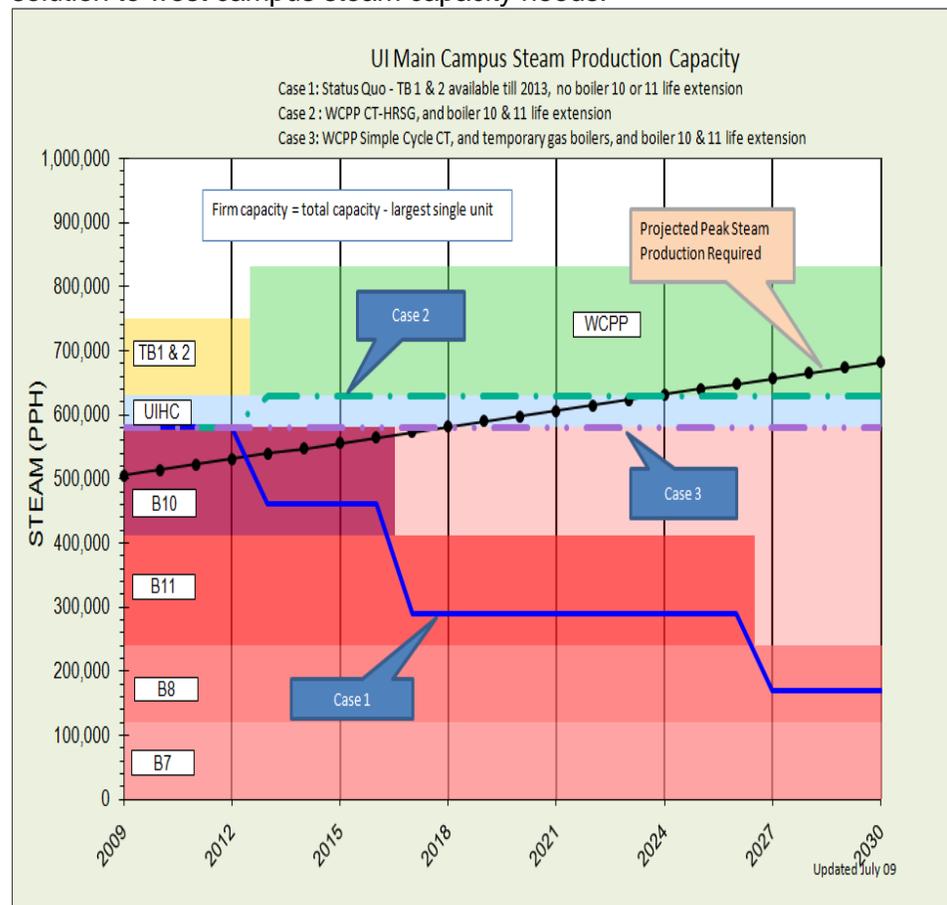


FIGURE 1 – Steam Production Capacity

Abandoned/

This project will not result in the abandonment, transfer or demolition of

Transferred/
Demolished
Space

existing space. However, it will require the relocation of existing commuter parking space within the portion of the Finkbine Parking Lot that will be impacted. The UI is studying the use of space formerly used for field hockey for the parking capacity lost due to the project. The space is adjacent to an existing Carver-Hawkeye Parking Lot and is closer to the UIHC complex.

Available
Financial
Resources/
Anticipated
Source of Funds

The project will be funded from a pending federal grant (DE-FOA-0000044) and be matched at 50% from University of Iowa funds (bond proceeds). Bond debt will be repaid through Utilities & Energy Management enterprise rates. A grant decision/announcement is expected in October 2009. If awarded, the project will need to be delivered expeditiously. Should the project not receive grant funding, the scope of the work will be adjusted accordingly.

Available
Operating and
Maintenance
Resources

Economic analysis indicates a net present value of \$4,723,881 over a 25-year project life, an internal rate of return of 6.11%, and a simple payback of 17.5 years, all with the assumption that \$35,000,000 of the project cost is funded through the pending grant. Natural gas fuel and purchased electric prices strongly influence this analysis. Increasing purchased electric prices is a virtual certainty due to the fact that much of the purchased electric power consumed by the University is generated in solid fuel central power plants, and carbon regulation will affect the future cost of this power. Though currently attractive, the natural gas market has demonstrated extreme volatility over the last five years and is expected to continue this trend. As carbon regulation takes hold, continued upward pressure on natural gas prices is expected; however, recent discoveries of new natural gas reserves will mitigate some of that upward pressure. The analysis concludes that there is a sufficient range in the gas and electric prices that a new West Campus Power Plant, based on CT-HRSG technology, will produce some amount of positive annual cost avoidance in fuel and electric purchases. Likely amounts for this cost avoidance will range from \$2,000,000 to \$12,000,000 per year.

The source of funds to cover the associated operating and maintenance costs will be from the Utilities & Energy Management Enterprise which derives its funding through the sale of utilities to the various University of Iowa departments/colleges.

External Forces
Justifying
Approval

The University of Iowa utility system will be without adequate steam and electric generation capacity to reliably serve existing and future loads on the main campus and UIHC complex. As a result, unplanned outages of steam and electric service will increase as existing systems continue to age and require more intense maintenance. Additional outages are possible from natural disasters such as floods or high winds/tornados affecting University owned as well as external utility generation and distribution capabilities.

Attachment B
Dental Science Building, Phase 1 – Construct Addition

Responses to Board Evaluation Criteria for Major Capital Projects

Fulfillment of
Mission and
Strategic Plan

This project addresses the University's strategic goal of "cultivation of excellent graduate and professional programs, and to advance the research and scholarly enterprise".

The College of Dentistry's mission and strategic plan are based on three components: 1) the education of students as dentists and dental specialists, 2) conducting research into aspects of oral diseases and the delivery of oral health care, and, 3) service to the community, state, and the profession.

Completion of this project will provide the College of Dentistry with modern clinical education and treatment facilities to attract both students and patients. The best students use facilities as a major criterion when considering which dental school to attend.

Patients have many choices for the source of their dental care. Modern and convenient facilities are essential to attract sufficient patients to provide an adequate quantity of clinical experiences for the education of dental students. In addition, with the growing disparity between the salaries of dental faculty and private practitioners, there is an increased reliance on clinical income as a funding source. Modern, attractive, and efficient clinical facilities are necessary to attract patients to contribute to clinical revenue. The college does not have an ADA compliant entrance. Given that it is a healthcare facility, it is necessary to provide appropriate entry accommodations. The University of Iowa College of Dentistry enjoys a national reputation as a leader in the care of geriatric and special needs patients. This patient population requires proper entry conditions.

Cutting edge research requires contemporary facilities to compete for external funding. The addition will allow some student functions to vacate existing space that can be reprogrammed to research space.

Alternatives
Explored

A conceptual analysis, conducted by an outside consultant, determined that the current building footprint was insufficient to accommodate the educational, clinical treatment and research needs of the College. Additional space is required to provide dental operatories, research facilities and instructional spaces that meet current standards.

Abandoned/
Transferred/
Demolished
Space

This project will not result in the abandonment, transfer or demolition of existing facilities.

Available
Financial
Resources/
Anticipated
Source of Funds

The project will be funded by a combination of College of Dentistry gifts and clinical earnings and University allocations from Treasurer's Temporary Investment Income or Central Building Improvement Funds.

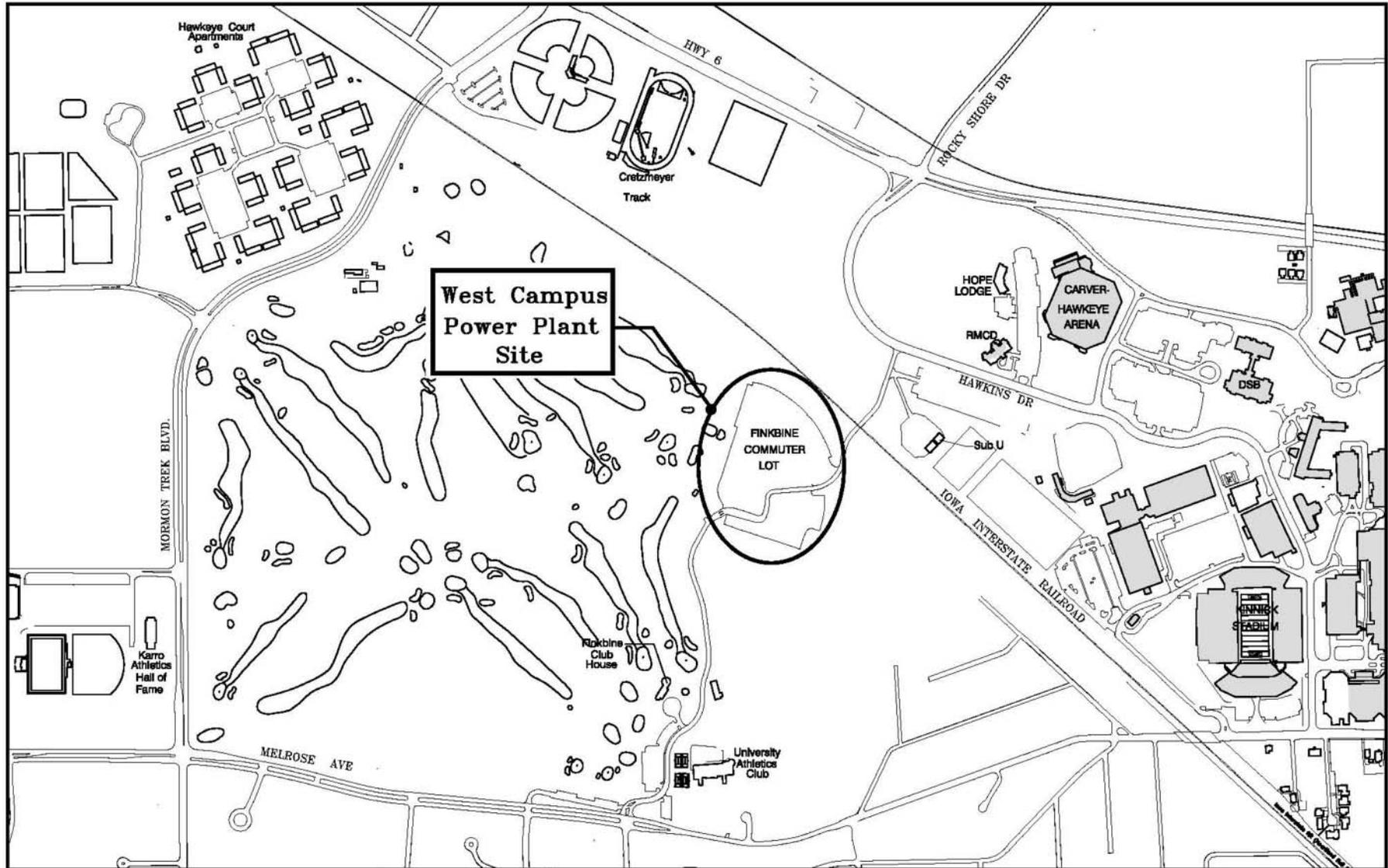
Available
Operating and
Maintenance
Resources

The source of funds to cover the operating and maintenance requirements will be existing Operating and Maintenance funds, indirect costs and collegiate overhead.

External Forces
Justifying
Approval

In order to attract outstanding students to meet the growing needs for dentists in Iowa and the nation, the College needs modern and efficient facilities.

The College's increased reliance on clinical revenue for the College's operational expenses requires facilities that are modern, accessible, attractive and convenient to patients in order for the College to compete with other sources of oral health care.



THE UNIVERSITY OF IOWA



Proj. No. 0182801
WestCampusPP.dwg
Plotted: July 22, 2009

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Scale: 1" = 800'

Location Map
West Campus Power Plant